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Vol. LXIX, No. 14

535 North Dearborn Street, CHICAGO, ILL.

OCTOBER 6, 1917

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The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 14

CHICAGO, ILLINOIS

OCTOBER 6, 1917

COOPERATION BETWEEN PHARMACOL- OGY AND THERAPEUTICS *

ALBION WALTER HEWLETT, M.D.
SAN FRANCISCO

It is important that a healthy cooperation should exist between those who are engaged in the scientific study of drug action and those who use drugs for the purpose of curing or alleviating disease; for the problems of pharmacology, like those of pathology, have a very immediate bearing on medical practice. Established modes of treatment frequently form the starting point of scientific studies, and the exact knowledge thus gained leads in turn to greater precision in treatment. Pharmacologic studies have uncovered new therapeutic possibilities that have ultimately proved useful in the clinic. Finally, a clear recognition of the fact that substances of similar chemical structure frequently possess pharmacologic properties that are similar but not identical has opened up a vast field of research. Numerous compounds of a given type are now produced with comparative ease by the organic chemist. While many or most of these may possess no great practical advantage over their original prototypes, yet such studies are constantly leading to improvements in our remedies, and the possibility is always present that the systematic combination of chemical and pharmacologic research will tap important fields that have hardly been suspected hitherto.

Now more than ever before, therapeutic advance depends on an intelligent utilization of the methods, the criticisms and the new discoveries of pharmacology. Older remedies are being restudied, and from the host of newer ones that are constantly being placed before the profession an intelligent choice must be made. Before I undertake to discuss how cooperation between the pharmacologist and therapist may be promoted, however, it may be well to point out some of the factors which tend to separate these two classes of workers. In the first place, their attitudes toward their respective problems are essentially different. The pharmacologist contemplates with scientific skepticism that which is unproved, and he proceeds slowly and carefully from the known to the unknown. The therapist, on the other hand, brought face to face with a crisis in the life of his patient, cannot refuse to try the unproved when remedies of known efficacy are lacking. Hence he often grasps at straws, being restrained only by the possibility of doing harm to his patient. Such a practice, justifiable in itself, too often leads to those habits of

inaccurate reasoning that are reflected in therapeutic literature. Optimism in practice often means an unjustified and uncritical enthusiasm in the interpretation of results.

The pharmacologist and the therapist are further separated by the conditions under which their observations are commonly made. In the laboratory the action of drugs is usually studied on normal animals, and toxic doses can be administered with impunity. In the clinic, on the other hand, therapeutic doses alone are used, and the effects of these are often modified by disease. The pharmacologist is permitted to employ methods of study which involve operative or other harmful procedures. The clinician is restricted to those methods of study that can be used without harm to his patient. Finally, the laboratory worker plans a series of experiments, and he endeavors to eliminate errors by repetition and by controlling the various factors that might influence his results. In therapeutics the number of observations is necessarily limited by the available clinical material, and the interpretation of results is often hampered by the fact that the effect of other factors, such as the natural course of the disease and the action of the other drugs used, is difficult to estimate and is, indeed, often estimated incorrectly. Under such conditions, years may elapse before even a simple therapeutic problem is conclusively answered.

As I have said, pharmacologic studies are usually made on normal animals. In seeking to utilize the knowledge thus obtained for therapeutic purposes, the following questions arise: 1. Are the effects observed produced by doses that can safely and easily be administered to patients? 2. Will the human organism react in the same manner as the animal studied? 3. How is this reaction modified by disease?

The question of dosage, simple as it may seem, has caused and will probably continue to cause occasional therapeutic stumbles. The fact that large doses of strychnin were known to produce a marked rise of arterial pressure in animal experiments was in part responsible for its extensive use by clinicians in conditions of low pressure. Yet it now seems established that in safe doses strychnin does not raise the blood pressure materially, either in man or in animals. The rise of pressure, therefore, is a toxic effect; and, so far as we know, it is not available for therapeutic purposes. Due consideration must also be given to the fact that in the laboratory intravenous injections are frequently used, whereas in medical practice these are seldom given except in emergencies. Finally, different species of animals may vary in their reactions to a given drug. When the reaction is essentially the same in a variety of mammals, it may be assumed that the human organism will respond in a similar manner;

* Chairman's address, read before the Section on Pharmacology and Therapeutics at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

but when the reaction varies, the effect on man cannot safely be predicted from laboratory studies. In practice, moreover, even lesser quantitative variations in response may become of paramount importance, for it is our purpose to secure therapeutic results, and at the same time to avoid unpleasant side effects.

One of the most important methods for helping to bridge over the gap between animal pharmacology and practical therapeutics is the accurate study of the effects produced when drugs are given in the usual medicinal doses to human beings. The methods employed in making such studies must naturally be free from the possibility of doing harm. Fortunately a great variety of new methods have been developed in recent years which may be applied to the study of human functions. Without attempting to name all of these, I mention the following: bloodless determinations of the arterial and venous pressures; graphic records of the gastric contractions, of the arterial and venous pulse waves and of the electric changes accompanying cardiac activity; roentgenographic examinations of the alimentary tract; determinations of the rate of metabolism; chemical analyses of the alveolar air, of small quantities of blood and of excreta, and estimations of the various immune bodies in the blood. Each new method that can be applied to the study of human functions not only advances our knowledge of these functions and of their perversions in disease, but also makes possible more accurate studies on how these functions are influenced by various remedial measures. In many cases such studies can be carried out on normal individuals, and within a short space of time sufficient data can be accumulated to establish with scientific accuracy certain aspects of drug action.

Ultimately, however, we must answer the question: Are these drug effects of value in combating the disturbances of functions that are encountered in disease? The final answer to this question can seldom if ever be given from studies either on normal animals or on normal men. In certain instances the diseased function is unusually susceptible to drug action. The body temperature of a febrile patient, for example, is reduced more easily by antipyretic drugs than is the body temperature of a normal person. Digitalis in therapeutic doses has relatively little effect on the heart rate when this is controlled in the usual way from the sinus region. Its reputation for slowing the heart of patients is based almost exclusively on observations which were made on those suffering from auricular fibrillation. Diuretics of the caffein group produce a moderate diuresis in the healthy man, and may be ineffective or harmful in nephritic edema, whereas in cardiac edema they often cause a veritable flood of urine. The dilatation of the bronchi produced by epinephrin is most plainly demonstrable in conditions of bronchial constriction, whether produced experimentally or occurring during asthma. Finally, the treatment of infections can manifestly be tested only on infected animals or human beings.

Not infrequently the remark is made that the value of a therapeutic measure is determined solely by clinical experience. While I have no desire to contradict this assertion, it should be pointed out that ordinary clinical observations are often extremely difficult to interpret, owing to the vagaries of disease and to the many remedies that are so commonly employed in a single case. The past history of therapeutics warns us that in order to avoid error we need as much assistance as possible from every source. Pharmacology

may not, indeed, answer therapeutic problems directly, but at least it aids in their solution. It shows how drug action may be made the subject of accurate study, and the critical attitude which it adopts must be carried over into the interpretation of therapeutic results, if progress in that subject is to be placed on a firm foundation.

On the other hand, pharmacologists could, I believe, be of greater help to those who work in the clinic if they would fully realize how their results may be given a form more suited to clinical needs. What, for example, is the effect of a given drug in small doses, especially when given over a long period of time? How are the effects modified when animals have been made the subject of disease? What pharmacologic problems can be studied on man himself, and especially on patients who are taking the treatment usually given for their disease? Work on such lines as these whether by pharmacologists or by clinicians, will help to maintain contact between the science of drug action and the art of treatment.

THE PROTECTION OF THE HEALTH OF THE WORKER IN WAR*

W. IRVING CLARK, JR., M.D.

WORCESTER, MASS.

The preservation of the health of the war worker is one of the most important problems of the next two years and one which, if a correct solution is found from a rational and practical standpoint, may lead to revolutionary changes in the majority of factories in the United States. The health of the war worker is a national asset, and must be scrupulously guarded along the most approved lines compatible with present factory administration. It must be remembered that any revolutionary project, no matter how carefully thought out, is potentially destructive, and that the greatest care must be taken in introducing reforms and changes to do so in such a way that maximum results can be obtained with a minimum amount of expense and change from existing conditions. In this paper I shall present briefly the experimental and practical data which apply to the protection of the health of the war worker, and a definite system of organization which is applicable to all factories doing war work and employing 1,000 or more employees.

HEALTH IN RELATION TO PRODUCTION

"Health is a condition of physical soundness or well being in which an organism discharges its functions efficiently."¹

To maintain health means to maintain working efficiency, while reduction of health means loss of efficiency. Sickness decreases the individual's production, increases the risk of accident, and militates against the efficiency of the department. An epidemic of sickness can completely disorganize a department or even a whole shop.²

Health may be affected (1) by outside factors (environment, fatigue, accident), and (2) by internal factors (disease and defects).

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Encyclopaedia Britannica, Ed. 11, 13.

2. Newman, George: Sickness and Injury, Memorandum 10, British Health of Munition Workers Committee, 1916.

OUTSIDE FACTORS

(a) *Environment*.—In factory work the health of the worker is menaced by three factors of environment, each of which can to a certain extent be overcome. These are poor ventilation (which should be coupled with heat and humidity), poor light, and dust. We will consider these briefly in order.

In muscular activity the glycogen of the muscle unites with oxygen from the blood, producing heat and combustion products, the most important of which is carbon dioxid. During work such as that done by the average factory worker, the amount of carbon dioxid thrown off in the expired air is about double the amount that is thrown off by the same person at rest. Along with this carbon dioxid there are thrown off by the working body emanations containing toxic protein products. These toxic products cause the odor and closeness of an ill ventilated room.

Recent investigation tends to show, however, that the lassitude, headache, and malaise experienced in a close atmosphere are due to heat and humidity rather than to the inspiration of waste products, and that the effect of heat and moisture on the skin is the determining cause of the discomfort. From these facts it is evident that not only must there be a free circulation of fresh air, but also the heat and humidity of the air surrounding the worker must be within certain definite limits. Briefly stated, factory air should not contain more than six parts of carbon dioxid in 10,000. The temperature should not, if it is possible to avoid it, exceed 68 F., and the humidity should not be higher than 72 wet bulb.

Good light is necessary not only for the health of the worker, but also for the efficiency of his work. This fact has been definitely realized in modern factory construction. Artificial illumination by electricity may be furnished by direct, indirect or semidirect methods of lighting. General semidirect supplemented by shaded individual lights probably give the best practical results. Each worker or group of workers can then control the light over the machine or group of machines being operated. The light should fall on the work, not on the operator's eyes. There are three dangers to be avoided: (1) overillumination, causing overstimulation of the retina and contracted iris; (2) underillumination, producing eye strain, and (3) reflected light from brightly polished metallic surfaces which tends to confuse and to produce the effect of overillumination. Poor illumination, besides injuring the worker and reducing the output, increases the number of accidents.

"The lighting of a factory is deemed to be insufficient if the illumination taken on the horizontal plane, 1 foot above the floor, falls below one third of a foot candle."³

(b) *Fatigue*.—"Fatigue is a diminution of the capacity for work which follows excess of work or lack of rest; and which is recognized on the subjective side by a characteristic sensation of malaise."⁴

No subject that has to do with industrial health has received more careful attention and consideration than industrial fatigue. The British Ministry of Munitions devotes a whole pamphlet or section of its report to its investigations and findings. Fatigue has also been exhaustively studied by Lee, Goldmark, Mosso and many others. Physiologically considered, muscular

fatigue results from (1) poisons produced by contraction of striated muscle; (2) catabolism of the glycogen in the muscles, and (3) consumption of the glycogen stored in the muscles and the liver. Fatigue products are chemical substances acid in reaction. They consist of sarcolactic acid, monopotassium phosphates, and carbon dioxid. These substances circulating in the blood produce fatigue. They act not only on all the muscles of the body, but also on the central and end nerve cells. These waste products are eliminated slowly, and the body requires a period of rest for their complete elimination and the necessary tissue repair. If sufficient rest is not allowed between working days, a physiologic deficit must result. According to Goldmark,⁵ "this is the essential injury of consecutive days, weeks and months of overtime work which we (shall) find common to many branches of industry—that the normal season of tissue repair between working days is cut down at the very time when the severest demands are being made on the human organism. Strain or work done after fatigue has set in not only costs more effort but accomplishes less."² This has been graphically shown by Lee:⁶ "Effort increases with fatigue, but if work is reduced by one half the period of necessary rest can be reduced one half or three fourths as much again."

There are three stages of working power. In the first the working power gradually increases; it is the limbering up stage and is known as the stage of incitement. During this stage the output of the individual worker gradually increases. The second stage begins when the worker has gotten into full swing. This stage is known as the stage of practice; work becomes automatic, speedy and leaves free will for application to the general consideration of the work. After a certain period of time, the duration of which depends on the work, the physical condition of the worker and many other factors, the stage of fatigue is reached. This stage is usually characterized by a spurt or effort on the part of the worker to overcome the lassitude caused by fatigue products. These stages correspond to the action of isolated muscle electrically stimulated. Before fatigue reduces the contracting power of muscle there is a steplike rise, each contraction being more powerful than the last, until a certain height is reached, after which there is first a slow, followed by a rapid, fall in power. We must remember, however, the volitional control of the worker, and this is shown in the spurt. The spurt may occur at any time during the stage of practice, but it is particularly prevalent toward the end of a working period or during the stage of fatigue. This spurt is known as the end spurt, and "occurs where a worker makes a special effort to do his best before leaving off. This effort is coupled with a stage of excitement which is psychological depending on the approaching rest period. During this period accidents diminish."

It is evident on physiologic and psychologic grounds that overwork, an insufficient number of rest periods, and insufficiently long periods of rest all militate against the health of the worker, and increase the danger of accident.⁷

The type of work in different departments varies, and the physical condition of each worker varies. It is obvious, therefore, that to make hard and fast working hours for the whole factory, as is now done, is

3. Oliver, Sir Thomas: *Occupations*, 1916, p. 33.

4. Ogden, C. K.: *The Nineteenth Century and After*, February, 1917, p. 420.

5. Goldmark, Josephine: *Fatigue and Efficiency*.

6. Lee, F. S.: *Fatigue*, Harvey Lectures, 1906-1907, p. 172.

7. Vernon, H. M.: *Output in Relation to Hours of Work*, Memorandum 12, British Health of Munition Workers Committee, 1916.

working a grave injustice on the workers of some departments and on the workers not physically fitted to work in certain departments. Therefore, I submit these principles: 1. Whenever possible, the working hours of a department should be governed by the type of work of the department. 2. Rest periods should be introduced as indicated by production and by the number of accidents. 3. In each department, only workers physically fit for the work of that department should be employed.

(c) *Accidents*.—Accidents are largely due to workers' so-called "carelessness." In a recent investigation of 1,000 accidents occurring at the Norton Company plant, 85 per cent. were found to be due to this cause. In many occupations, accident is undoubtedly due to monotony, breaking of rhythm, or complexity of work. The rendering of machinery safe is a science in itself, and large factories now employ safety engineers whose business it is to see that machines are fitted with the proper safeguards.

In the scientific consideration of accidents, injured workmen continuing to work should be classed and considered in the same way as are defectives, until they have completely recovered.

The proportion of accidents to sickness is generally considered very low. This is true in regard to time lost from work, but in actual numbers the records of the Norton Company show a remarkable equality. Thus, during the first three months of this year the number of employees applying for dispensary treatment was in the proportion of nineteen cases of sickness to twenty cases of accident.

Accidents should be treated promptly by trained assistants. When serious they should be treated by a physician. By prompt treatment I mean treatment within ten minutes of the time the accident occurs. The exact method of treatment of accidents has been discussed in a recent article.⁸

INTERNAL FACTORS

(a) *Defects*.—Physical defects militate against the health of a worker unless he is so placed that the character of his work and his mental ability allow him to keep up normal production without strain and without materially increasing the defect from which he is suffering. A defective worker is not by any means an inefficient worker. Inefficiency occurs only when the physical defect through fatigue or discomfort prevents the worker from producing a normal output. Often defective workers are the best workers in a department, but they will not remain so unless properly supervised. The method of supervision will be discussed later.

(b) *Disease*.—Sickness is prevalent among any large body of workers. It is most marked during the four winter months, and is an important factor in causing lost time. Our experience at the plant of the Norton Company during December, January and February, the worst months for sickness, showed that 27 per cent. of the men investigated were absent because of sickness, the remaining 73 per cent. being absent for personal reasons. Approximately 2 per cent. of the working force were absent each month because of sickness. It is obvious that sickness is probably the most important factor to be controlled in considering the protection of health, and I hope to

show later the possibilities of reducing this to a minimum.

In considering the foregoing factors which control the health of the worker, it is evident that the responsibility for the workers' health falls on four men: the engineer of the plant, the safety engineer, the manager of the works, and the factory surgeon.

1. The engineer of the plant controls the external factors of environment.

2. The safety engineer controls the external factors of danger.

3. The manager of the works controls the external factors of fatigue.

4. The factory surgeon controls the internal factors of disease and defects.

No further consideration will be given the first three. Each is a specialty in itself.

We will now consider the work of the factory surgeon and the medical supervision of war workers.

The object of medical supervision is to control the health of the working force by instituting methods of prevention of disease and maintaining them; by the prompt attention to accidents and through careful after-care preventing disability as far as possible; by finding defects in workmen and repairing them, and if this is not possible, endeavoring to place the defective workman where he will be most efficient; by the education of the workman in matters of hygiene, and by the control of sanitation and matters pertaining to the health of the factory at large.

PHYSICAL EXAMINATIONS

The keystone of efficient knowledge of the physical condition of the worker is a physical examination. This fact is recognized in every hospital, college and army. With the knowledge gained by physical examination, defects discovered may be remedied, employees may be placed in departments in which their defects will not only not militate against their efficiency but where they may be actually improved. Workers may be stimulated to cooperate with the physician in helping themselves, and the close touch necessary for future supervision and advice established. The value of physical examinations to both factory and worker is becoming more plain each year.

Outside of the specific fundamental data obtained by the examination, perhaps the most important feature is the use of the knowledge thus obtained in placing defectives in their proper departments. With the Norton Company there are at present 401 defectives so placed that they are all doing excellent work and apparently improving rather than retrogressing.

Defects may be divided into two classes: (1) Those which can be relieved by medical supervision and by proper placing, and (2) those which can be assisted only by medical supervision.

In the first class belong defective eyes, defective ears, defective hearts, defective lungs, and certain defects of the extremities. Defective eyes and ears are of particular importance in certain office departments and in shop departments requiring keen vision in the work. Slight refractive errors if not corrected lead to eye strain and poor work, which is of advantage to neither factory nor worker. Slight deafness among stenographers using the phonograph causes great nervous strain, and such work should not be assigned. Defective hearts are more or less of a bugaboo. The average patient with compensated endocarditis is capable of considerable work without

8. Clark, W. I.: Medical Supervision of Factory Employees, THE JOURNAL A. M. A., Jan. 6, 1917, p. 5.

danger, provided sudden or prolonged strain is avoided. My experience tallies exactly with that of MacKenzie, who says: "If the rule that exercise should stop short of exhaustion be followed, it is surprising what an amount of effort can ultimately be endured by patients who may once have suffered from extreme heart failure. This will be appreciated by those who practice among the classes employed in hard manual labor."

The Norton Company has ninety-two workers with defective hearts. Only two of these men have been forced to stop work because of broken compensation, and both after a rest were able to return and are now working. All are, of course, under careful supervision. The question of the seriously defective lung is quite different. Here the function of the health department must be to make an early diagnosis of tuberculosis or pneumonia, and see that the worker receives immediate and adequate care. In neither condition should one be permitted to work, but outside treatment should be arranged. It seems remarkable that not only have many persons with tuberculosis applied to the Norton Company for work, but even a few with pneumonia.

The handling of defective extremities is such a broad subject that it cannot be considered here.

In the second class belong those numerous minor defects so common among workers which if not checked and cared for sooner or later lead to marked disability.

In order that no defective may be transferred from a suitable to an unsuitable department, another physical examination should be made on all transfers, and this, together with the examination which all sick employees should receive at the main or subhospital when applying for relief, obviates the necessity of periodic examination of the entire factory force. Workers with severe defects should, however, be kept under close supervision, and should be reexamined once every six months or year.

Medical supervision should begin with the physical examination of the applicant and continue as long as he continues to work in the factory. He should be provided with careful and thorough examination and advice when he is sick. He should be given prompt and efficient treatment for every accident, no matter how slight, and this treatment should continue until the worker is able to resume work. Medical supervision should preserve the general health of all workers by supervising hygiene and sanitation at the factory, and it should educate by affording an opportunity for direct contact between physician and worker, and by the distribution of leaflets simply and clearly written on health subjects.

The great bulk of sickness among workers is of a minor nature; but unless this is given careful treatment, much more serious conditions are likely to follow. Thus at the Norton Company's plant, where the number of employees in office and shop approximates 4,500, during the first three months of this year, 1,920 patients applied for treatment, of which only 319, or a little under one sixth, could possibly be considered more than minor cases. The whole comfort, and much of the efficiency of the worker, however, depends on the relief of these milder ailments, and many, if not cared for, tend rapidly to become serious.

When we are confronted with figures like these, we realize the necessity of a sickness prevention movement similar to "safety first."

In short, sickness among workers is as prevalent as accidents, and should receive the same care and attention as accidents, if we are to preserve the health of the war worker. The best index as to the amount of sickness and the number of accidents at a factory is the lost time record. This may be divided into time lost from sickness, time lost from accident and time lost for personal reasons. I consider the personal lost time as a normal for sickness. If the sickness curve is lower than the personal curve, good medical service is being provided, and workers are availing themselves of it. During the past year the average number of hours lost from accident per month at the Norton Company plant employing about 4,500 workers was 328, or about six weeks' working time. In other words, the lost time each month was equivalent to six injuries each severe enough to incapacitate one worker for one week.

Good results can be obtained only by keeping a most careful check on each case of accident and sickness and by an efficient follow-up system; in other words, a close personal touch is the keynote of success.

The whole question of the preservation of the health of the war worker resolves itself into education and service: education of the employer as to the economy of preserving the health of his employee; education of the employee as to how to live and how to avail himself of medical supervision. Once this education has been accomplished, success is assured. The proper service is now to be considered.

The instruments of service are the industrial physician, the industrial nurse and the industrial hospital. The industrial physician is a specialist. His equipment and training are special, and more closely approximate those of the military surgeon than any other branch of the profession. His duties and responsibilities have been outlined above. The industrial nurse is also a specialist, and should receive a special form of training. In my experience the most adequate training is that given in the United States Army or Navy Medical Corps. The industrial hospital is a combination dispensary containing both medical and surgical units. It must be equipped (1) to provide room for physical examination; (2) to provide equipment adequate for the treatment of accidents, and (3) to provide for diagnosing all general medical cases and for the treatment of minor medical conditions. These three factors form a unit, and this unit can be extended as far as necessary by multiplication. It is customary, in large factories, to have an employment department where all applicants for positions apply. Therefore, the hospital should be placed in close proximity to this department in order that applicants after being registered may step into the examining room for their physical examinations. This examining room should be in immediate communication with the hospital in order to save the physician's time. It becomes evident that the hospital in connection with the employment department becomes a medical supervisory center and should be situated in the topographic center of the factory if possible. Depending on this main hospital, secondary units may be thrown out, each one complete but small, these in turn being situated in topographic centers of activity throughout the plant. Each subhospital should be capable of caring for accidents and minor sicknesses, and should be in touch with the main hospital by telephone. Each subhospital is in charge of an industrial nurse. This system can be carried out almost indefi-

nately, is absolutely pliable, and can be adapted to any type of factory. In small factories of 1,000 employees a main hospital alone is necessary. In larger factories one or more subhospitals are placed as indicated by the necessity. One subhospital is capable of handling the accidents and sicknesses of a thousand employees. It therefore can be rapidly figured how many subhospitals will be needed for the service of the employees in a factory.

All records, including physical examinations, should be kept in the main hospital, and all cases appearing in subhospitals should have records made, copies of which should be sent to the central hospital, in order that this record may be entered on the original report of the employee.

An industrial physician should make the rounds of each subhospital daily, and should go over the subhospital records and find out exactly how each case is progressing. If there is any reason to suspect that an employee is not doing well, he should be summoned by telephone and seen by the physician personally. The nurse should also have ready for the physician on his arrival any case which he does not consider himself competent to treat. Any serious cases arising in the subhospitals should be referred at once to the main hospital, or the physician should be summoned from the main hospital to give the necessary treatment.

The advantage of this subhospital system is that every injury is treated within ten minutes from the time it occurs. Redressings are done with great rapidity without the patient's being obliged to wait. Minor injuries and minor sicknesses receive adequate attention at the hands of a specially trained nurse without requiring the time of the physician.

The expense of maintaining a subhospital is less than the expense of time lost by injured and sick employees going a long distance to the central hospital. The records are kept carefully by this method, as every case of injury or sickness is reported directly to the central hospital.

This system has been used by the Norton Company for a year. During that time the subhospitals have administered on an average twenty-five treatments each a day. In the large number of minor accidents treated we have had no case of sepsis.

It must be remembered, however, that only industrial nurses should be given this responsibility, and that the limits of their power to treat cases should be firmly fixed. The industrial physician should remember that he is absolutely responsible for every case thus treated, and should go over the nurses' records with this in mind.

In closing, I feel that I cannot do better than quote the report of the British Health of Munition Workers Committee:

The committee have received evidence and reports from all parts of the country of the economic and industrial value of the proper organization of a medical service within the factory, and they are convinced that both on grounds of health and of securing improved output this subject demands the immediate attention of employers, and that adequate schemes of treatment, especially of minor injuries, are an important means of preventing loss of time and efficiency among the workers. They recommend, therefore, that provision for organized treatment should be made in every munition factory.²

37 Pearl Street.

ABSTRACT OF DISCUSSION

DR. JOHN R. WILLIAMS, Rochester, N. Y.: I think the study of the physical vigor of the worker is quite as important as the physical examination. By the use of the Collin dynamometer it is possible to measure and get a comparative estimate of the physical vigor of every person in this room in a few minutes. By making such observations under the definite conditions which one wishes to investigate, it is possible to determine whether or not the worker is being injured by the occupation.

I have employed this method with satisfactory results in some brief studies on the effect of undernutrition on certain persons. According to Dr. Ales Hrdlicka of the National Museum, Washington, the dynamometer as a means of measuring the muscular tone of the individual is quite as valuable a diagnostic instrument as is the thermometer or stethoscope. The effects of dissipation, bad food, worry, improper ventilation and fatigue, all have an appreciable effect on the muscular tone, which can be measured easily by this instrument. It seems to me that with this very simple apparatus we could readily determine whether the conditions in a factory were promoting the highest degree of efficiency in the worker.

DR. DAVID L. EDSALL, Boston: In regard to Dr. Clark's paper, the present time is, as we know, a time in which things ought to be done as effectively as possible, and not from the accident of impulse. I want to urge the members of this section present, and other physicians whom they may influence, to make themselves familiar in detail with the reports of the British Health of Munition Workers Committee, from the standpoint of being able to give some wise advice to people from the hygienic standpoint; in regard to the control of industries at the present time under pressure because of the war.

Physicians, knowing this subject somewhat, ought to be familiar with those reports, at least they ought to be read, to give some wise advice as to controlling this matter, not through any patriotic impulse, which is wrong, if driving us to do too much, rather than to do a little; but do something based on better knowledge, based on the attitude of men like Dr. Clark, who has had much experience in it.

The other point is this: Medical men have properly had some feeling against the establishment position as that has sometimes been managed. I have not the slightest doubt that establishment physicians are here to stay and are going to increase in number, from the standpoint of doing work well for the public at large, as well as for certain employers of the people at large; but I have in mind that establishment physicians are going to increase, and going to increase in very great numbers, and more than there will be need to increase, unless the profession at large becomes more familiar with problems such as Dr. Clark has been describing. At the Massachusetts General Hospital in the past year or two we have had an industrial clinic running in the hands of Dr. Wright, just a big dispensary clinic of patients of industrial accidents and the effects thereof. He has seen in that time, in that one hospital, about 5,100 people who are exposed to very definite industrial accidents. They have not been recognized by the ordinary familiar methods. Dr. Wright has diagnosed in one year 147 cases of lead poisoning; and the doubtful ones were all proved by finding lead in the stools, or urine, or both. The physician needs to recognize, as Dr. Clark said, that this is technical work and needs technical training; and we need to recognize in the medical schools that we should teach the students something more about this than we have yet done; but the man who wishes to retain the power of competing against establishment physicians has still to recognize that he has got something there apart, but still has to learn it with an open mind, and to realize the fact that he does not know it.

DR. J. W. SCHERESCHEWSKY, Pittsburgh: You must remember that it is not men alone that win a war, but, coincidentally, our ability to furnish the military establishments with all the supplies they can possibly need. Now the bulk of these supplies is something which we, used as we are to gigantic industrial operations, can hardly conceive of. If we are to

wage this war effectively we must not forget the necessity for maintaining armies which may amount to several million persons. As these are necessarily able-bodied men, they reduce by that amount those available for industry. This means that not only must every industrial worker be more efficient than ever before, but that women must enter industries to a hitherto unprecedented extent.

In order to secure maximum individual effectiveness, we must not only carefully supervise the physical condition of the worker, but each individual must be placed under circumstances and in an environment enabling him to perform a maximum amount of work. Therefore, measures for the conservation of the health of workers are of vital importance to the country.

In order to secure this result, provision must be made for the following: (1) the establishment of minimum standards of industrial hygiene in work places; (2) prevention of occupational diseases and poisonings; (3) medical supervision of workers, and (4) community sanitation.

The object of all these provisions is, of course, not only to secure conditions favoring maximum production, but so to safeguard the health of workers that an absenteeism from preventable sickness shall be reduced to a minimum. One point which was brought out in Dr. Clark's paper must be insisted on, namely, the adaption of the worker to his job and the utilization of everybody, including physical defectives, to the fullest possible degree. We should by no means reject a skilled workman because of a certain minor physical defect, for if he is given work which can be satisfactorily performed without injury to the health, we can utilize him as effectively as though the defect had never existed. Finally, we must not lose sight of the necessity for creating good sanitary conditions in our industrial communities. It will not be enough for us to secure ideal factory conditions and effective supervision of the health of workers while in the working place unless at the same time we see that their surroundings after they leave the factory are also healthful.

The production of effective conservation and utilization of the resources of the nation in this period of national emergency evidently require the fullest cooperation of all the health resources of the country. We cannot hope to put forth our best efforts in carrying on this great struggle into which we have entered unless there is an effective union of all the health agencies of the country.

DR. OSCAR F. DOWLING, New Orleans: Those of us who have been interested and have made investigations know that the best medical training is what we should set as the standard. Recently I had the pleasure of having some health officers say to me that when they got through and returned to their work they would show us "some sanitation." Camp experience has already convinced them that a county or town can be made healthful, something they did not believe a short time ago. If all the medical men not called to the front could serve a term in one of the camps, especially health officials, it would make for cooperation in the enforcement of protective measures. As it is, so few of them know anything of the value and effectiveness of this work.

This war will give us added respect for law. With us, and I presume it is true of every section, in theory the people have now a profound respect for the law, but once written, they think enforcement will take care of itself. No one feels responsible. We will now have an object lesson in the effect of obedience.

DR. HERBERT J. CRONIN, Cambridge, Mass.: Dr. Clark's system of medical supervision of employees at the Norton Plant in Worcester is practically perfect. I would advise the physician, unacquainted with industrial medicine and about to establish medical supervision in a plant, to introduce Dr. Clark's system complete.

The operating expenses of medical supervision in industry must always be the serious consideration of the physician. A too expensive system may fail because the plant may feel that it cannot afford it. General managers ask, "How much does this cost?" Cost will interfere with your plans; it may even discourage you; but industry must be operated for a profit and a return demanded for money spent. The physician can show a large return if he proceeds slowly and spends

cautiously. From my own observation of Dr. Clark's system, I consider it a most practical and inexpensive one.

The establishment of a first-aid hospital should be the first step for the physician on taking charge of the medical supervision of employees in industry. Gradually add the allied departments, such as physical examination of employees, visiting nurses, etc., but use the hospital as a center from which these other activities radiate.

DR. R. W. CORWIN, Pueblo, Colo.: The importance and benefit of first aid cannot be overestimated. The day is past when first aid can be neglected in any line of public industry; it must be considered in every branch of work, and, with equal justice, it should be extended to the home. The welfare of the man or employee should first be considered, then his family, and, last, the public or its representative, the employer, but all are vitally interested and should be keenly awake to its benefits and justice.

DR. OTTO P. GEIER, Cincinnati: One point stands out which has not been mentioned, it seems to me, in connection with this paper and the discussion. We talk about shortage of labor and shortage of material; but there is bound to result a shortage of medical attendance as a result of the war. We point to the fact that over on the other side anywhere from 25,000 to 50,000 doctors have been withdrawn from attendance on the civil population. That will mean that there will be a shortage of 20 to 50 per cent. of medical attendance in this country, which in itself means a serious thing to the community and to labor. I think that the medical profession should take such steps as will intensify the plans of preventive medicine, as that is the only way to meet the extra service that is going to fall on the medical profession in this country. The industrial physician through his control of the medical problems of large groups of workers can assist considerably in meeting the problem.

DR. W. IRVING CLARK, JR., Worcester, Mass.: I urge every one to use every influence he has to have established in any factory that he may come in contact with medical supervision of factory employees, for three reasons: In the first place, because it is good for the employee; in the second place, because it is good for the community; in the third place, because it is good for production; and, if you want to put such a small thing in as the fourth place, it makes money for the factory. All of those points have been absolutely proved; and I simply want to make that one appeal to every one. I think that there is great danger at the present time of long hours and insufficient medical attention to the laborers. It is going to reduce the production; it is going to hurt the laborer; and if arrangements were made so that when a factory is established medical supervision is established with it as one of the definite departments of that factory, it would save both factory and workmen in a great many ways.

Contract Practice in the Netherlands.—The *Nederlandsch Tijdschrift voor Geneeskunde* states that an agreement has now been signed which puts an end to the discord between the organized profession and certain sickness insurance societies, especially those at Amsterdam. One of the ninety-five clauses in the contract is to the effect that the loss of membership in the national medical association automatically excludes from sickness insurance practice. The practice of the individual sickness insurance physician is restricted to 2,500 adults, and the income limit is, for the unmarried beneficiaries, 800 florins and for the married, 1,400 florins, allowing an extra 100 florins for each child after the first, to a maximum of five. The honorarium for the physician is at the rate of 3 florins per adult and 0.6 florins per child. (The Netherlands florin is a fraction over 40 cents.) For exceptional obstetric cases he is to get 10 florins, and for night visits, 1.50 florins extra. Other clauses state that the physician must not take money from the insurance patients, and do no insurance practice outside the societies signing the contract. A control bureau is provided for, with representatives from the physicians, the societies and pharmacists. The contract covers a five-year period, with optional renewal for three years further.

THE EARLY RECOGNITION OF
MULTIPLE SCLEROSIS

WITH REPORT OF THIRTEEN CASES *

LEO M. CRAFTS, B.L., M.D.

MINNEAPOLIS

In the experience of European observers, disseminating multiple sclerosis is considered one of the most common organic diseases of the central nervous system, but is spoken of by American writers as of unusual occurrence, Church referring to it as uncommon. There is no evident reason why it should not occur as frequently in this country as abroad, and the only explanation for its infrequent recognition with us must be that many cases are at present overlooked; and if we are to withhold a positive diagnosis until the so-called classical syndrome of Charcot is presented in its entirety, or even a very close approach to this picture, a great majority of all cases of this exceedingly interesting and widely variant congeries will continue to pass unrecognized, for there is but a comparatively small proportion of all cases that present this grouping.

Close analysis of the commonly attributed etiologic factors, when applied to the life history of the process, must lead to the conclusion that the real cause or causes are as yet really entirely unknown. In what manner can previous acute infectious diseases, such as typhoid fever or pneumonia, traumatism, exposure or the puerperium act to initiate the development of succeeding foci of gliosis scattered with entire abandon throughout the sphere of the central nervous system, occurring, receding, with apparent clinical recovery, latent perhaps for years, again and again recurring and receding throughout a course of great chronicity? In what manner is it possible for these long past incidents to so affect the organism as to cause the repeated turning into the blood stream of some genetic agent, probably autotoxic in nature, to attack here and there limited patches of white or gray matter, destroying the myelin sheaths, leaving the naked axis cylinders and the cells largely intact and functioning, although suffering to some extent degenerative effects?

The only conceivable manner in which they can possibly operate, if at all, must be by establishing in the multiglandular system some vice of secretion, thus disturbing metabolism and at intervals pouring a toxin into the circulation. The alternative possibility, setting aside the usually attributed factors, would be some microbic agent acting directly or through its toxins. There is at present no conclusive proof whether the causes are endogenous or exogenous. Krafft-Ebing and Strümpell deny the importance of infectious diseases; Redlich believes the cause is exogenous; Strümpell and Hoffman incline to the endogenous origin of the process, and the peculiar characteristics of the disease certainly favor their position, for in a great majority of all cases no sufficient cause can be found.

In my series of thirteen cases no possible causative factors, even remote, could be found in six. Quite severe trauma had occurred in two, but in each case it antedated the initial symptom by a period of two

years, too far in the past to be rationally included as a cause. In two others there had been exposure, one incidental to a country practice and the other to a farmer's life, while with two that gave a history of previous infectious disease, years had intervened. When we consider the many who suffer from these infections and do not develop multiple sclerosis, and the few who do, they cannot be logically regarded as causative unless the sequence is immediate or close. All the cases in this series are of a distinctly or highly neurotic type.

In sharp contrast to the entire uncertainty of all initial etiologic factors is the clear and striking influence of trauma and the puerperium in promoting the recrudescence of symptoms. The importance of both these factors is notably illustrated in Case 1:

REPORT OF CASES

CASE 1.—Mrs. W. M. D., aged 30, housewife, came under observation, Jan. 22, 1917, having been referred by Dr. A. A. Laurent. Her family history was good, but she had had much trouble with tonsillitis as a child. When 15 years old she got wet at the time of her menstrual period. This was followed by what was called "dropsy" in the legs, and she could not walk without support at this time. She recovered and was married at the age of 17 and has had eight children. Following the birth of a child four years ago she could not walk well; the legs felt clumsy, and became almost powerless in five months; but she gradually got so she could walk quite well (never naturally), but could not run. With the birth of a child seven years ago she had weakness in the left arm. This hand was numb for a time, with the attack four years ago. At that time she had a severe fall on the steps and thinks she was made permanently worse by it.

About two years ago, after the birth of a child, her legs began to grow worse, and numbness again developed in the left hand. She had another fall at this time and was numb to the waist for three weeks, and the left leg has dragged more since then. This leg has always been the weaker. At times she has a sensation as if something were dropping in front of the eyes—black spots and flashes. She had a little trouble with speech seven years ago, and friends tell her that her voice has changed. She had some occipital headaches two years ago. Her memory is somewhat impaired. She has pyorrhea and several devitalized teeth. She is subject to sharp and sudden changes in ability to walk. She is in a good state of nutrition and has good color. She has a slight hitch in speech at times. The right pupil is somewhat the larger; both react sluggishly. There is an irregular moderate lateral and vertical nystagmus. The facial muscles and tongue are free. The right tonsil is large, and has some pyorrhea. The reflexes at the right elbow are sharper than at the left. The patellar responses are sharply overactive and equal. There is no clonus, but there is a Babinski reflex on both sides and an Oppenheim sign on the left. While abdominal reflex is lacking, epigastric is present and greater on the left. There is slight diminution of tactile sense over the left hand. There is distinct ataxia of station, and the gait is uncertain and somewhat stiff. Steps are short, with moderate limp in the left foot. There is no intention tremor, but some incoordination. A roentgenogram of the spine was negative. The eye grounds are normal. The Wassermann test of the blood was negative.

Case 2 shows the importance of the puerperium alone:

CASE 2.—Mrs. V. B., aged 23, came under observation, Nov. 1, 1915. She was seen in consultation with Dr. J. H. Higgins. The family history was not significant.

The patient had measles at the age of 3, but no other acute illnesses, accidents or exposure. She was always anemic and suffered from chronic constipation. At the age of 19 she suddenly noticed that the hands were clumsy and shaky when she tried to use them. A day or two later she found difficulty

* Read before the Section on Nervous and Mental Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

in walking, staggered, and had to hold something for support. There was some difficulty also in speech. This condition continued for three months, then largely but not completely cleared up. Numbness has been present in the hands and feet, but has now entirely disappeared. Speech also has become normal. There was also some dizziness. She gave birth to a child in May, 1915, and soon afterward noticed difficulty in walking and a numb feeling in the hands and feet. She had dizzy attacks, and in about two weeks got so she could not stand alone. She could not write legibly for a long time. No trouble was noticed with her speech. The right leg has been worse than the left. She is pale and poorly nourished. The pupils are negative. There is a quite marked nystagmus, lateral, rather slow, of quite wide amplitude and jerky. The corneal reflex is active, the pharyngeal somewhat slow. The face reflexes are negative, the face muscles free. The arm reflexes are negative; the grip weak and equal. The hands show very slight tremor and distinct incoordination. The gait is spastic-ataxic, chiefly ataxic, and there is marked ataxia of station. Speech is good. The patellar reflexes are overactive and about equal. Achilles reflex, clonus, and the toe sign of Babinski were demonstrated. Oppenheim and Gordon signs were present on the right, and there was a slight Babinski reflex on the left. The pulse was 72; pressure, 120 systolic, 85 diastolic; sounds clear. There was distinct improvement under fibrolysin. The patient was seen again, Feb. 17, 1917. She was now able to walk alone with difficulty; the condition varied at times, but in the main was stationary. During the past week the vision had become very dim; she could not read ordinary type at all. Dr. Pratt reports nothing except pallor of the disk. Vision is not improved by refraction.

The characteristic oscillation of the hand, or it may be of the head or leg, commonly denominated intention tremor, is distinct from the element of incoordination, but is probably closely allied with it. This occurs in only a moderate percentage of cases, and not always continually. Speech defects vary from a simple flat or monotonous tone, or slight dysarthria, to stuttering or occasionally showing complete scanning type, being present in only two cases here recorded, while some form of disturbed articulation was found in eight. One of the most frequently observed motor phenomena is nystagmus, said by Redlich to occur in about 50 per cent. of all cases. If the eye muscles are tested by being put in position of extreme imbalance laterally or vertically, a distinctly larger proportion will probably show this sign, and it may vary widely in amplitude, rapidity and rhythm. It was readily demonstrated in eleven cases of this group, and in the remaining two, the patients had poor fixation of the globes. Diplopia is found occasionally, but is not frequent.

The pupils often show distinct inequality, one being larger than the other, but this difference is often variable, present at one moment and not at another, or it may be constant. The light reflex may be sluggish; accommodation is usually normal. Ordinarily the pupil is circular, and the iris never takes on that flat, tightly drawn tense look; the velvety softness is gone, a condition as characteristic of the tabetic eye as the Argyll Robertson sign, but which I have never seen mentioned in any text. Disturbances of vision are of moderate frequency, occurring early, according to Stölting; in about one third of all cases, being the exact percentage in this series. It varies from simple dimness to irregular restriction of the field or amblyopia, sometimes with a degree of optic atrophy or some choking of the disk.

In the congeries of symptoms, subjective and objective, that unfold before the observer, we approach a most fascinating study. While the advent of the initial manifestation is usually abrupt and marked, it

may at times be vague and indefinite. Perhaps an irregular and patchy hysteroid area of disturbed sensation, involving one or all of the sensory percepts, may herald its advent, or an immediate loss, in part or whole, of motor power in one or more extremities, or sudden dimness of vision; and not infrequently an apoplectiform attack may prove the prelude to many scenes to follow, as occurred in the following cases:

CASE 3.—Dr. J. P. V., aged 57, a physician, married, came under observation, Jan. 26, 1916. His father was of a nervous temperament, and there was also some tuberculosis in the family. The patient has worked hard, and is of a nervous temperament. He had "writer's cramp" some years ago; he

TABLE 1.—SUMMARY OF FINDINGS

| | |
|---|--|
| Possible Etiologic Factors: | |
| Trauma | 1 (2 years previous), 1, (2 yrs) |
| Condition aggravated by trauma..... | 2 |
| Exanthems | measles at 3, pneumonia at 10 |
| Condition aggravated by pregnancy | 2 |
| Neuropathic heredity | 4 |
| Marked pyorrhea present | 2 |
| Miscellaneous | anemia, 1, frail, 1 |
| Exposure, including overtax | 5 |
| Tonsillitis | 1 |
| Gonorrhea | 1 |
| Age at onset | 14, 15, 15, 19, 21, 23, 23, 25, 27, 37, 42, 45, 69 |
| Initial Symptoms: | |
| Dimness of vision | 1 |
| Motor disturbances | 5 |
| Sensory and motor disturbances | 2 |
| Apoplectiform | 3 |
| Extreme headaches | 1 |
| Sex: | |
| Males | 6 |
| Females | 7 |
| Symptoms: | |
| Inequality of pupils, 55 per cent. | 7 |
| Sluggish reflex of pupils | 2 |
| Nystagmus, 85 per cent. | 11 |
| Poor fixation of globes | 2 |
| Speech disturbances | 8, 60 per cent. (only two being true scanning) |
| Intention tremor | 5 (3 of these slight) |
| Tremor of head..... | 2, 53 per cent. |
| Paresthesias, including hypesthesia: | |
| Hypalgnesia and thermal sense..... | 11, 85 per cent. |
| Motor disturbances: | |
| Monoparetic | 3, trophic changes (with fibrillation) 1 |
| Paraparetic | 7, 85 per cent. |
| Hemiparetic | 1, propulsion, 1 |
| Disturbances of coordination | 10, 80 per cent. |
| Disturbances of Vision: | |
| Dimness | 4, 35 per cent. |
| Diplopia | 2 |
| Qualitative Changes in Deep Reflexes: | |
| Heightened | 11, 85 per cent. |
| Abolished | 1 |
| Changes in epigastric and abdominal reflexes (usually diminution or loss on one side) | |
| Pharyngeal reflex absent | 2 |
| Control of bladder lowered | 5 |
| Stereognosis diminished | 2 |
| Spontaneous Remissions: | |
| Marked | 9, 70 per cent. |
| Slight | 1 |
| One case too recent, but showing marked improvement under treatment | |
| Marked vertigo | 4, 30 per cent. |
| Severe headache | 4, 30 per cent. |
| Mental Effects: | |
| Lowered memory and attention | 2 |
| More emotional | 1 |
| Depression | 1 |
| Results of Treatment: | |
| Improved under fibrolysin | 6 |
| Not improved under fibrolysin | 1 |
| Now under treatment | 1 |
| Not treated | 5 |
| Wassermann and Nonne tests, and cell count..... | |
|Negative in all cases tested, 5 | |

had also "neuritis" at the right shoulder, and intercostal neuralgia. He wrote with the left hand for a time. The right hand has never been fully useful since. He had a spell of sudden unconsciousness twelve years ago, with a good deal of dizziness after that. He is subject to sinking or fainting spells on exposure to cold or fatigue.

About three or four years ago he began having trouble with his speech; he could not pronounce words clearly, and a tremor of the head developed. He noticed also increased difficulty in the use of the right hand, and some tremor on closely adapted movement. He had no trouble with his legs. There has been no dizziness of late. He had some cramplike pain in the foot a year ago. He has control of the bladder, and there is no change in the sexual function. Color and

nutrition are fair. He has a halting, tripping difficulty in speech, and the tone is rather flat. He uses his lips peculiarly in speaking. There is no nystagmus, but fixation is not sustained when looking to the left. There is some rhythmic tremor of the head at times; the right hand also shows tremor on movement, slight but distinct. Arm and leg deep reflexes are negative. Epigastric and abdominal reflexes are much less on the right than the left. The cremaster is normal; there are no disturbances of cutaneous sensation, and no paralysis; there is some pyorrhea. The pulse is 76; pressure, 124 systolic, 90 diastolic. The heart sounds are clear. The urine is negative.

CASE 4.—Mrs. O. F. K., aged 45, came under observation, Feb. 6, 1917, having been referred by Dr. G. W. Bass. The family was of a nervous temperament on the mother's side. The patient was frail as a child up to 8 years of age. She was not fond of school; she was in the eighth grade at the age of 19. She had no serious illness. There were three children, all normal. When 15 years old she had "water on the left knee" for a year. One morning, three years ago, she had a sense of confusion, became unconscious, remained so for three days, and was in a dreamy state for several weeks. She has never felt well since then, is dizzy all the time, her memory is poor, and she is absentminded, has little interest in things, is inclined to be gloomy and cry, and is in a constant state of worry. The bowels are regular, and she has full control of the bladder. There is a numb and weak feeling in the left leg that is increasing. She often staggers about the house. She has cramps in the left lower leg at night, and also at times in the hands. The urine has been slow in starting the past four months. The patient is well developed and well nourished and her color is good, but her expression is dull. The right pupil is slightly larger than the left, but both are small and react poorly to light, somewhat better to accommodation. The arm reflexes are all sharply exaggerated and equal. The face reflexes are negative. Speech is free. Fixation of globes is not good, but there is no actual nystagmus. There is quite marked intention tremor in both hands. Patellar response is markedly increased on the right, less so on the left. There is no clonus, but a distinct Babinski and Oppenheim reaction on both sides. Station is fair; there is some ataxia of gait and the step is short, favoring the left leg. There is slight dulling of pain and tactile and thermal sense over the right arm and leg. There is marked anesthesia and analgesia throughout the left leg. Epigastric and abdominal responses are absent on both sides to stroke. Epigastric response is present on both sides to tap, but is distinctly greater on the right.

Usually the subject is a young adult under 30, there being no predilection for sex.

In the present analysis one began with extreme head pain, one with sensory involvement alone, five with pure motor disturbance, two with combined sensorimotor trouble, one with dimness of vision, and three with an apoplectiform picture.

The progress of the individual case is strikingly variant and irregular. Areas of paresthesia suddenly develop, extend or remain stationary for indefinite periods and gradually diminish or disappear. They may occupy any site, may be monoparesthetic, paresthetic, or hemiparesthetic in distribution. They may or may not be accompanied by corresponding disturbances of motor function. The gait may be slightly or profoundly affected, mostly spastic or almost entirely ataxic, and of the cerebellar type, this being evidently due to plaques in the peduncles.

The reflex phenomena are striking and significant. While a simple quantitative increase may possibly be the only alteration noted, in practically all cases there are definite qualitative changes, with either an ankle clonus, or the great toe sign developed in the Babinski, Oppenheim or Gordon test, on one or both sides, or perhaps a clonus on one and a Babinski on the other.

In one rare case of my group, all these reactions were found on both sides.

CASE 5.—Olaf O., aged 26, single, a Dane, entered City Hospital, Jan. 19, 1915. The family history shows no significant factors. The patient had pneumonia at the age of 10. He came to this country at 15. He is a heavy smoker and has had gonorrhea twice.

Three years ago he noticed difficulty in walking. He had chills and cold sweats. This improved for a time, but then became much worse; he could not stand or walk; the right leg was completely paralyzed. He took mud baths for three months, improving somewhat. The bowels are constipated, but he has control of the bladder. He has a sharp pain in the abdomen at times. The lower legs are cold. The vision is hazy. He has had headache for three weeks. The patient is well developed and in good nutrition. His manner is nervous, speech hurried but with slight trip in it. The right pupil is slightly larger at times. There is a marked rhythmic, lateral nystagmus of quite wide amplitude; there is reaction to light and accommodation.

The arm reflexes are sharply increased and equal, and there is no intention tremor. There is slight incoordination in the arms; very slight diminution in tactile sense in the hands; marked unsteadiness in gait and station, and a spastic element. The legs show overextension at the knees. The patellar responses are sharply exaggerated and equal. There is ankle clonus on both sides. The great toe sign is present on both sides in all three tests. Appreciation of touch, temperature and pain stimuli is markedly reduced over both legs. The cremaster is active and equal. The epigastric and abdominal reflexes are abolished on the right and present on the left. For a time the right leg was much weaker, then gradually improved. The Wassermann test of the blood was negative. All reactions of the spinal fluid were negative.

Intramuscular injection of fibrolysin was employed for about two months, with apparent improvement in the use of legs and in vision.

While, as has been stated before, the reflexes are commonly heightened, in an occasional rare case they may be abolished, as they were in Case 6.

By some writers the superficial reflex reactions are not considered of material importance, but variations in the epigastric and abdominal responses are highly significant. They will usually be found active on one side and diminished or lost on the other. This was true in ten of these patients.

Disturbances in sense perception are not usually considered as frequent as those in the motor sphere, but if both subjective and objective changes are included they are probably fully as common and possibly more so; and thermal hypesthesia may be more pronounced than the diminution in either tactile or pain sense, as in Case 13.

CASE 7.—Mrs. E. J., aged 35 years, housewife, came under observation, May 14, 1917. She was seen in consultation with Dr. E. G. Warne, St. Paul. The family history was negative. The patient comes from a family of very large people, and she was always large for her age. She matured at the age of 11. When 14 she had trouble with dimness of vision, and had glasses fitted. She was told she had cataract. The vision gradually cleared entirely. She had no material illnesses as a child. She was married at the age of 18, had two children, the last fourteen years ago, and she had several abortions, the last eight years ago. When about 20, she had trouble in walking. From time to time she has had numbness in the extremities, worse in the right hand and left foot. Vision at times has been misty and then cleared; she thinks she sees better in the evening. She has sudden temporary increase in the difficulty in walking or the feeling of numbness. Several years ago she had an interval of severe headache; dizziness is constant. Fifteen years ago she had a large fibroid removed. Menstruation is growing gradually less. Last summer she had a faint feeling; everything grew black.

She had another attack four weeks later which lasted several hours, although she was not entirely unconscious. She tires easily, and the difficulty in walking and the numbness are aggravated. There is no diplopia. She had tremor of the head for a time. She could not write last winter. She had her feet scalded and she did not know the water was hot. There was loss of control of bowel and bladder for a time last winter. Control is now partially restored. She is very large, and weighs 240 pounds; her color is good. The left pupil is large at times; both react. The jaw jerk is sharp; the teeth show much dental work, the arm reflexes are negative. There is no tremor of the hands. There is a marked vertical nystagmus on looking to the left, but slight when looking to the right, of rather wide amplitude and

severe and persistent vertigo is rather common, severe headaches are not considered a frequent occurrence, but were noted in more than one fourth of these cases. Intellection is not materially compromised, but there may be slight reduction, and somewhat lowered power of memory on increased emotionality.

Ordinarily there is little difficulty in arriving at a positive diagnosis. The clinical combination is unique, presenting both cerebral and spinal symptoms pointing to multiple, widely separated foci. It is not important what these individual symptoms are, provided we have any one characteristic spinal and cerebral sign com-

TABLE 2.—ANALYSIS OF CASES

| Case No. and Age at Onset | Causative Factors (?) | Initial Symptom | Motor Disturbances | Sensory Disturbances | Speech | Eye Symptoms | Reflexes | Remission (spontaneous) | Serology | Trauma and Puerperium |
|---------------------------|--------------------------------|-------------------------------|---|--|----------------------|---|--|-------------------------|-----------|--|
| 1—15 | Exposure to wet; tonsillitis | Paraparetic | Paraparetic; spastic ataxic gait | Numbness; slight dim. touch, temp. and pain; head pain | Dysarthria (slight) | Nystagmus, both vertical and lateral; inequality of pupils; dimness | Patellar sharp, right; Babinski, both; Oppenheim, left; abdominal diminished, right | Marked | Not taken | Marked recurrences with both trauma and puerperium |
| 2—19 | Measles at 3; anemia and snaky | Arms clumsy and shaky | Paraparetic; difficulty in writing | Numbness (subj.); dizziness | Dysarthria | Nystagmus; dimness | Clonus, Babinski, Oppenheim, Gordon on one side | Marked | Not taken | Marked increase with puerperium |
| 3—45 | Overstrain (country doctor) | Apoplecticiform | Monoparesis; tremor of head; intention tremor | Dizziness..... | Seanning | Poor fixation | All tendon responses negative, abdominal diminished on one side | Moderate | Not taken | |
| 4—37 | Constitutional frailty | Apoplecticiform | Intention tremor; spastic-ataxie; weak detrusor | Numbness; marked dim. all sense perceptions left leg | ..... | Poor fixation; inequality of pupils | All sharp; Babinski and Oppenheim; abdominal diminished on left | ..... | Not taken | |
| 5—23 | Pneumonia at 10; gonorrhea | Difficulty in walking | Monoparesis; spastic-ataxie | Marked dim. touch, pain and temp. perceptions; head pain | Dysarthria (slight) | Nystagmus; dimness; inequality of pupils; diplopia | All sharp, clonus, Babinski, Oppenheim, abdominal absent on one side | Moderate | Not taken | |
| 6—42 | ..... | Extreme head pain | Intention tremor; gait, spastic-ataxie | Numb and prickly feeling; dizziness | Dysarthria flat tone | Nystagmus; diplopia; dimness of vision | Dull in arms, absent in legs, abdominal, absent on one side | Slight | Negative | |
| 7—14 | ..... | Dimness of vision | Paraparetic; spastic-ataxie | Numbness; dim. in heat pcreep.; slight astereognosis; dizziness; head pain | ..... | Nystagmus, vertical; inequality of pupils | Patellar sharp, Ach'les absent, Babinski and Gordon left, Babinski and Oppenheim right | Marked | Negative | Faint feelings on exposure |
| 8—15 | Nervous temperament | Apoplecticiform | Monoparetic; intention tremor; paretic gait | Numbness..... | ..... | Marked nystagmus; inequality of pupils; diplopia | Clonus and Babinski on left | ..... | Negative | |
| 9—69 | Pyorrhea | Paraparetic | Diplegic; trophic wasting; spastic-ataxie, weak vesical sphincter | ..... | Dysarthria (slight) | Nystagmus | Patellar sharp; clonus and Babinski | Moderate | Not taken | Aggravated by trauma |
| 10—23 | Nervous temperament | Local area of numbness | Paraparetic; almost purely ataxic gait; weak vesical sphincter | ..... | ..... | Nystagmus | Pharyngeal absent; Babinski and Oppenheim on both sides; abdominal absent right | Marked | Negative | Recurrence with overstrain |
| 11—27 | Trauma two yrs. previous | Paraparetic | Intention tremor (slight); spastic-ataxie | Slight local paresthesia; slight astereognosis | Seanning | Marked nystagmus; inequality of pupils; dimness | All sharp, Babinski, Oppenheim, Gordon, both sides; abdominal abolished | ..... | Negative | |
| 12—21 | Nervous temperament | Weakness and numbness in legs | Intention tremor (slight); marked incoordination; spastic-ataxie | Numbness..... | ..... | Slight nystagmus | Clonus, Babinski, Oppenheim, both sides; abdominal absent one side | Marked | Not taken | Faint feeling from any exposure to cold |
| 13—25 | Trauma two yrs. before | Monoparetic | Monoparetic; slight incoordination; weak detrusor | Numbness; slight dim. tactile, marked of thermal perception | Flat tone | Nystagmus; inequality of pupils | Patellar inc. on right, Oppenheim and Gordon on right | Marked | Not taken | Recurrence following trauma |

somewhat irregular. Patellar response is sharply overactive and equal. Achilles reflex is absent on the left and slight on the right. There is no clonus. A Babinski and Gordon response on the left and irritation of the skin on the dorsum of the foot produces extension of the great toe. There is a Babinski and Oppenheim response on the right, and there is extension of the great toe on irritation of the skin just above the ankle. There is slight incoordination in the hands. The patient has a spastic-ataxic gait, slight diminution in tactile and pain sense and marked loss of thermal sense; also slight astereognosis in the right hand. The pulse is 84; pressure, 138 systolic, 105 diastolic (radial).

Stereognosis may be occasionally affected. Difficulty in either holding or passing the urine, transitory or more continued, is not infrequent. More or less

bined. It may be, for instance, a clear lateral or vertical nystagmus and motor disturbance in one leg, including qualitative disturbances in the deep reflexes, which constituted the picture in Case 8.

CASE 8.—Miss Martha W., aged 19 years, was referred by Dr. M. J. Jensen, and came under observation, June 19, 1916. Her family history shows no important elements. Her health was good up to four years ago, when she had a "fainting spell." She had another two years ago and a third a few months ago.

About a month ago she noticed numb feelings in the left hand (the patient is left handed). She has had some diplopia at times. For several weeks she has noticed that she could not use the left leg naturally, dragging the foot. She has not noticed any trouble with speech. She has very little headache, but some dizziness. There is no trouble with the right

extremities. She has slight numb feelings throughout the left side, and these were marked just before one of the fainting spells. Menstruation is normal. There are no disturbances of bladder or bowel; no nausea or vomiting, but possibly some muscular twitching in upper left arm.

She is in good nutrition and color. The left pupil is slightly larger than the right; both react well. The facial reflexes are negative, except of jaw, which is sharply overactive. The teeth are negative; the tongue is free. There is marked lateral nystagmus of fine character and somewhat irregular rhythm, greater to the right than to the left. The arm reflexes are active, the left elbow being greater than the right. Patellar response is sharp, more so on the left. Sustained clonus on the left, partial on the right. The toe sign is atypical on the left but the Babinski reaction is not complete. The left hand is slightly uncertain in movement. She drags the left foot slightly in walking. Epigastric and abdominal reflexes are absent on stroke, elicited on both sides on tap, distinctly less on the left. There are no objective disturbances of sensation. Pulse is 90; pressure, 115 systolic, 85 diastolic (radial). The spinal fluid and blood are negative to all reactions. The urine is negative.

The patient was reexamined, Oct. 19, 1916. After the use of fibrolysin by Dr. Jensen, she walks well, with no dragging of the foot. The pupils are negative. There is possibly a slight drawling in speech. Nystagmus is still present, but less pronounced. Stereognosis is good. The left hand is slightly uncertain on adapted movements. The patellar and elbow reflexes are greater on the left; also the Achilles reflex. There is no clonus on either side, but a distinct Babinski reaction on the left side. The pulse is 84; pressure, 120 systolic, 85 diastolic (radial). Continued improvement has since been reported by Dr. Jensen.

May 10, 1917, the patient reported that the left leg did not yet feel normal, and that the left hand was shaky when holding anything. There was slight divergence of the left eye. Nystagmus was marked when looking to the left, slight to the right. The pupils were negative. There was marked intention tremor in the left hand, also slight incoordination, but no disturbance of speech; there was a clear Babinski on the left.

There may be only disturbance in vision and spastic-ataxic gait with altered deep reflexes, or irregular hysteroid areas of paresthesia and nystagmus, or disturbance in speech with an intention tremor. If we have, as a background, also a history of similar manifestations that have come and gone or greatly improved spontaneously, and perhaps repeatedly, or shown sharp aggravation by such incidents as trauma or childbirth, we have valuable corroborative evidence, but they are not essential to a conclusion. When we have either spinal or cerebral manifestations alone, a positive diagnosis cannot be made; but the development of speech disturbances and a nystagmus in a young adult, or the advent of a clear intention tremor and a monoparetic condition with qualitative reflex changes are very strongly presumptive. The cases in which a definite conclusion is more difficult are those with a wealth of symptoms, such, for instance, as the rare form with trophic disturbances, in which unusual destruction or marked damage to gray cells is accompanied by muscular wasting, fibrillation and contractions closely resembling amyotrophic sclerosis. In such a case, positive determination must await the further development of the picture, beautifully illustrated by Case 9.

CASE 9.—A. S. S., aged 70 years, married, a French farmer, came under observation, Jan. 26, 1917, having been referred by Dr. W. J. Byrnes of Minneapolis. The patient's family history is without note. He has always been well and vigorous, and has worked hard. In March, 1916, the weather being rather cold, he drove about 5 miles one day, feeling well on getting into the buggy. When he got out he found

he could walk only with difficulty, and has never walked well since. He improved somewhat in the early summer, but had a fall in July and has been worse since. The right arm began to grow weak immediately, and now the left arm is growing weak. He has had no trouble with sensation. There is some difficulty in holding the urine of late. He has some aching and pain in the small of the back. He has noticed some fine twitching in the arms, and thinks there is some loss of size in the legs and decidedly so in the muscles of his hands. He has had bad teeth; many grew loose and fell out. He has had some trouble keeping his balance, and is now unable to walk without assistance. There is a little difficulty with speech and no trouble in swallowing.

The patient is well developed, in fairly good condition of nutrition, his color is good, and he looks young for his age. His face muscles and tongue are free; the pupils are negative. There is a fine and rapid lateral nystagmus. The arms are weak and somewhat stiff in movement. There is quite marked fibrillation in the muscles throughout both arms. There is distinct loss of volume in adductors of thumbs and the interossei, but very little if any at the thenar eminences. No fibrillation in the leg muscles is seen. At the right shoulder marked limitation in motion is noted. The grip is very weak and about equal. All arm reflexes are accentuated. The patellar response is sharply overactive and about equal. There is a well developed clonus and Babinski response on both sides, but no Oppenheim or Gordon reflex. The ankles are rather stiff. He takes short, stiff, unsteady steps with assistance. His speech has a slight hitch at times. The pulse is 88; pressure, 143 systolic, 110 diastolic (radial). The heart sounds are clear, and the urine is negative.

Few diseases of the central nervous system bear even a remote resemblance to multiple sclerosis. So-called pseudosclerosis, a very rare disease, begins in young children, has familial elements, no sensory disturbances, nystagmus rarely or never. Psychic defects are marked. Closely related to this is the equally rare diffuse sclerosis, which has almost identical symptoms.

Acute disseminating encephalomyelitis has febrile onset, no optic nerve disturbances or nystagmus, and no recurrences. Areas of multiple softening can be differentiated at times only by the disclosures of the further progress of the case. Tumors affecting the cerebellum may simulate for a time, but extreme headaches, projectile vomiting, and the further unfolding of the picture will make conclusion clear.

Cerebrospinal syphilis has often a similar appearance in some particulars, but never has intention tremor or scanning speech, and severe back pains are common, but are not present in multiple sclerosis. Gould confuses the two, and imputes to syphilis the chief rôle as the cause of the latter condition. Kaplan is undoubtedly right in stating that one of the chief differential proofs is the serology of the spinal fluid, and that syphilis when present is only coincident and not causal. In the five cases of this series in which the spinal fluid was examined, all were negative to all reactions.

As hysteria may simulate any disease, or be associated with it, we must always keep it in mind; but true nystagmus, or qualitative changes in the reflexes, are never functional. The sensory disturbances in multiple sclerosis, however, are often hysteroid in outline and may lead to serious error easily avoided if reflex changes, nystagmus or other characteristic signs are also found. This type is well illustrated by Case 10.

CASE 10.—C., man, aged 31 years, married, came under observation, Nov. 6, 1916, having been referred by Dr. J. Warren Little, Minneapolis. His father was of a nervous

temperament and his mother "at times dragged a foot." The patient is the youngest of six children. His father was 54, the mother 44, when he was born. He is of a nervous temperament, but his health was good until about eight years ago, when, while working very hard, he began to notice a drop in general condition of health. Then numbness came on in the right arm and side of the body down to the groin; this lasted for five months. In 1912 a numb area developed in the left arm and side of the neck but cleared in about a month. In 1913 the feet and lower legs were numb for about a month and in 1914 he had several numb patches over the body. Some difficulty in walking accompanied this attack, which cleared up in about a month's time. He has been a heavy smoker and has used a good deal of coffee. The present attack came on about a month ago. He had been carrying more responsibility than usual before this occurred. Numbness developed, with difficulty in walking, the lower body and legs throughout being numb. He has a little difficulty in holding the urine. There is no venereal history.

The patient is well developed and in good nutrition, with a highly neurotic eye. He is prematurely gray. The pupils are negative. The field of vision is apparently normal. There is a distinct lateral nystagmus of moderate amplitude. Pharyngeal reflex is absent. The ears are large and prominent, the hands steady. The arm reflexes are negative, and the patellar response is overactive and equal. There is no clonus. Both great toes show a slight but distinct upward tendency to both Babinski and Oppenheim tests. The epigastric and abdominal reflex is absent on the right. There is a slight epigastric reflex on the left. There is no objective loss of sensation. The gait and station are good. A quite marked incertitude in gait developed shortly after the first examination, with only slight spastic elements. The urine is negative, and the blood and spinal fluid are negative.

Six ampules of fibrolysin were given, resulting in rapid improvement in gait, which became practically normal in a month; nystagmus was much diminished.

Disturbances in the gait, the pupil and the sensory sphere are the only possible points of remote resemblance to locomotor ataxia, those of sensation being the most similar. The gait is markedly different. While the pupils may vary in size in both conditions, in locomotor ataxia they are irregular in outline, and response to light is affected and the iris has lost its normal velvety softness of texture and has a tense flat look like a tightly drawn curtain, presented earlier in this context as a new sign in that disease. There is less excuse for confusing these two diseases in diagnosis than almost any other that can come into consideration, and yet the following classical Charcot syndrome was designated as *tabes* even by a neurologist:

CASE 11.—Miss K., aged 35 years, came under observation, April 19, 1916, having been referred by Dr. A. Gullickson. There was nothing of note in the family history. The patient was well until 20 years old, when she was thrown out in a runaway and was unconscious for perhaps five minutes. There were no surface injuries, although she was slightly lame for a time. About two years later trouble began in the use of her legs. This has steadily increased down to the present time. Slight trouble in holding the urine began about five years ago. This difficulty has increased slightly. There has been no trouble with the bowel. There has been some peculiarity in sensation in the left thumb and forefinger for the past two years. She has had some difficulty in getting words at times. Her vision is somewhat dimmed. There is no vomiting, headache or dizziness, and no diplopia. Her memory is normal. Menstrual periods have been too frequent of late. She is gradually losing flesh, and is quite emotional and irritable.

The patient is poorly nourished, and her face is highly flushed. The pupils are moderately dilated, the right being distinctly larger than the left. Reactions are sluggish to both light and accommodation. There is marked nystagmus

of moderate amplitude, lateral, and more toward the right. She has several devitalized teeth. The throat is negative. There is slight tremor of the left hand on closely adapted movement. Her handwriting is very irregular. There is slight diminution of sensation in the left thumb and forefinger, and slight astereognosis. The arm reflexes on the left are sharper than on the right. Patellar reaction is decidedly overactive, greater on the right. Clonus is nearly sustained on the left, and there is a Babinski, Oppenheim and Gordon response on both sides, more marked on the left. There is decided ataxia of station. The gait is spastic-ataxic. Abdominal and epigastric reflexes are absent on both sides to stroke, but slightly responsive on the right to tap. There is slight dulling of tactile sense over the legs. Pain perception is normal. There is distinct slurring and trip in speech, but not actually scanning. The pulse is 72; pressure, 122 systolic, 90 diastolic (radial). A Wassermann test was not made.

The patient is very emotional and irritable. There is an element of propulsion in the gait. She was under observation for six months, a total of about 30 ampules of fibrolysin being used, with distinct gain in general nutrition, control in walking and in strength.

The course of multiple sclerosis is one of great chronicity, extending over a period of many years. Symptoms develop, are added to, shift or remain stationary for indefinite periods, or recede and disappear spontaneously, to remain latent perhaps for years, only to again recur, sometimes with identical, sometimes with widely different manifestations. This remarkable characteristic makes conclusions on the effect of any medication very uncertain; but when we find prompt and distinct improvement beginning and continuing on the administration of any medication, it is fair to conclude that it exercises at least some beneficial influence over the process. In this series of thirteen patients five did not remain under observation; of the others one showed no improvement with intramuscular injection of fibrolysin, one has only begun treatment, and the remaining six all showed either moderate or decided improvement, one with rapid and practically complete disappearance of all symptoms. Whether further recurrences will be influenced at all is at present uncertain; and the presentation of this paper with its limited group of case reports has been prompted chiefly by a desire to stimulate interest in closer attention to the protean pictures presented by disseminating multiple sclerosis; its earlier and more frequent diagnosis, as well as a more critical study of its causes, and possibly better methods of treatment.

ABSTRACT OF DISCUSSION

DR. A. L. SKOOG, Kansas City, Mo.: The differential diagnosis of multiple sclerosis from cerebral syphilis is often difficult to make. There is a diffuse arteriosclerosis affecting the brain and spinal cord. The diffuse sclerosis perhaps do not fall under the group of multiple sclerosis. It has been said that we need not consider syphilis as a cause of multiple sclerosis simply because the serologic tests give the sign. I agree heartily with this. When we consider the large number of persons afflicted with syphilis, it is not surprising that some of them develop multiple sclerosis. We have had illustrated the same fact with tumors of the brain. I wish to cite a case under my observation about one year. The man was doing interior decorating on a government building when he developed his first symptoms of multiple sclerosis. A number of volatile oils were used in this work. He was informed by physicians and believed that his trouble was caused by inhalation of these fumes. The other workers did not work as long hours as he did. The onset was rapid, making one think of acute multiple sclerosis. During the past year the disease has taken the ordinary course, and now he has

all the classical symptoms. He is in a bedridden, helpless state. Serologic analyses are negative. Personally, I do not think the volatile oils had anything to do with causing the disease. I believe multiple sclerosis is caused by some teratologic defect which becomes evident at a selected development epoch.

DR. E. E. MAYER, Pittsburgh: Believing, as I do, in the infectious origin of multiple sclerosis, Minneapolis must be a very unhealthy place. I am surprised at the large number of cases that Dr. Crafts has observed. Even at as high a percentage as is observed in institutions, namely, about 1 per cent. of all nervous diseases, his number averages high. We do not secure many necropsies in Pittsburgh. A consultant, I believe, in the early stages cannot often positively diagnose multiple sclerosis. The family physician rarely returns these patients for further study, and if they go to state institutions we lose track of them. My low number of multiple sclerosis may be accounted for in that way. But the many multiple inflammatory myelo-encephalitic processes and the numerous cases of syphilitic meningo-encephalitis are not diagnosed by me as multiple sclerosis, though I know that later, if I saw them, I would perhaps make this diagnosis.

DR. CHARLES R. BALL, St. Paul: In the United States we have been slow to recognize the protean symptomatology of multiple sclerosis, and Dr. Crafts' paper has called our attention sharply to this fact. Multiple sclerosis has an extensive symptomatology which is often much different from the classical description given in most textbooks. We must get, in general, a broader conception of this disease and then we will find that it is not at all an uncommon affection.

DR. D. I. WOLFSTEIN, Cincinnati: We do not see as many well developed cases as are shown in European clinics, but we do see cases rather frequently in which the diagnosis is justified. Long ago attention was directed to the so-called cases of "formes frustes," and most of the suspicious cases fit into this designation. Often there is difficulty in distinguishing between this disease and hysteria, but if one keeps a sharp lookout for organic signs, such as a Babinski sign or mild clonus, or slight rigidity, the proper diagnosis may be made. I have a case now which shows a marked astereognosis of the affected hand, and this without other involvement of sensation. I wish Dr. Crafts would give his experience on this point of astereognosis. Are there any contributions to the treatment? Is there any value in the silver nitrate method? I have relied on thiosinamin sodium salicylate (fibrolysin) and sodium cacodylate.

DR. G. A. MOLEEN, Denver: The abundance of literature is an index of our ignorance in regard to this disease. In Colorado I have seen a number of cases, but not in proportion to the number mentioned in this paper. It, like other conditions, has an apparent tendency to run in groups. There is one point which was omitted in the paper and that is the frequent mistaking of this condition for hysteria. Risien Russell says that in this condition we make many mistakes, and he was often forced to revise his diagnosis of hysteria. The characteristic striking remissions after very grave symptoms are misleading. This would suggest hysteria, but is, after all, a characteristic of this disease. The character of the disease would lead one to believe that it is constant in type. The eye symptoms mentioned by Kennedy I have never seen. I have seen attenuation of the vessels and glistening appearance of the nerves, with some degenerative patches. Kennedy has seen a number of cases in which there was papilledema. I have thought that the idea that there was some improvement with thyroid was justified. I have had improvement in one case endure for eighteen months on thyroid extract. The patient still shows a slight degree of spasticity in his gait.

DR. B. SACHS, New York: I am sure that now we are recognizing disseminated sclerosis here as frequently as they do in Europe. The early stages must be considered suspicious. The disease is a protean one and the onset varies in many cases. I think that formerly cases were largely classed as chronic myelitis and spastic paraplegia. There is a diffuse myelitic disturbance. Seventy-five per cent. of these cases are early disseminated sclerosis. The absence of abdominal re-

flexes is a characteristic sign. I must differ with Dr. Moleen. We recognize pallor of half the disk as a symptom of disseminated sclerosis, and a nystagmus confirms this. Stammering is a rare symptom. Intention tremor is less frequent than absence of abdominal reflexes. We will have to improve our diagnostic ability in this particular. The cause of the disease is puzzling. I do not know whether it is hereditary or due to deficiency of glandular secretion (though I hesitate about that), or that there is a toxic origin of some kind, or some basis of deficient development. As for the treatment, we have found no specific. I find a large number of youthful spastic paraplegias that are really early cases of disseminated sclerosis. We can treat the spasticity by massage, baths and electricity. Perhaps we can use sodium cacodylate and push it to the extreme. The disease has remarkable remissions and exacerbations.

DR. FRANK R. STARKEY, Detroit: I have in my care at present a patient with multiple sclerosis with a peculiar onset. The patient, 34 years of age, at the age of 17 became lame in the right leg and was unable to walk without assistance. She went home and rested for an hour, the lameness disappeared and she went to a dance and danced. After three or four weeks the trouble returned in the right knee, particularly; there was, however, no pain. At first the condition would clear up after rest and return with fatigue. The condition grew gradually worse and she was confined to her room for weeks. She took osteopathic treatments and obtained relief. She married, and within ten days the lameness returned and affected both legs and the right arm and she is, at present, unable to stand or walk without assistance. From this description I concluded that the case was one of hysteria and was therefore greatly surprised on examining her to find that she was extremely spastic in both legs, the right arm and both hands. She had increased reflexes, including ankle clonus and the Babinski reflex. There was no intention tremor or scanning speech. There was, however, a slight nystagmus and absence of the abdominal reflexes. I took one of my colleagues to see her who made a diagnosis of lateral sclerosis, which was also made by others. I, however, believe the case to be one of disseminated sclerosis. She gave a distinct history of abscesses of the roots of the teeth at the time of the onset and more or less trouble of this kind since, and at present has a number of old roots in her mouth. I believe there is a definite relation between the tooth trouble and her nervous phenomena. The picture at the beginning, however, was that of hysteria, and now the signs of lateral sclerosis predominate.

DR. ANDREW H. WOODS, Canton, China: It has been repeatedly pointed out during the past ten years that syphilis of the cerebrospinal system produces, at times, multiple, millet-sized sclerotic lesions which are in some cases with difficulty distinguished microscopically from the lesions of "disseminated sclerosis." The accompanying meningomyelitis in syphilitic disease is an important diagnostic point. There is, however, no reason to consider the syphilitic virus as the cause of "disseminated sclerosis." The distribution of the sclerotic lesions, both in these cases of syphilis and in ordinary "disseminated sclerosis," points to the blood lymph system as the avenue of approach of the causative agent. It almost certainly does not enter through the pia. The appearance of the pia-arachnoid in syphilitic cases is consistent with what we would expect from its protective function. The sections show round-cell infiltration, often intense. Inflammation may spread by contiguity to a thin segment immediately behind the membrane. The arterioles that enter the cord from the arteries of the pia are interfered with. The whole appearance is that the pia is keeping the irritant away from the underlying nervous tissues. The function of the cerebrospinal membranes and fluids is not nutritive. It is mechanical—lubricant and protective. The fluid is a hydraulic buffer for the cord which is suspended in it. The pia is not meant to absorb and transfer substance into the cord, but it is a barrier to keep things out. Hence, if organisms are acting within the tracts and gray matter of the cord and brain, we would antecedently expect that chemical agents injected into the intramembranous space would fail to penetrate the cord and act on those organisms.

DR. E. D. FISHER, New York: The subject of the frequency of multiple sclerosis was taken up in the New York Neurological Society some years ago, and the number of cases reported was very small. After that, as Dr. Sachs said, we began to study the symptoms more carefully and found more cases, but I think that then some cases were included which were not multiple sclerosis. The differential diagnosis between multiple sclerosis and hysteria is often difficult to make. Many apparently hysterical cases turn out to be multiple sclerosis. In London, in 1913, at the International Congress, many cases were presented at the Hospital for Paralytics and Epileptics. I think it was asserted that it was one of the most common diseases of the nervous system. As to the etiology, it may be of toxic origin, a disseminated myelitis. This differs from a primary degenerative disease. When we come to examine conditions in the cord and brain we find degeneration, but the peculiar characteristic of the primary disease is that the degeneration does not descend, as in myelitis. Where we have a localized sclerosis it is permanent and there is no such thing as a cure. No treatment will affect the sclerosed tissue and no new formation is possible, so far as we know. All that we can do is to alleviate some of the symptoms. I should not place my diagnosis on any two symptoms. It is a general picture and cannot be diagnosed by one or two signs. The prognosis is unfavorable and the disease is incurable.

DR. L. M. CRAFTS, Minneapolis: I think there is as much multiple sclerosis in Pittsburgh as in any other city. Dr. Sachs says it is as fully recognized now in the United States as abroad. If he means by the United States, New York, possibly so. I was asked by Dr. Bramell why our observers were not reporting more multiple sclerosis. In Europe it is considered the most common form of organic nervous disease. It is a matter of closer observation. It is well not to make a diagnosis on one symptom alone, but with two characteristic symptoms, one referring to the cord and the other to the brain, one can make a diagnosis. In reference to the differential diagnosis from hysteria, that is at times difficult. One case I considered hysteria until I found Babinski's sign, which is never found in hysteria. One speaker mentioned astereognosis. I had two or three cases with astereognosis. In regard to the teeth and tonsils, there were a number of my patients with this coincidence. I had one case resembling amyotrophic sclerosis in a man of 69 who got out of his buggy after a long drive and found he could not walk. Dr. Fisher spoke of it as myelitis; it is agliosis. For treatment I have used thiosinamin sodium salicylate (fibrolysin), and there have been distinct remissions; but these may occur spontaneously. The case must be watched for long periods of time. The neurologist is the one who should be consulted. I think the Charcot picture should be revised. Scanning speech is not typical. There are many variations as typical as the Charcot type.

The First Infant Welfare Work.—In France, about twenty years ago, 1892, Dr. Budin stated a movement of paramount importance for France—I may say, for the world. He observed that physicians took care of the mother, but let the infant child take care of itself. The result was an infant mortality so great that between a man of 90 and a child of 1 day, the chance of living one week was in favor of the man of 90. In many parts of the country, out of two children, one was sure to die; in the more thickly populated industrial quarters in certain cities out of three children, two were sure to die. Dr. Budin thought it was necessary first to learn and secondly to teach; thus he came to establish his "Consultations for Nurslings," which have done wonders. Mothers come with their babies every week. The children are examined and the mothers are instructed how to rear their offspring to strong, healthy men and women, and produce citizens to enjoy a useful life. He especially taught that children were meant to be nursed by their own mothers, and that the use of the best cow's milk or of a most scientifically prepared mixture could not compare with the mother's milk.—*Jules Jusserand. Some Checks to Infant Mortality. Trans. American Association for Study and Prevention of Infant Mortality. First Annual Meeting, 1910, p. 34.*

NOTES ON THE STANDARDIZATION AND ADMINISTRATION OF ANTIMENIN- GOCOCCIC SERUM *

HAROLD L. AMOSS, M.D.

NEW YORK

Now that wide and repeated experience here and abroad with reliable preparations of the antimeningococcic serum in the treatment of epidemic meningitis has resulted in a consensus of opinion favorable to its value, it is time to take up seriously the question of providing federal standardization in order that the public may be protected from poor and worthless preparations.

Unfortunately, as the distressing English experience of 1915, later retrieved when supplies of potent serum became available, showed, the commercial producer of the serum cannot be left to determine his own method of manufacture and his own standard of potency.

There has been misconception also as to the practicability of standardization, which needs to be removed by a statement of the essential facts of the case.

Undoubtedly, our minds have been clouded and our action impeded by the notion, which is only slowly giving way, that the only therapeutically active serums are those which are antitoxic in the strict sense, while the other class of antibacterial serums stands on an insecure therapeutic foundation. In the face of the convincing data available relative to the effects of the antimeningococcic serum and the growing favorable testimony to the value of the antipneumococcic serum Type I, this prejudice is being overcome.

The essential obstacle in each case—that of the antimeningococcic and antipneumococcic serum — arises from the circumstance that neither the meningococcus nor the pneumococcus is a consistent species, both being separable into more or less distinct type groups. As regards the pneumococcus, the practical case is simple and the whole matter of standardization is reducible to a formula, since up to the present the serum Type I alone is therapeutically effective, and no serum should be accepted as up to the standard which does not contain given quantities of antibodies for Type I pneumococcus.

While the case is not quite so simple for the meningococcus, it is by no means so complex as to defy ready solution. In one respect, the therapeutic possibilities of the antimeningococcic serum are far wider than serums for pneumococcus, since it can be made effective against all the meningococci causing epidemic meningitis.

Fortunately for our purpose, 80 per cent. or more of all the cases of epidemic meningitis are caused by two type strains or groups of the meningococcus, regular or normal and parameningococcus, and nearly the remaining 20 per cent. by two more strains not quite so definitely marked off biologically as the former or intermediate meningococcus A and B.¹ Hence, a potent serum may be prepared with, say, the four type cultures, which, if of sufficient titer, may be accepted as standard.

* From the Laboratories of the Rockefeller Institute for Medical Research.

1. A comparative study might readily reveal that the four type groups here given correspond with the so-called Types I, II, III and IV of the English classification.

Any one familiar with the recent invaluable English experience which has been collected into a pamphlet issued by the British Medical Research Committee² will know that, by pursuing a course similar to the one just outlined, they have insured supplies of an efficient preparation of the antimeningococcic serum, whereas formerly, without this control, they were grievously disappointed in the action of the available product.

This procedure will, as stated, yield a valuable and reliable preparation. In following it, there is nothing to prevent a more conscientious or ambitious manufacturer improving further his particular brand of serum by adding to the selected type cultures examples of the variants from the types which are occasionally encountered. This practice should indeed be encouraged; but it should not permit any clouding of the essential issue, which is to produce a highly potent serum for the standard cultures of meningococcus.

It is my intention to define what would be a readily realizable and adequate standard of potency. But before doing this, I wish to describe a series of tests which were carried out very recently with commercial samples of the antimeningococcic serum and, coincidentally, with three other samples prepared by departments of health and the Rockefeller Institute.

TESTS OF COMMERCIAL SERUMS

Several immunity reactions have been employed in testing the value of therapeutic serums. When applied to the antimeningococcic serum, they arrange themselves in the following order of specificity: (1) agglutination at 55 C.; (2) opsonization; (3) complement fixation; (4) anti-infectious power, and (5) antitoxic power. Gradually, agglutination of the type cultures of the meningococcus is displacing other and less indicative methods of standardization. Accurate clinical experience also is confirming this decision. We have made a series of observations, which extend now over two years, on the relation of agglutination to the therapeutic efficiency of the serum. Thus, we have tested the meningococci isolated from the cerebrospinal fluid against several so-called polyvalent samples of the serum; and we have noted that when the sample of serum failed to influence the course of the disease, agglutinating power was either absent or very low. Moreover, we have also noted that the replacement of the impotent preparation of serum with one carrying agglutinins for the culture in question would, as a rule, control the infection. A serum of proper standard should agglutinate the four type cultures mentioned in dilutions of from 1:400 to 1:1,000. The still more efficient serum may show agglutination for all the variants in dilution of from 1:200 to 1:500.

Five samples of antimeningococcic serum produced by the larger producers of biologic products were purchased in the open market. The dates for return on all the samples were 1918. Presumably, therefore, they were recent products. To them were added three other samples: two had been obtained not long before from departments of health, and the third was a recent sample of the Rockefeller Institute preparation. They were examined for physical properties and for agglutination against four type cultures. The results are given in the accompanying table. The dilutions of the serum were set up by letters so that

2. Bacteriological Studies in the Pathology and Preventive Control of Cerebrospinal Fever Among the Forces During 1915 and 1916, Special Report Series, No. 3, National Health Insurance, Medical Research Committee, London, 1917.

RESULTS OF AGGLUTINATION TESTS MADE WITH DIFFERENT ANTIMENINGOCOCCIC SERUMS*

| Sam- ple | Date for Return on Label | Origin | Appearance | Regular or Normal Meningococci | | | | | | | | | | Parameningococcus | | | | | | | Intermediate Meningococci | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | 100 | 200 | 400 | 800 | 1600 | 3200 | 6400 | Con- trol | 100 | 200 | 400 | 800 | 1600 | 3200 | 6400 | Con- trol | 100 | 200 | 400 | 800 | 1600 | 3200 | 6400 | Con- trol | 100 | 200 | 400 | 800 | 1600 | 3200 | 6400 | Con- trol | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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* The agglutinations were conducted at 55 C. over night by the macroscopic method.

the worker carrying out the agglutination tests was not aware of the origin of the several samples.

Moreover, the physical properties of certain samples were such as to make their employment by intraspinal injection, to say the least, dangerous. To explain this point, the accompanying illustration was made.

SUMMARY OF THE RESULTS OF THE TEST

Serum A (commercial) is slightly active against normal or regular culture No. 10 and sufficiently active against the parameningococcus culture No. 60. In other words, it is not sufficiently representative of the different type cultures to be suitable for therapeutic purposes. Moreover, the sample, while transparent, contains hemoglobin in excess and in an amount giving a red color to the serum. Severe reactions would follow its administration.

Serum B (board of health). The agglutinins are somewhat developed for the regular or normal meningococcus Nos. 1 and 7, well developed for the two irregular cultures Nos. 10 and 30, and for the parameningococcus. It is a useful product, but could be improved by the employment for immunization of larger quantities of the regular meningococcus cultures.

Serum C (commercial). Agglutinins are present in doubtful or small amounts for the regular meningococcus Nos. 1 and 7, and in somewhat larger quantity for the irregular culture No. 10 and the parameningococcus. This serum, which fulfils the requirements in physical condition, is of uniformly low titer and improperly balanced in type agglutinins. Its therapeutic efficiency is dubious.

Serum D (commercial). The physical properties of this sample (as shown in the illustration) condemn it wholly. It consists of a dark, opaque, rather heavy liquid, which did not clarify on centrifugalization for twenty minutes at 3,500 speed. The preparation would undoubtedly give rise to severe, possibly to dangerous, reaction. And yet the product is marketed in dark amber glass so that the physician would not detect the color and suspect the danger. In order to be fair, it should be stated that another sample obtained directly from the New York office of the firm was straw colored and clear; but there is no excuse for putting out the former preparation. Had the container been clear glass, the sample would have been rejected; hence until clear white glass is used, it is advisable to pour out or inject about 1 c.c. of the serum into a test tube or other receptacle before administering it. Moreover, the agglutinins are present in low quantity except for irregular type culture No. 10. Aside from the physical properties of the one specimen, the preparation is unsatisfactory for therapeutic purposes.

Serum E (commercial). Agglutinins are present in adequate quantity for irregular culture No. 10 and for the parameningococcus culture. The quantity present for the regular meningococcus is minimal. The preparation is unsatisfactory for therapeutic purposes.

Serum F (commercial) represents the regular meningococcus and parameningococcus and the two irregular type cultures, but is improperly balanced. Taken as a whole, its agglutination titer is too long.

Serum G (Rockefeller Institute) represents adequately all the type cultures. A balanced serum which should fulfil therapeutic expectations.

Serum H (board of health) is a satisfactory product that should be therapeutically active.

COMMENT

A critical examination of the results of the tests exhibited in the table brings out points both interesting and practically of high importance.

The first thing that impresses one is the striking inferiority of the commercial as compared with the noncommercial products. There would appear to be very little excuse for this discrepancy. It is particularly true of the antimeningococcic serum that it is unsafe to reduce its preparation to mere routine. Second bleedings without further injections of cultures should not be made, and in no instance should the horses be bled for serum until a test bleeding has shown that agglutinins are present in adequate amount for the principal type cultures. The practice of mixing samples of serums of high and low titer to increase the volume collectable should never be practiced.

There is nothing involved in the preparation of a satisfactory serum that cannot be mastered in a properly organized commercial laboratory. But knowledge of the subject, conscientiousness and vigilance are demanded to obtain a product that will fulfil reasonable standard conditions and be therapeutically effective. It is to be trusted that merely by pointing out

present deficiencies, rectification will be made; and it may also be hoped that the constituted federal authorities will establish and enforce a standard which is readily attainable and secure.

There is one point of technical interest in the table. Comparison of the agglutinability of regular or normal cultures Nos. 1 and 3 shows that one is more readily agglutinable than the other. This is a familiar phenomenon and one recognized in respect to many bacterial species. Its practical import in this connection is to the

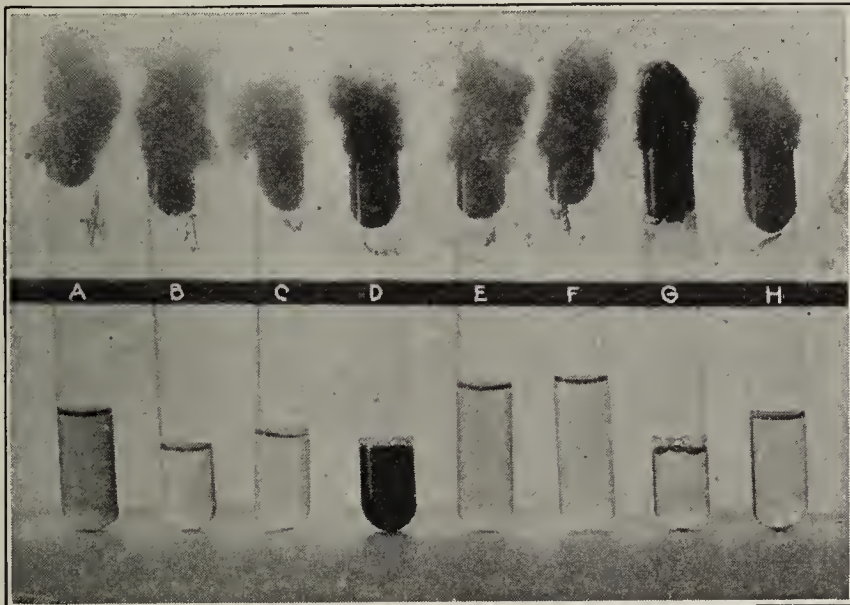
effect that in controlling the agglutination titer, reliance is not to be placed merely on a highly agglutinable culture.

There is no difficulty involved in this procedure, since it will practically never happen, and indeed it should not be permitted to conduct the immunization with a single regular or a single parameningococcus culture. Several of each, together with the representatives of the intermediate types, should properly be employed for injection.

It will be sufficient and a great gain to have progressed so far. As already indicated, a still more perfect serum product can be turned out by paying constant attention to the rarer variants and introducing them into the scheme of immunization, controlling their effects also by agglutination tests. But this refinement is one not to be introduced into the plan of standardization.

STANDARDIZATION

The next question relates to a practical standard for the serum. It should include two requirements. The first should define the physical qualities of the product which are acceptable. This definition should



Specimens of antimeningococcic serums illustrating variations in the physical condition of commercial products.

include absence of more than a trace of hemoglobin, color of straw yellow to amber, perfect clearness, or if slightly turbid, clearing on standing for twelve hours. As regards the preservative, tricresol is to be preferred, and the strength should not exceed 0.35 per cent. and may safely be reduced to 0.2 per cent., provided due care is exercised in collecting and bottling the serum.

Next, the employment of dark glass containers should be prohibited. The container, whether bottle or syringe, should be of clear white glass, and the labels arranged so as to permit of inspection of the contents from without. The containers should be wrapped in blue paper or otherwise enclosed so as to exclude the actinic rays of light.

Finally, the agglutination titer for each of the four type cultures should be from 1:400 to 1:1,000, as determined by the macroscopic method after incubation at 55 C. for sixteen hours (over night).

There should perhaps be added one more comment. With the assembling of large numbers of recruits, it is quite probable that epidemic meningitis may become more widely and numerous prevalent in this country. In the interests, therefore, of the military and civil populations, the supplies of the antimeningococcic serum now so generally employed in treatment should be vigorously controlled.

ADMINISTRATION

As the result of a somewhat extensive experience with the clinical administration of the serum, I wish to direct attention to a few points of value. Whether or not the serum is to be effective depends in the first instance on its content in immunity bodies; but it depends also on the dosage, early administration and the frequency of repetition. The question of dosage has been considered in Dr. Flexner's³ recent paper and need not be discussed here. It remains to be said that while the temperature remains high and meningococci are still present in the cerebrospinal fluid, injections every twelve hours, except in very young babies, should be resorted to unless clinical indications to the contrary exist. The next interval between injections should be twenty-four hours, then forty-eight hours. Subsidence of high temperature, clearing of cerebrospinal fluid with disappearance of the meningococcus, and general improvement in the condition of the patient, are the indexes for moderating the energy of the treatment.

The position of the patient is of moment. In order to distribute the serum over the surface of the brain and into the lateral ventricles after the intraspinal injection, the foot of the bed should be raised from 8 to 12 inches and kept so for six hours if possible. Sometimes the headache resulting from this position may make it expedient to return the bed to the normal position. At the end of six hours, the foot of the bed is lowered to its original position, and the other end raised until the time for the next lumbar puncture. During this time, the turbid fluid or pus is collected in the lower part of the spinal canal to be drawn off at the next puncture.

In addition to treating all cases by intraspinal injection of the serum, it is advisable to administer one or more doses intravenously in fulminant or very severe cases, or cases in which there are numerous skin hemorrhages. The quantity thus injected should be from

50 to 100 c.c., depending on the age of the patient and the severity of the infection. The usual precautions for guarding against anaphylactic reaction should of course be taken. Intravenous injection has been employed also to supplement the intraspinal ones in cases of less severity coming late under the serum treatment. Whether this is a real advantage cannot be stated positively; in some instances, it appeared to be beneficial. Obviously the chances of recrudescence and of blocking off of the ventricles will be lessened.

Ventricular puncture and injection of serum into both lateral ventricles should not be delayed when symptoms of cranial involvement remain after the spinal fluid is almost normal.

RETAINING THE FLOOR OF THE ORBIT IN RESECTION OF THE SUPERIOR MAXILLA

WELLER VAN HOOK, A.B., M.D.

CHICAGO

Surgeons are familiar with the fact that the removal of the superior maxilla does not leave the patient in such a state of repellent deformity as one would expect. Furthermore, functions of the parts

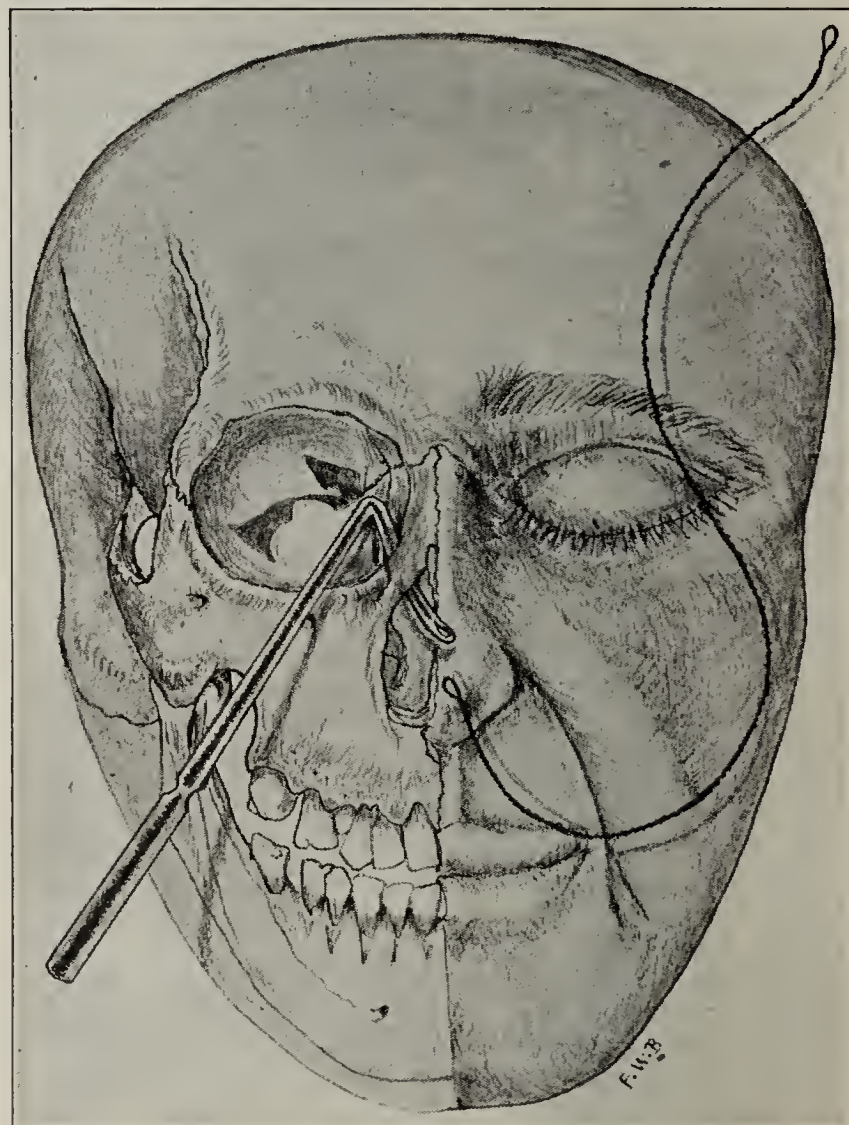


Fig. 1.—The wire saw carried through from the nose into the orbit.

remaining are not so very much disturbed. The dentist can be of the greatest aid on the oral side, and the arts of the rhinologist remove or alleviate many of the difficulties that arise within the nasopharyngeal cavity.

3. Flexner, S.: Mode of Infection, Means of Prevention, and Specific Treatment of Epidemic Meningitis, *THE JOURNAL A. M. A.*, Aug. 25, 1917, p. 639; Sept. 1, 1917, p. 721; Sept. 8, 1917, p. 817.

But Hans Bode¹ wisely remarks, "It is very important that the eye shall rest on a substantial support and that the oral and nasal cavities shall be separated from one another."

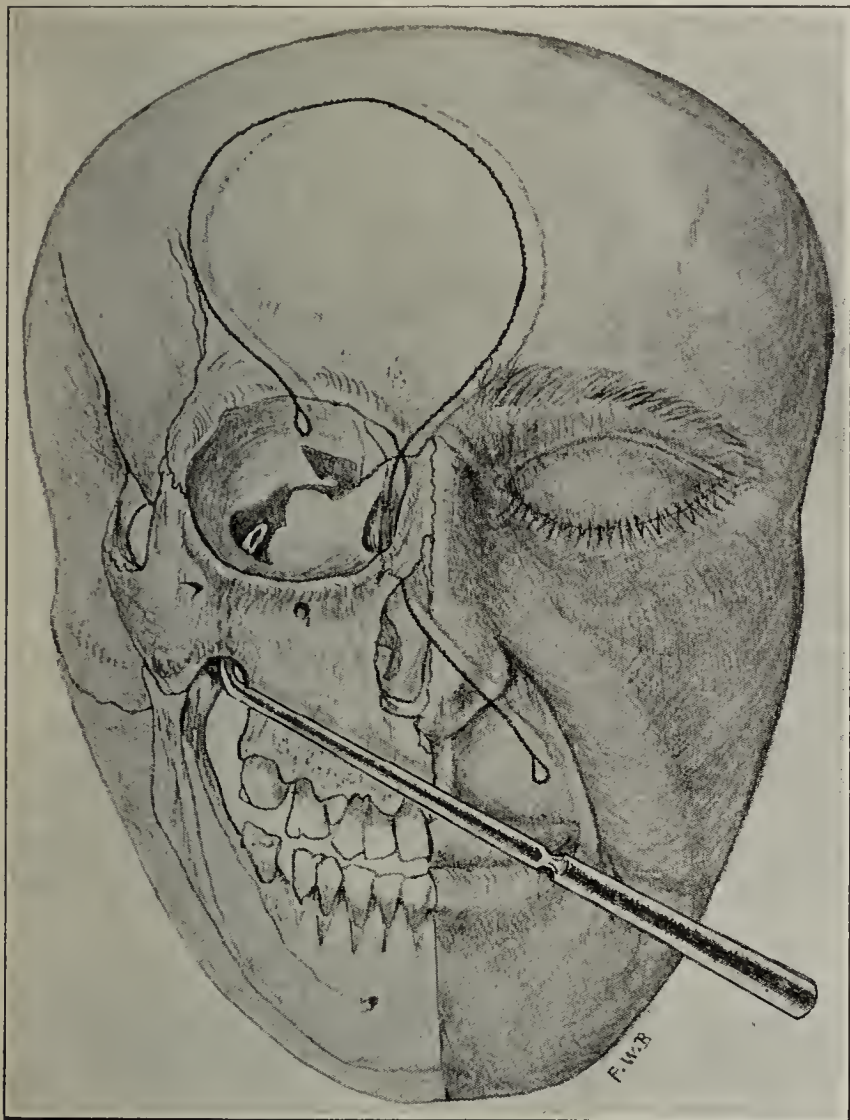


Fig. 2.—The saw carried across the orbit to make its exit through the sphenomaxillary tissue into the zygomatic fossa.

As early as 1859, Langenbeck preserved the periosteum of the orbit, and Bode tells us that his literary studies reveal the fact that Heine, Jacobs, Israel, Peyrat, Jallaguier, Koenig and Kuester have operated in this way. Koenig, Jr.,² in 1900, provided support for the eye by splitting from the outer part of the temporal muscle a flap one and a half finger-breadths long which contained the coronoid process and the anterior edge of the submaxillary border, together with the muscle insertions. This substantial flap he applied below the globe in order to supply a firm base of resistance where the bone had been removed. Riese obtained a good result with the method.

Another ingenious substitute for the lost support was provided by Schoenstaedt,³ who used the transplanted middle turbinate as a flap.

Bode remarks that, since most of the operations of resection of the superior maxilla are undertaken for the extirpation of malignant growths, it is frequently not feasible to leave the periosteum. With this statement I am entirely in harmony. Kuhn,⁴ who worked with the advice of Rehn and who used the material of the latter's clinic, strongly recommends more radical operations than have been, as a rule, performed.

I have been appalled, when first viewing the cavity left after resection, at the inroads made by malignant

disease in the structures contiguous to the part removed. But I can substantiate the statements of Kuhn that much can be done to prevent recurrence by extensive removal of invaded tissues about the base of the skull, the soft palate and the neighboring accessory cavities.

It is with the conflicting necessities in mind—on the one hand that the globe shall be substantially supported, and on the other hand that the malignant disease shall be thoroughly extirpated—that this paper is presented. Yet it is to be remembered that there are not a few cases of superior maxillary cancer which begin at points remote from the orbit, and that some resections are made for nonmalignant disease.

Since the floor of the orbit is very thin and the lower border of the orbit is not massive, the retention of this tissue may frequently be practicable with the aid of the method to be presently described.

Curiously enough, but few advances have been made in the actual technic of these resections in many years. Kuhn's⁵ anesthesia by tracheal tubage and preliminary ligation of the external carotid artery are most desirable advances in management.

There are many incisions from which to choose in laying bare the structures to be removed. Any incision through the soft parts may be used. I prefer the one which vertically divides the upper lip in the median line, passes around the ala of the nose, runs then toward the inner canthus of the eye, and, before

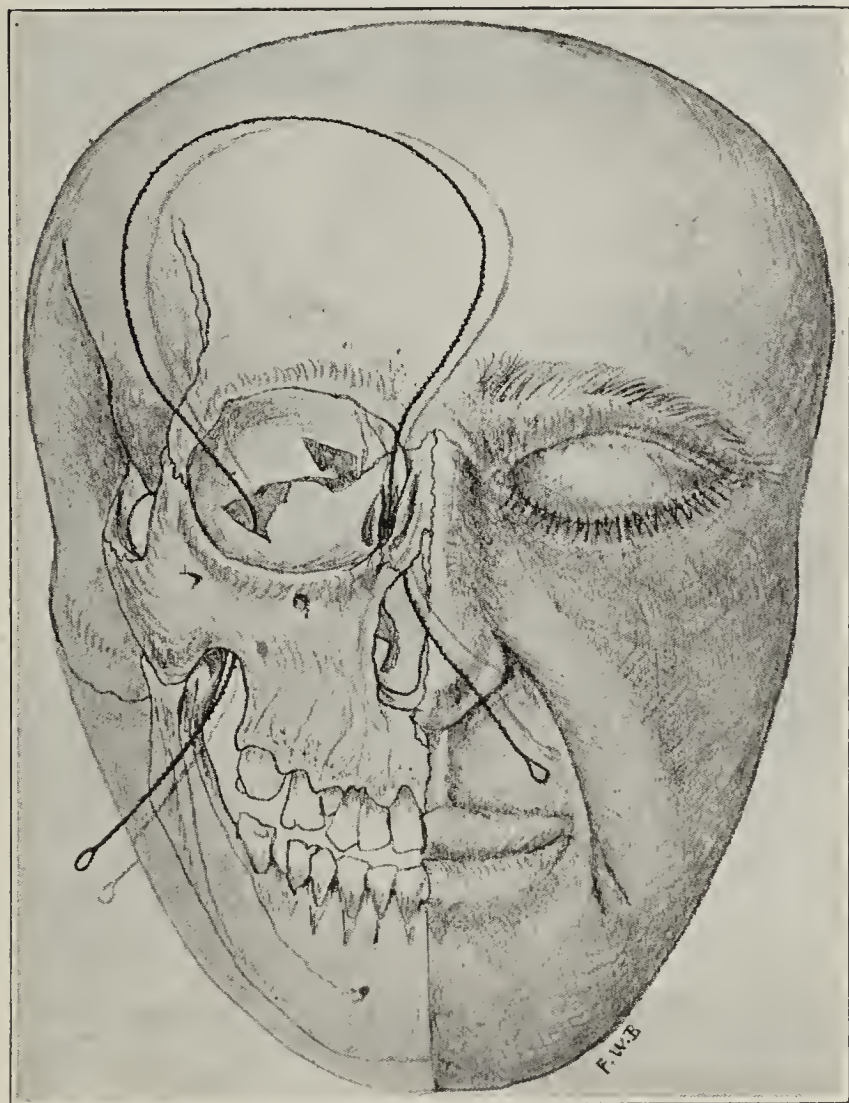


Fig. 3.—The wire saw in position, but not drawn taut.

reaching that point, curves along the lower orbital edge to the end rather far out toward or on the malar bone. This flap is first turned out and held wrapped in gauze. The hard and soft palates are divided in

1. Bode, Hans: Beitr. z. klin. Chir. (Bruns'), 74.

2. Koenig, F., Jr.: Arch. f. klin. Chir., 61, No. 3.

3. Schoenstaedt: Ztschr. f. ärztl. Fortbild., 1908, No. 14.

4. Kuhn, F.: Zentralbl. f. Chir., 1913.

5. Kuhn, F.: Zentralbl. f. Chir., 1901.

the usual way, with the chisel or with the Gigli saw.

Then the separation of the floor and the margin of the orbit from the body of the bone is effected as follows:

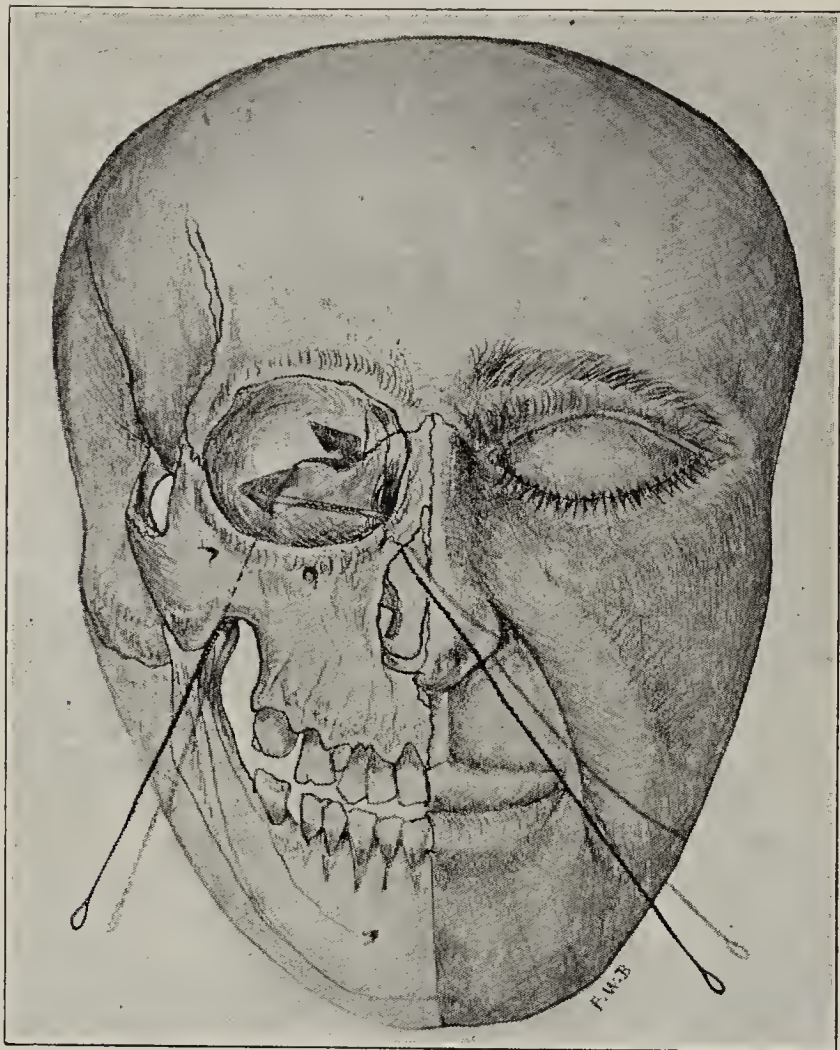


Fig. 4.—The approximate line of the saw-cut.

With a spatulous retractor, the contents of the orbit, including the periosteum, are held up, after the soft parts have been separated carefully from the bony edge and floor of the orbit. Now an ordinary grooved director is bent into a large hook and passed into the orbital cavity. With its point the anterior part of the sphenomaxillary fissure is found and the point is passed out into the zygomatic fossa, where it can be first felt by the finger-tip and then caught in a heavy silk loop. Withdrawal of the instrument brings with it the loop by the aid of which the end of a light, and therefore easily flexible, Gigli saw is carried through.

Next the grooved director is passed from within the orbit toward the median side, to the lacrimal groove and, with slight pressure, caused to perforate the thin bone and enter the nasal cavity. By being pushed further on, its point may be made to emerge around the bony margin of the nasal cavity. There it is again grasped by a loop of heavy silk, which is withdrawn as before through the wound below the globe. This loop of silk, removed from the grooved director, grasps the loop of the Gigli saw and carries it across the floor of the orbit and out through the nose.

This gives us a wire saw passing under the malar bone to the anterior part of the sphenomaxillary fissure, thence traversing the cavity of the orbit to the lacrimal groove, entering the nose through a perforation of the shell-like bone and emerging from the bony nasal framework.

The operator is now to attach the handles of the saw, and make his cut with the usual precautions of keeping the saw at work as nearly in a straight line

as possible, and making the excursion of the handles as great as he can, in order to diminish to the utmost the danger of breaking the saw.

It will be seen that this maneuver accomplishes at once three of the classical steps of the operation: It divides the malar bone, separates the superior maxilla from its orbital connections, and transects the nasal process of the upper-jaw bone.

The remainder of the operation is conducted in the way described in the textbooks of surgery.

The drawings, made by Dr. F. W. Beilstein, show the steps of the maneuver in reverse order.

I have had one opportunity to carry out this procedure in the case of a man, aged 75, suffering from carcinoma of the superior maxilla, the disease beginning in the antrum of Highmore just above the left canine tooth. After preliminary extirpation of the regional glands in the neck and ligation of the external carotid artery, the usual flap was made and the procedure which has been described was carried out.

This experience taught that the grooved director chosen should be large and easily bent to any curve, and that the silk should be braided and very heavy to avoid breaking. No difficulty was experienced in raising the contents of the orbit and working beneath them. Sharp bleeding occurred when instrumentation was carried out through the nose. But this ceased spontaneously after a few minutes. The total amount of blood lost was not great. With the greatest regret

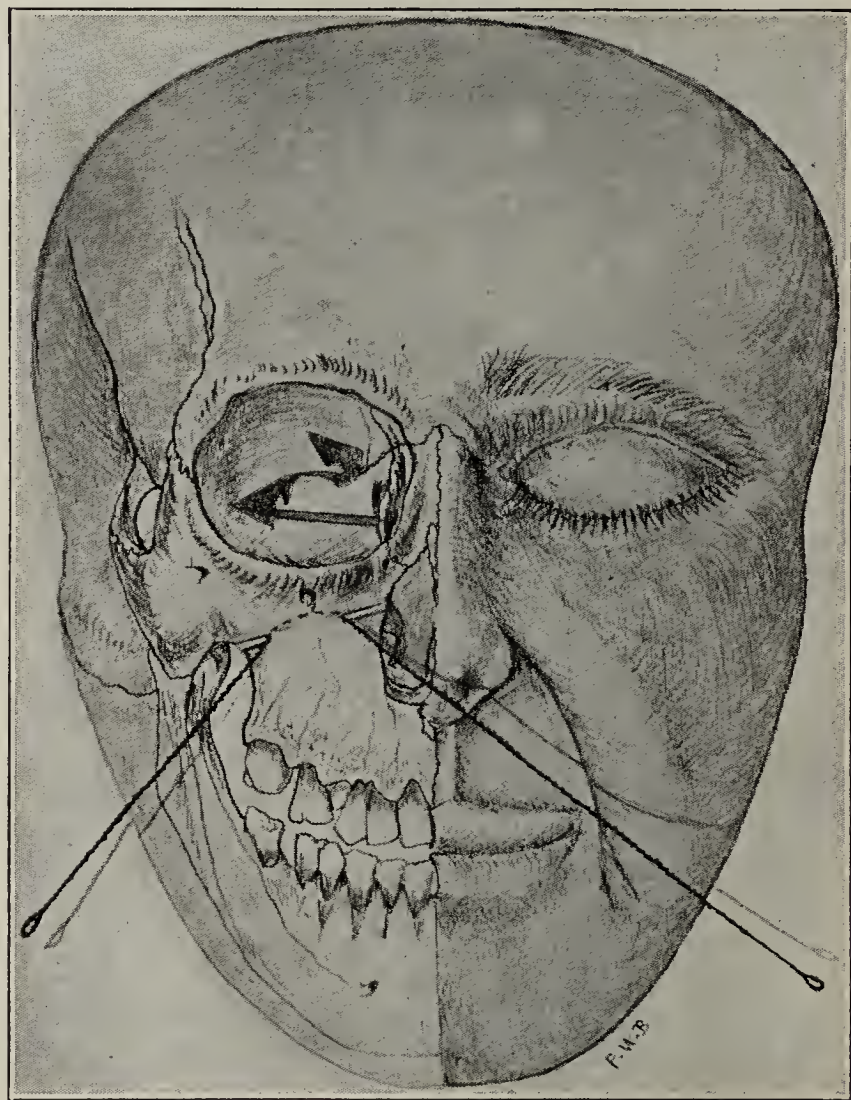


Fig. 5.—The saw-cut almost complete.

it must be recorded that the patient died on the table before the sutures had been applied, but after the extirpation had been completed. The pulse continued beating at the wrist long after respiration had ceased, making it evident that ether poisoning was the cause

of death. The feasibility and practicability of the operation were proved.

I recommend this modification of the usual procedure, when the floor of the orbit has not been

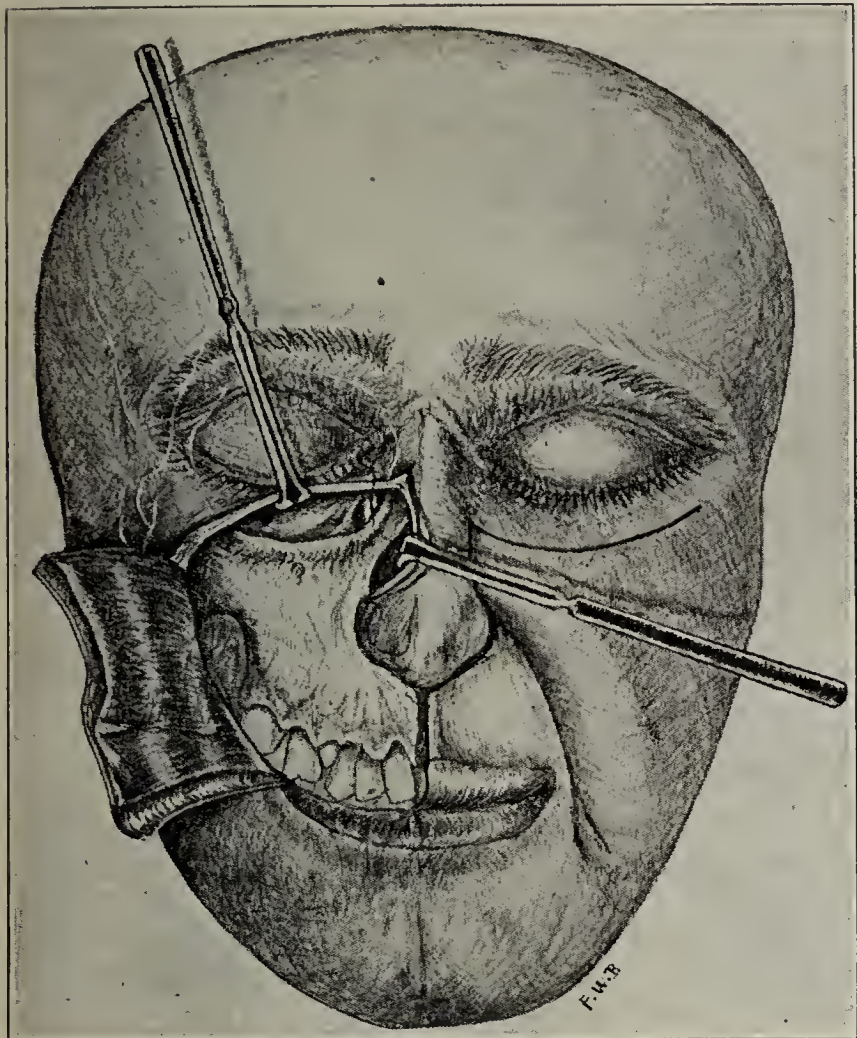


Fig. 6.—The exposure of the orbital floor and the entrance to the nose.

invaded by disease, in order that the globe of the eye shall retain its full support, that the palpebral muscles shall have their attachments unimpaired, and that the disfigurement of the face by collapse shall be maintained at the minimum of necessity.

31 North State Street.

FRACTURES *

H. R. ALLEN, M.D.

INDIANAPOLIS

In presenting this paper I cannot include all fractures, nor all of the details of any one fracture. I have selected certain conventional methods usually employed in every day practice, and I shall attempt to show that those methods are defective, and with each defect I shall submit my reasons for calling them defective, in each incident supplying what I consider a correction of the defective method. In other words, I believe there are sound logical reasons that explain bad results in treating fractures, and I also believe that better and more consistent results will follow better methods. The better methods, at least, are logical, they are consistent with the unalterable laws of nature, and they are approved by physicists and mechanical engineers.

* Read before the Section on Orthopedic Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

* Because of lack of space, this article is abbreviated in *THE JOURNAL*. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

By directing my first attack on the popular use of the weight and pulley in treating broken femurs, I shall bring to light the absurdity involved in at least one conventional method. However, if any one can defend this traditional usage, we shall all be glad to hear from him.

Back in the dark ages and probably before that time, and at the present time, bone setters searched for a consistent force to hold broken bones in a constant normal position. Hence they selected the constant force of gravity, knowing that bones would unite in the position in which they were held. They did not stop to consider that they were using the force of gravity, first, on the patient's body, where it acted as a fixation force, and secondly, on his leg, where it acted as an active kinetic force to oppose the most varied of all opposing influences which are to be found in the varied and irregular contractions of muscle tissue. Muscle tissue, if prodded with a sharp piece of bone, may exhibit spastic contractions, a tremor, relaxation or irregular contractions, all of which are to be opposed and balanced between the active force of gravity applied through the weight and pulley, and the fixation force of gravity applied to the body of the patient as it holds him down on his bed.

It is a difficult matter to convince any physicist that there is any balance or constancy in a formula that uses gravity as a fixation force on one end, and the active and acting force of gravity on the other end, while between the two there is present the unconstant and varying opposition of muscle contractures. Hence, in defending the use of the weight and pulley, I propose not to drift into a dissertation on the wonderful results following its employment, but rather to adhere to the fixed basic mechanical principle involved. Those wonderful results obtained can be logically explained and obtained without the weight

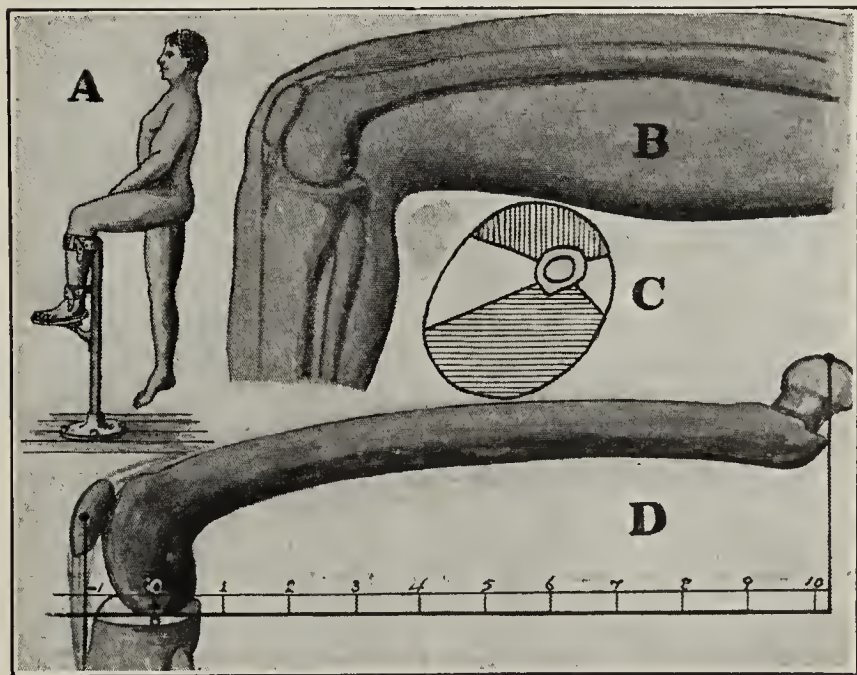


Fig. 1.—Mechanical principles involved in correcting a fracture of the femur: A, the powerful leverage of the femur in lifting the body; B, thigh muscles which cause direct traction; C, cross-section of the thigh illustrating groups of muscles concerned in reducing fracture of femur; D, the femur pictured as a scale beam.

and pulley. What we are really striving for is the hope of putting our specialty on an unassailable basis, at least from a mechanical point of view, and I desire to see eliminated all possible guesswork and bunglesome misuse of mechanical principles in this age of sound mechanics. If I am wrong in the hope or in my mechanical claims, we should all know it.

Believing that there is no constancy, balance or logic in the principle of the weight and pulley, I will, before suggesting some substitute, take up one more absurd item in regard to the amount of the weight used with the pulley.

Figure 1 *A* represents a young man with his leg fastened securely to an iron frame. Without unusual effort he lifts the entire weight of his body directly from the floor. Suppose he weighs 225 or 250 pounds; then, while lifted clear of the floor, the only part of his body not lifted by the extensor muscle

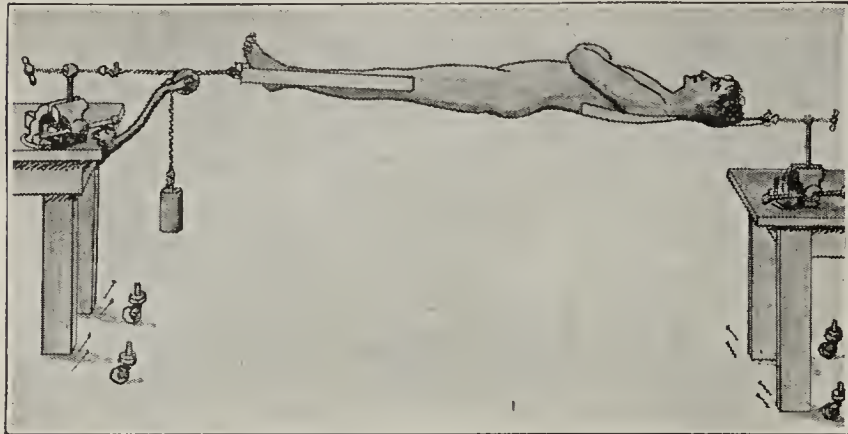


Fig. 3.—The mechanical difference between fixation energy and the weight and pulley. Fixation of support is secured by nailing the two tables to the floor instead of having them mobile on the casters, and thus the patient's body may be fixed as desired.

would be his leg and foot which rest on the steel frames. In other words, the rectus muscle through the agency of the femur as a lever is lifting a total of 200 pounds.

Figure 1 *D* represents the femur laid off as a scale beam; — 1 represents the length beyond the fulcrum *O*, while more than 10 units extend back to the long arm of the lever. Thus when he lifts his body, 10×200 pounds represents the strain or traction of the rectus muscle. I believe no one could tolerate the traction of 1 ton during the time of bone union.

In Figure 1 *C* it will be noted that the cross-section of the thigh at point *B* represents the total amount of the thigh muscles capable of making direct traction. The total traction released for activity in the event of a fractured femur would amount to several tons. It will be observed that the segment in the cross-section indicated by vertical lines represents the rectus. The lateral unstriated segments plus the lower, laterally striated segments exceed the rectus by five or six to one. This being the case, what special or particular function would a 10, or 50, or 100 pound weight perform in the event that the patient sneezed or contracted his thigh muscles, or during a spasmodic contraction while sleeping or dreaming? We all know that some muscles tire out and others never seem to offer much resistance. We also know the spastic type of muscles that resist, such as a finger in writers' cramp.

If the formula or principle of the weight and pulley is wrong, and if the weight is insignificant, then it behooves us to employ correct mechanical principles. The idea is constant normal position. We must use fixation energy for fixation purposes.

Figure 3 represents the mechanical difference between fixation energy and the weight and pulley. The weight and pulley would allow the body of the patient to sag. The same is true if the traction screws were employed, provided the two tables were mounted on rollers. But, if fixation energy should be applied

(by first nailing the tables in place on the floor), then the traction screws would drag the patient's body to a straight horizontal line like a tight rope, if such unpardonable traction were used. By placing the patient in bed the traction screws merely guarantee a fixed distance between themselves, any part of which fixed distance may be occupied by the patient. If steel pins above and below the fracture are held at a fixed distance apart, they serve as fixation energy. A Lane plate serves as fixation energy. If the square ends of bone rest against each other, or if the bony spicules and their retaining notches rest against each other, there is fixation energy. But, if the patient disturbs such contact by using the bed pan, or by coughing or other commotion, then the bones are apt to be displaced and must be reduced to opposing position again. It is easy to understand how a good result might be obtained with the projecting spicules and notches of bone, even if a trifling weight was or was not employed. If the projecting spicules of bones caught and hung in muscle tissue, a fair result might occur in spite of a trifling weight and pulley.

In regard to the reduction of the shaft of the femur, there are cases in which screw traction will draw the fragments down past each other and permit the ragged ends of bone to come into their proper places. There are other cases, and plenty of them, in which the hamstrings and gastrocnemius and soleus muscles prevent reduction, provided the knee joint is extended.

Figure 4 *A* represents the knee flexed and relaxed, while *B* represents the knee extended with the posterior muscles tense. Any one who will extend the knee joint will find the hamstrings tight. They will surely be loose if the knee joint is flexed. Now the so-called transverse fractures are not like the sawed edges of a bone. If they were, the bones would go into place with the knee extended. But the transverse fracture is transverse roughly with bony spicules and notches

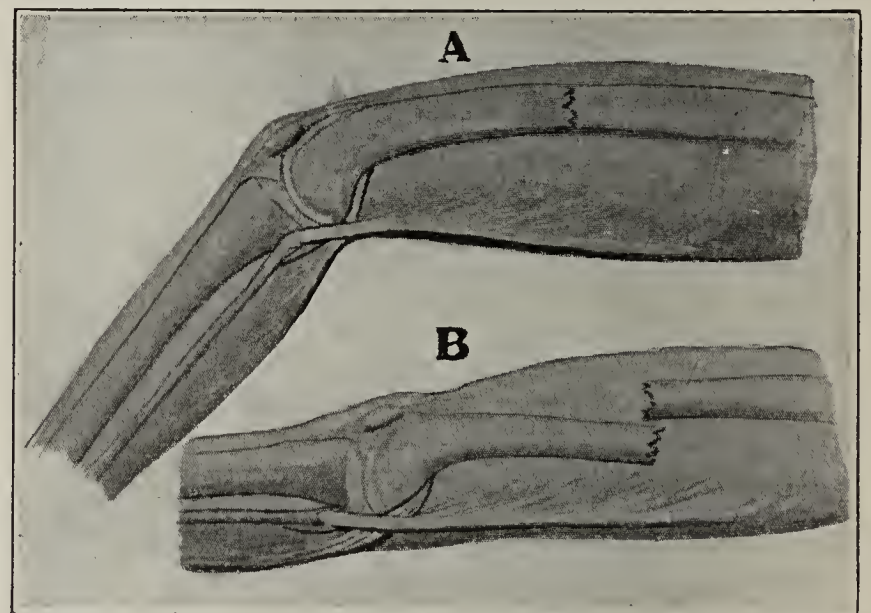


Fig. 4.—Unlocking the thigh so as to approximate the fractured ends: *A*, the knee joint flexed and muscles relaxed with bone fragments in perfect apposition; *B*, the leg extended and the fragments displaced.

left. Hence, in order to get the bones in line, the muscles must provide the requisite length for the rough areas to pass each other. But if the muscles are tight, when the knee is extended, they will not stretch enough to permit the rough ends to pass each other; consequently, the thigh must be muscularly unlocked by flexing the knee. Under knee flexion the bones easily go into place and, in these cases, will lock in place if the knee joint is again extended. This

matter of unlocking the thigh is so helpful that it is strange it could have escaped mention in our textbooks.

There is another item involving the use or misuse of good mechanics that should be mentioned. In the treatment of hip joint disease and in manipulation of certain fractures and dislocations, a line of traction parallel with the neck of the femur is sought. It is

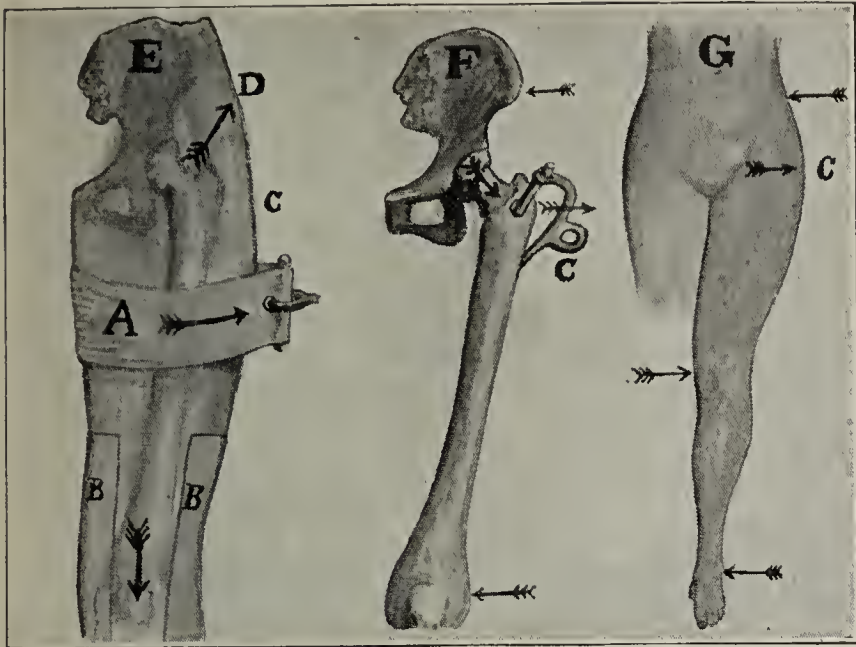


Fig. 5.—Traction to be applied in a line parallel with the neck of the femur: *A*, band applying lateral traction; *B*, adhesive strips making downward and outward traction in line with the neck of the femur pointing from the acetabulum to *C*; arrow pointing to *D*, actual result of such traction; *F*, proper position maintained by downward and lateral traction as indicated by arrows; *G*, points of pressure at which desired traction is secured.

regularly attempted, as shown in Figure 5 *E*. Adhesive plasters, *B B*, on the leg have traction applied to them, while a band, *A*, is passed around the thigh and is pulled laterally. The composite result of the traction on *A* and *B* is supposed to result in a downward and outward traction in line with or parallel to the neck of the femur pointing from the acetabulum to *C*. The actual result, however, is almost directly at right angles, as indicated by the arrow pointing toward *D*.

The desired traction can be accomplished by following the unusual suggestion indicated in Figure 5 *F*, or to a limited degree by following the lines of pressure indicated by the arrows in *G*.

Figure 6 indicates one of the important triangles of the thigh in regard to which I wrote quite extensively twenty years ago. Two sides of the triangle are bone, while the third is muscle. If one side or one angle of a triangle is changed, the entire triangle is altered. Thus, if the side *A-C* is bent inward, the rest of the triangle must change. It does change, and as the femur is dislocated or fractured and free to move and the rest of the triangle is intact, the shaft or line *C-B* will travel upward or outward or in the two directions simultaneously.

Figure 7 is interesting in showing how a little pressure on the gracilis and adductors will become a tremendous upward pressure. If in *B* there is a 1,000 pound weight suspended by a rope, a very slight pressure at the middle of the rope will bend it, and if bent at all the weight has been lifted, although it may have been lifted only a fraction of an inch; yet it is true that 1,000 pounds has been lifted.

C represents the same state of affairs, except that the 1,000 pounds are secured to the top of a rod, while the rope is secured to the bottom of the rod. A pressure of a few pounds, or even a few ounces, against

the middle of the rope will produce a pressure of a thousand pounds upward. This illustrates how we may create tremendous destructive pressure in the head of the femur and acetabulum by applying lateral pressure or traction to the gracilis or adductor muscles.

D represents, in all fairness, the increased pressure required to lift the same weight by applying more pressure or traction when the rope makes an angle of about 90 degrees. But the gracilis and the adductors make no such angle.

Figure 8 represents various positions employed in using the weight and pulley method.

In considering the basic mechanical principles appropriate to the treatment of fractured femurs, the ingenuity of the physician will be greatly improved if he does not consider this or that transverse or spiral or compound complicated fracture, but pictures constantly in his mind how he would treat a patient who had the middle third of the shaft entirely shattered and disconnected. By keeping this picture in mind, the physician will be stimulated to consider basic principles. If they are appropriate to a shattered femur they might be appropriate to a more simple form of fracture, since after all the thigh is merely an eccentric muscle tube with a bone filling its lumen. Of course a shattered or simple fracture of the neck of the femur are treated alike, as fractures of the neck of the femur are the easiest of all fractures to treat without deformity or shortness. The rules of fixation energy for fixation purposes are borne out here as elsewhere, and I know of no case of nonunion or "ligamentous union" which is genuinely nonunion to have resulted from this method of treatment at any age. In very old people of 80 or 90 years the bones unite. These patients may die with or without any treatment, but I believe their chances are better if no analgesic or any anesthetic is used at any time during

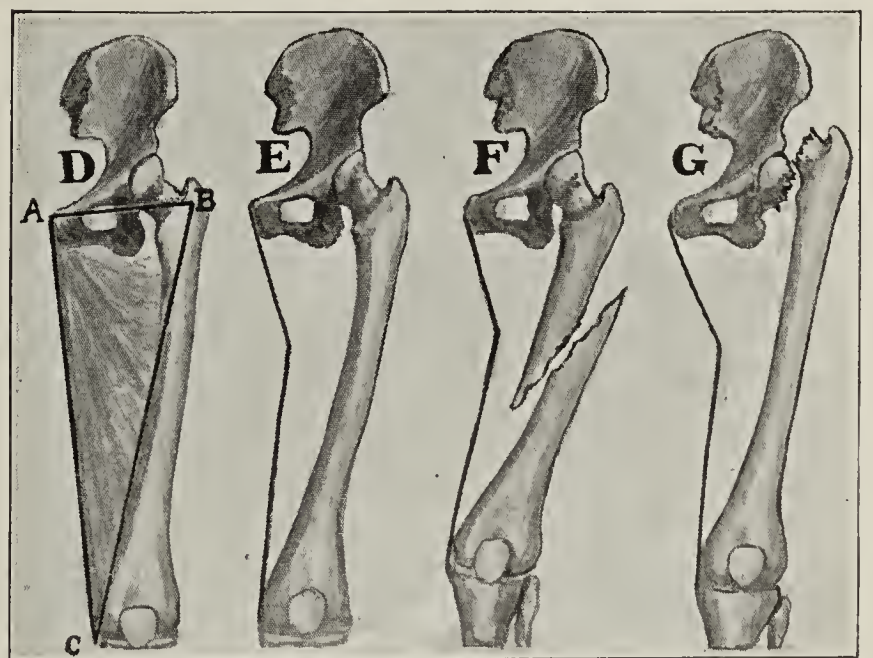


Fig. 6.—Triangles, two sides bone and one side muscle; if line *A-C* (muscle side) is altered, bone shaft *C-B* will travel upward or outward, as shown in *E*, *F* and *G*.

the period between accident and recovery, and there is no occasion for using anesthesia or analgesics, as the treatment is not painful nor pain-inflicting, but is absolutely comforting from the moment it is begun. This, of course, is a statement to be substantiated by the physician's own patients when this method is adopted. The simplicity of the method is the feature most difficult of comprehension to the average practi-

tioner who employs it. An ordinary army stretcher with a traction screw or strap at each end and a hole in the canvas for the bed pan service is a simple, direct and efficient fracture splint. But the details are trivial; the essential features are the selection of appropriate mechanical principles.

Allied to fractures of the femur are fractures of the humerus. Here the principle of fixation energy

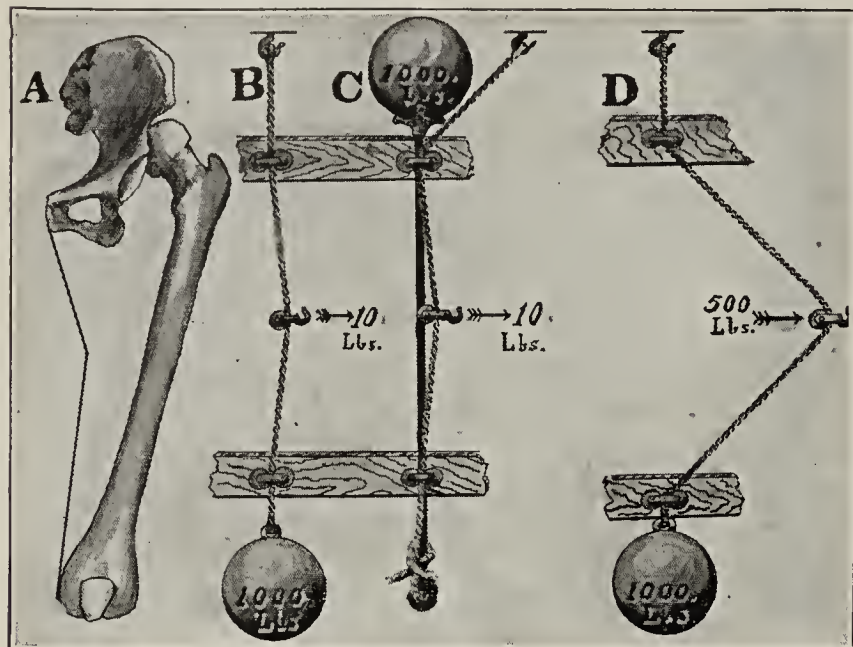


Fig. 7.—Illustrations of possible destructive pressure on the head of the femur and acetabulum by applying lateral pressure or traction to the gracilis or adductor muscles: *A*, displacement of the femoral head through improper traction or pressure; *B*, slight lateral traction in the center causing weight to rise; *C*, weight on top of rod raised by lateral traction; *D*, extreme traction required to lift the same weight to an angle of 90 degrees.

for fixation purposes is equally essential. Instead of using the tuberosity of the ischium as a superior fixation point, we use the muscles in front and behind the axillary space protecting the blood vessels and nerves from pressure. The inferior fixation area is the angle pad anterior to the elbow resting down on the forearm and back against the arm.

In Figure 9 a band under the wrist serves to hold the elbow in right angle position, affording a base for the angle pad. This type of splint is not new and untried, but has been in use by me for twenty-five years. The wire and adhesive plaster brace, as will be noted at *C*, is light, rigid and clean, permits free inspection at all times and is easily adjusted, is neither expensive nor difficult to construct, and is efficient in affording constant diastasis and maintaining constant normal length of humerus. The fixation area is supplied by the superior axillary base and the lower base on the forearm close to the arm as shown in Figure 9 *C*. Likewise, *B* represents the axillary sling, crutch or bandage showing the pectoralis muscles in front and the latissimus dorsi behind, against which the padded sling rests protecting the axillary blood vessels and nerves. *A* is a transverse section through the arm and chest showing that the padded axillary sling should not compress the blood vessels or nerves of the arm.

Figure 10 shows in series the construction of the angle or elbow pad. I have frequently made them out of empty ether cans. Have the nurse hold the can over a gas flame until the solder melts, quickly throw the can on the tile floor to prevent its resoldering itself, then cut and bend it, stick it together with adhesive plaster and pad it, and apply it with bandages that do not encompass the arm or forearm, but attach to the brace as shown in the drawing.

Fractures of both bones of the forearm seem to give considerable trouble for a variety of reasons. These bones are provided not only with muscles paralleling them capable of long axis compression, but also diagonal pronators and supinators, and one other not to be forgotten is the rotator. The last and universally overlooked condition is the fascia. The fascia is inelastic, built to fit over a forearm containing only two bones. If the bones are broken obliquely and override each other, the inelastic fascia is called on to provide space for three or four bones instead of two.

Figure 11 *A* represents normal cross-section of the forearm, showing the interosseus membrane in a straight line. *B* represents fractured bones overriding and taxing the inelastic fascia to its full capacity. The interosseus membrane no longer occupies a straight line position.

A frequently used method of treatment consists, first, of traction, and, second, the application of a padded separator to be crowded down between the bones, as shown at *F*. If the fascia is loose and flabby, this scheme might be feasible; but after fracture there is usually sufficient swelling to fill the fascia to its capacity. If already tense, then any pressure will draw the bones closer together instead of separating them. This is shown at *C* and *D*. It is a well known and established fact that a circle surrounds the greatest area of any geometric figure for a given fixed length of peripheral line. Consequently, if the circle is compressed at any point, the compression is equal for all parts and the compression is extended to the contents of the circle. Therefore the intervening separation pad becomes an interosseus approximator, and obviously should not be used.

The question of using fixation energy in this case becomes complicated. Some experienced operators use Lane plates, although Lane informs us that they are not as good for arms and forearms as they are for legs and thighs. I dare say many physicians have had good and bad results with them.

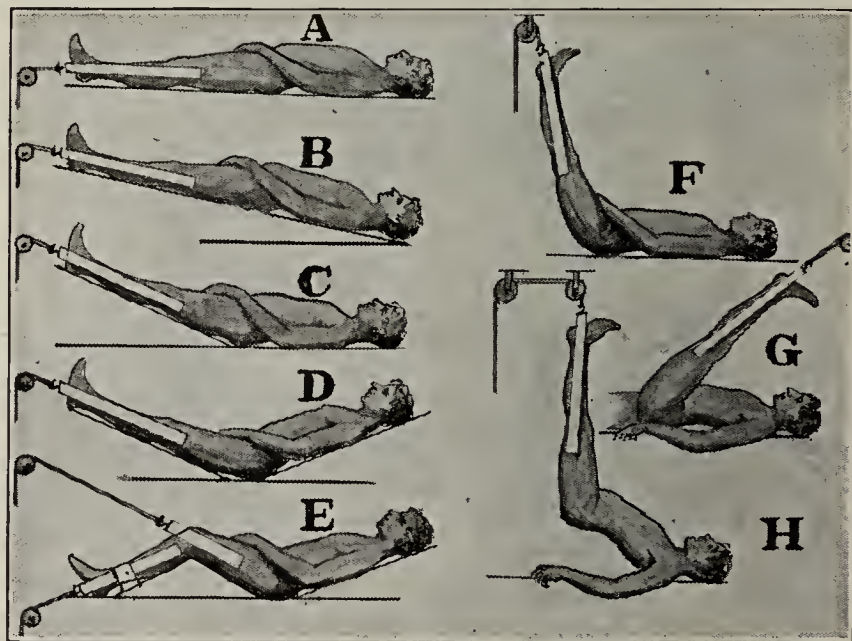


Fig. 8.—Various positions in which the patient may be placed when traction is made with weight and pulley.

Figure 12 shows a Lane plate installed. It will be noted that only one or two turns of thread are confined to the durable, hard shaft of the bone, while six or seven turns of the thread extend into the open space of the canal of the bone. Of course, no efficiency accompanies this unengaged portion of the screw. Furthermore, the round hole that fits so

snugly the newly installed screw becomes oval or egg-shaped in a week or two, and then even the upper thread or two become as useless as those sticking down into the marrow or open canal.

Figure 13 represents the bone gimlet with its low melting alloy handle compared with the screw. It will be noted that the screw at best has only one-eighth to three-sixteenths inch bearing, while the pin

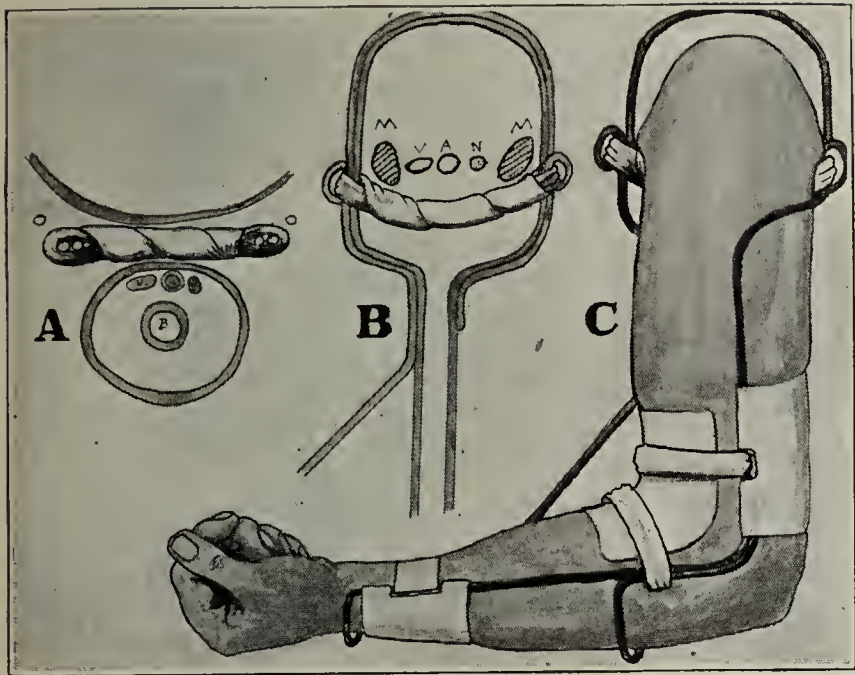


Fig. 9.—The principle of fixation energy as applied to fractures of the humerus: *A*, cross section of the arm illustrating the relationship of vessels and nerves to the humerus and showing the correct position of the axillary sling to prevent compression of the blood vessels, and nerves; *B*, relation of important structures to the padded axillary sling; *C*, axillary sling and wire brace applied so as to hold the humerus in the correct position.

goes clear through the bone, engaging both sides. Now the little round holes for the pins become just as oval as they do for the screws. The difference is that the pins transfix the entire forearm, and at all times provide external control over internal conditions. If the pins become loose, the slack can be taken up outside. It cannot be taken up with a Lane plate, but the plate can slough out while the pins remain in position. In the event that the Lane plates succeed in staying in, they remain in forever; but the pins are removed after bone union, and the forearm is not half human and half hardware. Another advantage of the pin is the long leverage obtained from passing from one side of the bone to the other. The strain is divided and the holes remain round longer. The details concerning lack of infection and freedom from pain have been covered in previous papers, although they are open for discussion at any time.

The last fixation device that I shall take up is the wire stabilizer shown in Figure 14. In this diagram there are presented four or five technically different types of wire stabilizers attached internally to the broken bone and externally to the straight edge, which straight edge is usually made of the low melting alloy. In badly shattered bones these stabilizers and external straight edges are indispensable. I prefer the plain flat metal to the tube instruments. Sterilization is more certain and easier to accomplish. This device forms the simplest type of stabilizer.

CONCLUSIONS

I trust that I have been both fair and successful in presenting just a few of the many defects in treating fractures, and also successful in presenting efficient and unquestionably sound remedies for the methods I have referred to as inappropriate or deficient.

In the department of mechanical surgery, the surgeon's methods will be judged to some extent by their mechanical soundness. Consequently, fractures and dislocations and other cases involving mechanical problems will be referred to that department which is the most efficient and most capable of treating them. If it can be shown that we can best treat these patients, they will not be classed as general surgical cases.

1899 North Illinois Street.

ABSTRACT OF DISCUSSION

DR. JEFFERSON D. GRIFFITH, Kansas City, Mo.: Fractures of the long bones, especially the fractures of both bones of the forearm, are difficult to treat and get a perfect result. One may get a functional result with the bones overlapping, and a useful arm, but the thing is, How can we get a perfect result? We can all use this apparatus of Dr. Allen's. I think very well of it. The claim made of reducing and having an aseptic condition is all right.

Some years ago Dr. Parkhill of Denver employed the same principle, with screws and clamps which he connected afterward. They could be put on without any trouble at all with the patient under an anesthetic. I have used his device, and I could succeed in maintaining reduction very well with it after I got it on. But it required the use of his complete outfit, which you must have on hand before you commence reducing the fracture. After you have the pins through, by Dr. Allen's method, you have to use the fusion clamp to maintain the malleable metals in position. If this can be done easily, I like it. The Parkhill method was the same as that of Dr. Allen, except that it had the screws with it, with movable plates on both sides. I have his apparatus at home now and have used it in fractured femurs and forearms. I like Dr. Allen's method much better, I think, if I can find a way to get at it and do it easily.

DR. EDWIN W. RYERSON, Chicago: I should like to ask whether Dr. Allen has any difficulty with paralysis from the crutch under the arm in fractures of the humerus treated by his ingenious apparatus.

DR. JOSEPH E. ROOT, Hartford, Conn.: I wish to emphasize the value of a constant fixation, instead of the old method of

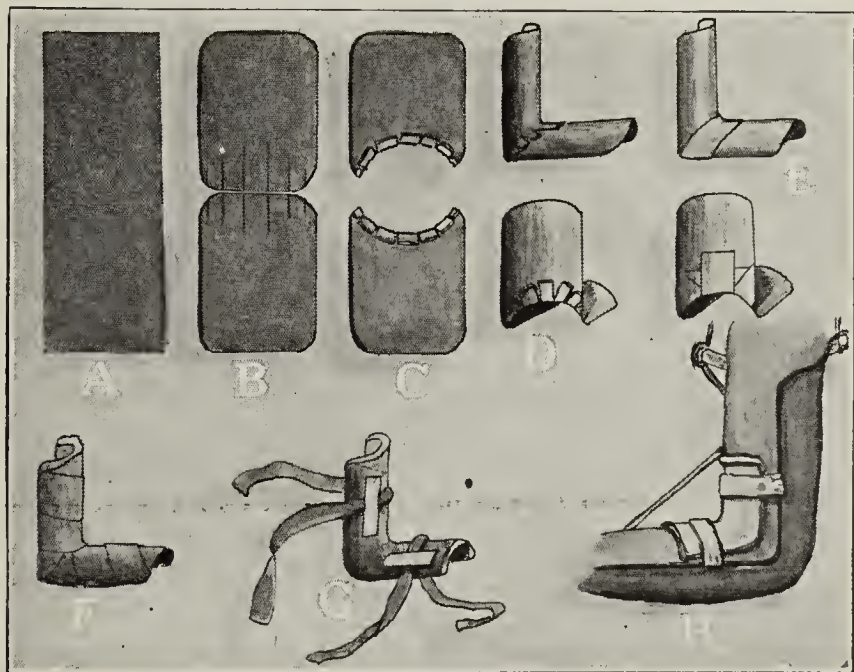


Fig. 10.—Method of construction of the angle or elbow pad from an ether can: *A*, ether can flattened out; *B*, ends cut ready for bending; *C*, ends curved; *D*, ends approximated to form an angle; *E*, adhesive strips fasten ends together; *F*, the can padded; *G*, arm straps placed in position; *H*, the elbow support applied.

using a weight and pulley, which are inconstant. We have in Connecticut a celebrated family of Swedes who are natural bonesetters. The best representative of this family once made this remark, which has always stuck with me, and has been my guide in my entire work with bone: "Doctor, if you put on a variable extension,"—he referred to the ordinary

weight and pulley—"you will have trouble. As long as you fight the muscles, they will fight you, and you will gain nothing but constant misery to the patient and a bad result." I have always worked on that principle. If you employ such an extension, you have a see-saw all the time. The pulley never lets up, and sets up a source of irritation to the muscles which cannot be overcome.

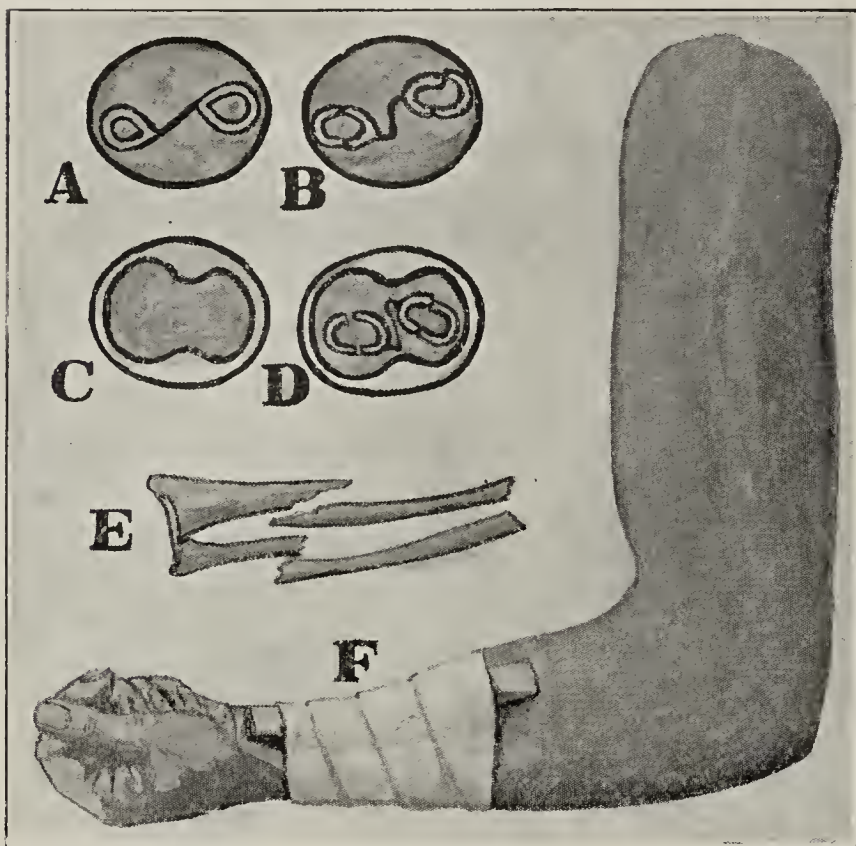


Fig. 11.—Importance of the interosseus membrane in the correct treatment of a fracture: *A*, normal straight position of the interosseus membrane; *B*, curving of the membrane due to overriding of fractured bones; *C* and *D*, external pressure causing faulty position of fracture, since it will tend to force the bones together; *E*, overriding in fractures of the forearm; *F*, commonly used padded separator, which should not be employed, as it applies undesirable compression.

I do not think it is just to criticize means to an end. Every man gets results by methods of his own; but so long as his results are good, he should stand by his own methods. The method of Dr. Allen is unique, and I can see some difficulties in its ordinary application.

DR. JOHN RIDLON, Chicago: It is true that the general surgeon and the general practitioner still use weight and pulley traction in the treatment of fractures, but I did not know that any orthopedic surgeon used weight and pulley traction now in any line of work. I have not used any variable traction for more than twenty years, and I hope that no orthopedic man is any longer doing it. The main point is not whether we shall use pins in this way or in Parkhill's way, or splints with fixed traction, or plaster-of-Paris. The meat is to put the fragments in place—in common parlance, to set the fracture; and I do not know any way by which one man can tell another that he knows that he has set any individual fracture. That is a personal question; and he either thinks he has set it or is in doubt whether he has set it or not. If we really set a fracture, we can hold it set by almost any fixation apparatus. I do not think that Dr. Allen has shown us how we can know with certainty that we have set any fracture.

DR. ALBERT H. FREIBERG, Cincinnati: I looked forward to hearing the paper with some anticipation, and after hearing it felt keen disappointment, because I have heard substantially the same principles enunciated and the same apparatus shown by Dr. Allen for the last three successive years. I had felt that this time I was going to come and hear, not simply that a broken bone was to be treated like a broken table leg and by the same mechanical principles, but that I should hear Dr. Allen tell what he has done and see him show it, which, after all, is the "milk in the coconut." I am still unaware, moreover, what this fusible metal consists of. Dr. Allen's method is ingenious, but whether it works out in

practice is another matter; and I think that he owes it to us to show us that it does work out in practice by exhibiting tangible results.

DR. HENRY KELLER, New York: I should like to ask Dr. Allen whether he is confining himself to the treatment of cases not amenable to simple methods of treatment in performing this operation, or whether he uses this method in every case. There is a social question involved in that. A good many patients, as soon as you tell them that there is to be an operation, will get frightened. In using this method, asepsis being of great importance, you have to take the patients to a hospital, whether you are dealing with fractures of the humerus or fractures of any other part. The general practitioner has something to say about this. When he calls in a consultant he does so because he wants the cooperation and advice of an expert. If you are going to advocate that every patient is to be treated with pins and must be taken to a hospital, that will simply keep the general practitioner from calling in a consultant and lead him to do the work himself, for fear that the patient will be taken away from him. A great deal of work has already been taken away from the general practitioner, and it is time that we look at things medical from his point of view. If, however, this operation is to be confined to cases that cannot be reduced by simple methods and held by ordinary immobilization, that is all right. After one has tried conservative methods and does not succeed, it is time to devise various other means of reducing the fracture and keeping it; but before that, there is no reason to open avenues of infection and also add burdens to the already overburdened and underpaid general practitioner.

DR. ROLAND HAMMOND, Providence, R. I.: I am one of those orthopedic surgeons who are still using the weight and pulley in the treatment of fractures in the shaft of the femur and, at times, in the shaft of the humerus; and when a fracture with a number of inches of overlapping can be brought

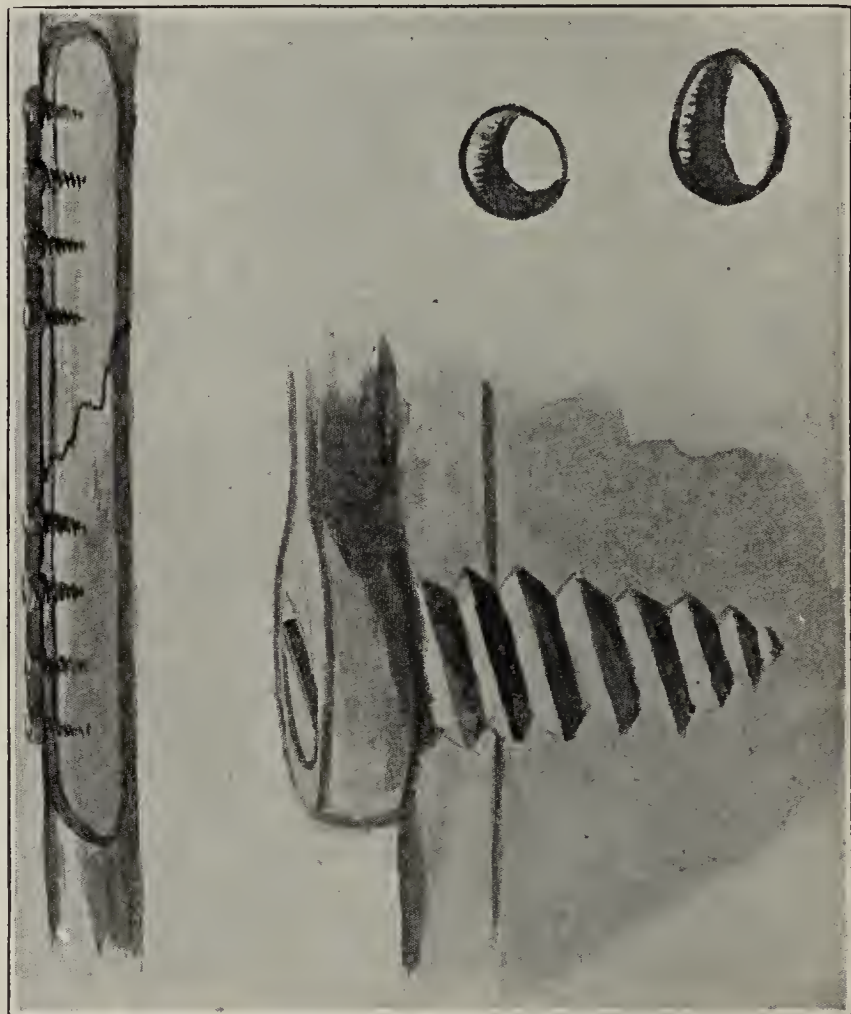


Fig. 12.—Lane plate applied so as to unite a fracture. Note that only about two turns of the thread of the screw are in the hard substance of the bone; the remaining threads are within the lumen of the bone.

down to position and held there, as shown by the Roentgen ray, I shall continue to use that method in such cases. It usually does not involve the use of ether, and I feel that when a fracture is once in position it is easy to hold it there.

DR. A. A. CRANE, Waterbury, Conn.: It is a tremendous relief to me to hear from the gentleman from Providence that there is one old foggy still ignorant enough to use weight and pulley traction. I thought that I was the only one left. I was in France last summer and saw that there were some old fogies left there. For instance, Dr. Joseph Blake was using that method entirely. Dr. H. H. M. Lyle and Dr. Joseph Marshall Flint also used it. It is considered over there as

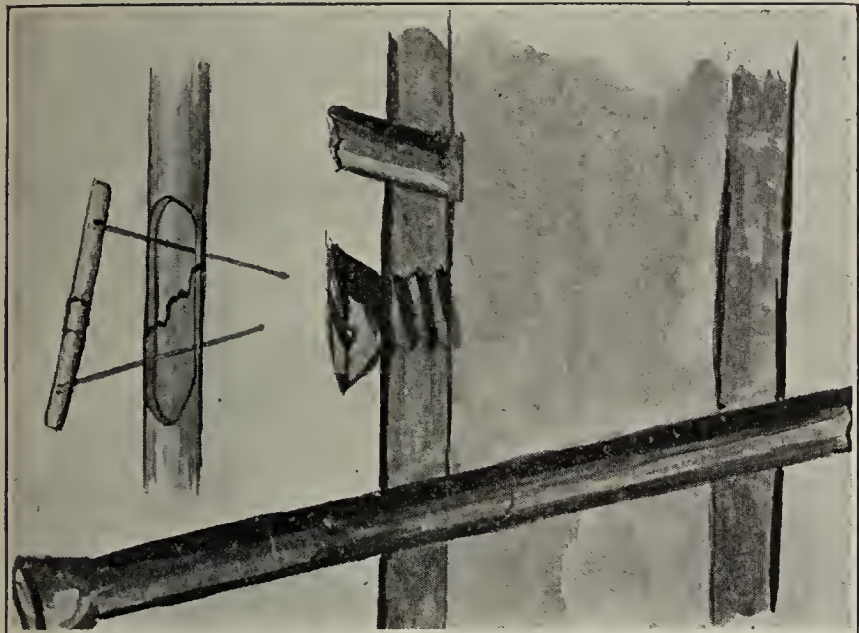


Fig. 13.—Bone gimlet in position: Advantages in the use of pins which transfix the entire forearm.

the type of American surgical treatment. French army surgeons are detailed by their government to study these methods and adopt them. By the method of suspension and traction by weights, springs and pulleys, as carried out by Dr. Blake, adjustment in every direction is possible.

Dr. Ridlon said that we do not know when the fracture is set. They do over there. The results are all verified by the fluoroscope. There may be cases in which this line of treatment cannot be carried out, but it applies to most cases. I used it before I went over and have done so much more since I came back.

DR. JOHN RIDLON, Chicago: I should like to have Dr. Crane say whether, in using that method in France, they constantly verify the position in which the fracture is maintained by means of the fluoroscope, or simply note it once.

DR. A. A. CRANE, Waterbury, Conn.: The fluoroscopic examination is made only once after the reduction is made, and again before the patient is discharged. There is no constant verification by means of the fluoroscope from day to day.

DR. E. A. MCCARTHY, Fall River, Mass.: Dr. Allen can probably use this method with a great deal of skill. I believe, however, that the indiscriminate use of this method by practitioners throughout the country would probably not result in a great deal of benefit on account of its complicated character. As to traction in the reduction of fractures, most men of the present day, I believe, are convinced that traction in the case of a fracture of the femur is passé as compared with the operative procedure in uniting fragments. The patient, himself, on traction for a long time in a reclining position, is a big factor to be considered. In the cases that I have seen and reduced by the open method, it has been possible in many to hold the fragments together without the aid of foreign material. Plaster-of-Paris has been applied after the wound has been sutured. Exceptionally good results have followed this method.

DR. SAMUEL C. BALDWIN, Salt Lake City: The more orthopedic men get to using operative procedures in the treatment of fractures, the less cases of fracture they are likely to get to treat. People do not want to undergo an operation if they can help it.

With regard to the weight and pulley, I would say that there is unquestionably no doubt that a man may lift himself

up by his hamstrings, but how many seconds can he hold himself there? A weight attached to the lower portion of the limb, if kept on long enough, will tire out the muscles, allowing extension to be complete; and in a large proportion of cases this will prevent overlapping of the fragments and permit of apposition. Recently a physician in Pittsburgh told me that he was going to operate in a case of fracture of the tibia at the patient's home, because he could not get the patient to go to the hospital. I asked him how much weight he was going to use, and he replied, "Twelve or fourteen pounds." I said, "Put forty pounds on." He did this and the next day it was down. Notwithstanding Dr. Ridlon's statement that he does not know any orthopedic man who follows weight and pulley traction, I believe that nine-tenths of them are doing it; and the more of them that are doing it intelligently, the better the results.

DR. MELVIN S. HENDERSON, Rochester, Minn.: I should like to emphasize what Dr. Freiberg has said. We have heard Dr. Allen talk of his method for several years, and while it is exceedingly interesting, I fail to see any new mechanical principles; but the main objection to it is that as an operative procedure it complicates the operative field and adds another avenue for the entrance of infection. If Dr. Allen would show us statistics to prove the good effects of the method I am sure that we should all be delighted.

DR. H. R. ALLEN, Indianapolis: I do not use a constant force under any conditions requiring fixation energy. Buck's extension is usually associated with a weight and pulley, and I have tried to make it clear that I do not use a constant force when I am trying to secure a constant distance; and you will surely recall from your childhood the unaltered statement in your primer that the force that operates the pulley is the force of gravity which is a constant force, and all primers agree on this point. Bones unite as they are held. It is therefore up to us to hold them straight and in a constant position.

It is disheartening to present this topic to a man of Dr. Freiberg's attainments for several years and find at the end of that time he is unable to discuss the paper. We are sup-

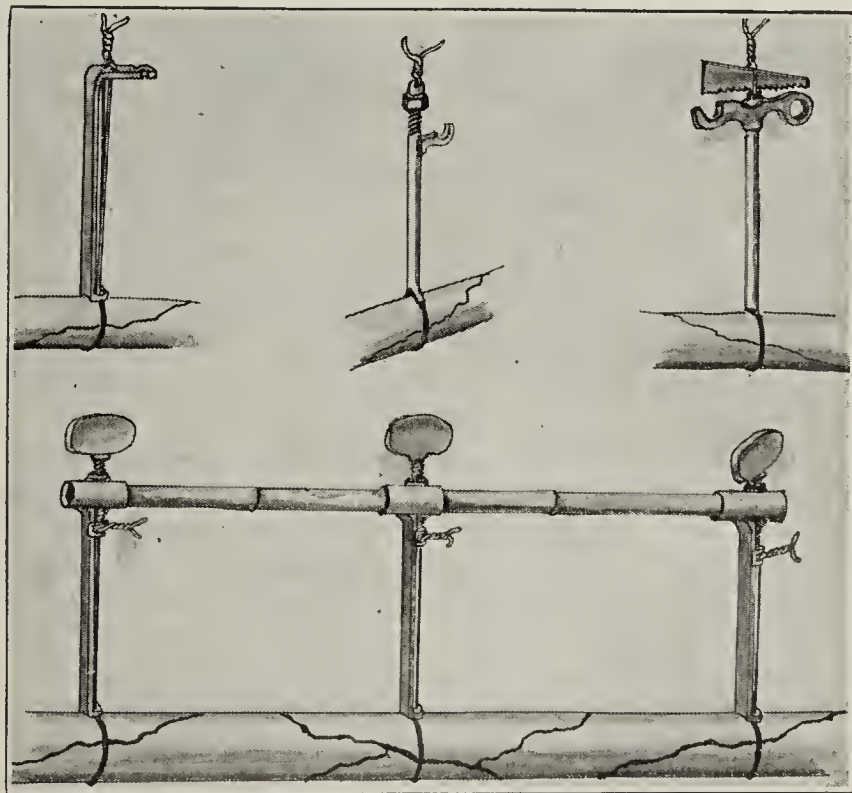


Fig. 14.—Different types of wire stabilizers which are indispensable for use in badly shattered bones.

posed to be dealing with the abstract subject of "mechanical principles" which cannot be Roentgen rayed. We are trying to put orthopedics on a sound and unassailable mechanical basis, and to present Roentgen-ray pictures or other diverting and irrelevant matter would merely confuse the purpose of this paper. It is only fair to add that the application of sound and appropriate mechanical principles will produce most gratifying roentgenograms of united bones.

At every meeting I am asked for the formula of this alloy. It contains 50 per cent. lead, 25 per cent. tin, 12.5 per cent. cadmium and 12.5 per cent. bismuth. The wire loop stabilizers are not through and through devices. I have seen real pus accumulate about them and flow out over the skin without one degree of temperature rise. They are so constructed as to provide sufficient outlet from their base out.

I am very glad that Dr. Ryerson has called attention to the possibility of establishing crutch paralysis by using the splint for fractures of the humerus. Like any crutch made on the nonrigid straplike plan there is less danger of crutch paralysis than with the rigid type of crutch. But it must be remembered that any crutch paralysis also depends on a prolonged and a considerable degree of pressure which is never necessary in this system of treatment for the following reasons.

In the first place there is little or no traction necessary to hold broken bones in their proper place after they have once been pulled down to their proper place. For twenty-five years I have worked diligently on the application of mechanical principles to surgical procedures and I want above all else to have orthopedic surgery put on a sound dynamic basis, since it represents the mechanical division of all medicine and surgery and it should be unassailable in its very foundation. Not one has come out and attempted to discuss the basic principles I have come to present to you. There is not one who can logically account for the basic mechanical principles that he uses every day.

THE THERAPEUTIC VALUE OF ORAL RHYTHMIC INSUFFLATION OF OXYGEN

WITH DESCRIPTION OF A SIMPLE APPARATUS
FOR ITS EXECUTION *

S. J. MELTZER, M.D., LL.D.
NEW YORK

The literature on the relation of oxygen to the processes of life, the rôle which oxygen plays in internal and external respiration, and the availability of that gas as a therapeutic measure, is immense. I shall not attempt to review it even in a cursory way, but it may not be amiss to discuss some of the problems of this subject, especially those which we encounter in recent medical literature. We may conveniently divide the discussion of our subject into two aspects: the physiologic and the therapeutic.

THE PHYSIOLOGIC ASPECT

It seems to be the dominant opinion among physiologists that inhalation of pure oxygen or air strongly enriched with oxygen is of no greater oxidative value to the normal organism than the inhalation of simple atmospheric air, which contains about 20 per cent. of oxygen. This view seems to be upheld by two considerations. In the first place, it is a fact that the oxygen in the blood is carried chiefly by the hemoglobin, which, it is generally assumed, is nearly saturated with oxygen and would not take up more of it even if the individual were breathing pure oxygen. The only part of the blood which may take up more oxygen when offered under higher pressure is the serum; but it seems to be generally accepted that the amount of oxygen which the serum is thus able to take up is a small and negligible quantity. The second influential consideration is the assumption, which seems now to be quite generally accepted, that the decision as to

the amounts of oxygen which the organism is to absorb rests finally and exclusively with the body cells, that is, with their necessities, activities and storing capacities, and is not influenced by the oxygen pressure within the tissue lymph. In other words, oxidation, the chief process of life, depends on cell activity and not on the tension of oxygen within the blood or within the tissue lymph.

The question under discussion has been the subject of numerous investigations. Lavoisier and Seguin, as far back as 1789, were the first to draw the conclusion from their experiments that "there was no increase in the vital processes as the result of breathing pure oxygen." Probably the last, and surely one of the best and apparently most careful investigation, is the one that was published a few years ago in this country by Benedict and Higgins.¹ They say that a critical examination of the entire literature strongly favors the belief expressed by Lavoisier. But they say that "nevertheless we find that there is much that is lacking in the evidence thus far secured, so that the matter is not yet definitely settled." Their careful investigations, however, led them to a similar result, namely, that there is no difference in the gaseous metabolism between breathing ordinary air and breathing oxygen mixtures of 40, 60 or 90 per cent.

But even with regard to this careful research, Krogh² said: "It is extremely probable, however, that there is in these experiments a slight systematic error," and he comes to the conclusion that the "breathing of oxygen does increase the metabolism to some slight extent."

Apparently there are many factors of greater or lesser importance that have to be taken into consideration before we shall be justified in accepting as final any estimate of the extent of the influence that the inhalation of air with a higher partial pressure of oxygen may exert on the normal gaseous metabolism. The hemoglobin is even normally not completely saturated with oxygen, nor is the oxygen in solution in the blood serum normally an entirely negligible quantity, and it is certainly not negligible during an increase of the partial pressure of oxygen of the inhaled air.

There is no real quantitative analysis of the amount of oxygen present in the tissue fluid. The analysis of the various body secretions does not mean the same as an analysis of the tissue fluid. There are some authoritative investigators who still believe in the storage of oxygen, intramolecularly or extramolecularly, in loose chemical combination or in physical solution. There are other considerations to be solved; but I shall not attempt to discuss any of these points. However, I wish to call attention to one factor which has not yet been taken properly into account, or at least not from the proper point of view, as it seems to me, and that is that element in biology which I designated, a decade ago, as the factor of safety.

All experiments under consideration start implicitly from the point of view that the oxygen content in the air is the physiologic amount sufficient for the maintenance of the life of the animal under normal conditions. But is this entire amount also indispensable? It has been established by many experiments that the

* From the Department of Physiology and Pharmacology of the Rockefeller Institute for Medical Research.

1. Benedict and Higgins: Effects on Men at Rest of Breathing Oxygen-Rich Gas Mixtures, *Am. Jour. Physiol.*, 1911, **28**, 1.

2. Krogh, August: The Respiratory Exchange in Animals and Man, London, Longmans, Green & Co., 1911.

organism remains in a normal condition even if the partial pressure of the oxygen in the air amounts to only 12 or 13 per cent. What is the significance of the considerable surplus of oxygen that the animal is normally breathing? From my point of view it presents a factor of safety in the function of respiration, a factor which I have shown to exist in most of the functions of the animal body.³ I shall not attempt to discuss again this problem in its details. But it will not be amiss to give an example taken from every day life which will suffice to illustrate the meaning of the underlying principle of the factors of safety and the simplicity of its requirements. Let us take, for instance, two houses of about the same size, of which we have good reasons to expect that each house uses up the same amount of coal in a given time. But while the occupant of one house, who may possess larger means and a greater foresight, lays in a larger supply of coal, let us say, twenty tons at a time, we find the occupant of the other house, perhaps because of lack of means or the necessary foresight, provides himself with only one ton of coal at a time. The difference in the fate between the occupants of the two houses becomes strikingly evident when unexpectedly necessities arise for greater consumption of coal, and when, furthermore, these necessities set in under circumstances of time and place that make coal difficult to obtain.

Life is characterized by the instability and variability of its states, and all its functions must therefore be so arranged as to be capable of being ready to meet the highest possible demands. The function of respiration has for its object chiefly the provision of the organism with oxygen, properly and safely. While, as far as the muscle system is concerned, the provision of the respiratory function with factors of safety is under normal conditions surely of a satisfactory extent, because, as we know, the muscle is capable of continuing its contractions even if the oxygen tension of its surrounding atmosphere is fairly low, it is different with the central nervous system. Here we know that a comparatively slight reduction in the oxygen tension interferes profoundly with the activities of this system. Are we justified in assuming that the addition of 7 or 8 per cent. of oxygen is just the limit of the factors of safety which the respiratory function may need and use under all conditions? Furthermore, in breathing normal atmospheric air, what is the fate of the 7 or 8 per cent. of oxygen present in the normal air above the amount actually indispensable for maintenance of life? Is this oxygen stored away somewhere and in some manner, to be ready for immediate use when needed, or is it normally unabsorbed and got rid of in the same manner as is assumed to be the case when 20 or 30 per cent. of oxygen is artificially added to the atmospheric air?

THE THERAPEUTIC ASPECT

The extensive experiments on which the prevailing view has been founded, namely, that the addition of oxygen to the atmospheric air does not affect the normal metabolism, were made on normal resting individuals. But the processes of life, even in the normal individual, and even while at rest, cannot be represented by a straight line. The processes vary continuously within certain limits; that is life. These variations in the demands have to be met by variations in

the supplies which have to be ready in store to the extent corresponding to the maximum limits of the demands of normal life. The 7 or 8 per cent. surplus of oxygen in the atmospheric air is apparently sufficient to meet the maximum demands of the respiratory function of the normal individual when at rest. But would it be sufficient to cover the demands when the individual is engaged in hard work? We know that unusual physical effort leads to shortness of breath, to dyspnea. Could this not be remedied by adding oxygen to the atmospheric air which the hard-working person has to respire? This is indeed the case, a fact which has been discovered and established by Leonard Hill⁴ and his co-workers. Hill and Flack⁴ found that inhalation of oxygen makes running up and down stairs easier, can be accomplished in a shorter time, relieves the feeling of dyspnea, and restores strikingly the vigor after fatigue from boxing, etc. They believe that the fatigue which follows an athletic feat is cardiac in origin and due to want of oxygen. Haldane,⁵ whose great merits in the elucidation of the physiologic relations of carbon dioxide to the function of respiration are well known, was inclined to explain Hill's observation as a result of the deep breathing which is apt to occur in persons to whom oxygen is administered. Haldane's view was later refuted by new experiments, carried out by Hill and Mackenzie,⁶ which brought new evidence that the favorable effects that they have obtained were indeed due to the inhalation of oxygen.

From the observations of Hill we learn that the addition of oxygen to atmospheric air exerts a favorable influence under conditions of greater bodily activities. Is inhalation of air enriched by oxygen also capable of exerting a favorable influence when the body is in a condition of rest but is undergoing pathologic processes? In other words, is there any evidence that inhalation of oxygen is capable of exerting a therapeutic effect? This question concerns a wider field than I intend to cover in this paper. There is no doubt now as to the therapeutic value of inhalation of air-oxygen mixtures in cases of poisoning by gases that affect the normal condition of the hemoglobin. But I wish to confine my remarks to the use of oxygen in certain types of diseases. Here we encounter a very unsatisfactory situation. On one hand, hardly a patient, sick with a respiratory or cardiac disease, will be permitted by the physician in attendance to die without trying oxygen inhalation. On the other hand, not many practitioners will readily admit that oxygen is doing much good in these cases.

Two factors are at the bottom of the skeptical attitude of physicians toward the value of oxygen as a therapeutic agent. In the first place, many clinicians are influenced by the view entertained by the great majority of physiologists that the addition of oxygen to the inhaled air is incapable of exerting a physiologic influence, that it does not affect the metabolism, and that the added oxygen returns unabsorbed. Furthermore, many clinicians and pharmacologists are still under the influence of the teaching that there is no fundamental difference between physiologic and pathologic processes. In this connection, the present attitude of the physiologist Haldane is very instructive.

4. Hill and Flack: The Influence of Oxygen on Athletes, 1909, **38**, Jour. Physiol., **28**.

5. Haldane, J. S.: The Effects of Previous Forced Breathing and Oxygen Inhalation on the Distress Caused by Muscular Work, Jour. Physiol., 1909-1910, **39**, Proc. Physiol. Soc., London, **1**.

6. Hill and Mackenzie: Jour. Physiol., 1909-1910, **39**, Proc. Physiol. Soc., **33**.

3. Meltzer, S. J.: The Factors of Safety in Animal Structure and Animal Economy, THE JOURNAL A. M. A., Feb. 2, 1907, p. 655.

As stated above, Haldane doubted that the favorable influence which, according to Hill, the administration of oxygen exerts on the work of athletes is due to oxygen. Very recently, however, Haldane⁷ came out strongly for the administration of oxygen in inflammatory conditions of the lungs. He says:

It may be argued that such measures as the administration of oxygen are at the best only palliative and of no use, since they do not remove the cause of the pathological conditions. As a physiologist, I cannot for a moment agree with this reasoning. The living body is no machine, but constantly tending to maintain or to revert to the normal, and the respite afforded by such measures as the temporary administration of oxygen is not wasted, but utilized for recuperation.

The second, and probably the more influential factor, is the actual fact that practitioners rarely see any favorable effect that may have been brought about by the administration of oxygen. But the general conclusion drawn from this fact, namely, that the inhalation of oxygen is incapable of exerting a favorable influence in pathologic conditions, is unjustifiable. The failure to see such an influence is probably due essentially to the inefficient method of administration. In most instances oxygen is given in a weak current through a funnel which is kept an inch or more from the mouth of the patient. Under these conditions we can hardly speak of "inhalation of oxygen." The atmospheric air which the patient actually inhales is probably not richer by more than 2 per cent. of oxygen, if by so much. On the other hand, the funnel may be instrumental in making the inspired air richer in carbon dioxide and surely makes the air over the face warmer, an unpleasant sensation to the patient, who prefers to be fanned and cooled off. Therefore, we often see the patient pushing the funnel away or turning the head away from it.

THE AUTHOR'S APPARATUS AND EXPERIENCE IN THE USE OF IT

My personal experience dates back about two years. I was called up one night by a very unhappy mother who told me that her only son was dying and begged me to come over. The athletic young man of 25 years was sick with pneumonia, Type II. I arrived at about 2 a. m. and found several physicians around the patient, who was unconscious and deeply cyanotic. Respiration was rapid and very shallow. He had no corneal reflex and there was a thready pulse of about 190 per minute. The patient was apparently dying and the physicians expected death to take place within the next ten or fifteen minutes. Nurses were administering oxygen in the usual manner, that is, through a paper funnel, kept at some distance, the gas bubbling through a wash bottle at a moderate pace. I disconnected the rubber tube from the foot bellows of my pharyngeal insufflation apparatus⁸ that I brought along with me, and connected it with an oxygen cylinder. I then inserted the pharyngeal tube in the mouth (not in the pharynx), turned on the oxygen and started working the respiratory valve. Within a short time after the beginning of the oxygen insufflation in the new manner, the cyanosis disappeared and the face of the patient became actually pink. Several minutes after the discontinuance of the insufflation, the cyano-

sis began to reappear gradually. In the course of the next five hours the experiment was repeated numerous times and invariably with the same result, that is, the cyanosis disappeared promptly during the insufflation of oxygen and reappeared several minutes after cessation of the insufflation. There was no perceptibly favorable influence on the other symptoms of the patient, except perhaps on the pulse. In the morning hours it came down to 180 per minute and was perhaps slightly fuller. At any rate, in the bedside parlance, it could be honestly stated that "the patient was holding his own." The waste of the gas was considerable. A tank of oxygen was used up in a short time. About 7:30 in the morning the supply of oxygen of the neighboring drug stores became exhausted, and it took some time before another tank of oxygen could be procured. Five minutes after the last insufflation had to be discontinued the heart stopped suddenly. The resumption of the insufflation of oxygen about ten minutes later had no effect whatever.

This patient was not saved; but nobody could have expected it when beginning treatment at that terminal stage. His life, however, seemed to have been prolonged, and it is impossible to state how much longer death would have been deferred, if the supply of oxygen had not given out. But this is an insignificant issue compared with the fact that the insufflation exerted an unmistakable effect on the profound cyanosis. Cyanosis, of whatever origin and nature, is a sure evidence that the respiratory function is profoundly disturbed. In the present case the cyanosis promptly disappeared on the administration of oxygen by the new method. Although we are dealing with only one case, each instance in this case in which the cyanosis disappeared on the insufflation of oxygen and reappeared on stopping the insufflation presents a complete experiment, an experiment that we were able to repeat at will. We made more than a dozen such experiments, and the results were invariably the same. These experiments permit at least the provisional conclusion that the insufflation of oxygen by the method employed in this case affects favorably the function of respiration when it is pathologically profoundly disturbed.

In the case here mentioned the apparatus employed was provisionally arranged and applied in great haste without consideration for the great waste of oxygen and other shortcomings. After observing the results, which seemed to be very encouraging, I devised a special apparatus for our purpose which is simple, inexpensive and works very satisfactorily.

The thick walled rubber tubing that is connected with an oxygen tank terminates in a strong rubber bag which, at its distal end, is connected with the proximal end of the respiratory valve.⁹ The distal end of the last named device is connected by means of a short piece of rubber tubing with a flat metal tube which we may designate as a "hollow tongue depressor." If the ring of the respiratory valve is kept in the inspiratory position (right side), when the oxygen is turned on, the gas streams through the tube into the bag and from there escapes through the respiratory valve and the tongue depressor. If the ring is kept in the inspiratory position (left side) the oxygen cannot pass through the respiratory valve, and accumulates within the bag. The accompanying illustration shows the last mentioned position.

7. Haldane: Brit. Med. Jour., Feb. 10, 1917. Benedict and Higgins (Note 1).

8. Meltzer, S. J.: History and Analysis of Methods of Resuscitation, Med. Rec., New York, July 7, 1917; Pharyngeal Insufflation, a Simple Method of Artificial Respiration, THE JOURNAL A. M. A., May 11, 1912, p. 1413; Simple Devices for Effective Artificial Respiration in Emergencies, *ibid.*, May 10, 1913, p. 1407.

9. A description of this device is contained in the Medical Record, New York, July 7, 1917.

The tongue depressor should be inserted in the mouth not much farther than the middle of the tongue, so that, if the patient is conscious, the presence of the depressor may cause no gagging or other discomforts. The lips should be kept closed. The ring should be moved from left to right and from right to left (a respiratory circle) about twelve times per minute. The oxygen should be turned on slowly, and the velocity of its escape should be controlled, so that it does not cause an overdistention of the bag during the expiratory pause. The turning of the ring to the right should be done slowly, so that the inspiration may develop gradually; the turning to the left is preferably done abruptly. The expiratory air escapes during the closure of the valve through the nose and through the aperture that appears above the closed valve when the ring occupies an expiratory position. It is advisable to time the inspiratory insufflation synchronously with the inspirations of the patient. However, I found that after a while the respiratory phases of the patient become involuntarily adapted to the phases of the insufflation.

I have tested on myself the action of insufflation of oxygen by means of this apparatus. When the insufflation is carried on under moderate pressure, there are no unpleasant sensations whatever. When it is done under too much pressure, the surplus of oxygen escapes through the nose and never enters the esophagus; but it causes some unpleasant sensations which conscious patients will probably not be willing to stand for any length of time.

My chest was examined by auscultation while I was receiving oxygen insufflation. It was found that each insufflation produced a distinct inspiratory blowing sound which was distinctly recognized even while I was holding my breath. It seemed, further, that the oxygen was capable of entering my lungs even when I was endeavoring to keep the glottis in a state of adduction. Some other objective and subjective effects of the insufflation experiments on myself will be mentioned later.

The results of the observations made by the method of auscultation induced me to make a few experiments on animals. In deeply anesthetized cats, with the thorax split transversely, the insufflation by means of the apparatus was sufficient to distend the lungs moderately with each insufflation, even when the "tongue depressor" was inserted in the mouth, as in the human being, not farther than the middle of the tongue. It appeared, however, that when the tongue depressor was kept at that position, life could not be kept up indefinitely. When the tongue depressor was inserted in the pharynx, the oxygen entered readily the gastrointestinal canal, which had to be prevented by keeping the abdomen compressed. With this precaution the artificial respiration was excellent and the animals

remained in good condition. But in this arrangement the method is identical with the method of intrapharyngeal insufflation that I have described elsewhere, and is not applicable to conscious patients.

Dr. A. L. Meyer of our laboratory performed on himself a couple of experiments with the apparatus. After having been insufflated for about eight minutes, he analyzed his expiratory air at the end of the insufflations and found it to consist of nearly pure oxygen. The nitrogen of the atmospheric air was displaced by the oxygen.

The foregoing observations demonstrate that by using the "apparatus for oral insufflation of oxygen" under moderate pressure, oxygen undoubtedly enters the lungs, assists in distending them during inspiration, and displaces largely the nitrogen of the "dead space." The assistance that it renders to the inspiration ought to be of special value when the respiration of the patient is very shallow. The rhythmic character of the insufflation is, on the other hand, of value, as it does away with the resistance which the pressure of the continuous insufflation undoubtedly offers to the expiration, especially when, owing to the low vitality of the patient, the expiratory efforts fail to get

succor from the activity of the expiratory muscles. Haldane administers the oxygen by means of a mask. The interruption of the continuous stream of oxygen in his method depends on the force of the expiration, which is expected to close a mica valve and, at the same time, prevents the entrance of the expiratory air into the bag that stores up the oxygen. I developed my simple apparatus about eighteen months previous to the appearance of the communication of Haldane. I then gave up the use of the mask even in my pharyngeal apparatus, mainly because it is liable to drive

some deleterious material that may be present in the nasal and the postnasal cavities into the trachea and the lungs, there causing an infectious inflammation. Hill and Mackenzie⁶ stated that in giving oxygen during athletic work they did not use the mask, because it increases the dead space. In dealing with sick persons some other points must be regarded as more important. Either the patient is already unconscious, in which case the respiration will be shallow and the expiratory force will be insufficient to close the valves and overcome the pressure within the bag. Or the patient is still conscious and he will surely feel the face piece, which fits over mouth and nose and is kept in position by an elastic strap, as a great inconvenience, and will not tolerate it. Haldane says he had but few opportunities to give his method a practical trial, but he reports that in a case of valvular disease he has seen the cyanosis "clear up at once on the administration of oxygen." There is some other difference between Haldane's method and mine. By Haldane's arrangement the oxygen is accumulated in a bag of thin vul-



The oral insufflation apparatus. The rubber tubing which is connected with an oxygen tank terminates at its distal end in a strong rubber bag which in turn is connected with the "respiratory valve." The ring of this device occupies in this illustration an expiratory position; hence the distention of the bag. Above the ring an aperture can be seen, which appears only when the valve is closed (expiratory position). The respiratory valve is connected at its distal end by means of a short piece of rubber tubing with the hollow "tongue depressor." The T tube is here unessential.

canized rubber. This oxygen enters, then, through mouth and nose, under comparatively low pressure, and it was not established whether the stream enters the lungs with any force capable of causing any degree of artificial inspiration. The bag in our apparatus, on the other hand, has thick walls and drives out the oxygen under a pressure which is sufficient, as we have previously shown, to cause a deeper inspiration and as a consequence also a stronger expiration. Haldane says that he knows from experiments on himself and others that the immediate effect of suddenly giving an abundance of oxygen may sometimes be unpleasant. I have taken oxygen many times by means of my apparatus, and sometimes as long as eighty minutes, and never felt any unpleasantness from it. Under stronger pressure and prolonged insufflation there might arise a sensation of dryness. This can be easily remedied by interpolating between the oxygen tank and the bag a wash bottle containing a Ringer solution. I agree, however, with Haldane that the oxygen should be turned on slowly.

Not being any longer in private and hospital practice, I am not in the favorable situation to have many opportunities for testing personally the value of the method. I am, nevertheless, in a position to report encouraging and instructive results obtained in a few cases, three of which were observed at the Rockefeller Hospital. I have to thank Dr. Chickering for the details in these cases. The first case was a most gratifying one. One forenoon in November, 1916, Dr. Cole, the director of the hospital, telephoned to our laboratory asking me to come over and administer oxygen with my apparatus to a pneumonia patient. To my reply that I would be over in half an hour, as I had to finish an experiment, Dr. Cole remarked that in all probability it would then be too late. I went over immediately and started the administration of oxygen by means of the oral insufflation. That patient recovered. Concerning the details of that case I shall quote Dr. Chickering.

REPORT OF CASES

CASE 1.—The patient came in on the second day of his disease having signs of consolidation of both lower lobes of the lungs. . . . A Type II pneumococcus was recovered from the sputum. . . . He was treated with ethyl-hydrocuprein (optochin) on the third day of his disease, and this treatment was continued during the fourth, fifth, sixth and seventh days . . . partly by mouth and partly intramuscularly. On the fourth day of his disease the patient appeared extremely ill, temperature being 103.4 F., pulse 152, and respiration 40. He was delirious, color was ashy gray, lips and finger tips very cyanotic and tracheal râles were marked. At 10:45 a. m. the patient was given oxygen according to Dr. Meltzer's method intermittently for about two hours. While the oxygen was being given, his color changed surprisingly; his lips and ears lost their cyanotic color and took on a pinkish tint, and his general condition seemed decidedly improved. The following morning the patient's temperature and pulse were lower, 100.5 F., pulse 104 and the respirations 32. His temperature gradually came down by lysis to normal on the twelfth day of his disease. Convalescence was uninterrupted, no complications developing except a moderate amount of sterile pleural effusion which gradually cleared up without aspiration.

CASE 2.—The patient was admitted, Feb. 19, 1917, and the oxygen treatment was begun on the twelfth day of the disease, one hour before death, February 28. The patient received ethyl-hydrocuprein treatment every day from the fourth day of his disease to the twelfth, the day of his death. On the day of his death, his blood culture contained innumerable colonies of pneumococci of Type II. "On the afternoon of

his death his color suddenly changed . . . and severe cyanosis developed." Oxygen treatment was started. "While the oxygen was being administered, patient's cyanosis became less intense, but as soon as the oxygen was stopped cyanosis rapidly returned."

CASE 3.—The patient was admitted to the hospital, Feb. 25, 1917, on the first day of the disease. "The next morning the whole right chest was involved posteriorly, and on the following day signs appeared anteriorly. At the same time the left chest became filled with fine moist râles. From the sputum an atypical Type II pneumococcus was obtained. Blood culture was sterile, blood count 29,000. . . . On the fourth day of the disease the signs became more marked for the left lower lobe; the temperature rose to 104.5 F. and the pulse to 140. The patient became pale and cyanotic. The extremities were cold and expirations labored and moist. Ethyl-hydrocuprein was begun at 2 p. m., and oxygen at 3 p. m.¹⁰ . . . During the afternoon the pulse rate gradually increased to 142 (8 p. m.). The semicomatose, delirious condition deepened into unconsciousness about 7 p. m. From then on, the color could be maintained with oxygen, but the pulse quality became poorer; respirations increased from 44 to 60, and the patient's throat gradually filled with mucus. There was dulness over the left lower lobe, with râles throughout the left chest. From 2 a. m. to 6 a. m., the time of death, it was necessary to use oxygen continually in order to maintain respiration. If the oxygen was stopped for a few minutes respiration became more shallow and slow, and a dull blue flush appeared on face. This immediately disappeared with more oxygen. Gradually her color and respiration failed in spite of continual oxygen and the pulse, which was good almost to the end, became more feeble and gradually less rapid, until it failed entirely at 6 a. m."

COMMENT

In these three cases the pneumonia was due to pneumococcus of Type II, for which an efficient antiserum has not yet been developed. In all three cases the oxygen treatment was instituted very late, when the condition of the patient already appeared to be quite hopeless. Nevertheless in all three cases the oxygen insufflation manifested the tendency to exert a favorable influence. Even in the second case, in which the oxygen treatment began only one hour before death, the cyanosis of the patient became less intense while the oxygen was administered, to return rapidly when the oxygen was discontinued. This favorable effect on the cyanosis was still more striking in the other two cases, in which each short series of insufflations produced a change of color which outlasted the insufflation by shorter or longer periods. In the first case the face had a leaden, ashy gray color which is characteristic for oxygen deficiency.¹¹ This color disappeared quite soon after I started the insufflation, and the face gradually assumed rather a pinkish appearance. When I first saw the patient I understood why Dr. Cole thought that the administration of oxygen after half an hour might prove to be too late. I had little hope that the administration of oxygen would save the life of the patient. He was unconscious, had no corneal or lid reflex, the pulse was rapid, small, with very little tension, and the tracheal râles had the death sound. Nevertheless, that patient recovered. The third patient, who received oxygen insufflation for about fifteen hours, died; the pneumonia in this case was very extensive; it spread over both lungs. But here again, besides the pronounced action on the cyanosis, there seems no doubt that the oxygen insufflation prolonged the patient's life. We may be, in fact, we ought to be, optimistic

10. In the first few hours the oxygen was administered without expiratory interruptions.

11. Haldane: Brit. Med. Jour., Feb. 10, 1917.

enough to assume that in conjunction with the use of some other efficient or even only semiefficient remedies, early insufflation of oxygen may offer a chance even to patients of this type.

The third patient has taught another favorable lesson, namely, that the oral insufflation of oxygen may assist in maintaining respiration. In the last few hours of her life, when the insufflation was stopped, the respiration became shallow and slow, and a dull blue flush appeared on her face which disappeared as soon as the oral insufflation was begun again. It acted apparently like artificial respiration. This fact reminds me of the statements previously made with reference to the auscultation of my chest while receiving oral insufflation, and to the behavior of the lungs in animals under the same condition.

I shall record further observations made by Dr. Victor Meltzer on a woman, aged 60, with marked arteriosclerosis and hypertension. For the last two years she was most of the time subject to cardiac dyspnea and had frequent and severe attacks of pulmonary edema. In the last two months of her life, oxygen was administered to her by means of the apparatus for oral insufflation during the attacks of dyspnea as well as those of pulmonary edema. It proved to be of great value, and afforded the patient great relief. When administered at the beginning of an attack of edema, not infrequently it prevented its full development. Among the most noticeable effects were the rapid disappearance of cyanosis.

Before concluding, I shall record briefly two observations made on myself. For experimental purposes I had oxygen administered to me several times by means of oral insufflation for periods lasting between thirty and eighty minutes. Objectively I can state that the insufflation brought high color into my face, which was noticed by persons who did not know of my experiment, and which did not leave me for several hours. Subjectively I found that it removed the sensation of fatigue and that I felt stimulated for the rest of the day. Of course, the latter fact might not have been due to the insufflation of oxygen. Not infrequently a successful experiment may bring about similar results. At any rate, both facts concern the problem of the possibility of a physiologic action of oxygen when administered by rhythmic oral insufflation, a problem which I shall not discuss here.

SUMMARY AND CONCLUSIONS

In four pathologic cases it was definitely established that the rhythmic oral insufflation of oxygen reduced or removed promptly the cyanosis, and in three of the cases the patient turned even pinkish shortly after the insufflation was begun. Without doubt these prompt effects must be ascribed in the first place directly to the action of oxygen. But it must be admitted that the rhythmic insufflation, since it is capable of assisting in the maintenance of the respiration, may be helpful in the ventilation of the lungs and thus helpful also in the removal of some of the accumulated carbon dioxide. The favorable action of the insufflated oxygen may be explained in various ways. It may simply be due to the presence of the oxygen in the blood serum in greater quantity, as a consequence of the greater oxygen tension in the alveolar air. It may be further assumed that in certain pathologic conditions the hemoglobin is not saturated with oxygen and therefore takes it up readily from the serum, and furthermore, in certain stages of the

disease the oxygen thus taken up may be retained by the hemoglobin for shorter or longer periods even after the oxygen tension in the alveolar air and in the serum is again reduced. The same may perhaps be said of the other vital body cells, the nerve cells of the medulla and the cells of the circulatory neuromuscular apparatus. In the course of a disease either the cells are gradually receiving less and less oxygen, or they gradually lose the capacity for storing up oxygen, or both. There are other possibilities; but I shall not merely speculate as to which of these possible factors were the effective elements in the observations previously mentioned. But I shall point out the following facts. In one case of pneumonia the cyanosis returned immediately when the oxygen insufflation was stopped. In this case surely the vital cells had no longer any storing capacity. This patient died one hour after the insufflation was installed. In the case of another patient the insufflation had at first a marked after-effect when the insufflation was discontinued, but gradually this storing capacity disappeared and the patient was kept alive for several hours longer by continuing the insufflation without intermissions. In this patient, when the insufflation was first begun, some degree of storing capacity of the vital cells for oxygen was still present, but it was on its down-hill course, which the oxygen insufflation could neither revert nor stay. In my first patient each series of insufflations was followed by a period of freedom from cyanosis. These periods were short, but for five hours the periods did not become shorter; "the patient held his own," and he died suddenly when the period before oxygen could be again administered became too long. In this patient the down-hill course was stayed; whether it could have been reverted by further administration of properly timed insufflations of oxygen was at that time more than doubtful. But the condition of the fourth patient, who actually recovered, was, when first seen, as grave as that of the last patient. Nevertheless, the rhythmic oral insufflation of oxygen not only stayed the down-hill course, but undoubtedly assisted in reverting it to normal.

To recapitulate briefly: Four cases of pneumonia due to pneumococcus Type II were treated by oral insufflation of oxygen. In all cases the treatment began when the condition of the patients was already very grave and apparently hopeless. In all cases the cyanosis improved soon after the insufflation was started. In one case the cyanosis returned immediately after the insufflation was stopped. There was apparently no more storing capacity whatsoever for oxygen. That patient died one hour after the beginning of the treatment. In the second case there was at the beginning a definite storing capacity for oxygen which, however, gradually disappeared. The life of that patient was then kept up for several hours by continually administering the (rhythmic) insufflation of oxygen. In a third case the storing capacity was small but remained unchanged for five hours. The patient died during a prolonged period when oxygen could not be readily procured. The fourth case, which practically was as hopeless as any of the foregoing, showed a definite reversion in the direction of recovery about two hours after the treatment by means of oral insufflation of oxygen was begun.

It seems justifiable to assume that the period of definite cyanosis is preceded by a more or less long period during which the capacities for taking up oxygen, and storing it, by the vital cells, are gradually

getting impaired; and it is further justifiable to assume that during early pathologic periods the insufflation of oxygen may be capable of restoring these capacities to their normal extent more frequently and efficiently than during later stages. The early insufflation might thus be the means of preventing the disease from reaching the stage of cyanosis. In other words, early administration of oral insufflation in pneumonia and similar diseases may prove to be a real therapeutic measure. In normal conditions the individual inhales air which contains about 30 per cent. oxygen above the physiologic need. This surplus presents the factor of safety for the healthy, moderately active individual. During sickness that gradually leads to respiratory insufficiency, the loss of the capacity of the vital body cells for taking up and storing oxygen, the factors of safety for this vital gas ought to be then considerably larger than in normal conditions. It is true that, experimentally, we shall be the losers. If the patient recovers under early administration of oxygen insufflation, we shall in most cases be deprived of the absolute evidence that the recovery was actually due to the treatment. But we must give the benefit of doubt to the patient.

I recommend, therefore, that in pulmonary and cardiac disease oxygen should be administered by means of the oral insufflation several times a day at an early period when there is not yet an urgent necessity for it. Oxygen should not be considered as a terminal measure. On the other hand, it ought to be emphasized that oxygen should not be considered as a specific, and its use should by no means eliminate the use of other promising remedies. On the contrary, oxygen may make the body cells more amenable to the curative action of other therapeutic agents. Furthermore, the oral insufflations offer a chance to other therapeutic agents to develop their favorable action.

THE PLACE OF INFANT WELFARE IN PUBLIC HEALTH INSTRUCTION *

J. H. MASON KNOX, JR., PH.D., M.D.

Associate in Clinical Pediatrics, Johns Hopkins University; Physician-in-Charge, the Thomas Wilson Sanitarium; Medical Director, Babies' Milk Fund Association
BALTIMORE

Hygiene has been defined as that department of knowledge which concerns the preservation of health. It not only includes the various branches of the so-called medical sciences, but lays tribute on any knowledge or practice which may be serviceable in combating disease and in promoting health.

It is the fundamental duty of all governments to provide for the safety of their people, even at the sacrifice of individual right, liberty and property. This function is exercised under the common law as a police power, and implies the right of a government to secure for its subjects healthful living conditions. Under the government of the United States, the authority for this sanitary provision is vested in the separate states, rather than in the federal government. The latter exercises its right of control only in exceptional cases, namely, in interstate traffic, in cases of threatened general epidemics, and in maintaining advisory authority over quarantine. This federal con-

trol is exercised through the Public Health Service, a branch of the Treasury Department, while supervision over food and drugs is under the control of the Department of Agriculture; whereas the vital statistics, which form so fundamental a part of all public health work, is a division of the Bureau of the Census of the Department of Commerce.

Prior to the nineteenth century, boards of health were organized in the larger cities along the Atlantic coast, but little was done except when outbreaks of severe epidemics required that unusual steps be taken to control them. Later, local boards of health were formed in other inland communities; but the first state board of health was organized in Massachusetts, in 1869. Since then, in practically all the states, some duly authorized body has had charge of matters pertaining to public health. In many states there are laboratories where various examinations are made for physicians practicing in the state. In the laboratories of other states valuable research work is being carried on.

The functions of the state boards of health have been developed in a haphazard rather than an orderly fashion. Each state has gone its own way, often regardless of the experience of other states and countries, and much time, money and labor have been wasted because of lack of cooperation. This is in no small measure due to the domination of politics and to the fact that there exists in the United States a serious lack of trained and experienced hygienists.

To supply this need for competent workers in public health, a number of medical schools are offering more or less extensive courses in preventive medicine, and there are a few thoroughly equipped institutes of hygiene.

In connection with ten medical schools, at present, graduate courses in public health have been established. Seven of these schools give the degree of Doctor of Public Health, three after a two years' course, and four after a one year course. The degree of Certified Sanitarian is given by one university, after a one year course, to graduates of arts and sciences. The degree of Master of Public Health is conferred by two medical schools, and the degree of Master of Arts of Public Health, or Master of Science of Public Health, is given by three other universities, and the degree of Graduate of Public Health by one.

The subjects considered in one of the more complete courses in public health include preventive medicine and sanitary science, consisting of epidemiology and tropical medicine; personal hygiene, having to do with choice of foods, ventilation, exercise, sleep, etc.; industrial hygiene; public health administration; sanitary biology and chemistry; communicable diseases; sanitary engineering; demography; eugenics; infant mortality; school hygiene, and tuberculosis and venereal prophylaxis.

Even such a cursory summary of information to be obtained at a well established school of hygiene must convince physicians and intelligent laymen of the value to the future well-being of the country of the propagation of such knowledge; and all physicians will admit that but a small proportion of this knowledge, in its relation to public health, is given in the ordinary medical school curriculum. In other words, it has become evident that preventive medicine is a distinct, specialized science, offering unusual opportunities of service to those well equipped students who care to pursue it.

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

When we consider that there are constantly about 3,000,000 people sick in the United States, involving an annual financial loss of more than \$500,000,000, and that a considerable proportion of this illness is preventable, it is readily understood that preventive medicine offers a field almost unique in its service to humanity.

It is the purpose of this paper to present briefly the importance of infant welfare work in any properly considered and thorough instruction in public hygiene.

Several general facts in reference to infant mortality would seem, of necessity, to place infant welfare work, that is, all efforts to reduce infant illness and death, in the van of any movement having to do with public health. These facts are briefly as follows:

Eighteen per cent. of the total mortality of all ages occurs under 1 year. Infant mortality can be reduced by known methods, from one death within the year, to every five babies born (which is the rate in many portions of the country), to one death in every twenty babies born, which is the rate under satisfactory hygienic conditions, and which means the saving each year in the whole country of approximately 200,000 lives, a larger number than would be saved by the complete eradication of tuberculosis. If the capitalized value to the state of an infant life is, as has been claimed, \$5,000, the loss of wealth represented by this human wastage can be roughly estimated. It is to be emphasized, too, that babies who come healthily through their first year look forward to a much longer life expectancy than do the cured patients from any illness.

As has been well said by Dr. Woodward of Washington:

The day has gone by when the public health officer can look on the abating of nuisances and the control of preventable diseases as the chief part of his duty. Infant mortality presents as great a problem for the health officer as does smallpox, scarlet fever, infantile paralysis, school hygiene or anything else.

In presenting the subject of infant welfare to students of hygiene, three distinct lines of approach should be followed. In the first place, infant welfare must be studied in relation to other branches of hygiene, of which it is an integral part. Therefore, much that should be taught in the general curriculum of such a school requires no duplication in presenting the subject of infant welfare, except that the relation of the latter to the subject considered must be emphasized. For it is true that nothing is done in the community to improve health conditions in general which does not help the baby. Thus, for example, vital statistics, particularly birth registration, form the foundation of any intelligent infant welfare work. These subjects would, of course, be presented in relation to other matters of public health. The same can be said of general sanitation, housing, water supply, milk supply, and of industrial occupations and venereal disease in their relation to the health of the infant. Secondly, measures already in operation should be thoroughly studied and compared, and those best suited to any given community should be determined. For example, in some cities distribution of modified milk, or the encouraging of day nurseries, or the licensing of midwives, may be distinctly advantageous, whereas in other cities they might be harmful. Thirdly, not only should we "prove all things and hold fast to that which is good," but an institute of hygiene offers incomparable opportunities for ascer-

taining new facts which should lead directly to the saving of infant life.

In suggesting a brief outline for the study of infant welfare, I avail myself, among other sources, of the *Transactions* of the Association for the Study and Prevention of Infant Mortality, and of many valuable suggestions of Miss Knipp, its executive secretary.

It would seem that infant welfare falls naturally into two main divisions, one of which has to do with having better babies born. It presents as an ideal that every conception should result in a healthy baby. This leads at once to a discussion of the science of genetics and eugenics. Here one must tread cautiously, as there is much in theory which cannot be put advantageously into practice. It would seem, however, that the reasons for the prevention of the marriages of the notoriously unfit, and of the segregation or the unsexing of such persons, should be presented from the standpoint of the baby's welfare. Again, the effect of acute and chronic alcoholism, or of the abuse of other habit-forming drugs, in one or both parents, on the well-being of the child should be discussed from a thoroughly scientific point of view. The whole question of syphilis should be studied with special reference to stillbirths, premature births, and lowered infant vitality. The effect of tuberculosis in parents on the vigor of the offspring must be presented; likewise the effect of factory work, or hard manual occupation, on the part of the pregnant woman.

Then, in connection with the obstetric department, steps should be taken to bring about more skilful, aseptic obstetric practice. The question of training or abolishing midwives in this country, the early registering of expectant women at the obstetric clinics, thorough prenatal care, adequate obstetric service in rural districts, the establishment of obstetric substations under the control of health departments: these and similar subjects having to do with getting babies well born are parts of infant welfare.

A second division of the subject would consist of a study of the causes of illness and death during the first year. These divide themselves into several important groups, which should be discussed separately:

1. *Congenital Debility, Prematurity, etc.*—It has been long known that a third of the deaths in the first year occur in the first month, many of them in the first week of life. The reasons for this are not thoroughly clear, but the data should be collected and carefully analyzed.

2. *Digestive Diseases.*—It is in this group that nearly all the progress made in recent years, in reducing infant mortality, has taken place. The various plans carried out in this country and abroad which have resulted in the reduction of disease and death from digestive disturbances should be presented from a historical point of view, and those means which are most efficient and best applicable to our own conditions should be pointed out.

3. *Diseases of the Respiratory Tract.*—This group of ailments presents now a danger to the infant practically equal with the diseases of the intestinal tract; but little light has been thrown on the subject, and much of our knowledge of the spread of pulmonary infections has not been made use of in pediatrics.

4. *Acute Infections.*—Fortunately, the baby leads a partially isolated life. It is peculiarly susceptible, however, to infections, and should be protected from them. When infectious diseases are controlled among

schoolchildren, through proper sanitation and health administration, the infant will be the gainer.

Other conditions, resulting in the destruction of infant life, including deformities or defects in development, are little understood, but are almost negligible compared to the loss of life from the conditions already referred to.

Another group of babies among which there is a high mortality, and which require unprejudiced, tactful treatment, are the babies at present reared in institutions, many of whom are of illegitimate birth. The reception of these children by institutions began in the seventeenth century, under the advice of St. Vincent de Paul. This practice has tended to increase both illegitimacy and infant mortality. No better illustration could be given of the fatal partnership of good intentions and wrong methods, and it is on questions such as this that the impartial balanced judgment of an institution devoted to scientific hygiene can be of incalculable value. It is important to show to future health officers that immorality is checked, the mother's self-respect restored, and many sturdy infant lives saved, by keeping mother and baby together during the early critical months, and in helping her to secure remunerative occupation amid sympathetic surroundings. We need unprejudiced investigation of the mental capacity of many of these unmarried mothers. We need, too, a light on the notoriously large mortality in institutions, and directions as to the best methods of reducing it, or of substituting foster homes for children bereft of parents.

A large number of other topics must be considered in any complete outline of courses on infant welfare. Some of them are:

1. Study of the milk supply of a community in relation to infant welfare. This could be carried out in connection with other courses in sanitary milk production.

2. Maternal nursing, in its relation to infant mortality, particularly in the homes of the indigent.

3. Housing conditions, which are of fundamental importance in the well-being of the infant. In this connection it should be stated that in any institution situated in a southern city special emphasis must be laid on the health conditions among the negro population. In view of the fact that the negro presents more than double the white death rate and morbidity rate, especially for infectious and venereal diseases, this race constitutes a problem of its own in which infant welfare plays a vital part. The negro needs more sympathetic and kindly, but firm, treatment, and less exploitation. Their low living conditions in many parts of the South, the prevalence of infectious disease and puerperal fever among them, and the kind of food they give their children leaves everything to be desired; and yet there are 10,000,000 of them among us, thus constituting more than 10 per cent. of our total population. It is estimated that about half a million of this number are constantly ill, thus entailing a loss of millions of dollars in the communities in which they live.

Another subject in which the infant is gravely concerned is the wage of its parents. Insufficient income and the resultant low standard of living are always associated with high infant death rate. This has been shown by a number of recent investigations, notably in Johnstown, Pa., where the infant mortality in families earning less than \$10 a week was more than 200 per thousand, while, when the income was more than

\$25 per week, the infant mortality rate was about 80 per thousand. These and similar facts demand careful attention, not only in an institution of hygiene, but also on the part of sociologists. Can they be met by the gradual raising of the standard of our wage earners, by a system of health insurance, or will the working men in America, as in other countries, eventually limit the size of their families? Low wages for the men of the family make it necessary, of course, for the women of the family to work to avoid starvation. This results in absence of the mothers from home and in the neglect of the children. It is interesting to recall that in Lowell, during a strike, when the mothers could not work, infant mortality was reduced; and that during the siege of Paris, when the general mortality was doubled, the infant death rate was halved.

5. This leads to a consideration of what is perhaps the most important element in the welfare of babies, namely, intelligent care on the part of their mothers. No outline of courses having to do with infant welfare would be worth while that did not stress as perhaps its pivotal point the importance of the education of the present and future mothers of the country in those matters pertaining to the feeding and care of their children. If this instruction can be given in all our schools, and the social conditions can be adjusted so that wages compatible with decent living are possible for all families that are willing to work, much of the infant mortality problem would be solved. This education of girls in infant welfare has been carried on, in some form or other, in various parts of the country, for a number of years, in private and public schools, and in so-called continuation schools, and in "little mothers' health leagues."

It is the duty of an institution devoted to hygiene to study the character of this instruction and the results obtained when these girls have homes of their own, and to determine what forms of instruction may be best adapted to particular communities.

The child of run-about age, between the infant and the school boy or girl, also needs special study. He suffers often from neglect, from improper food and clothing, and from the lack of fresh air. Many serious conditions start before school age begins.

The infant mortality movement, as it is generally understood, began in France in 1892 with the "consultations des nourissons" of Budin. From this time on, in an incredibly short period, infant welfare work of various kinds has spread over nearly the whole civilized world. Milk stations have been organized in many large cities, hundreds of nurses and physicians are devoting their time to this form of philanthropy, and divisions of child hygiene have been organized in the departments of health in New York, Philadelphia, Boston and other cities.

The care of the expectant mother is now conceded to be essential for thoroughgoing infant welfare work.

The National Association for the Study and Prevention of Infant Mortality was organized in New Haven, Conn., in 1909, and since then its office has exerted a guiding influence in this whole movement. The *Transactions* of the society reflect the progress that has been made. In 1912 a federal Children's Bureau was established, in which infant welfare work was made a feature. This bureau has made a number of exceedingly valuable investigations on the infant mortality rate under various urban and rural conditions. Divisions of child hygiene have been created

in several state departments of health, including New York, New Jersey, Kansas and Ohio.

It should be the purpose of an institute of hygiene to acquaint the students taking infant welfare courses with the history of the movement and with the methods that have been used in other countries and in our own to conserve infant life. New Zealand, with its infant mortality rate of less than 5 per cent., deserves special consideration.

Finally, in many cities, in cooperation with existing agencies, such as the infant welfare associations, the health departments, and the obstetric and pediatric departments of medical schools, it is possible for students of hygiene to obtain a large experience in practical infant welfare work on the field; to see for themselves the many examples of the deleterious influence on the baby of poverty, bad housing conditions, improper food, and ignorance on the part of parents, and to note also the dire results of long institutional life on young infants. These students will thus have abundant opportunity to form their own conclusions as to the efficiency of the various agencies in meeting and correcting circumstances so inimical to infant health.

If the subject of infant welfare work can be presented in some such fashion where instruction in hygiene is thoroughly given, no interested student could receive his degree and take up his public health work in any community without knowing something of the value of infant life and something also of the measures best adapted to promote it.

At this time of stress and danger, when the youth of the land are about to offer themselves for the service of their country in battle and many of them may be called on for that last measure of devotion, it is especially timely that all efforts tending to improve the health of the people should be fostered, and particularly is it vital that the infant population, on whom in due time the future of our nation must depend, be carefully enumerated and conserved.

ABSTRACT OF DISCUSSION

DR. WILLIAM H. WELCH, Baltimore: The most promising line of attack on the prevailing death rate is to control the diseases of childhood. We can accomplish more there, make more impression, and it makes a stronger appeal than anything else, I think, on the community at large.

As regards the relation of school hygiene and public health to this work, that, again, seems to me so apparent that it requires no particular emphasis. As to the details of that I am hardly prepared to speak. It is obvious such an institution must be in close connection with the pediatric clinic during the organization of the service of the schools or hospitals, which have been such a tremendous accession for our municipal and state departments of health, especially in the work that the Public Health Service has done in that connection, and with all the official and voluntary organizations, of which we have so many. Those who are studying in this field should have every opportunity. Perhaps I should like to emphasize as much as anything, although it is only one of the many functions of school hygiene, the importance of increasing our knowledge on the subject. While it is true that we do not apply, or begin to apply, all that we know, nevertheless the whole field is full of still open and unsolved problems; and nothing is more certain than that failure revolves around this, when we attack the problem of controlling a given disease without spreading active knowledge as to the mode of origin and the spread of the disease.

I should like to know a little more of why it is that there is such a tremendous difference between the so-called individualized care of the infant at home, boarding out, and in

institutions; and I expect that field can be narrowed a great deal more than it has been.

DR. HENRY DWIGHT CHAPIN, New York: There was one question raised by Dr. Welch as to the cause of the difference of the mortality in boarded out babies and in institution babies. There are several causes that favor the high mortality of institutions for the baby; and here is the proper point at which this question must be attacked, and successfully attacked; the very high mortality in infants can be checked right there. First is the lack of a sufficient number of attendants. Babies are brought into the world singly, and not in droves; and they are not intended to be cared for in great masses. And the second reason is, they do not get enough fresh air. They lack a sufficient supply of fresh air that very few institutions can give them. Third, they lack a mother; and if they cannot get their own mother, they ought to have somebody else's mother. The subject of boarding out has not been sufficiently studied, nor sufficiently systematized. If the same work, the same attention to detail, the same study were given to putting these little babies into homes as is given to institutions, we would cut the mortality in half at once. They must be boarded out in units, under the constant supervision of a physician and nurse who are familiar with this class of cases and competent to deal with it. The Speedwell Society has successfully operated along these lines for the past fifteen years.

DR. ROWLAND G. FREEMAN, New York: I do not want to discuss the excellent paper of Dr. Knox so much as I want to say a word for institutions. All the evidence that we are getting now from people studying these infant problems is in favor of the boarding out of children. I myself feel that an institution is the best place for a child, if it is a good institution. We have our old institutions that had 100 per cent. mortality; we have, more recently, institutions with 20 to 30 per cent. mortality; and we have other institutions where we keep the children out of doors, where we have plenty of nurses, and where children do better than they do in their homes; and I am in the habit, with difficult cases, of sending them to a hospital where they can have good, fresh air, proper food, and good nursing, and they do much better than they do in the homes. The institution has to exist as a clearing-house for babies. It is all well enough to board them out; and I believe that is the best solution for the large proportion of the babies coming to our institutions; but you must have the institutions to receive them and board them out; and you have to have the institutions to take care of them when sick. One reason why large institutions are rated as having such a large mortality is because all of their hundreds of boarding-out children when they get sick come back to the institution and the institution, not the boarding-out home, where they become sick, is credited with their deaths.

DR. A. F. HESS, New York: I should like to say a word, also, in favor of the institution. I do not believe, with Dr. Chapin, that there is anything inherently good or inherently bad in institutions or in the boarding-out system. They can be well managed, or they can be poorly managed. Now as regards the boarding-out system, there are no statistics which show that it can be better managed than an institution. I have seen mothers who take care of babies, mothers who are licensed by the department of health, whom you would not think of entrusting with the care of babies. It is true that the department of health is now doing much better in this respect. I understand that there are now some 500 who are entirely trustworthy, but we must remember that we need 5,000 such mothers, as there are 5,000 babies to be boarded out. I believe that mothering is a very bad thing for a baby; mothering often leads to tuberculosis. I find at the Preventorium that a great number of the infants have developed tuberculosis from contact with the mother who had an open tuberculosis. Furthermore, it is not infrequent for babies to develop colds, pneumonia and die owing to the fact that the mother has had a cold. I have therefore come to believe that a baby is much better off if left alone and not mothered too much. We should not be too radical or destructive. There may be good boarding-out systems and be good institutions; let us make use of the good and abolish the poor ones.

DR. J. H. MASON KNOX, JR., Baltimore: The institutional care of young babies is a question of the character both of the institution and of the foster home. In institutions as constructed years ago and which have an inadequate number of poorly trained attendants, the infant mortality is frightfully high; much higher than in even indifferent foster homes.

The term "mothering" has been objected to on the ground that it may imply too much fondling. We might perhaps better substitute the phrase, "individualizing care." I agree with Dr. Hess that too much unintelligent mothering is a great disadvantage; but I believe that the baby, absolutely dependent, as it is, on others, does best when it has individualizing care; this cannot be obtained unless there is one caretaker for every three or four children. When this is furnished so that the babies' wants are promptly supplied, and there is abundant air space and quiet, it really does not make much difference whether the baby is in an institution or in a foster home.

SIMPLIFIED TECHNIC IN LAMINECTOMY*

WITH DESCRIPTION OF COMBINED LAMINECTOMY
AND SPINE FIXATION BY BONE TRANSPLANT

F. J. GAENSLER, M.D.

MILWAUKEE, WIS.

The operation of laminectomy has become so well standardized that one feels a certain hesitancy in presenting modifications. However, the technic that I have employed during the past few years has been found rather simpler than that of methods previously described, so that a description of it appears warranted.

Briefly, the essential point lies in the fact that instead of stripping the soft parts and the periosteum from the posterior vertebral spines on either side and then cutting off the spines at their bases, the spines are split longitudinally into right and left halves, just as in the Albee operation for insertion of a bone transplant in Pott's disease. However, instead of deflecting the halves on one side only, as in the Albee technic, the split halves are deflected on both sides. It is then a very simple matter to separate the periosteum with attached soft parts from the laminae as far laterally as the articular processes. The posterior spines should be split well down to their bases. There is then left only a small remnant of the process to be cut away with bone cutting forceps. The cutting away of the laminae can be accomplished by any one of the numerous methods advised.

Details of Technic.—The first steps are like those in the Albee spine fixation. A curved incision is made slightly to one side of the row of posterior spinous processes through the skin and subcutaneous tissue. The flap is rapidly reflected, exposing the deep fascia on either side of the middle line. With a stout knife, a straight incision is made down the middle line, splitting the supraspinous ligament and incising or at least marking the tips of the spinous processes themselves. A tenotomy knife is now used to dip down between the individual spinous processes, dividing the interspinous ligaments. With a very thin chisel the spines are now split through the line indicated, care being taken to keep as close to the middle line as possible. On reaching the base of the spinous processes, the chisel is driven slightly to one side, and the corresponding halves are broken and deflected to that side. With a gauze sponge over a periosteal elevator, the

periosteum is now stripped from the corresponding laminae to the articular processes. This is easily and quickly accomplished without injury or fraying of the periosteum with the clean start obtained, as just indicated. It is the ease and rapidity with which this can be done, and the relatively slight hemorrhage encountered as compared with other methods, which particularly recommends this procedure. With a few strokes of the chisel the opposite standing halves of the posterior spines are now broken off close to their bases, and deflected to the side, the periosteum being stripped back as on the opposite side. The next step consists in biting off with suitable forceps the remaining portion of the bases of the spinous processes and cutting through the laminae by any one of a number of suitable methods. The Hudson drill and a number of rongeur forceps of suitable size and shape will answer the purpose very well. After removal of the laminae, the spinal contents are dealt with as circumstances demand.

The closure of the wound is in no way complicated by the method of approach outlined. In fact, the clean cut wound edges showing the split halves of the spinous processes and the split supraspinous and interspinous ligaments offer good opportunity for accurate approximation. When the split spines are not too thick a stout,

full-curved cutting needle can be passed directly through the corresponding halves, holding them in firm apposition. This is not necessary, however, as they will be held sufficiently firm by sutures taken through the periosteum or the dense ligamentous tissue above and below. A few intermediate sutures serve to unite the interspinous ligaments. The preservation of the spinous processes, so far as they have been split, though by no means an essential to firm union, may be regarded as a distinct advantage in securing greater firmness and accuracy in closure.

In one instance, when a laminectomy was done for fracture of the fifth cervical vertebra, death occurred some six weeks after operation from ascending

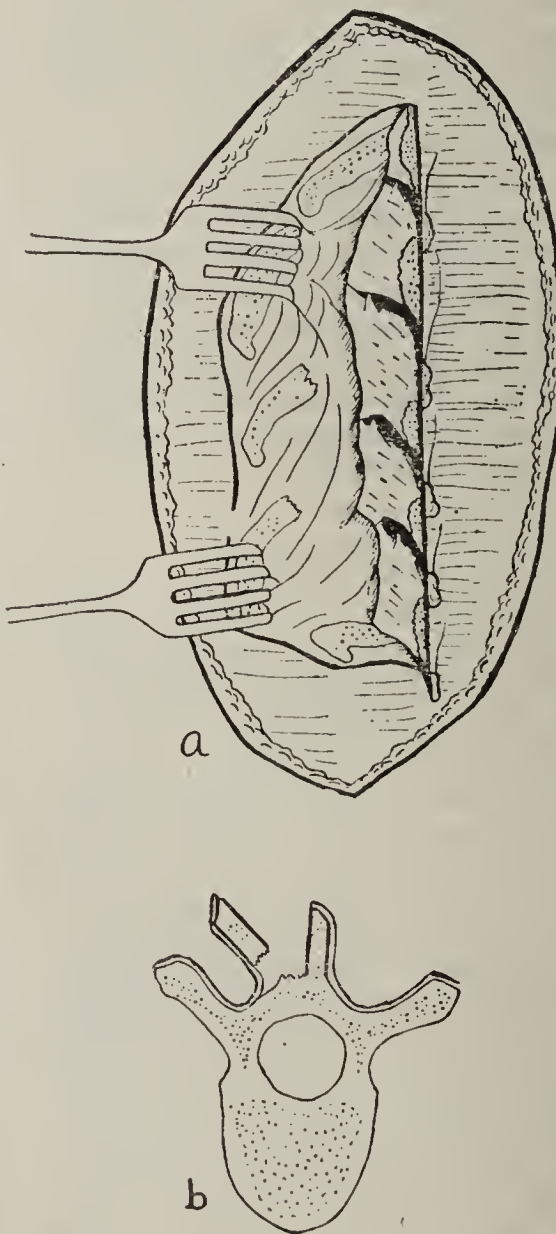


Fig. 1.—Posterior spinous processes (a) split in the middle; the left halves are deflected with the periosteum, leaving the denuded laminae on that side exposed; the right halves remain standing; b, cross section, showing splitting of posterior spinous process and denudation of lamina on left.

kidney infection and trophic ulcers. The laminectomy wound had healed perfectly and the split halves of the

* Read before the Section on Orthopedic Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

spinous processes were firmly adherent to one another, though with a little force they could be separated with

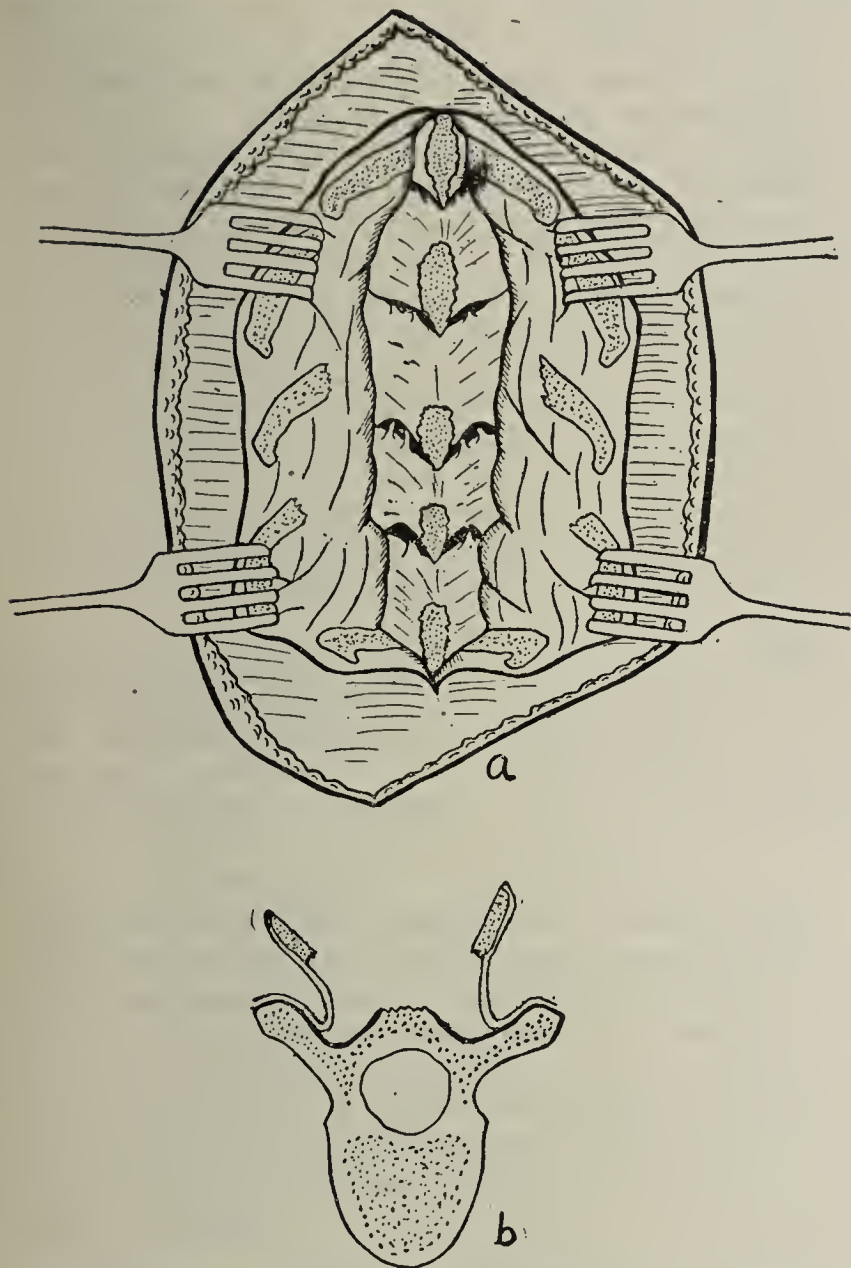


Fig. 2.—Broken spinous processes (a) deflected on both sides, exposing denuded laminae on both right and left; b, cross section.

a snap, showing that bony union was well under way.

The advantages of the method of approach, outlined above, are: (1) rapidly; (2) diminished trauma; (3) diminished hemorrhage, and (4) more accurate and firmer closure, by virtue of the union of the bony components.

In certain instances, after laminectomy for urgent cord pressure symptoms, it may be desirable to fix the spine by means of a tibial transplant immediately after decompression of the cord. After the usual operation practiced heretofore, in which the spinous processes are sacrificed, a bridging over of the laminectomized area by means of a tibial graft would be a hazardous proceeding, the graft receiving bony contact only above and below the laminectomized region. This hazard would naturally increase with the length of the laminectomized area. It may be regarded as a universally accepted fact that a bone graft has far better chances of becoming firmly united if it is in contact with numerous healthy bone surfaces. The method of approach, indicated above, by preserving the spinous processes and therefore retaining the usual number of bony contact points, paves the way for a successful combination of laminectomy and spine fixation by means of the bone graft. This plan was carried out in two cases, in both of which a diagnosis of vertebral tuberculosis had been made with urgent cord symp-

toms. After decompression of the cord, by laminectomy, performed according to the plan just outlined, several healthy spines above and below were split after the usual manner. The left halves were deflected while the right halves remained standing. A graft of sufficient length was then cut and put in place, bridging over the laminectomized area and finding anchorage above and below on the standing halves.

In both instances, primary union was obtained. In the first case, one with a middorsal lesion, the spine is held perfectly rigid, the graft fulfilling its mechanical function perfectly. In the second, a case of cervical Pott's disease with urgent symptoms, death occurred about four weeks after operation from an ascending urinary infection.

To be sure, indications calling for the employment of this combination of procedures will be encountered only rarely. Traction and recumbency in the hands of most orthopedic surgeons will prove adequate in the vast majority of cases, but in certain cases of Pott's disease, possibly also in some cases of fracture of the spine, a combination of the two will be found desirable. The experience in the cases just reported would indicate also that the method is feasible.

141 Wisconsin Street.

ABSTRACT OF DISCUSSION

DR. EDWIN W. RYERSON, Chicago: My experience with this operation is confined to one case, which I had recently, for fracture-dislocation of the spine. The procedure of Dr. Gaenslen was not exactly followed, in that I used a motor saw to split the spinous process, thereby causing less traumatism than when the chisel and mallet are used. The operation was nearly bloodless, much less hemorrhage being encountered than when the spinous processes are exposed and cut away by the rongeur. This procedure is the more valuable, as it gives an opportunity to put in a bone splint in cases of pressure on the spine caused by tuberculosis. These cases do not often require laminectomy; but when they

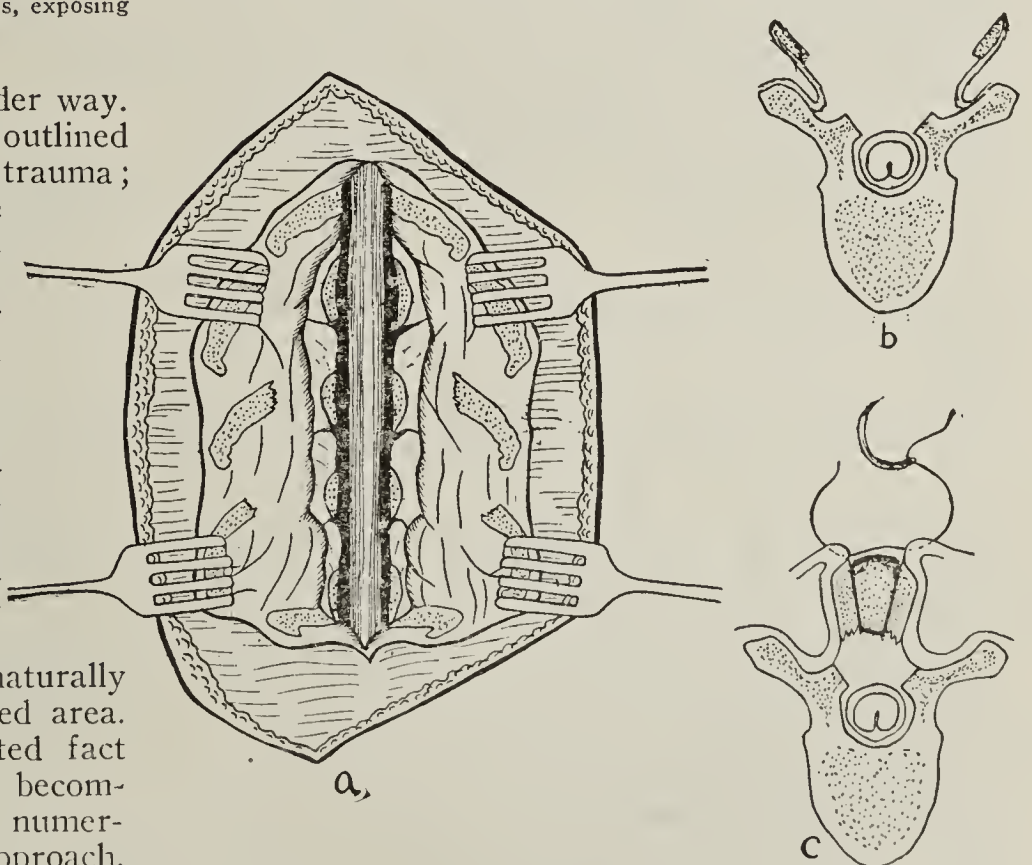


Fig. 3.—Laminae removed (a); cord exposed; b, cross section; c, cross section of vertebra in laminectomized area, showing bone graft in place and suture introduced.

do, one would hesitate to do a simple decompressive laminectomy, if there were no possibility of fixing the spine afterwards; but with one of the tibial splints, we may properly hesitate less to do it than in the past.

OPERATIVE TREATMENT OF TUBERCULOSIS OF THE KNEE JOINT IN ADULTS*

ROBERT B. OSGOOD, M.D.

AND

EDWARD C. BULL, M.D.

BOSTON

Tuberculosis of the knee joint in adults differs in two important points from the same disease in children.

1. In children we have centers of growth in direct anatomic relation to the joint. Disturbance of these centers by the disease or by operative interference may seriously affect the ultimate length of the limb. This condition requires consideration and treatment.

2. In children there seems to be a more marked resistance to the disease than in adults, and cures with only slight disturbances of function often occur when persistent and continuous local fixation is combined with general treatment by heliotherapy and an antituberculous regimen.

In adults, the disease when once established, in our experience, may be said never to recover fully without operative interference of some form.

We realize that this is a sweeping and dogmatic statement, but we have yet to see a tuberculous disease of the knee joint in which the diagnosis has been conclusively established by means of tuberculin tests showing general and local knee joint reaction, by means of examination of tissue removed for purposes of microscopic study, or by means of positive guinea-pig inoculation of fluid removed by aspiration, gain a lasting recovery without operative interference.

DIAGNOSIS

We do not believe that the diagnosis of tuberculosis of the knee joint in adults can with certainty be made in the early stages of the disease from clinical examination alone. Several other monarticular affections may well be mistaken for it; a gonorrheal infection of subacute character; a syphilitic infection; a villous arthritis; a simple chronic synovitis of unknown origin, or a chronic traumatic arthritis.

We shall not attempt to indicate the important points in the differential diagnosis, but rather to emphasize the fact that in our opinion it cannot at times be made without the help of the laboratory tests enumerated in the foregoing. It is fair to say that any rather subacute affection of the knee joint, in which the subjective symptoms are often intermittent and which objectively is characterized by a persistent but variable change in the external contour of the joint and an atrophy of varying degree of calf and thigh, should be considered to represent tuberculosis of the knee joint unless there exists proof to the contrary.

We have become convinced that tuberculosis of the knee joint in adults is at times primary in the synovia. Our belief is based on the failure to find evidence of bone involvement by careful Roentgen-ray examination, by macroscopic examination at operation, by subsequent recovery as the result of arthrotomy and the injection of 4 per cent. iodoform and olive oil emulsion, and on the positive evidence of tuberculosis of

the synovia by microscopic examination and the positive inoculation tests of guinea-pigs with the removed tissue or joint fluid.

TESTS

We have found the von Pirquet test to be of only negative help in excluding tuberculosis.

If the patient has no elevation of temperature and is placed on a two-hour chart, and if he reacts to a subcutaneous injection of Koch's old tuberculin by a slight or marked febrile rise and an increase in the local joint symptoms, as indicated by greater sensitiveness, added heat, or both, we believe an almost positive diagnosis of tuberculosis of the knee joint may be made. It is the practice of the clinic with which we are associated to begin with an injection of 0.1 mg. If no reaction occurs in two days, an injection of 1 mg. is given. If still no reaction, two days later an injection of 3 mg. is given, and if there remains no reaction to this and to a last injection of 5 mg., we consider the test to be negative.

We have no statistics as to the percentage of cases later proved positively to be tuberculosis in which this test fails to give any local or general reaction. We know that we sometimes fail to obtain it, but our impression is that the percentage of failures is very small.

ROENTGENOGRAPHIC EXAMINATION

The diagnosis by roentgenogram is often confirmatory, but opinion should in few cases be made conclusively from this evidence when considered alone. Tuberculosis is a destructive process, and when the bone is affected, loss of substance will often be shown; but when the disease is creeping in beneath the articular cartilage, it may not be evident in the roentgenogram. There is occasional lime salt deposit beneath the periosteum. Typically there is a hazy appearance of the articular surfaces.

The Wassermann reaction and the gonococcus complement fixation reaction are done as a routine in this clinic.

OPERATION

It is our belief that an operation should be contemplated as soon as the diagnosis has been made. It is often wise to defer the operation in a case in which there has been no fixation and in which the knee is in a more or less acute and irritable state. Such a patient should be put at once at complete rest and freedom from weight-bearing for perhaps a month, and when the acuteness of the disease has subsided, the appropriate operative procedure may be more safely executed, with less postoperative reaction.

Only two types of operation have for many years been considered in the clinic: the one conservative of function and representing little or no shock, attempting to cure the disease by keeping synovial surfaces apart and bathing them in an antiseptic oil; the other destructive of function, a major operation, attempting to cure the disease by destroying the joint and eliminating the synovial membrane and the red bone marrow.

When we believe that the tuberculous disease exists only in the synovia, we have been advising our adult patients to submit to an exploratory arthrotomy through a 3 inch lateral incision, and if no bony disease can be found at operation and the macroscopic findings are consistent with tuberculosis, we have been injecting a bland olive oil containing 4 per cent. of iodoform after the method of Brackett.¹ A consid-

* From the Orthopedic Department of the Massachusetts General Hospital.

* One patient was operated on at the age of 17; the others were 18 to 54 years of age, respectively.

* Read before the Section on Orthopedic Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Brackett: Boston Med. and Surg. Jour., June 4, 1914, p. 873.

erable number of these patients (eight out of thirty) with tuberculosis of the knee have apparently been cured in his hands and able to regain function. For the technic of the operation, the reader is referred to Brackett's carefully written and excellently illustrated paper. Suffice it to say that from 1 to 5 ounces of the 4 per cent. iodoform oil are injected after the joint has been opened, the fluid evacuated, and the adhesions and pannus, if it exists, carefully separated. The deeper layers of the capsule and the synovia are closed by a continuous stitch from each end, a small opening being left in the middle for the nozzle of the glass syringe. A special double loop lock stitch is inserted and pulled tight about the nozzle, and the oil injected with considerable tension and the

TABLE 1.—CASES OF BONE AND JOINT TUBERCULOSIS TREATED FROM THE OUTPATIENT DEPARTMENT OF THE MASSACHUSETTS GENERAL HOSPITAL FOR TEN YEARS UP TO 1917

| | No. |
|--|---------|
| Total cases treated in outpatient department | 239,867 |
| Total cases treated in orthopedic department | 20,079 |
| Cases of bone and joint tuberculosis | 1,336 |
| Cases of tuberculosis of knee treated in outpatient department.. | 206 |
| Cases of tuberculosis of knee treated in orthopedic department.. | 181 |

lock loop pulled home. Oil has been recovered from the joint eight weeks after the operation in an apparently unchanged condition.

For the detailed after-treatment, the reader is again referred to Brackett's article. Complete fixation is never employed, though the patient bears weight in a split cast only after several months. The cast is removed every day for gentle passive movements. Sometimes two, and in a few cases three, injections are given if we can obtain no evidence of the involvement of the bone and the evidence of active synovial disease still exists.

If the evidence presented shows that disease of the bone exists, we have come to believe that excision is the procedure to be unqualifiedly advised. As we have said previously, if the disease is acute there should be an initial period of complete rest and fixation, but we have never seen permanently satisfactory function restored in a knee joint in which tuberculous disease has involved the bone. The disease often becomes quiescent under complete fixation, but subjected to use without protection, these apparently healed joints light up, and the disease advances, though the history may extend over a period of years.

We do not maintain that there never has existed a permanent cure of tuberculosis of the knee joint which has involved the bone, without an excision or an erosion or some procedure which obliterates the joint, but we do say that we have never seen one, and until we do we shall continue to advise for these cases excision as the method of choice.

Technic.—In discussing the technic of the operation for excision of the knee we shall describe that which after a period of years has seemed to us the more useful. The most careful two day or three day preparation of the skin is given. A tourniquet or an Esmarch is applied.

Incision.—A wide U-shaped incision is plotted by making three or four small skin scratches which will run at right angles to the U-shaped skin incision. Through these the main incision is made, and by matching the skin scratches, eventual nice apposition of the skin is made easy. The incision is carried down to the bone, from condyle to condyle, through the patellar tendon. The patella and flap are pulled

upward, the crucial ligaments cut as the knee is flexed, and the whole joint cavity exposed. A quick, moderately complete dissection of the tuberculous tissue is carried out, and the patella, if badly diseased, is removed. If only its cartilage is affected, the articular surface is removed with a saw, and it is used later as a bone graft.

The really important judgment of the operation must be exercised in determining the amount of bone to be removed and the plane of the cuts. If paper patterns of the bones as shown in the lateral roentgenograms are cut before the operation and the amount of flexion to be desired because of the social conditions of the individual patient be determined, these patterns can be made to indicate in a fairly accurate way the planes of the saw cuts.

The determination of how much permanent flexion it is advisable to obtain for the patient is an important question. It is more than is generally thought to be wise. Brackett especially has called attention to the usefulness of even 45 degrees of permanent flexion in a man with a largely sedentary occupation. With a high sole and heel, walking is not as awkward as would be expected, and is more than offset by ease in sitting.

Our opinion is that in a man or woman with a sedentary occupation, from 35 to 40 degrees of flexion is the position of choice. If the work is to be chiefly ambulatory, from 15 to 20 degrees seems to offer the best functional position.

The bone is removed best with a miter saw, and after the slices have been taken from both femur and tibia, and perfect apposition in the desired position has been obtained, the posterior disease is removed down to the capsule.

We have become convinced that some method of internal fixation of the bone ends is greatly to be desired. Union is certainly quicker, postoperative pain is less, and early union favors early cure. Reference is here made to a study of the end-results of excision of the knee made by one of us.²

The method of internal fixation by means of bone plates and screws or by the Goddu aluminum wire clamp is satisfactory in many cases. The fact that

TABLE 2.—CASES OF BONE AND JOINT TUBERCULOSIS TREATED IN THE MASSACHUSETTS GENERAL HOSPITAL IN THE THREE YEARS PRECEDING 1917

| | No. |
|---|--------|
| Total cases treated in hospital | 19,423 |
| Cases of bone and joint tuberculosis | 321 |
| Cases of tuberculosis of knee treated in hospital | 61 |
| Cases of tuberculosis of knee treated in orthopedic ward..... | 55 |

in a considerable number of cases these plates or clamps had to be subsequently removed did not seem to delay speedy and satisfactory cure of the disease or early firm union. Two flat vanadium or plain steel plates have been most commonly used, placed laterally on the inner and outer sides. These plates may be quite accurately shaped before operation by cutting out a paper pattern of the anteroposterior roentgenogram, performing a paper excision, and fitting the plates to the lateral outlines. There are many cases, however, in which the atrophy of the bones is so considerable that even coarse-threaded wood screws get no grip and the plates offer little if any fixation. In such cases and in certain others (in order to try the method) we have been employing a suture of kangaroo

2. Osgood, R. B.: Boston Med. and Surg. Jour., July 24, 1913, p. 123.

tendon, which we believe to be useful. It may be called a "bundle knot tie," and is made with double kangaroo tendon for double strength, less likelihood of cutting, and greater length of tie. With a hand drill, in the end of which is a large eye, while the knee is flexed, a hole is bored straight through the femur from front to back, about 1.5 cm. above the cut surface. It may be necessary with a periosteum elevator to free the posterior capsule upward on the femur and downward on the tibia. With the knee flexed there is no danger of wounding the vessels if the drilling is carefully done. Through the eye of the projecting drill the two ends of a stout kangaroo tendon suture are threaded and pulled back. A second suture is now looped to the first and its two ends pulled through a symmetrical drill hole in the

TABLE 3.—END-RESULTS IN SIXTY-NINE CASES OF TUBERCULOSIS OF THE KNEE IN ADULTS TREATED BY OIL ARTHROTOMY AND EXCISION; OPERATIONS DONE ON THE ORTHOPEDIC SERVICE OF THE MASSACHUSETTS GENERAL HOSPITAL, 1907-1917

| | No. |
|--|------|
| Cases of oil arthrotomy | 17 |
| Cases of excision of the knee | 52 |
| Oil arthrotomy results: | |
| (a) Apparent cures | 4 |
| (b) Improved patients | 4 |
| (c) Patients not improved (1 died) | 6 |
| (d) Patients lost sight of | 3 |
| Means of internal fixation in excisions: | |
| (a) No internal fixation | 1 |
| (b) Bone plates, wire clamps or nails | 30 |
| (c) Kangaroo tendon | 21 |
| Secondary operations required: | |
| (a) Oil arthrotomy | 4 |
| (b) Excision | 4 |
| (c) Reexcision | 4 |
| (d) Amputation | 7 |
| (e) Removal of plates, wire clamps or nails | 14 |
| Number of excision cases with firm union | 38 |
| (a) In one month or less: | |
| Bone plates, etc. | 6 |
| Kangaroo tendon | 0 |
| (b) In one to two months: | |
| Bone plates, etc. | 4 |
| Kangaroo tendon | 2 |
| (c) Three months or more: | |
| Bone plates, etc. | 17 |
| Kangaroo tendon | 9 |
| Average time required for bony union in last 24 cases | 9.2 |
| (a) In cases with bone plates, nails, etc. | 9.5 |
| (b) In cases with kangaroo tendon | 8.25 |
| No record of eventual union (including amputations): | |
| (a) Bone plates, nails, etc. | 4 |
| (b) Kangaroo tendon | 10 |
| Mortality | 1 |
| Failure to avert disease: | |
| (a) Oil arthrotomy (1 patient died) | 6 |
| (b) Excision | 14 |
| Failure to secure good functional result: | |
| (a) Oil arthrotomy | 10 |
| (b) Excision | 14 |
| Successful results as to cure of disease and usefulness of limb: | |
| (a) Oil arthrotomy | 4 |
| (b) Excision | 36 |

tibia. Next, a hole is drilled through the femur from side to side about 2 cm. above its cut surface, and a double kangaroo suture drawn through. Its looped end is looped to a fourth suture, which in turn is drawn through a corresponding hole in the upper end of the tibia. When the knee is extended and the apposition is accurate, the knots are tied tight and give a surprising amount of fixation. If only the joint surface of the patella has been removed, a bare bone bed is prepared for it and the sutures tied through and over it.

Smith-Peterson has suggested that the external and internal portions of the posterior capsule be tightly fastened together with kangaroo tendon when the knee is flexed. This is a reinforcing suture, and when the knee is extended, tends to keep the posterior bone surfaces from separating and to prevent the gap so often

seen in the early subsequent roentgenogram as gravity tends to extend the leg. When all the sutures are tied, the skin and fat flap is closed with chromic gut in layers without drainage, and the skin with interrupted silk or silkworm-gut. The tourniquet is usually not removed until this has been done, and we do not as a rule find it necessary to tie any vessels. As soon as the bone ends are fixed by the plates or the sutures, an assistant devotes his entire attention to holding the limb in a position in which the close apposition will be maintained; and as soon as the dressing is in place a sterilized sheet iron or steel ham splint, bent previously to the determined angle, is placed beneath the limb, and with the assistant still holding, a plaster is applied from toes to groin. We hope for fairly firm callus in four weeks, we expect it in eight, and we are disappointed if the patient cannot bear some weight with artificial support in three months.

The importance of function in converting fibrous union into bony should be emphasized, cases having occurred with fibrous union for many months which rather rapidly became rigid on beginning moderate function with plaster support.

The general health of the patient often greatly improves when this focus of disease is removed. The operation is not necessarily contraindicated in the presence of visceral disease elsewhere, and we have seen such lesions improve after an excision.

With the kangaroo bundle suture, even discharging sinus cases, if not too badly secondarily infected, may be induced to become solidly united and to overcome their disease.

The occurrence and results of the cases of tuberculosis of the knee joint in adults occurring in the orthopedic clinic of the Massachusetts General Hospital since 1907 are submitted in the accompanying tables.

CONCLUSIONS

1. Tuberculosis of the knee in adults is not fully cured without operative treatment.
2. Primary synovial tuberculosis of the knee in adults exists and is frequently improved or cured by inflation of the joint with iodoform oil.
3. We have seen no permanently satisfactory function restored in cases with bone involvement.
4. Excision of the knee is the method of choice in cases with bone involvement.
5. The position of choice is from 15 to 20 degrees' flexion for ambulatory vocations, and from 35 to 40 degrees' flexion for sedentary occupations.
6. Bone plates, where the bone is firm, and the kangaroo tendon "bundle tie," for conditions in which there is much atrophy, are valuable means of internal fixation.
7. Function is important for final bony union after excision.

372 Marlboro Street—Massachusetts General Hospital.

ABSTRACT OF DISCUSSION

DR. MELVIN S. HENDERSON, Rochester, Minn.: The operation of dissection of the knee joint has been carried on in the Mayo Clinic for years, and we consider it one of the best types of operation that we have. Taking it all in all, it has been satisfactory, although not all the results are good.

The statement was made in the paper that the authors have never seen a case of knee-joint tuberculosis in an adult cured. I can record two such cases in which the patients got well without operation. The cases were synovial in type, clearly proved to be that by guinea-pig inoculation. Both

patients have now been well for over three years. The treatment was by injection of iodoform emulsion in 10 per cent. glycerin, and not by fixation. The time of operation is important. These cases should not be operated on, but made quiescent. The age of the patient is also very important. Generally speaking, a man over 50 years of age is not a good subject for arthrodesis in tuberculosis; and many cases of this kind later require amputation. With regard to fixation, that is an important point. It depends on the social status of the patient, his occupation, etc.

I have this criticism to make of the technic described by Dr. Osgood: It appears to me to be too extensive a dissection. It seems to me important that the patient should not be subjected to a too extensive dissection, and that the operation should be quickly performed, with as little traumatism as possible. I think that some form of fixation is best, however. I had discarded it, but these statements seem to show that it is best. I have used merely one or two long nails driven through the skin below the line of incision, and up through the head and the condyles of the femur, and left projecting. At the end of three weeks I withdraw them.

In regard to the question of tuberculosis in adults, I would say that there must be a sharp differentiation between the synovial type, in which you can cure the condition by means of antiseptic solutions, and cases in which there is bone involvement, in which resection is indicated.

DR. JOHN RIDLON, Chicago: I should not like to have go to the general practitioners and general surgeons without a protest the statement of the apparent conviction on the part of the authors of this paper that cases of adult tuberculosis of the knee joint are not cured without operation; for I know that they are cured without operation, under prolonged immobilization and protection, the same as in children. I had the opportunity of showing such a case to Dr. Ryerson, who had doubted my statement, a year or two ago; and when he saw the patient and found how good the result was, he thought that it could not have been a case of tuberculosis. Maybe it was not; but the other knee had been excised at Johns Hopkins Hospital, the diagnosis having been concurred in by Bloodgood and Halsted of Baltimore, Gibney and Sayre of New York, and Fenger, Senn and McCarthy of Chicago.

DR. MARK H. ROGERS, Boston: This question of whether a knee recovers without operation or not in adult tuberculosis would seem to be an important one; for if such patients do recover to any great extent or in any great proportion, one does not want to do an excision in the early stage. On the other hand, if there is only probably about 1 per cent. or 2 per cent. of these cases that recover without operation, and it can be proved that they are tuberculosis, a delay in this type of case for three to five years, until there is bone destruction, will probably mean amputation and not improvement or cure. There has not yet been any record, so far as I know, of a cure by fixation. Men come to meetings and say that they have cured such cases by fixation, and that they were cases of tuberculosis; but they have not proved their results by iodoform injection. Their cure, so far as I know, has not yet been substantiated by published results; so until I see published some authentic results of careful observations, I shall still remain of the opinion that in order to get a cure, and a cure without waiting for four or five years and running the risk of having to do an amputation later, it is better to do an excision early, because there have been published authentic records of the absolute elimination of the disease by excision. If you have not obtained cures by the other methods, therefore, the earlier you do excision, the better. That is self evident. What you have to prove is that you can cure these patients without it. In a paper published last year I reviewed the records of over 100 cases. I found that, as far back as I could go, there was no record of a cure by any other method. In regard to the use of iodoform oil, I think it is too early yet to tell whether the patients so treated are cured. A good many supposedly cured cases light up later, and excision must be done. If you wait three or four years before excision, you have very poor tissue to do an excision on.

DR. JAMES ARCHER O'REILLY, St. Louis: In speaking of the diagnosis I do not think the paper mentioned the Wassermann test. That was probably an oversight on the part of the authors; because I do not believe that, with our knowledge of syphilis, any one would operate on the knee without having made a Wassermann test. In our clinic I could show several cases of similar conditions of the knee that got well under treatment without operation; but they were cases of syphilis, and not of tuberculosis. Therefore, I think it is very important that the Wassermann test be made.

DR. HENRY KELLER, New York: I think it is worth while to mention that there are two classes of tuberculosis, the bovine and the human, and that there is a difference between them. When the infection is due to the human tubercle bacillus, the cases are resistant to conservative treatment, whereas cases of the bovine tuberculosis will ultimately recover, although it takes a few years. I think, therefore, that it is worth while to find out, before resorting to any operative procedure, whether we are dealing with a bovine or a human tuberculosis. If I were sure that I was dealing with bovine infection I should not excise. Such cases should be treated by persistent and prolonged immobilization of the affected joint or joints. I wish to reiterate that these two types of tuberculosis should differ in their treatment, because their prognosis and ultimate results differ.

DR. ARTHUR STEINDLER, Iowa City, Iowa: I should like to ask Dr. Keller whether he has ever seen a case of adult tuberculosis of the bovine type, or has had any unimpeachable evidence of the existence of the bovine type in children.

DR. KELLER: Yes, sir; I have.

DR. WALTER G. STERN, Cleveland: I should like to ask Dr. Bull to explain his method of exploring the entire knee joint through "a simple lateral incision of 3 inches." I cannot see how such an incision will allow one to explore the top of the tibia, both condyles of the femur, etc., which is, of course, quite necessary in such an exploratory arthrotomy.

DR. E. H. ARNOLD, New Haven, Conn.: One thing that stands out prominently in the paper is that fixation works very well in these cases, if it supplements excision or any other procedure, which emphasizes the point made by Dr. Ridlon that fixation is, after all, one of the means of cure, and will cover the bovine cases and the Wassermann-test cases, because in all of these it will prove beneficial.

DR. F. J. GAENSLER, Milwaukee, Wis.: I should like to ask the essayist to go into the question of the results obtained by the Brackett method. We are all interested; and although he suggested that enough time may not have elapsed to allow of formulating the results, we should like to have his impressions regarding the treatment. The speaker mentioned that two weeks after the injection of iodoform oil, he began passive movements. That, I think, will impress most of us as being contrary to the principles involved in the treatment of tuberculosis; and I should like to know how he justifies that proceeding. In speaking of the tuberculin test, he referred to the local or the general reaction. I think that we should have both in all cases. One of the chief difficulties that I have had is in immobilizing the knee securely during the time the plaster is applied, whether a nail is used or not. I think that the suggestion of using a posterior splint is excellent. No mention has been made of the method that Dr. Galloway described before the American Orthopedic Association at Pittsburgh, which consists in freshening the lateral surfaces of the tibia and having periosteal bone flaps from the femur come over the denuded surface, so as to have a more secure fixation. It impressed me as a valuable help in securing early and efficient bony union.

DR. EDWIN W. RYERSON, Chicago: I have said very often that I have never seen tuberculosis of the knee get well without operation. Dr. Ridlon referred to a case that he showed me last year. It was in a woman who, many years before, had had an undoubted tuberculosis of the knee joint, which had been operated on by excision and was cured. Years later she developed what was believed to be tuberculosis of the other knee joint; but this was not proved. As

I remember, Dr. Ridlon applied a plaster-of-Paris splint from the hip joint to the ankle joint, and the knee became well at the end of six months.

DR. JOHN RIDLON, Chicago: The knee tuberculosis in the right knee was diagnosed by Bloodgood of Johns Hopkins, and the patient was operated on there. The tuberculosis in the left knee developed while she was still in the hospital, and the diagnosis was then made by Bloodgood and Halsted. Wassermanns did not exist at that time; roentgenograms did not exist; rabbit inoculations did not exist. It was simply the opinion of the men in Baltimore, New York and Chicago whom I mentioned that it was tuberculosis of the left knee. It was treated for three or four years, and was not cured in six months.

DR. EDWIN W. RYERSON, Chicago: I think it is only fair to state that this case was not definitely proved to be one of knee joint tuberculosis. Dr. Henderson and others have said that the synovial form may be cured in adults without excision. Of course, everything is possible, and it may be that synovial tuberculosis may be cured without operation, but can a tuberculosis that is active in the bones of the adult knee joint be cured? Personally, I have seen no such case. It seems reasonable to believe that injections of antiseptic substances into the synovial surfaces may cure synovial tuberculosis. I have long hoped that it might do so, but I have seen many cases in my clinic in which we have injected different solutions without any result whatever, except to keep the patient wearing apparatus year after year, and then, at the end of many years, convinced that the knee was not going to get well, I have lost faith in this method of treatment. It has been an almost appalling surprise to me to find how extensive the disease is in many cases. The Central States Orthopedic Club saw in one city a large series of knee joints that had been treated conservatively for five to seven years. Not one patient was well, and all had had a stiff knee for all those years that they had been under treatment; and in my opinion, none of them stands a good chance of getting well without operation.

On the other hand, we have a simple and rapid method of producing bony ankylosis in the position best suited for the individual patient. We can reasonably expect to remove a large part of the tuberculous disease, and we can rapidly make the patient able to go about without apparatus. The majority (I will not say all) of the cases of joint tuberculosis in adults, as differentiated from synovial tuberculosis, will do better, I believe, as we see an increasing number of cases, with an excision done by a competent surgeon. Whether plates or other methods of bone fixation be deemed advisable is an open question. In my hands a long plaster-of-Paris spica from waist to toes has apparently made the patients comfortable and has promoted early union.

DR. JOHN DUNLOP, Washington, D. C.: In reply to what Ryerson has said in regard to diagnosis, and also what Dr. Ridlon said of the early diagnosis of his case, I would say that I was Dr. Bloodgood's assistant for a year and saw a great many of the pathologic knees that were excised. After the possibility of a diagnosis of chronic joint disease became known, which it was not when I worked in the laboratory, they went over all those old excisions that they had made at Johns Hopkins and found that the diagnosis of atrophic arthritis was always being made in place of the diagnosis of tuberculosis. I believe that the case that Dr. Ridlon referred to was one of atrophic arthritis, although at that time all the men in Baltimore were making the diagnosis of tuberculosis in such cases.

DR. EDWARD C. BULL, Boston: There seems to have been a misunderstanding. Our statement was that we have seen no recovery of adult tuberculosis of the knee without operation—meaning to include as an operation the injection of iodoform oil. At the time of the dissection of the involved tissues no effort is made to get the diseased portion out completely, but to get out most of the synovia and diseased bone. The Wassermann, gonococcus complement fixation and tuberculin tests are made as a routine; syphilis is therefore eliminated. As to the 3-inch incision in the oil arthrotomy operation, we grant that we cannot get a complete view

through this; our observations are based on what we can see and feel, the fingers being run around to break up adhesions. Passive motion is employed very conservatively at first. The capsule is quite distended under the pressure of the oil, so there is little rubbing of the synovial surfaces, and certainly no force is used in the earlier employment of passive motion. Only a very few degrees of motion are employed at first.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

HALAZONE-ABBOTT.—Parasulphonedichloramidobenzoic acid.— $C_6H_4(SO_2NCl_2)COOH$ -1:4.

Actions and Uses.—Halazone-Abbott is said to be a powerful disinfectant. It is said to act like chlorine, but to have the advantage of being stable in solid form. In the presence of alkali carbonate, borate and phosphate, Dakin and Dunham report that, in from thirty to sixty minutes, halazone in the proportion of 1:200,000 to 1:500,000 sterilized polluted water contaminated with such organisms as the *Bacillus coli*, *Bacillus typhosus*, *Bacillus paratyphosus* A and B, *Cholera vibrio* and *Bacillus dysenteriac*.

Dosage.—For the sterilization of water, 0.004 to 0.008 Gm. halazone, in the form of tablets containing sodium carbonate (or sodium borate) and sodium chloride, is added to 1 liter.

Manufactured by the Abbott Laboratories, Chicago. No U. S. patent or trademark.

Halazone Tablets-Abbott.—Each tablet contains halazone-Abbott 0.004 Gm., anhydrous sodium carbonate 0.004 Gm. and sodium chloride enough to make approximately 0.113 Gm.

Parasulphonedichloramidobenzoic acid was first prepared by H. D. Dakin and E. K. Dunham (Brit. Med. Jour., May 20, 1917, p. 682) under the name "Halazone." It is prepared (1) by oxidizing para-toluenesulphonamide to parasulphonamidobenzoic acid, and (2) chlorinating the latter.

Halazone-Abbott is a white powder having a strong odor of chlorine. It is slightly soluble in water and chloroform; insoluble in petroleum ether; soluble in glacial acetic acid, benzene, and with formation of the salt in alkali hydroxide solutions. It crystallizes in stout prisms from glacial acetic acid. The melting point of pure halazone is 213 C.

Halazone-Abbott liberates iodine from a neutral solution of sodium iodide and bromine from a neutral solution of sodium bromide.

If 15 Cc. of a saturated aqueous solution of aniline is treated with 0.05 Gm. of halazone-Abbott, the solution acquires a brownish-red color, which becomes deep blue upon supersaturation with ammonia water.

If 0.1 Gm. of halazone-Abbott is treated with a few drops of concentrated sulphuric acid, chlorine is evolved, but no blackening occurs (readily carbonizable matter).

About 0.150 Gm. of halazone-Abbott (or in the case of halazone tablets-Abbott, 30 tablets), accurately weighed, is dissolved in 100 Cc. of water and 10 Cc. of a 10 per cent. sodium hydroxide solution. Fifteen Cc. of a 10 per cent. potassium iodide solution is added, the mixture then acidified with acetic acid and titrated with tenth-normal sodium thiosulphate volumetric solution. (If the reagents used liberate iodine, the number of Cc. of tenth-normal sodium thiosulphate volumetric solution required for their decolorization should be deducted from the total volume used.) The available chlorine content of halazone-Abbott should not be higher than 26.2 per cent. or lower than 24 per cent. Each Cc. of tenth-normal thiosulphate volumetric solution is equivalent to 0.00177 Gm. of chlorine. The theoretical chlorine content of pure halazone is 26.2 per cent.

Smallpox and Vaccination in Turkey.—Smallpox is especially prevalent in the village communities. More than half the population of such places show the pock marks. The disease does not seem to have a very high mortality in Turkey, but it is the cause of innumerable cases of blindness among children, and in this respect ranks second only to gonorrheal infection. Vaccination is practiced in larger towns and cities and in the army. Only in the last instance it is systematically carried out.—A. R. Hoover, M.D., *The Survey*.

Military Medicine and Surgery

NOTES ON THE CARE OF THE CRIPPLED SOLDIER IN ENGLAND

F. C. KIDNER, U. S. A.

Captain, M. R. C., U. S. Army; Orthopedic Surgeon, Military Orthopedic Hospital, Shepherds Bush, London, England

DETROIT

The British War Office and the Royal Army Medical Corps early realized that the responsibility of the government to the wounded soldier did not end when he was discharged from hospital with his primary wounds healed, but with his usefulness more or less impaired. They appreciated that to give a man, with a badly united femur, contracted trench feet, or a paralyzed arm, a pension sufficient to keep him alive, and leave him to shift for himself, was economically unsound. They, therefore, undertook the study and perfection of methods to restore each man as nearly as possible to a state of activity and earning power which should approximate or excel that man's state before he went into the war.

The problems were and are huge ones. First to be considered were the difficulties of reconstructive surgery. Each case presented points for study which were outside the experience of the general surgeon, and had to be worked out under conditions entirely foreign to civil life. The Medical Corps of the Army had done wonders in saving life and limbs, but their skill most easily applied itself to the acute injuries. They were apt to assume permanent crippling because they had been used to seeing similar cases in civil life remain cripples. Second, the men themselves had a natural tendency to avoid prolonged hospital treatment with repeated surgical procedures. They were willing to be content with their disabilities and look forward to a life of ease, supported by their pension and helped by their friends. They could not bring themselves to see that such a life stretching ahead for many years must sooner or later become irksome. They could not foresee as did the authorities the growing discontent—first of the individual, and second of a community—which would be fostered if large numbers of healthy young men should be kept in idleness by loss of function in one or more members. The third difficulty to be considered was the provision of suitable hospitals for the accommodation of great numbers of men who must be kept under treatment for long periods of time if good results were to be obtained. Secondary to this difficulty was the provision of workshops in which men under the process of reconstruction could be taught to do useful things adapted to their ultimate loss of function. In short, the authorities were obliged to work out the details of a comprehensive scheme for the surgical, mental and physical treatment and training of enormous numbers of damaged men, of a class which we in America see occasionally in industrial surgery, in order that at the end of the war the country's manpower might be as efficient, busy, and therefore happy, as ingenuity and persistence can make it. They felt that on the proper creation of such a scheme depended very largely the welfare of the nation for many years to come.

To the everlasting credit of the government, urged on by such men as Sir Alfred Keogh, the Surgeon-

General, Col. Sir Robert Jones, the great orthopedic surgeon of Liverpool, Sir Walter Lawrence, King Manuel, and others, the problems just outlined have been taken up with great firmness and breadth of vision, and a splendid approach, which is constantly broadening in scope, has been made to the solution of the difficulties of rehabilitation of the crippled soldier.

It was due largely to the energy and courage of Sir Robert Jones that the War Office was made to see that surgery had not done its uttermost when a man's wounds were healed. He showed them how special training and aptitude for the work could create surgeons who would go much further than this, and acquire through long contact with chronic cases an ingenuity and patience which would enable them to take up the work where the general surgeon left off his brilliant accomplishments.¹ He showed that only men so trained could gain the best results. At first he was given his opportunity to prove his theories on only a small scale, and even then was handicapped by transfer to other duties of the men who worked under him. Gradually, however, his results began to speak for themselves, and he was given more and more a free hand. Growth was brought about by the increase in the number of beds under his control, sometimes by setting aside numbers of beds in general military hospitals and sometimes by the creation of complete reconstruction hospitals, until now there are in the British Isles something like 11,000 beds. This number is being increased rapidly and indefinitely, with a future minimum of 30,000.

It is my privilege to be stationed at the largest of these hospitals, the Military Orthopedic Hospital at Shepherds Bush, London, with its 1,100 beds and its permanent staff of five chiefs and the necessary assistants, under the orders of a major, responsible to the R. A. M. C., who acts as superintendent, disciplinarian, and business head. The hospital is divided into five services, each under the charge of one of the chiefs, and each with about 200 beds. The chiefs are all surgeons who in peace times had leanings toward orthopedics; and most of whom have served as army surgeons in the war. They have worked up to their positions through special aptitude for the work, and through periods of training in minor orthopedic positions under Sir Robert Jones. He it is who has general supervising charge of all the hospitals, and is the originator in all matters of policy. The hospital is divided into two blocks—the South and North. In the South Block are twelve wards of thirty-six beds each where the severe cases are kept. Each two wards have a head nurse and three or four nurses with voluntary women assistants. While waiting for operation or while convalescing, if able to be out of bed at all, men are transferred to the North Block, where they care for each other under the direction of two head and two or three ordinary nurses. At night the North Block is in charge of orderlies, who have certain disciplinary powers. There are also tents where many of the convalescents live. Discipline is roughly on army lines, but is complicated by the fact that it is against the law to punish any soldier in hospital except by confinement to bed, if necessary in a sort of prison ward, and by deprivation of privileges such as leave. On the whole, considering that most of the men are pretty healthy animals, they behave extremely well.

1. Of late, too, it has been realized that a great proportion of the wounded men need special orthopedic care from the very first, in order that the best ultimate results may be obtained.

The hospital is thoroughly equipped with a large massage department, a gymnasium, a hydrotherapeutic plant, and an electrical department. These are interdependent and ample. The men have regular schedule cards which admit them to any or all of these departments as ordered by their surgeon. Each department is in charge of an expert in the particular form of treatment who prescribes the details, which are carried out by large numbers of trained assistants. For instance, the massage department has about twenty masseuses or masseurs, one of whom is a blinded soldier. All departments are extraordinarily well run, especially the electrical, under Capt. W. R. Bristow, whose coil for diagnostic and treatment purposes far surpasses anything I have seen. When used under his direction, electrical treatment is of real value.

As an adjunct to these departments for special treatment are large workshops—woodworking, forge, splint making, repair shops, artificial limb shop, etc. In these large numbers of the patients work regularly. Their object is fourfold: First, to keep the men busy, and in that way to take their minds off their troubles. It is well known that the victim of long standing disability is apt to become depressed and the victim of his sympathizing friends. He does not do well physically because he is in a nonreceptive psychologic state. If he works he is usually happy. Second, work provides one of the best means for passive and active motion and massage. Third, work keeps a man at his trade, or goes far to teach him a new one. Fourth, the product of the shops supplies many needs of the hospital. In the English army no man in hospital can be forced to work, except for short periods as a prescription. He must work voluntarily. Here lies the great difficulty of the curative workshop—to get a man to go to them. It has not been fully solved, and there is much to do yet in making work interesting. Gradually the men are learning the value of work, and are taking it up more willingly. The best application of work to the individual is also a hard matter, for two reasons. First, a man with an injured hand constantly tends to save that hand, and use the good one, and thus gains nothing. Second, the tendency of the business authorities of the hospital is to get as great a product from the shops as possible. Therefore, the foremen are very apt to put patients on the job they can do best, regardless of its curative value. This, too, is being solved by the appointment of a medical supervisor, who prescribes the work, and by an increasing openmindedness on the part of the authorities.

The question of long residence in hospital is also a difficult one. It is appreciated that beds in a hospital which are costly should not be blocked by men who are waiting long periods for the regeneration of nerves or the subsidence of low grade infection. Yet if the men are allowed to leave the hospital, it is often difficult to get them back. The so-called Command Depots partially solve this problem. These depots are large camps where the men are kept under military discipline, doing what little work they can, but protected from the strain of active life. They care well for certain types of cases which need no nursing. Convalescent homes, too, care for large numbers. These are rather expensive and tend to hospitalization of the patient. The Command Depots furnish some of the details of treatment, such as baths, electricity, massage etc.

From this brief statement an idea of what has been accomplished toward the regeneration of cripples in England can be obtained, and the results are excellent.

Surgeons are made especially fit to deal with the men, by a well organized course of continuous training, and the trained surgeons are kept at the job.

Hospitals have been acquired by the government for the treatment of this type of case only.

The men themselves are gradually being educated to an interest in the improvement of their own condition. Education is apparently the sole means for producing this result.

Military Orthopedic Hospital, Shepherds Bush, London, England.

THE VENEREAL DISEASES THE TREATMENT OF GONORRHEA

GENERAL CONSIDERATIONS

(Continued from page 1081)

Every patient with acute urethritis should be ordered immediately to hospital for treatment. The earlier cases are seen, the better are the chances for rapid cure and the less the dangers of posterior urethritis and the complications of gonorrhea. With gonorrhea, as with syphilis, soldiers should be encouraged to report on the slightest suspicion of trouble, and those who have been exposed should be watched for a week for manifestation of the disease. On its appearance, treatment should be instituted immediately.

The patient should be given instructions, preferably printed, on the part he must take in the conduct of his case. In all cases he must be warned of the danger of carrying the disease to his eyes, and of gonorrheal ophthalmia; and of the necessity of washing his hands after touching his penis or anything contaminated with his pus.

At the first examination of every case of gonorrhea, the patient should be stripped in order to permit a general survey of his condition. Note should be made of the amount of discharge and of the condition of the glans and prepuce. The presence or absence of chancre and chancroid should be determined, and the testicles should be examined for a beginning epididymitis. Then the patient should be instructed to pass his urine into two glasses.

Two-Glass Test.—The two-glass test should be made at each examination for the purpose of determining: (a) if the posterior urethra has been affected; (b) the amount of pus secreted.

The urine passed during gonorrhea appears turbid from admixture with pus, and in it are little clumps or masses of desquamated epithelium. After standing, the pus settles to the bottom of the glass and a cloud of mucus appears floating above it. As the patient goes on toward recovery, the pus disappears, but the hypersecretion of mucus continues and occasions a cloudiness of the urine, giving it a mucilaginous appearance. After the mucus disappears, the "clapshreds" persist for months, because isolated portions of mucous membrane are not covered with epithelium and are still secreting pus.

In the two-glass test, if the anterior urethra alone is affected, the first glass of urine will be cloudy and the second glass clear; but if the posterior urethra is involved both glasses will be turbid from the presence of pus. This is accounted for by the action of the "cut-off" muscle which forms a barrier between the anterior and posterior urethra. It prevents pus in the anterior urethra from flowing back into the bladder; so

that in anterior urethritis alone, the pus in front of the cut-off muscle is washed out in the first flow of urine, while the last of the urine will flow over a clean surface and remain clear; that is, the first glass will be turbid, the second clear. On the other hand, in posterior urethritis, the cut-off muscle holds back the pus, as it does the urine in the bladder, and the pus flows back into the bladder and renders all the urine turbid. When the urine in posterior urethritis is passed into two glasses, the second glass is turbid as well as the first. If it is desired to determine the condition of the anterior urethra in posterior urethritis, it can readily be done by irrigating the anterior urethra with saline solution and collecting the washings in a glass for inspection.

Microscopic Examination of Pus.—Microscopic examinations of pus are indispensable, not merely for the establishment of the diagnosis, but also for the observation of the progress and stage of the disease, for the selection of the appropriate treatment for the different stages, and finally for the purpose of determining whether the gonococci have been eliminated and the patient cured.

THE GONOCOCCUS

The gonococcus is coffeebean or kidney shaped, and usually found in diplococcus form, the flat or slightly indented side of the organisms facing each other. In pus from acute gonorrhea organisms are found both within and without the cells, crowded in masses in the leukocytes. The intracellular location of the organisms is of diagnostic importance, but is not so characteristically seen in pus from chronic cases.

The gonococcus is easily stained with methylene-blue or with most of the other anilin dyes. It is a gram-negative organism, and for the purpose of differentiation from other diplococci a Gram stain is necessary. It is quickly decolorized by Gram's method and can then be counterstained with safranin or other stain. The Gram stain does not furnish an absolutely characteristic differentiation of the gonococcus from all similar cocci, but in pus from the urethra or vagina, or from the eye in cases of acute conjunctivitis, it may be accepted as a reliable test.

For the absolute differentiation of the gonococcus, cultural methods are necessary.

In the prodromal stage when the discharge from the meatus is thin and scanty, microscopic examinations of smears shows quantities of desquamated cylindric epithelial cells and a moderate number of pus cells containing clumps of intracellular gonococci. In the ascending stage a large number of pus cells, many of them containing gonococci, and a number of free gonococci are to be seen. The stage of decline is indicated by the appearance of squamous epithelial cells, showing that the erosions have begun to cicatrize and have become covered with newly formed epithelium. Clumps of gonococci are also present, adhering to the epithelium. The pus cells have diminished in numbers and a smaller number of them contain gonococci. As the disease continues to improve, pus cells and gonococci disappear, and finally the discharge from the meatus is found to be composed only of squamous epithelium, mucus, and an occasional pus cell, without gonococci.

PROGNOSIS

The virulence of the gonococcus differs in different cases. It is often noted that when a person has chronic gonorrhea for months or years, the gonococci, when

transplanted into the tissues of another person, are not capable of producing such virulent inflammatory symptoms as when taken from a fresh case. This attenuated virulence explains the fact that in such cases the period of incubation is comparatively long, the purulent discharge is scanty, and the cases often become chronic and result in prostatitis and stricture.

Another factor which influences the prognosis in gonorrhea is the state of the patient's general health. Gonorrhea acquired in persons affected with phthisis, or who are debilitated from any cause, is apt to run a subacute; but exceedingly protracted, course. The other causes which retard recovery may be grouped as follows: (a) complications, posterior urethritis, prostatitis, etc.; (b) reinfection from a urethral gland, seminal vesicle, prostate, etc.; (c) lack of rest; (d) alcoholic indulgence; (e) too vigorous treatment, especially injections which are too strong or too frequently repeated; (f) coitus.

ANTERIOR URETHRITIS

General Management.—Acute gonorrhea should be treated on the principles that apply to other severe acute inflammatory diseases: with rest, simple diet, removal of sources of irritation, and other such measures. The patient should have rest in bed as long as the urethritis is acute or as long as there are acute complications; no other measure contributes so much to prompt and uneventful recovery. He should have a bland diet from which highly seasoned or rich foods are excluded; and in very acute cases a milk diet is best. He should drink an abundance of water—eight or ten glasses daily—and no other drink except milk. Alkalies and alkaline mineral waters should not be prescribed, because an acid reaction of the urine is the best safeguard against cystitis from bacteria which find their way into the bladder; and the acidity of the patient's urine will already be greatly reduced by his free use of milk and his abstinence from meat. Throughout the disease, the bowels should be kept open with aperients, and during the very acute stage the patient should have a saline cathartic every other morning.

Dressings for the purpose of catching the discharge and keeping it from the clothing are always necessary. The best form is a loose bag, such as that which can be made by cutting off the foot of a stocking, into the bottom of which gauze can be placed to catch the pus. The bag is suspended from a waist band. In this way a free flow of pus from the urethra is encouraged and retention prevented. Constriction of the penis by dressings wrapped around it should be carefully avoided, so that there may be no interference with the return circulation. A suspensory bandage should be worn when the patient is allowed to get up, in order to relieve the sensation of dragging on the spermatic cord and perhaps to lessen the danger of epididymitis.

Oil of sandalwood is soothing and curative and should be given during the acute stages, but not copaiba or cubebs; they are serviceable only in the declining stages of gonorrhea. Sandalwood oil should be administered in capsules—dose, 0.5 to 1 c.c. (8 to 15 minims) three times a day after food. It sometimes disagrees with the digestion or causes an intense pain in the back, and then should be discontinued.

Severe Acute Urethritis.—In very severe anterior urethritis with intense reaction, profuse discharge, and great swelling and edema, it is good judgment to wait for some subsidence of the symptoms before beginning

injections. In the meantime the parts should be kept clean; the penis held in hot water for fifteen minutes at a time every few hours, and hot sitz baths given every three or four hours to relieve distress. If pain on urination is very distressing, it may be relieved by an injection, five minutes before urination, of 1 c.c. of 1 per cent. solution of cocain hydrochlorate or B-eucain or novocain. Sandalwood oil diminishes the pain on urination in most cases, so that the use of a local anesthetic is not often necessary.

In the same way injections should not be used for anterior urethritis in the presence of acute complications in the posterior urethra or its adnexa.

Local Treatment.—In the ascending stage of acute urethritis and in other acute cases, which do not reach the intensity suggested in the preceding paragraphs, local treatment by injection may begin at once. For treatment in this stage and as long as gonococci remain, albuminates of silver salts, such as protargol, and argyrol, should be used. The treatment may be carried out by injections with a small hand syringe or by irrigations with an uninterrupted flow of solution from a large irrigator. Both methods of treatment have their advocates; either may be used effectively. But if irrigations are used, more care is required to avoid irritation or traumatism.

For hand injection, protargol or silvol are used in strengths of from 0.5 to 2 per cent. argyrol in strength of from 2 to 4 per cent. Injections should be given three or four times daily at intervals of four to eight hours. Before injections, the patient should wash out the urethra by urinating. For these injections, an acorn-tipped syringe should be used, the tip being firmly pressed into the meatus, and the penis held under moderate tension. The injections should always be given with the utmost gentleness, and if they produce distress, their strength should be reduced. In order to be effective, a sufficient quantity of fluid must be injected to distend the anterior urethra so that a syringe of at least 15 c.c. capacity should be used. The solution must be held in the urethra for at least five minutes—better, ten.

The same treatment may be carried out by copious irrigations or urethral lavage, using a glass irrigator filled with the fluid and suspended at a height of 2 to 4 feet above the penis. The solutions used for irrigation are less concentrated than those for injection. The solutions in common use are protargol or argyrol in the strength of 1:1,000, or permanganate of potash in the strength of 1:3,000. The irrigations should be given at temperatures of from 110 to 115 F.—as hot as can comfortably be borne—and be repeated as often as four times in twenty-four hours.

Technic of Irrigations.—The patient should sit well forward on the chair and lean backward, resting his shoulders against the back of the chair. He should hold a small basin to catch the overflow of the irrigation. The irrigator tip is pressed against the meatus and the anterior urethra distended with fluid. Then by a short release of pressure of the tip a return flow is allowed. This is repeated until thorough irrigation of the anterior urethra has been obtained. If it is desired to irrigate the posterior urethra, the anterior urethra should first be washed out. Then the tip should be firmly pressed against the meatus and the anterior urethra dilated with fluid. The patient is then instructed to take a long breath and to try to urinate; this releases the cut-off muscle and the irrigating fluid

flows into the bladder. The bladder is allowed to fill with fluid, but should not be distended beyond the point of comfort. After the bladder is filled, the patient empties it by urination.

The advantages of treatment by irrigations are that the surgeon is sure that the treatment is correctly applied; the discharge is rapidly reduced to a minimum; and posterior urethritis occurs less frequently than under the treatment by injections.

Stage of Decline of Gonorrhea.—Under the above methods of treatment, the acute symptoms of gonorrhea promptly disappear. If, however, treatment be discontinued at this point, even though the discharge has ceased and only a few shreds remain in the urine, a relapse is certain to occur in from two to three weeks, since a few gonococci have been left in the tissues and extensive reinfection occurs.

In about three weeks, in cases which run a favorable course under the treatment with silver albuminates, the discharge becomes watery and scant. Microscopic examination shows few or no gonococci, but many newly formed desquamated epithelial cells. The urine in the first glass is clear or slightly turbid, but contains many long mucous filaments. When the case has reached this stage, the task remains of curing the existing postgonorrheal lesions. These consist of catarrhal inflammation of the mucous membrane, erosions, periglandular infiltrations, and infiltrations of the submucous tissues. Since the albuminates of silver have the purpose only of destroying the gonococci, but exert no effect on the inflammatory processes, it is necessary at this time to treat the existing catarrh of the mucous membrane by astringent remedies.

The following are appropriate preparations for this purpose:

| | gm. or c.c. | |
|-------------------------|-------------|-----------------|
| Zinc sulphate | .60 | gr. xii |
| Resorcin | 1.25 | gr. xxiv |
| Water | 100.00 | ℥ iv |
| or | | |
| Zinc sulphate | .20 to .60 | gr. iv to xii |
| Phenol | .20 | gr. iv |
| Water | 100.00 | ℥ iv |
| or | | |
| Zinc sulphate | .40 | gr. x |
| Lead acetate | .80 | gr. xx |
| Water | 100.00 | ℥ iv |
| or | | |
| Zinc permanganate | .05 to .10 | gr. i to gr. ii |
| Water | 100.00 | ℥ iv |

Injections of these solutions are given once or twice daily. They are not, however, bactericidal, and should be supplemented by injections of silver albuminate, in order to get rid of the few remaining gonococci. The latter are also given twice daily, alternating with the astringent injections.

It may be repeated that these astringent injections are indicated only in the terminal stages of gonorrhea, and that they should be given neither in acute gonorrhea nor in the presence of acute complications in the posterior urethra.

Under such astringent treatment, the discharge soon stops, and the urine becomes clear and free from pus; but numerous small clap-shreds persist. When this stage is reached, a provocative irrigation of a 1:4,000 solution of silver nitrate should be given. If gonococci are still present, this causes the return of a profuse discharge, in which gonococci will be found. The occurrence of such a discharge after provocative injection necessitates a return to treatment for acute urethritis. When no relapse follows the silver nitrate irrigation and the urine is clear, but contains many shreds, dilatation of the urethra not oftener than every

five days is necessary to get rid of the remaining lesions and bring the urethra back to normal. The dilatations are made with a sound large enough to distend the urethra, and if the meatus is too small to admit a 28 or 30 French sound, a meatotomy should be done. Gentle massage of the urethra should be practiced with the finger over the sound while it is lying in the urethra.

Each dilatation should be followed by a copious irrigation with a 1:10,000 silver nitrate solution, and an irrigation with the same solution should also be made on days when the dilatation is not done. A hand injection of one of the astringents may be used once or twice a day in conjunction with the irrigations.

Treatment by dilatation of the urethra and irrigation should be continued until the shreds have disappeared from the urine. In most cases this is eventually accomplished, but occasionally persons will be observed who do not respond to this treatment; these are likely to improve rapidly under a daily irrigation of potassium permanganate.

It is possible to treat gonorrhea too long, and to cause the discharge to persist by the simple irritation of injections. In such cases, there will be a secretion free from gonococci, which on squeezing will appear at the meatus as a small, transparent, glycerin-like drop, and which will cause sticking together of the meatus in the morning. In cases manifesting this condition, it is advisable to stop treatment and to allow the irritation to subside. In consequence the mucous discharge will often disappear spontaneously.

After five or six weeks of treatment, if the discharge has stopped and the urine is free from filaments, and the prostate and vesicles are not involved, treatment may be suspended. But the patient should be examined at frequent intervals for two weeks more. Cultures can advantageously be made at this time since a growth of the gonococci may be obtained even when none are seen in stained specimens. As a last precaution before discharging the patient, the urethra should be examined with a bougie à boule or urethroscope, and the condition of the prostate and seminal vesicles should be investigated to make sure that these organs are free from disease.

POSTERIOR URETHRITIS

Posterior urethritis develops as a rule after acute anterior urethritis has become subacute, that is, from the second to fourth week of infection, or later. It occurs in 40 to 80 per cent. of cases. Its occurrence is usually due to the spontaneous spread of the infection from the anterior urethra; but not infrequently the tendency to its spread is increased by a too vigorous local treatment, particularly by injudicious instrumentation. It may occur as a very severe process, or more frequently as a subacute one. In addition to the urethra, it is likely to involve the prostate and the base of the bladder, and frequently it spreads to the seminal vesicles and the epididymis.

Posterior urethritis will not escape detection, if the two-glass test is done daily as a routine measure on each patient. A turbidity of both glasses, when due to pus and not to phosphates, denotes involvement of the posterior urethra.

Severe posterior urethritis demands complete rest in bed and measures directed to the relief of the distressing symptoms. All local treatment of the urethra should be suspended. The nearer the diet approaches to a liquid or milk diet, the better. Abundant water should be taken, but diuretics should not be used,

because they cause the too frequent evacuation of an already overtaxed bladder. Saline cathartics should be given every other day to reduce congestion in the pelvis. For the relief of tenesmus and pain, sitz baths of half an hour's duration, repeated several times a day, are useful. Alkalies, which favor the growth of bacteria in the bladder by rendering the urine alkaline, are contraindicated, as they are in acute urethritis. Sandalwood oil is not only curative, but soothing and gives relief in many cases. In the severe cases morphin should be given to relieve tenesmus and desire to urinate. It is best to give it in these cases in suppositories.

When other methods fail to relieve tenesmus and pain, remarkable relief is occasionally obtained by the instillation of a few drops—about ten—of a 1:500 to 1:100 solution of silver nitrate through a soft catheter or a deep urethral syringe. In the beginning this should not be stronger than 1:500, and it should not be used oftener than every two or three days. This instillation of silver nitrate in acute cases of posterior urethritis should be a last resort. It is contrary to the principles which should usually control the treatment of such cases, namely, not to introduce instruments during acute urethritis.

As a rule, the acute stage of posterior urethritis disappears promptly, and the cases pass into the condition of mild posterior urethritis, and then should be treated as such.

Treatment of Mild Posterior Urethritis.—In subacute posterior urethritis, treatment is given on principles similar to those applicable to subacute anterior urethritis. Solutions are applied to the surface, either by the injection of small quantities of concentrated solutions or by irrigations of copious quantities of dilute solutions.

In the first method, a small soft rubber catheter is introduced just beyond the cut-off muscle, and by means of a small urethral syringe about ten drops of 1:500 to 1:100 solution of silver nitrate are introduced into the posterior urethra. This is to be repeated at intervals of one or two days according to the tolerance of the case. In order to prevent immediate precipitation of the silver by the urine, the injection should be made with the bladder empty.

Irrigations are particularly applicable to the treatment of posterior urethritis. These may be given with a 100 c.c. hand syringe having an acorn tip, but they are preferably given through a gravity irrigator elevated five to six feet above the penis, according to the technic already described for irrigation. For posterior irrigations, protargol in the strength of 1:1,000 to 1:250, or silver nitrate 1:10,000 are used. Less effective, but still useful in some cases, is potassium permanganate, 1:3,000.

There is room for personal preference in selecting instillations or irrigations for the treatment of posterior urethritis. As a general statement, it may be said that copious irrigations are likely to be most useful in recent cases which are free from pain and other acute symptoms, but show rather an abundant purulent secretion; while instillations are more serviceable after the urine has cleared and only shreds remain.

As a rule, posterior urethritis is accompanied by complications in adjacent structures, and persistence depends on reinfection from these structures. Successful treatment, therefore, depends on the treatment of the complications.

(To be continued)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . "Medic, Chicago"

Subscription price Five dollars per annum in advance

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SATURDAY, OCTOBER 6, 1917

THE OUTPUT OF BASES AFTER INTAKE OF ACID

The introduction of a nonoxidizable acid, such as the ordinary mineral acids, into the organism must resemble in considerable degree that condition which may result in acidosis. In order to retain its normal capacities, the body must neutralize the foreign acid and get rid of it in some way. Organic acids may be eliminated as such to a certain degree; but any noteworthy accumulation of acid products demands some compensatory elimination of base. Among the ordinarily available resources are the fixed alkalies and alkali earths of the body, as well as ammonia that is "deflected" from the usual course of nitrogenous metabolism. Severe acidosis invariably involves a depletion of the alkali reserves of the body.¹ It is well known that an increased output of ammonia attends the appearance of considerable quantities of acid in the organism, whether they are introduced experimentally or arise in metabolism.

The extent to which other bases may be eliminated is not so well known, owing, doubtless, to the greater difficulty in the analytic estimation of their output. Stehle² has lately undertaken a study of this question at the University of Pennsylvania. He found that administration of hydrochloric acid by mouth to dogs causes an increased excretion of calcium and magnesium as well as of sodium and potassium. But in the case of the latter pair—the alkalies—a subsequent compensatory retention makes the loss apparent rather than real. The ammonia is, however, the great factor in neutralizing acid administered in this way.

Stehle remarks that if an analogous condition holds in human diabetes, the resulting calcium loss may be something to take into consideration in the treatment of diabetic patients in whom the excretion of beta-hydroxybutyric acid has reached a significant figure. He cites an illustrative case in which there was an excretion of more than 5 kg. of this substance in the last 160 days of the patient's life. This is equivalent

to 66 gm. of calcium. Such an amount, says Stehle, does not seem large when the whole calcium content of the body is considered; but it is unknown to what extent the calcium of the body must be considered inert. If the quantity is large, then 66 gm. may be quite a significant loss. The balance of calcium in diabetics is usually reported to be negative.

With the possible function of calcium as a neutralizer of acid in mind, it has been maintained that the storage of calcium is dependent on a suitable supply of alkali to the organism. Thus the assertion has been made that the addition of alkali carbonate to the food of children may change a negative calcium balance to a positive one.³ This was believed to be due to the neutralization, by the alkali, of the acids formed in metabolism and also to a prevention of the formation in the alimentary tract of insoluble calcium soaps which cannot be utilized. The alkali was supposed to render unnecessary the withdrawal of calcium. According to a recent study by Givens and Mendel⁴ at Yale University, administration of base produced no significant effect on the balance of nitrogen, calcium, magnesium and phosphorus, in dogs; nor did it decrease the urinary output of calcium in a human diabetic.

CANNING WHAT YOU CAN

Since Aesop wrote the fable of the ant and the grasshopper, and possibly before that time, it has been considered the act of the wise to store in times of ease and plenty for use in times of stress and poverty. When a nation is at war, production of many of the commodities of peace time of course diminishes. Therefore, one of the first considerations of the United States Food Administration is in the direction of food conservation and preservation—storing—the latter through canning, drying and other approved methods. On account of the increased production of food during the warm season of the year, it is necessary to save the surplus of perishables "to provide variety for the winter diet, lessen the expenditure for food, and help to simplify the growing problem of transportation."

Probably the most advantageous method of preserving foods is by canning, as this method retains the original form, color, flavor and texture of fruits and vegetables to a greater degree than do other means of preservation. In addition, such preserved foods require less preparation before serving. Of course, the initial cost of containers increases the price of canned foods over the expense of drying, brining or curing, but it is likely that the advantages of the canning method—and this includes putting up in jars, bottles, etc.—outweigh the disadvantage of the initial increased cost of containers, especially as most housewives use the same containers from year to year.

1. The Newer Conception of Acidosis, editorial, THE JOURNAL A. M. A., Aug. 25, 1917, p. 646.

2. Stehle, R. L.: A Study of the Effect of Hydrochloric Acid on the Mineral Excretion of Dogs, Jour. Biol. Chem., 1917, 31, 461.

3. Dubois, M., and Stolte, K.: Jahrb. Kinderh., 1913, 77, 21.

4. Givens, M. H., and Mendel, L. B.: Studies in Calcium and Magnesium Metabolism, I, The Effects of Base and Acid, Jour. Biol. Chem., 1917, 31, 421.

It is interesting to look back into the history and development of the canning industry. Near the end of the eighteenth century, the French government enacted, among other military measures, the offering of a bounty of 12,000 francs for an improved method of preserving foods.¹ The bounty, generous for that time, attracted many capable men. Nicholas Appert, an expert confectioner, brewer, distiller, and chef, worked on the problem from 1795 until 1804 before he attained his first success. At that time he found that by heating the product and then hermetically sealing the container, the food could be well preserved. In 1810 he published his results. He was awarded the prize, and is generally recognized as the discoverer of canning. By 1820 this method was being used in a commercial way. According to Appert's description, he packed the product in glass bottles, added sufficient water to cover, inserted the corks, and then placed the bottles in the water bath, heating them gradually for varying lengths of time, depending on the character of the food. He used glass exclusively.

In 1807 a Mr. Saddington in England had described a method of preserving essentially similar to that of Appert, but he did not claim to be the originator of the method, having obtained it while traveling in France. It was not generally understood why foods kept when heated by this method, but it was customary to ascribe the results to the exclusion of outside air after applying sufficient heat to the food. The French government appointed Guy Lussac to investigate the cause, and he reported that spoiling was a series of oxidation changes which could be prevented by the exclusion of outside air. It was only later that with the advent of bacteriology the true explanation came forth. And the honor for discovering most of the fundamental principles of bacteriology belongs also to the French master, Pasteur.

According to Bitting and Bitting, commercial canning on a small scale was begun in this country in New York in 1819, and in Boston in 1820, salmon, lobsters and oysters being packed in the former, and fruits in the latter. The firm of Underwood in Boston, which did the work at that time, has been in continuous operation since. The first cannery in Baltimore was opened in 1840, and the sardine industry at Eastport, Maine, in 1841. Appert used the glass bottle for his experiments, as did Saddington; but in 1810, Peter Durand in England took out a blanket patent on containers of almost every known material, and specifically mentioned tin. He is therefore known as the "father of the tin can." The early packers paid most attention to the preservation of fish and meat products, and the canning of fruits and vegetables was incidental. Today, or just previous to the onset of the war, there were packed annually in the United States some

3,000,000,000 cans of food, representing products of approximately 3,000 factories, and valued at millions of dollars.

Canning is the most widely used means of preserving large quantities of food, and is probably the best understood of all preserving methods. When properly performed, it yields food which is safe and hygienic and which has lost none of its palatability or nourishing qualities. In this way every householder may aid the food conservation bureau by economizing, with distinct advantage and with no detriment to himself.

WAR DIET AND METABOLISM

There seems to be little doubt that during the early period of the European war, when it seemed necessary to institute a strict economy in the distribution of food to the peoples of the countries involved, the food requirement of the population was underestimated for the physical work to be accomplished and underestimated for those who were in the period of adolescence; furthermore, that the enforcement of the food laws was placed in the hands of farmers, middlemen, and politicians, who mismanaged the situation.¹ The economy of food in the body is, in the first instance, a problem related to the need of energy and the metabolism of the offered nutrients. Even at complete rest the human organism requires energy for the performance of vital functions such as the activities of the heart and the work of the circulation and respiration, not to mention minor items of energy exchange which express themselves as tonus. Much more energy is called for as soon as external work is being done. If the food intake is inadequate it is inevitable, therefore, that the body should give up some of its stored nutrients—glycogen, fats, and last of all proteins—to maintain the performances just outlined. There can be no compromise in the matter of energy. The laws of the conservation of energy are inevitable in their incidence.

Two competent German physiologists, Professor Loewy and Zuntz² of Berlin, have related in a paper that has recently come to notice in this country how the early German food proclamations worked. They observed as the result of the restricted war diet that the majority of the strong and healthy men lost from 6 to 8 kg. (10 to 12 per cent.) of their earlier body weight. After the decrease a constant weight was established. The question is raised as to the cause of this decreased and then constant weight, and whether there is a relation to a lessened consumption of energy. With two people there was found a plainly evident reduction in metabolism and the decrease in consumption of energy was more marked than the accompanying loss of weight. An explanation of the low

1. Bitting, A. W., and Bitting, K. G.: *Canning and How to Use Canned Foods*, National Cannery Association, Washington, D. C., p. 11.

1. Lusk, G.: *The Science of Nutrition*, Philadelphia, 1917, p. 556.
2. Loewy, A., and Zuntz, N.: *The Influence of the War Diet on the Metabolism*, Berl. klin. Wchnschr., 1916, 53: 825.

equilibrium given is that with the decrease in body weight there is a relatively greater decrease of the active cell substance.

Evidently, any procedure which lessens the quantity of metabolizing tissues in the body may decrease the amount of energy required. An emaciated individual who is in good health will invariably exhibit a diminished metabolism. Lusk states that in starvation the fall in metabolism reaches greater proportions than does the fall in the mass of protoplasmic tissue. Thus there seems to be a specific reduction in metabolism coincident with undernutrition. But who will say that in final analysis the best measure of human performance is to be found in the most economical use of food? The newly organized Food Administration of the United States fortified by an advisory board on alimentation composed of recognized students of nutrition has not advocated that our people shall go without needed food. Indeed, we are urged to "eat wisely and well," but to choose our foods in such a way that those most needed across the seas, especially the most concentrated foods, such as wheat, beef, pork, dairy products, and sugar may be saved for export. We have for our own use an abundance of foodstuffs of other kinds—the perishables, fish, corn and other cereals—and we are asked so far as possible to substitute these for those other products of greater use abroad. The assistant secretary of agriculture has well stated the needs of the time. In time of war, he remarked, as in time of peace it is not only important, but essential that the people be well fed. Victory does not depend alone on guns and soldiers; it depends as well on the efficiency of every man, woman, and child back of the firing line. To maintain this efficiency there must be enough food and it must be so cooked and so combined as to be both palatable and nourishing. The war must be won in the kitchens and on the dining tables of America as well as in the trenches.

HUMIDITY AND HUMIDIFIERS

Our ideas respecting the physiologic action of atmospheric conditions and as to what constitutes an ideal atmospheric environment have been greatly changed in recent years. Those features of general bodily discomfort which betray themselves by unmistakable sensations—malaise, sleepiness, the flushed face, headache, disinclination to think or act, general debility—are no longer ascribed to chemical vitiation of the air, but rather to certain physical peculiarities. Carbon dioxide and unidentified organic respiratory products are at present not charged with responsibility for the unquestionably deleterious effects of certain atmospheres. Today we are inclined rather to say that "bad air" is too warm, too moist and too still. As Lee¹

has remarked, if it has not these physical features it is not harmful.

Lee has summarized the evidence of modern investigation as to what constitutes a favorable atmospheric environment by saying that when an existing external temperature is fairly comfortable to the body, an elevation of it, especially when such an elevation is accompanied by an increase of humidity, is deleterious, and the deleterious effects are more pronounced when the air is stagnant. Deleterious effects resulting from such a combination of atmospheric conditions may be obviated in some degree if the air next to the skin be put into motion, but a more effective antidote is a reduction in the temperature of the air, and this may be assisted by a reduction in its humidity. All experimentation and observation demonstrate that a moderately cool and moderately dry air in motion constitutes the most physiologically helpful aerial envelope of the body. The customary figure of 70 F. (approximately 21 C.) for the atmosphere in which most persons engage in the ordinary occupations of the living room of a dwelling, is too high; a range from 65 to 68 F. (approximately 18 to 20 C.) with not over 50 per cent. relative humidity, is undoubtedly better, but even such temperatures are too high when much physical activity occurs.

The question as to whether the atmosphere can ever become too dry for comfort or physiologic well being has not yet been satisfactorily answered. The comfort contributed by a dry atmosphere in contrast to a humid one in warm weather is unmistakable. In cold weather the moisture may be largely precipitated from the air so that it becomes extremely dry when it enters houses. This has led to the desire and the practice to moisten such air. This may be done, to some extent, by heating water in large open vessels. It has been pointed out,² however, that for efficient moistening of the air, either a very large evaporating surface or steam jets are required. The small open vessels or saucers on which some people rely, even when located in the air passages of a hot air furnace, have only an infinitesimal influence.

An ordinary medium-sized house requires the evaporation of not less than ten gallons of water per twenty-four hours, and much more than this according to some writers, to afford suitable conditions of moisture in cold dry weather. Various devices have been suggested and are being marketed to produce humidity in the heated house in winter months. Dean Lyon³ of the University of Minnesota has tested four types of radiator humidifiers now on the market. The most efficient of these have evaporated no more than 1,248 grams of water (a little more than two pounds) in a day per each horizontal foot of radiator occupied by

1. Lee, F. S.: Recent Progress in our Knowledge of the Physiological Action of Atmospheric Conditions, *Science*, Aug. 11, 1916, **44**, 183.

2. See, for example, Fisher, I., and Fisk, E. L.: *How to Live*, New York, 1915.

3. Lyon, E. P.: Tests of Radiator Humidifiers, *Science*, Sept. 14, 1917, **46**, 262.

the apparatus. Lyon, therefore, states that, under the conditions of our northern winters, it will be seen that these radiator devices are practically worthless. Using the sling psychrometer he was never able to detect an increase of humidity from the use of any of them. Indeed, the best of them is no more efficient as an air moistener than one human being. The average evaporation from lungs and skin of a large laboratory class in subzero weather, and about 70 degrees F. inside temperature, was nearly two ounces per hour per person, or about 1,200 grams a day. Such information is valuable at this season when the question of maintaining humidity in house air always recurs.

THE FOOD REQUIREMENT IN INFANCY

A considerable number of data are now available respecting the energy requirement of the young infant at complete rest.¹ These establish the so-called metabolism of the individual, that is, the energy transformed in a condition of muscular repose and when absorption of food from the digestive tract is not going on. In the case of new-born infants it does not exceed forty-eight calories per kilogram of body weight per day. Children at later ages, between 2 months and 1 year, manifest a heat production equivalent to about sixty calories per kilogram per day, during sleep. Valuable as this information is, it does not suffice by itself to establish a practical basis for estimating the food requirement of the child under conditions of its customary routine. Something more is necessary than an allowance of thirty calories per pound to keep a baby alive. As Dr. Mary S. Rose expresses it, babies cannot lie quietly all the time. If they are to grow and acquire strong muscles they must have exercise, which they get by crying, kicking, pounding with their fists, and other movements. This means work, requiring a further supply of energy. A baby 5 months old has been shown to double his energy expenditure by the effort of crying. Active children really work as hard as any adult manual laborer.² Furthermore, a not inconsiderable quota of energy is required to meet the demands of growth of the young child.

For calculating the energy requirement in infant feeding at the present time it is customary to accept as standards the figures furnished by Rubner and Heubner as the outcome of their observations in this field. Heubner maintains that an average normal infant requires per twenty-four hours, one hundred calories per kilogram of body weight during the first three months of life, ninety calories during the second three months, and eighty or less calories during the last half

of the first year of life. The greatest factor of uncertainty in such figures lies in the difficulty furnished by the unknown degree of muscular activity of an infant in the course of the day. The essential facts could be established, of course, by studies of infants in a respiratory chamber where the actual metabolism could be followed over sufficiently long periods of varied infantile activity to afford evidence of the real performance of the individuals. Experiments of this sort are attended with great difficulty in performance and inconvenience to the investigator. Dr. Talbot of Boston is to be congratulated, therefore, on his success in measuring the heat output in infants at the Nutrition Laboratory of the Carnegie Institution of Washington over successive periods so that the effects of both absolute quiet and characteristic infantile activity could be independently established and compared.³ In babies of 2 and 6 months of age, respectively, their muscular activity increased their metabolism 67 to 70 per cent. over the basal metabolism at rest.

Talbot suggests that a rough estimate of the caloric requirements of a normal infant may be made by adding the calories used up by muscular activity to the basal metabolism. If the infant is very quiet, 15 per cent. should be added, if normally active 25 per cent., and if extremely active, about 40 per cent. To the result add 15 per cent. for energy lost in the excreta and 20 per cent. for growth. Lusk⁴ believes that Heubner's figure of one hundred calories per kilogram of body weight during the first month of the infant's nutrition is in excess of the requirement. He states that probably eighty calories per kilogram will be found to suffice during the whole of the first year, and that the physician should remember very definitely the lower limits. Talbot's findings tend to argue for the higher rather than the lower figure and approach the Heubner standard more closely. Talbot adds, finally, it is probable that infants fed on cow's milk, particularly on formulas containing large amounts of protein, will require even more food than infants fed on human milk, because the stimulating action of protein causes extra heat to be burned during digestion. The caloric requirements of normal infants obviously are not the same as those of the sick infant whose "basal" metabolism is higher per kilogram of body weight and who may use up additional energy because of increased restlessness from colic or discomfort, burn it up in fever, or may not absorb all the food given him, as happened in one infant who lost 20 per cent. of the food calories in the feces. Neither does it apply to the infant with a subnormal temperature, indicating depressed vital functions. These infants come under another category and require further study to answer many of the points now obscure.

1. Benedict, F. G., and Talbot, F. B.: *The Physiology of the New-born Infant*, Carnegie Institution of Washington, 1915, Bull. 233. Murlin, J. R., and Hoobler, B. R.: *The Energy Metabolism of Ten Hospital Children Between the Ages of Two Months and One Year*, *Am. Jour. Dis. Child.*, February, 1915, p. 81.

2. Rose, Mary Swartz: *Feeding the Family*, New York, 1916.

3. Talbot, F. B.: *Twenty-Four-Hour Metabolism of Two Normal Infants with Special Reference to the Total Energy Requirements of Infants*, *Am. Jour. Dis. Child.*, July, 1917, p. 25.

4. Lusk, Graham: *The Elements of the Science of Nutrition*, Philadelphia, 1917.

Current Comment

THE COST OF MARKET MILK

THE JOURNAL has repeatedly directed attention in the past few months to the importance of maintaining unimpaired the milk supply and, if possible, increasing the production of milk in the United States in the present emergency. The reasons need not be reiterated here. The desirability of providing "a quart of milk a day" for every child is only one of the impelling circumstances for securing as much as possible of this food. In the past there have been few articles of diet which furnished so much quantitatively and qualitatively in the way of desirable nutrients in palatable form as a quart of milk at the prices current before the recent skyward tendency of costs. As there is great danger that consumption of milk will be much decreased, and since much unfavorable comment is already making itself felt, it is imperative that those vitally concerned, as is the physician in eminent degree, should understand the situation in its true light. If 10 to 15 cents per quart represented exceptionally high prices of milk before the war, it does not follow that they are in any sense exorbitant at the present time. Adequate calories can no longer be purchased at the rate of 20 cents per adult requirement per day. War means sacrifice that expresses itself in increased payment for service and materials in every direction. Economy is only one form of material sacrifice in war time. As part of its program the Connecticut Committee on Food Supply has just published studies from a survey on the cost of market milk production.¹ This deals with statistical facts rather than with exaggerated generalities bearing on the actual cost of producing milk under present conditions, that is, with the abnormal increase in prices for feed, labor and other items. After all, the dairy cow is no mysterious agency, but merely a machine, as it were, for converting one kind of food into another. The output and intake are correlated in cost, and the machine must be carefully managed. In typical communities in the Eastern United States, where the milk must be produced near to an immediate market, the cost of milk production on 178 representative dairy farms for the year ending April 30, 1917, was 5.53 cents per quart, or \$2.57 per hundred pounds. In April, 1917, however, the cost was 6.29 cents per quart, or \$2.92 per hundred pounds, with labor at the yearly rates. There is no profit in producing milk at the lower price. The cost per quart has advanced more rapidly than the increase in price received in the past few years. As the result of a census taken among 2,500 farmers there was shown a decrease in mature dairy stock for the year of 4.5 per cent. and an increase in young stock of 6.7 per cent. There was a net decrease of all dairy stock of 1.6 per cent. This represents the conditions on farms remaining in the dairy business, where, through summer conditions and patriotic motives, they have been able to nearly maintain their herd numbers. This fall, with winter conditions ahead, if conditions appear to be the same as last year, many men will

probably reduce their herds. This is one of the conditions that must be averted if possible. A frank understanding of the situation will help in the impending emergency.

THE BLOOD LIPOIDS IN ANEMIA

Amid all of the conflicting views and uncertain evidences regarding the etiology or pathogenesis of the severer types of anemia, and particularly pernicious anemia, practically only one characteristic feature remains undebated, namely, the ready destruction of the red blood cells. As hemolysis has been associated in recent years with the reactions of certain lipoids, the investigators of the anemias have given consideration to the possible pathologic variations of these compounds in the blood during the course of the disease. Utterance has been given to the view that an undue amount of specially hemolytic products, such as the unsaturated fatty acids, may appear and thereby account for the disintegration. Supporters of this conception call attention to the experimental production of crises resembling those of pernicious anemia, as the result of excessive feeding of cottonseed or olive oil. Again, the lack of normally present antihemolytic blood constituents, such as cholesterol, has been postulated as the real pathogenic factor involved. There are many scattered data in medical literature bearing on the features just mentioned. Until quite recently, however, the methods for accurate study of the lipoids of the blood have been decidedly uncertain, so that comparative estimates could not easily be formed. At the Harvard Medical School, Bloor and MacPherson¹ have undertaken a timely revision of the subject in order to determine with up-to-date precision to what extent, if any, the blood lipoids may be abnormal in anemia. The outcome may be summarized by the statement that the results offer no certain evidence that abnormalities in the lipoids are responsible for the disease. Nevertheless, the low values sometimes found for cholesterol, which is an antihemolytic substance, and the reported high fat fractions, which may indicate the presence of abnormal amounts of hemolytic lipoids in the blood, are possible causative factors of which, to quote the Boston investigators, further study is desirable at this time. In view of the association of the spleen with the destruction of the red blood corpuscles, and the assumption that hyperactivity of the spleen is sometimes a cause of anemia, splenectomy has been advocated and undertaken for the relief of the condition. Without venturing any conclusion at this time regarding the efficacy of removal of the spleen in the severe anemias, we may note that the operation is followed by blood-lipoid changes. There is an increase in total fatty acids and lecithin in the corpuscles and of cholesterol in the plasma. But the results are essentially the same whether the patients have had anemia or not. In most cases of anemia the lipoid composition of the corpuscles has been found to be normal; that is, analysis has disclosed nothing in their make-up chemically to indicate any abnormal susceptibility to hemolysis.

1. Musser, K. B.; White, G. C.; McDonald, B. A., and Judkins, H. F.: Studies from the Survey on the Cost of Market Milk Production, Conn. Agr. College, Extension Service, Bull. 7, July, 1917.

1. Bloor, W. R., and MacPherson, D. J.: The Blood Lipoids in Anemia, Jour. Biol. Chem., 1917, 31, 79.

IS THERE A FATIGUE TOXIN?

In the domain of medicine explanations of phenomena are not infrequently colored by the popular theories of the day. It has always been difficult to elucidate the chief manifestations of fatigue. These have been further complicated by the peculiar interrelations of the nervous and muscular system where the problem of fatigue is concerned. Not long after the toxin antitoxin theories began to attain a vogue in immunology, the claim was made by Weichardt, in 1904, that the chief agent in the production of fatigue is a specific substance, a fatigue toxin. A corresponding or identical substance, designated "kenotoxin," was alleged to be produced by chemical manipulation of protein materials in definite ways. However obtained, these substances were asserted to have the significant property of inducing the development of an antitoxin when they were introduced in suitable ways into the animal organism. Here then there was presented an apparent opportunity of combating fatigue by scientific methods quite as striking as the subsequent method of eliminating certain cases of laziness and languor by eradicating the hookworm from mankind. Like so many other hopes of promise this too seems to have been shattered by the outcome of critical investigation. Only recently Lee and Aronovitch¹ of the Department of Physiology at Columbia University, New York City, have subjected the specific fatigue toxin to a crucial test. They noted that when test muscles were suspended in the juice of fatigued muscles of animals their working power was diminished considerably in comparison with the contractile power of normal muscles not treated with juice. But practically the same quantitative effect was observed when the test muscles were subjected to the juice of nonfatigued muscles. The New York investigators conclude that no acutely toxic fatigue substance is produced. Weichardt's assumption of the existence of a specific fatigue toxin is therefore not sustained. It seems probable, they say, that Weichardt's animals, which were actually killed by his extreme methods of inducing fatigue, were put into a profoundly pathologic condition in which the toxic component of the protein molecule was split off. There is no reason to believe that this occurs in the normal course of fatigue.

1. Lee, F. S., and Aronovitch, B.: Does a Fatigue Toxin Exist? *Proc. Soc. Exper. Biol. and Med.*, May 16, 1917, **14**, 153.

Rodent Destruction on Ships.—Investigation of the efficiency of fumigants for the destruction of rodents on ships was made by Creel and Simpson of the Public Health Service (*Public Health Reports*, Sept. 7, 1917). Intensive trapping after fumigation was employed to determine the effectiveness of the agents used, among them being sulphur dioxid and cyanogen gas. From this investigation it is said that a fair estimate shows that cyanid gas is superior to sulphur dioxid, besides requiring shorter exposure and consequent keeping of fumigated vessels out of service. Fumigation of 182 vessels resulted in the destruction of ninety-five out of each 100 possible rodent inhabitants, while sulphur dioxid destroyed only seventy-seven of a possible 100 in a series of sixty-two vessels. The time of exposure to the sulphur was six hours, and to the cyanid gas one and one-fourth hours. It is not believed possible to obtain 100 per cent. destruction by either agent.

Medical Mobilization and the War

IN FLANDERS' FIELDS

NOTE.—The verses printed below appeared recently in the *New York Sunday Times*, as "By Capt. John McCrae." The author, who is still in France, is Dr. John McCrae, Guelph, Canada, a brother of Dr. Thomas McCrae of Jefferson, Philadelphia. Dr. William H. Welch, in calling our attention to this poem and suggesting its reproduction in *THE JOURNAL*, said: "I met him a year ago in a Canadian hospital where he had charge of the medical service. He gave me the most gripping account of the hell in which fighting goes on at the front, where he had been, that I have ever heard. The verses are so simple and direct they seem to me among the best produced by the war."—THE EDITOR.

In Flanders' Fields

*In Flanders' fields the poppies blow
Between the crosses, row on row,
That mark our place, and in the sky
The larks still bravely singing fly,
Scarce heard amidst the guns below.
We are the dead. Short days ago
We lived, felt dawn, saw sunset glow,
Loved and were loved, and now we lie
In Flanders' fields.*

*Take up our quarrel with the foe,
To you from falling hands we throw
The torch—be yours to hold it high.
If ye break faith with us who die,
We shall not sleep though poppies grow
In Flanders' fields.*

NEW ASSISTANT SURGEONS, U. S. NAVY

On September 25, Gen. W. C. Braisted, U. S. Navy, welcomed into service a class of sixty-one Navy assistant surgeons graduating from the Navy Medical School at Washington, D. C. The majority of the class are members of the Naval Reserve Medical Corps who had been ordered to the medical school for two months of intensive training.

A number of the graduates were unable to attend the graduating exercises as they were either already on active duty or were taking postgraduate work elsewhere. Some have gone to New York City for a course at the Rockefeller Institute; some to take up the study of problems appertaining to aviation; some to the laboratory of the Washington Medical School for training in technic for the detection of germs and germ carriers of infectious diseases; and others are on duties of confidential nature.

The members of the class on active duty are: Ely L. Whitehead, Evanston, Ill.; Matthew L. Carr, New York City; Dozier H. Gibbs, Alabama City, Ala.; Normal King, Waco, Texas; Robert L. Schaefer, Allentown, Pa.; Claud W. Colonna, Mappsville, Va.; Robert T. Canon, Lufkin, Texas; William J. Corcoran, Portland, Ore.; Robert N. Hedges; Ernest Larkin, Carthage, N. C.; Everett Taylor, Lancaster, S. C., and William T. Gill, Washington, D. C.

The eight at the Rockefeller Institute include: William C. Blake, Baltimore; Tracy T. Gately, New Orleans; Frank W. Ryan, Maryville, Mo.; Nelson W. Sheley, Independence, Mo.; Lyman E. Dockry, Green Bay, Wis.; William E. Morse, Annapolis, Md.; Charles H. Savage, New Orleans, and John W. Vann, Danville, Va.

The twelve with the Aviation Corps are: Victor Armstrong, Minneapolis; Clarence J. Brown, St. Louis; Henry Le R. Franklin, Benchley, Texas; Harry C. Gebhardt; Lloyd B. Greene, Augusta, Ga.; Eugene D. Hardin, Toombsville, Miss.; Bruce F. Holding, Wake Forest, N. C.; Robert H. McMeans, Palestine, Texas; Clarence N. Meador, Chicago; Guy B. Taylor, Gibert, S. C.; William R. Taylor, New Washington, Ind., and Frank B. Wallace, Holden, Mo.

The eight in laboratory work include: John W. S. Brady, Boston; George A. Gray, Detroit; Robert P. Henderson,

Tampa, Fla.; David R. Higbee, New York City; Thomas J. Kennedy, South Hadley Falls, Mass.; John M. McCants, Guthriesville, S. C.; Charles K. Reinke, Philadelphia, and Eben E. Smith, New York City.

Twenty-one are on special duty, including: John C. Adams, Superior, Wis.; William H. Frampton, Charleston, S. C.; Everett K. Geer, St. Paul; Bertram Groesbeck; Benjamin H. Hager, Edmonton, Alta.; Frank W. Hartman, Elliot, Iowa; James E. Houghton, Washington, D. C.; Louis Iverson, Badger, Minn.; Travis S. Moring, Abbeville, Ala.; Fred A. Nause, Sheboygan, Wis.; Matheson J. Montgomery, Pitcairn, Pa.; Carl A. Broadus, Newton, Va.; John J. Sale, Fredericksburg, Va.; James A. Fields, Norfolk, Va.; Burton E. Belcher, St. Petersburg, Fla.; Guy B. McArthur, Bloomville, N. Y.; Charles D. Terrel, Washington, D. C.; Sterling Cook; Harry Brockan; George B. Dowling, Washington, D. C., and Frank A. Williams, Quincy, Ind.

"WELL RECOGNIZED MEDICAL SCHOOLS"

MEDICAL SCHOOLS WHOSE STUDENTS WILL BE
RECOGNIZED FOR EXEMPTION

In announcing the supplemental regulations authorized by the President regarding the exemption of students and hospital interns from the draft, the term "well-recognized medical school" was used (*THE JOURNAL*, September 8, p. 830). Among the preliminary regulations prescribed by the Surgeon-General's Office for carrying out the supplemental regulations was this definition:

"For the present a medical school recognized generally by state examining boards will be considered as a well-recognized medical school."

In view of the indefiniteness of this definition, the Surgeon-General has now announced the following:

"A well-recognized medical school is one legally authorized to confer the degree of Doctor of Medicine, and is recognized by at least fifty per cent. (50%) of the States of the Union, through their licensing boards for the practice of medicine."

"An institution which gives the first two years of the medical course will be recognized if its students after completion of these two years are eligible to admission to the third year of a 'well-recognized' medical school." Recognition by 50 per cent. of the state medical licensing boards means recognition by at least twenty-four states (not counting Alaska or the District of Columbia).

On this basis the following medical colleges, arranged alphabetically by states, would be included under the definition as "well-recognized medical schools": Univ. of Ala.; Univ. of Ark.; Leland Stanford Jr. Univ.; Univ. of Calif.; Hahnemann Med. Coll. of Pacific; Coll. of Phys. & Surg., Los Angeles; Oakland Coll. of Med. & Surg.; Univ. of Colo.; Yale Univ.; George Washington Univ.; Georgetown Univ.; Howard Univ.; Emory Univ. (formerly Atlanta Med. Coll.); Univ. of Ga.; Loyola Univ. (formerly Bennett Med. Coll.); Chicago Coll. of Med. & Surg.; Hahnemann Med. Coll., Chicago; Northwestern Univ.; Rush Med. Coll.; Univ. of Ill.; Indiana Univ.; State Univ. of Iowa Coll. of Med.; State Univ. of Iowa Coll. of Homeo. Med.; Univ. of Kan.; Univ. of Louisville; Tulane Univ.; Bowdoin Med. School; Johns Hopkins Univ.; Univ. of Md.; Boston Univ.; Harvard Univ.; Tufts Coll. Med. School; Detroit Coll. of Med. & Surg.; Univ. of Mich. Med. School; Univ. of Mich. Homeo. Med. School; Univ. of Minn.; Univ. of Miss.*; Univ. of Mo.*; St. Louis Univ.; Washington Univ.; John A. Creighton Med. Coll.; Univ. of Neb.; Dartmouth Med. School*; Albany Med. Coll.; Columbia Univ.; Cornell Univ.; Fordham Univ.; Long Island Coll. Hosp.; New York Homeo. Med. Coll.; Univ. and Bellevue Hosp. Med. Coll.; Syracuse Univ.; Univ. of Buffalo; Leonard Med. School*; Univ. of N. C.*; Wake Forest Coll.*; Univ. of N. D.*; Western Reserve Univ.; Eclectic Med. Coll.; Univ. of Cincinnati; Ohio State Univ. Coll. of Med.; Ohio State Univ. Coll. of Homeo. Med.; Univ. of Okla.; Univ. of Ore.; Hahnemann Med. Coll., Philadelphia; Jefferson Med. Coll.; Medico-Chirurgical Med. Coll.; Temple Univ.; Univ. of Pa.; Woman's Med. Coll. of Pa.; Univ. of Pittsburgh; Med. Coll. of State of S. C.; Univ. of S. D.*; Meharry Med. Coll.; Vanderbilt Univ.; Univ. of Tenn.; Univ. of Tex.; Baylor Univ.; Fort Worth School of Med.; Univ. of Utah*; Univ. of Vt.; Med. Coll. of Va.; Univ. of Va.; W. Va. Univ.*; Marquette Univ.; Univ. of Wis.*

* These colleges give only the first two years of the medical course.

THREE MONTHS OF IT

The following letter was addressed to the chairman of the program committee of a county medical society who forwards it to *THE JOURNAL*:

"Your recent letter asking me to give an account of a medical man during three months in the Army 'in 500 or 1,000 words' reminds me of the publisher's order to his 'hack' to write 'a snappy history of the world in a hundred pages.' I am contemplating a four volume work along the lines you suggest but will essay to give the high lights of the adventure within the compass allotted.

"Dr. ——— and I left our firesides and electric fans on June 6, bound we knew not whither, but were enlightened by another reserve officer on the train, whose cousin was in Congress. His information which was thus authentic, he imparted to us. We were going to Russia! I was glad of this for I had never been there and it seemed a good place to spend the summer. Dr. ——— who met us at the train in San Antonio also knew where we were going. We were going directly to France. Of this I was not quite so glad. On arriving at the hotel we encountered one other officer—a resident of Washington thus close to all knowledge—who laid down as a positive rule that no medical reserve officers would go abroad, only regular Army officers. Thus all doubts of our destination being laid at rest, we slept soundly, and reporting to the department surgeon the next morning were sent over to the base hospital for examination.

"This rite was conducted by a young lieutenant in the Medical Corps—a youth of haughty mien and deep preoccupation. We had apparently interrupted him at some important task. I have since learned he was perfecting a new golf stroke, for he was somewhat brusque with us. He ordered us to strip and when we had done so he gave a glance at me as Apollo Belvedere and yelled 'Figure stout' to an orderly who was copying our dimensions and limitations at the far end of the room. Thus were our spirits begun to be broken.

"While awaiting our assignments we were quartered in a hospital ward and here I made the acquaintance of Arthur. He was our orderly and he was more. Arthur was affable, he was about as affable as a major-general. Lieutenants, I have found, both first and second of the regular Army, are difficult to engage in conversation—human intercourse with them seems to be largely a matter of grunts—and difficult also to extract information from. (I have found since that there is good reason for this.) Furthermore they are always very busy. Captains, while not quite so busy and more familiar with the forms of English speech, are equally chary of the disclosure of facts—I don't mean facts about the war—I mean where the postoffice is and isn't it a hot day. Majors have less to do, which prevents them from the arts of conversation, while colonels and brigadier-generals and such, they like to talk, will cross the street to say how-de-do and see if there is anything they can do for you. Well, now, Arthur was like that. He told me about his sister's divorce, and where the best place was to get my uniform made, and what he thought about the war, all the first night he met me. The next day he told me how to salute soldiers on the streets, gave me a rough general notion of the enlisted man's idea of an officer, offered voluntarily to try one of my cigars, and confidentially informed me that if my craving got great enough he could obtain whisky or other libation of an alcoholic nature.

"Dr. ——— was ordered to El Paso soon after this and I alone sat lingering here. Alone, that is except for the 10,000 aviators at Camp Kelly, the Nineteenth and Fifty-Seventh Infantry, the Third, Seventh, Nineteenth, Twentieth and Twenty-First Field Artillery, the Third Cavalry, and various little things like Signal Corps, the Hospital Corps, the Officers Training Camp, and a drill sergeant. But many things began to happen. I began to know the gulf which separates 'not in line of duty' from 'in line of duty.' Also that when a soldier has a convulsion he is not necessarily very sick, he may only crave a day off in a nice cool hospital; that a temperature of 106 may only mean he has been smoking a cigarette against the bulb of a thermometer. And high in my chamber far away from this vulgar gaze of the populace and the gentle voice of drill sergeants, I practiced 'about face' as it is done in the U. S. Army, as it used to be done in the U. S. Army, as it is done in the English army, the Swedish army, and the Swiss army—we had a very learned drill sergeant.

"And now—well now—I'm just about like all the rest. I grunt at new reserve officers like a regular lieutenant. My uniform has been to the laundry several times, has passed from brown to light brown, to dark green, to light green, to

light yellow and is now about the color of a cirrhotic liver in the last stages. So that I give the appearance of the oldest inhabitants. I can now 'about face' in every language except some of the obscure dialects of Chinese, with only a momentary period of embarrassment. I acknowledge salutes without trying to take off my hat or blushing.

"Incidentally the summer has been one of the most interesting of my life, both professionally and patriotically. We have had many cases of rheumatism, pneumonia, spinal meningitis, a few of paratyphoid fever, several gastric ulcers, one syphilis of the lung, and one of Pick's disease. And Russian generals and French aviators, and English artillery officers, reviews, aviation meets, etc., have been too numerous to catalogue. We have seen a city built for the new National Army division in thirty days, and are just beginning to have the new National Army arrive.

"Since beginning this letter, we have been shocked at the news of the death of Fitzsimmons of Kansas City. After hearing about it four medical officers who are shortly going to France have told me that the first ten German officers they get in their wards are going to die mysterious deaths!!! When I said that wasn't giving them much chance one of them asked me how much of a chance poor Fitz had. And there was nothing to answer. So you see, the dirty blackguards of baby maimers' and hospital bombers' idea worked out fine. They've got everybody scared of them—yes, they have."

A TWO DAYS' BIVOUAC MARCH AT FORT BENJAMIN HARRISON, INDIANA

Two companies of medical officers, numbering about one hundred each, of the First Battalion of the M. O. T. C., Fort Benjamin Harrison, Indiana, commanded by Lieut.-Col. G. H. Scott, M. C., left the fort at 7 a. m., Sept. 14, 1917, for a practice march of two days' bivouacking at "Camp Scott" for the night.

The duties to be performed in this march included: (a) tactical problems for sanitary troops; in other words, the selection and location of stations for ambulance trains, field hospitals, and dressing stations, with a war map for a guide; (b) lectures by Lieutenant-Colonel Scott on tactics of sanitary troops; (c) map making and map reading.

In addition, Company No. 1, Capt. H. L. Celler, M. R. C., instructor, had rations issued raw, except coffee, which was prepared for the whole company. For this purpose the company was divided into groups of eight men, each group being directed to build its own fires and prepare its own meals.

To the uninitiated the program may seem simple; nevertheless, elucidation is needed for its comprehension.

The tactical problem may be explained as follows: Fort Benjamin Harrison was being attacked by the Red Army and defended by the Blue. Information had been brought into the fort from various sources that the enemy was approaching. A division of the Blue Army had entrenched in a line of hills between the fort and the Reds, to check their advance. The sanitary troops of the Blue Army were sent out to locate sites for field hospitals, ambulance and dressing stations, using Fort Benjamin Harrison as an evacuation hospital, and were given military maps as a guide. To make the problem more realistic, a district of the country was selected which was entirely unfamiliar to the student officers.

This duty is far more complicated than it sounds. In the first place, a military map to many of us was as much of a conundrum as was the discovering of the points of the compass after wandering around in the country for several hours. We were as much lost on the chart as we were on the ground, and the commanding officer must have been sorely tried by the necessarily frequent repetition of putting many of us back on the map.

After marching and countermarching for an entire afternoon, up hill and down again, through ravines, over fences, through the mud and dust, the necessary stations for the care of the wounded were finally established—on this particular occasion, I fear, long after the Red Army had been driven back over "Schlitz River."

Tired and footsore, we marched back to bivouac to receive our supper rations. These consisted, per head, of two raw eggs, a sweet and an Irish potato (raw), salt and pepper, and two slices of salt pork. We had with us our kits, each consisting of canteen and cup, a meat can, which is a small covered skillet with a handle, and a knife, fork and spoon. We were instructed to go about preparing this feast, and were introduced to a pile of wood to be used for fires, and specially selected spots where fires would be allowed. The

sacred army coffee we were not allowed to prepare. This was to be made by the regular cooks of the mess.

All this to one hundred medical men, not long since accustomed to the College Inn's sirloin steaks or Delmonico's best, with their cooks, waiters and glad smiles provided! Disappointment is in store for you if you believe that these doctors reneged on the job. They went about the task like old-timers. In less than no time the miniature field ovens were burning briskly, with the little skillets of pork and scrambled eggs sizzling in veteran style. Perhaps it was the appetites which acted as the stimulus to produce the results. They were due more likely to the hunting and camping experiences of past vacations, the advice of instructors, and of those in the company who hailed from the West. Some of the groups were baking their potatoes in a bed of embers, and others French-frying them in the skillets. When we consider that only a few weeks ago these same doctors had never thought of such life, the sight of their industry and the success of their efforts were truly surprising.

Perhaps being in the Army is responsible for this transformation. More probably, however, such development was only made possible by the same motive which prompted these men to give up their life work and to leave their homes from a sense of duty. Many of the tasks are hard and fatiguing, and sometimes extremely unpleasant. It is the willingness to accept the restraints of discipline without complaint or shirking which is making soldiers of these men.

The scene of these little groups bending over their fires was an inspiration. In them were some of our ablest internists, surgeons and specialists, some others just entering on their medical careers, and others again with long established reputations; youngsters of 25 and youngsters of 50—all bent on the same task of acquiring knowledge of their new work in the shortest time and the most thorough manner possible. The spirit behind it all, and the untiring and efficient instruction of the Regular Army Medical Officers are the real causes which are accomplishing results; and if the rest of the country in arms is as earnest, as willing, and as thorough as the doctors in the various camps, there need be no fear for the quality of the army now under preparation.

After the meal had been prepared and had disappeared into our hungry stomachs, we washed our dishes and went about selecting a soft spot on which to lay our bedding rolls. A bedding roll is a large, oblong piece of dark-colored canvas, to the outside of which three large straps are attached. The roll, as a usual thing, contains a thin mattress, three blankets and a pillow. When unrolled, the canvas folds over the blankets and buckles, and into this the sleeper crawls feet first, hoping that the piece of ground of his selection contains depressions corresponding to his own protuberances. Even though all this may sound forbidding, it is, however, snug, warm and comfortable after some experience. On this occasion a heaping fire was built, around which we sat and sang while digesting our culinary efforts, and then crawled into our rolls at the late hour of 8 p. m., to sleep the sleep of exhaustion.

Bright and early the next morning, at 5 a. m., we were routed out and given a short time to brush our teeth and wash the sleep out of our eyes at a nearby spring, and then were put through a sharp, exhilarating drill of setting-up exercises before being called to our breakfast, happily prepared by our company "mess."

The second day was a repetition of the first, with a sharp quiz on the work gone over, and a most instructive and interesting lecture by Lieutenant-Colonel Scott.

At the end of the day the bedding rolls were piled into army trucks and the entire camp was policed. Here, again, the "medics" covered themselves with glory by the thorough manner in which they carried out their work. Policing a camp is nothing more or less than scavenger work. Everything with which the camp ground had been littered—papers, potato peelings, and what not—was picked up by hand and burned. All holes made for the fires were filled in and the ground left clean. With hardly a trace of their presence left behind, the two companies assembled for the long march home.

Not alone was this campaign in miniature a complete success from the educational standpoint, but it also constituted a remarkable exhibition of the beneficial effects of the physical training of camp life on those who only a few short weeks before were firmly rooted in the sedentary habits of civil life.

CHARLES H. PARKES, M.D.
Captain, M. R. C., U. S. Army. Company 1, M. O. T. C.,
Fort Benjamin Harrison, Ind.

NEWS OF THE CANTONMENTS

*(From Our Special Correspondents)***Camp Grant, Ill.**

At the opening of Camp Grant, September 5, there were more than enough physicians present to take care of the first quota of the new National Army, and shortly enough new doctors arrived to complete the medical personnel for the division. These men were under Lieut.-Col. J. M. Phalen, M. C., the division surgeon. The medical staff were distributed among the various organizations, in the line, the base hospital, a field hospital and an ambulance company.

The base hospital under Major Michie, M. C., was already in running order, in temporary quarters, which were equipped for the care of all hospital cases. Noted specialists were assigned to its staff so that all classes of disease could be skilfully treated. Several experts were assigned to the camp to make careful examination of selected cases in their specialty. The base hospital had a laboratory which made the ordinary clinical examinations and made daily examination of the water supply.

The sanitation of the camp was under Major Bailey, M. C., who ably handled the many difficult problems which presented themselves.

The camp has been unusually free from sickness, and the hospital has had a small number of cases. Most of the cases now in the wards are in men who were sick before they left their homes.

A DAY WITH THE MEDICAL OFFICER

The life of the medical officer is a pleasant although a somewhat strenuous one. Calisthenics begin at 6:10, when every one gets thoroughly warmed up by an athletic junior officer who, for the time being, has no respect for rank or figure. Well-nourished specialists with international reputations are becoming as trim as racing yachts, and, although they pant and blow in the process, they do not utter a word of complaint. Mess is from 6:30 to 7. At 7:30 all turn out for drill in marching and until 8:30 every one learns the various sanitary formation. Again the drill master is no respecter of person and woe betide the man who "forget where his right hand lieth." From 9 to noon is devoted to medical work about the hospital. Mess is at noon. At 1:30 there is instruction in delicacies of the transfer card and other Army paper work. Some of the regimental surgeons wonder, when their transfer cards come back with "diagnosis not concurred in," whether they have forgotten their art, but they usually find they have neglected to state whether the condition was acute or chronic, catarrhal or suppurative. At 2:30 most of the ward surgeons devote an hour to instructing the ward nurses. The rest of the day is devoted to finishing up odds and ends. It will be seen that a conscientious man will be busy from early morn to late at night. There is a large amount of good material at hand, and, if a man digs into it, he can get a wonderful amount of good out of it. The work is not all medical by any means and is of such varied nature that there is little chance to grow "stale." Efficient effort is well worth while, for the man who "can and does" gets the best place and is soon repaid for his efforts.

Camp Zachary Taylor

The medical situation at Camp Taylor, Dumesnil, Ky., which has been under way for about one month under the supervision of Lieut.-Col. John H. Allen, is rapidly assuming permanent form. In the camp there are at present seventeen regimental infirmaries in the care of the regimental surgeons and the base hospital. The work since the onset has been that of examining conscripts, caring for the acutely ill and isolating the unfit infectious cases before discharge from the army.

The new men after being assigned to their companies are given their physical examinations and triple typhoid and small-pox vaccine by a board of regimental surgeons. Any with outspoken defects and the doubtful ones are referred to the "Reviewing Board," an organization composed of the heads of the various departments including the specialties. Final disposition of the case remains in their hands.

The examination of the first 5 per cent. of the conscripts pointed out many defects in system both in the regimental boards as well as in the Review Board, which when corrected made the examination of the second 40 per cent. move much more quickly and efficiently.

Many interesting medical conditions have been found which it is hoped we will have the opportunity to dilate upon at another time, several of these cases being in the base hospital at present.

BASE HOSPITAL

The base hospital has been in permanent quarters for two and one-half weeks and is occupying eight of the thirty-two wards. There are at present 216 patients in the hospital, divided as follows: medical, 23; surgical, 24; genito-urinary, 103; ophthalmologic, 53; neuropsychiatric, 13. The large number of genito-urinary patients is composed mostly of men with active syphilis, who are isolated before being discharged from the army.

The fifty-three ophthalmologic cases are trachoma, mainly from the mountain regions of Kentucky, and have been the source of much interest. Major John McMullen, U. S. Public Health Service, came last week to see these patients, and gave an interesting clinic on them. Major McMullen, formerly at Ellis Island, is at present in charge of the trachoma work in Eastern Kentucky, Virginia, West Virginia and Tennessee and is well qualified to speak on this subject. As a result of this large number of cases of trachoma, a general survey of the camp in the hands of experts is being contemplated.

SOCIAL

Major Nelson M. Black, M. R. C., from the Surgeon General's Office, spent part of the week visiting the camp. He addressed the staff of the base hospital on "Surgery of the Head," the specialty to which he is detailed.

Major John Ridlon, M. R. C., supervising orthopedic surgeon, was a new arrival this week. He will spend a few days, giving a course of lectures on his specialty and then continue on his circuit. Major Ridlon, who is honorary professor of orthopedic surgery at Northwestern University, is the fourth Chicago major at the base hospital. The other three are: Major William H. Wilder, M. R. C., professor of ophthalmology at Rush Medical College; Major F. Menge, M. R. C., professor of otolaryngology at Northwestern University, and Major Walter W. Hamburger, M. R. C., associate professor of medicine at Rush Medical College.

Camp Lee, Petersburg, Va.

Every one who comes to Camp Lee, Va., soon realizes that this is historical ground, for a little walk along the western part of the camp reveals rifle pits and in the woods along the edge of the camp are trenches and redoubts which were made by the federal forces during the famous siege of Petersburg in 1864. The base hospital is located in this area and in digging the foundation many interesting Civil War relics were found. Although many boys earned their pocket money by picking up lead from the battlefields, a little search brings to light a "minie" ball or shell fragment. About 2 miles to the west of the camp is a ridge where the Confederate works were built and there is still present the deep "crater" formed by the explosion of a mine on July 30, 1864. The mine was dug and planted by a regiment of Pennsylvanians and was the first mine exploded in war.

The camp was named after Gen. Robert E. Lee, who was in command of the Confederate forces during the defense of Petersburg. Today Pennsylvanians and Virginians, with West Virginians as well, instead of being antagonists, are drilling as brothers on this battleground.

Some of the barracks are built on the Prince George Court House Road traveled over by LaFayette and Virginia soldiers during the Revolutionary War and Yorktown is but 30 miles away.

PERSONNEL

Work was begun at the camp in June. The forest was cleared and buildings commenced. Major Henry P. Carter, M. C., U. S. Army, was appointed sanitary inspector and began his work the middle of July. Major Carter was well fitted for the work as he had just returned from three years' service in the Panama zone, where he had served as health officer of Ancon and Panama. In the latter part of July Capt. Hugh T. Nelson, M. R. C., Charlottesville, Va.; First Lieut. William F. Merchant, M. R. C., health officer of Manassas, Va., and First Lieut. Harry R. Seelinger, M. R. C., Norfolk, Va., were assigned to assist Major Carter. Under Major Carter's directions all swamp and marshy areas have been ditched and oiled, so that now instead of many anopheles mosquitoes there are none and only an occasional larva is found whose ambitions are promptly drowned by a dose of crude oil.

Major Ferdinand Schmitter, M. C., U. S. Army, came early in August to be commanding officer of the base hospital and acted as chief surgeon until the permanent assignment of the division surgeon. Major Schmitter has had a wide experience in administration and examination of recruits

and has been of great assistance in directing the examination of recruits.

Lieut.-Col. T. L. Rhoads, M. C., U. S. Army, was assigned as division surgeon early in September. Colonel Rhoads brought with him a wide experience in administrative work and is admirably equipped for the post. He had been specially selected by President Taft to represent the government in handling the relief work after the flood at Dayton, Ohio. Colonel Rhoads is well known in the Army and has served as operating, administrator and also in a sanitary capacity in Texas in 1916.

A number of medical officers were assigned to the division and base hospital before the arrival of the first quota. They were temporarily quartered in barracks pending the completion of the base hospital. While in the barracks they were constantly entertained by the negro stories told by Major Joseph W. Hope, M. R. C., Hampton, Va., and First Lieut. Isaac M. Goldman, M. R. C., Richmond, Va. Now that the hospital is nearly finished the officers and the patients under treatment have moved in. Medical supplies have been furnished by First Lieut. Romanus A. LaGrinder, S. C., who has had nineteen years' experience in Hospital Corps work, and is in charge of the medical supply depot.

Capt. Elliott B. Edie, M. R. C., came from Fort Oglethorpe the last of August with the personnel of a field hospital, and First Lieut. Burr Ferguson with the personnel of an ambulance company, whose organizations had been through a course of training under Colonel Page. The medical organization has been increased by the arrival of an ambulance company under the command of Capt. Charles L. Scott, M. R. C., Raleigh, N. C., organized by the Raleigh Red Cross. The Richmond Red Cross has also sent an ambulance company under the command of First Lieut. Charles H. Lewis, M. R. C.

EARLY EXAMINATIONS

The arrival of the second quota of the draft the last of September created great activity among the medical officers. Physical examinations, vaccinations, sick call and paper work kept them busy and troubled with many new duties. The work was well done and soon finished. Recruits for rejection and doubtful cases were referred to specialists at the base hospital. Special examinations for heart and lung cases were put under the direction of Major Lawrence Litchfield, M. R. C., Pittsburg, Va.; surgical conditions, First Lieut. William L. Peple, Richmond, Va.; genito-urinary, Capt. J. Bayard Clark, M. R. C., New York City; eye, ear, nose and throat, Capt. Llewellyn E. Hetrick, M. R. C., New York City, assisted by Capt. Lawrence Thomas, Latrobe, Pa. Medical work is now progressing smoothly and sanitary conditions are excellent. Petersburg furnished the camp with a safe water supply, drainage is excellent, the camp is well sewerred, buildings are all screened against flies, and the health of the men is excellent. The sick rate is far lower than the sick rate of the Army in 1916.

The Patriotism of Sioux City

Dr. John W. Shuman of Sioux City, Iowa, writes: "I note in THE JOURNAL, Sept. 29, 1917, page 1090, under 'Medical Patriots of Rochester, N. Y.,' 13.1 per cent. of the physicians of that city have enlisted. I drop you this line to let you know that Sioux City has Rochester beaten on the percentage basis. Here is Sioux City's bit to date: the population is 65,000, there are 100 physicians practicing in the city, twenty-one of whom have been commissioned in the Army."

Exemption Asked for Dental Students

A committee consisting of Arthur D. Black, Chicago, chairman; H. E. Friesell, Pittsburgh; W. H. G. Logan, Chicago, and F. D. Casto, Cleveland, has submitted to the Provost-Marshall's Office arguments for the exemption of drafted dental students. The committee points out that there is no legal obstacle to the issuance of an order for dental students similar to that issued for medical students; that dental schools will lose a large number of students by the draft and, owing to the fact that all dental schools have extended their courses from three to four years this fall, there will be no graduating classes in 1920. It is stated that the supply of dental students is already less than the demand and that the present ratio of Army dentists is inadequate. This ratio calls for one dentist to each 1,000 men, which corresponds to a provision of one hour of dental service over six months for each enlisted man. It is argued that there should be at least one dentist for each 500 men in the Army. The com-

mittee points out that dentistry is closely related to the practice of medicine, that face and head wounds constitute 20 per cent. of the injuries in the war zone, and that the services of none of the various medical specialists are more important to the welfare of the Army than those of the dentist.

Food Division in Surgeon-General's Office

Major-Gen. William C. Gorgas, Surgeon-General, U. S. Army, has organized a division for safeguarding the food supply of the Army. This work is to be carried on in cooperation with the Quartermaster Corps and will include a food survey of each camp conducted by specialists in nutrition, together with inspection of food received for soldiers' rations and study of methods of preparation. It is desired not only to prevent sickness through improper food but also to recommend changes to provide more healthful and appetizing meals. About sixty commissioned officers will be engaged in the work of making food surveys at the camps, with about twice their number of enlisted men to assist in the work. Major John R. Murlin, formerly of Cornell University Medical College, will act as director.

Recommendations for Control of Venereal Disease in Michigan

The commission recently appointed to present recommendations for control of venereal disease as presented by the mobilization of the new army in Michigan has reported to Governor A. E. Sleeper, that at a meeting held in Lansing, September 28, the subject was carefully considered, with the view of presenting to the War Board a practical program designed to control and minimize this menace.

The commission stated that it does not harbor the illusion that venereal disease can be eradicated from the state by any program it might suggest. However, it is the unanimous opinion of its members that a great deal can be done to reduce the danger of venereal infection to the soldiers and to the civil population. It is obviously very necessary at the outset to secure the cooperation of the military authorities in any proposed plan of action.

The following general plan is recommended as the most practical means of securing the desired results:

1. The sources of infection to be located in every possible way.

By securing the cooperation of the military medical authorities in the reporting of cases from which soldiers have acquired infection.

The appointment by the state board of health of a special medical inspector to be stationed at Battle Creek, and the detailing of inspectors to other points if necessary.

Cooperation with the local health authorities of various communities in the state.

Suggestions to the cities of Battle Creek and Kalamazoo of the desirability of securing the services of full-time health officers.

Furnishing, by the state, of free laboratory tests for venereal diseases.

2. Segregation of infected persons.

Infected soldiers to be segregated in camp, by military authority.

Infected women to be segregated in detention hospitals or by house quarantine, if necessary.

Hospital facilities at Detroit and Ann Arbor being now available, the commission recommends the use of these hospitals until further arrangements can be made.

3. The treatment of infected persons.

Soldiers to be treated in camp by the military medical authorities.

Infected cases in the civil population to be cared for in the segregation hospitals above mentioned and in free clinics to be established at various points in the state.

4. The supervision of cured or arrested cases.

By paid social workers in each of the several communities near the encampment.

5. By enlargement of the protected zone.

The military authorities to be requested to extend the zones under authority of the act of May 18, 1917.

6. By a campaign of education.

In the military camps, through cooperation with the Medical Corps of the Army.

In communities throughout the state, under the auspices of the state board of health.

Cantonment and Camp Sites

Perhaps no words have been more used recently in questions of military operations in this country than the words "cantonment" and "camps." According to the Field Service Regulations:

When troops are sheltered under canvas, they are in camp. When resting on the ground without shelter, they are in bivouac. When occupying buildings in towns or villages, or huts specially erected, they are in cantonment.

Cantonments often develop through improvement of camps—huts or temporary buildings taking the place of tents.

Paragraph 236 of the Field Service Regulations of United States Army concerns shelter in the service of the interior. In itself it is a lesson in hygiene and sanitation. It says:

In mobilization and concentration camps, troops are sheltered under canvas or in temporary barracks, and proper provision is made for their health, comfort, and instruction. As a rule, such camps or cantonments should fulfil the following conditions:

1. The grounds should be easily drained, naturally healthful, large enough for depots, corrals, hospitals, etc., and the encampment of the troops without crowding, and with ample space for exercise and instruction.

2. The water supply should be excellent and abundant and not liable to contamination from any source.

3. There should be ample railroad and switching facilities and suitable arrangements for loading and unloading, as the fundamental reasons for the mobilization or concentration will be defeated if ample rail or water facilities are not available to promptly receive and dispatch troops and supplies.

4. All parts of the camp should be readily accessible by good wagon roads.

All arrangements for the accommodation and supply of the troops should be completed before their arrival by the permanent camp personnel sent ahead for the purpose. Camps are laid out so as to preserve the integrity of units, the headquarters of each being centrally or conveniently located with respect to its troops; tents are pitched and aligned, kitchens equipped, water and fuel supply arranged, latrines prepared, hospitals erected, and arrangements made for ample mail, telegraph, and telephone service. The general headquarters should be centrally located and connected by wire with the principal subordinate headquarters. Depots and storehouses are placed at railroad sidings and the hospitals near the railroad station. Trains are placed so as to interfere as little as possible with the comfort and cleanliness of the troops.

No individuals, troops, or trains of organizations temporarily present should be attached to the permanent camp personnel, if it can be avoided. It is the function of the permanent camp personnel to operate depots, hospitals, to maintain camp telephone and telegraph lines, etc. The troops temporarily present must be in constant readiness to move.

August 18, the Field Service Regulations were modified, and this paragraph was added:

5. Boards for the selection of permanent or semipermanent cantonment sites will include in their membership an officer of the Medical Corps.

All questions of sanitation and hygiene, relating to building construction, water supply, drainage, or sewage disposal for such cantonments, on which the board is not unanimously agreed, will be referred to the department commander for final action.

Orders to Officers of the Medical Corps

Lieut.-Col. J. C. Gregory, M. C., to Fort Benjamin Harrison, Ind., training camp, as instructor.

Par. 12, S. O. 210, Sept. 10, 1917, War D., relating to Major L. P. Williamson, M. C., is revoked.

Officers of M. C. to duty as follows: Col. T. J. Kirkpatrick to Fort Oglethorpe as surgeon; Lieut.-Col. F. C. Baker to Fort Oglethorpe, medical officers' training camp, as camp surgeon; Major J. W. Meehan from duty in Canal Zone to Syracuse, N. Y.

The following appointments in the Medical Corps are announced, to rank from the dates named, all in 1917: To be first lieutenants: First Lieuts. J. P. Kelly, Aug. 20; E. J. Farrow, Aug. 21; H. L. Freeland, Aug. 22; W. M. Archer, Jr., Aug. 23, and H. F. Philips, Aug. 24.

The leave granted Major F. N. Chilton, M. C., on account of sickness, is extended one month.

First Lieut. A. J. Canning, M. C., from Corregidor Island to Manila for duty.

Major P. L. Freeman, M. C., to duty at Fort Myer, Va.

Major E. G. Huber, M. C., to South Bend, Ind., for investigating the report of typhoid fever at that place.

Orders to Contract Surgeons

CALIFORNIA

To Camp Kearny, Linda Vista, Calif., from Arcadia, Calif., for duty as a member of a board of medical officers for the special examination of the troops for tuberculosis, Drs. Charles C. Browning, J. E. Fahy, Leon Shulman, Los Angeles; Lewis D. Remington, Monrovia.

CONNECTICUT

To Walter Reed General Hospital, Tacoma Park, D. C., and report to commanding officer for special instruction in tuberculosis examina-

tions, Drs. George H. Jennings, Jewett City; Hugh F. Keating, New Haven.

DISTRICT OF COLUMBIA

To Walter Reed General Hospital, Tacoma Park, D. C., for duty, Dr. Francis S. Echols, Washington.

To his home from duty at Camp Lee, Petersburg, Va., Dr. Thomas A. Claytor, Washington.

ILLINOIS

To Walter Reed General Hospital, Tacoma Park, D. C., and report in person to commanding officer for special instruction in tuberculosis examinations, Dr. James S. Rankin, De Kalb.

LOUISIANA

To their homes from duty, Drs. Robert Bernhard, Harold J. Gondolf, James C. Cole, Edmund Moss, New Orleans; Robert A. Strong, Pass Christian.

MASSACHUSETTS

To his home from duty at Boston, Mass., Dr. Edward W. Taylor, Boston.

MISSOURI

To his home from Chickamauga Park, Ga., Dr. Scott P. Child, Kansas City.

NEW YORK

To Camp Sevier, Greenville, S. C., for the purpose of making examinations in his specialty and on completion of this work to return to his home, Dr. Robert J. Carlisle, New York City.

To Walter Reed General Hospital, Tacoma Park, D. C., and report in person to commanding officer for special instruction in tuberculosis examinations, Drs. Leonard P. Sprague, Chateaugay; Percival F. Dalphin, Malone.

RHODE ISLAND

To Walter Reed General Hospital, Tacoma Park, D. C., and report in person to commanding officer for special instruction in tuberculosis examinations, Dr. Jay Perkins, Providence.

TEXAS

To his home from duty at Leon Springs, Dr. Charles H. Carter, Smithville.

Orders to Officers of the Medical Reserve Corps

ALABAMA

To Army Medical School, Washington, D. C., for instruction, Lieut. Clarence C. Elebash, Selma.

To Camp Gordon, Atlanta, Ga., for duty as tuberculosis specialist and assistant to the Army Medical Staff, Capt. Cabot Lull, Jr., Birmingham.

To Camp Sheridan, Montgomery, Ala., for duty, Lieut. James R. Haigler, Montgomery.

To Phipps Clinic, Baltimore, Md., for a course of study in his specialty, Lieut. Robert H. Howard, Tuskegee.

To Post Graduate Hospital, New York, N. Y., for a course in orthopedics and on completion of this course to proceed to Boston, Mass., for further instruction, Capt. Paul L. Cocke, Birmingham.

ARIZONA

To Fort Benjamin Harrison for a course of instruction, Lieut. William A. Kinsley, Tucson.

To Fort Benjamin Harrison for instruction, Lieut. Charles F. Thomas, Fordyce.

To Fort Des Moines, Ia., for instruction, Lieut. George W. Antoine, Prescott.

CALIFORNIA

To Camp Kearny, Linda Vista, Calif., from Arcadia, Calif., for duty as a member of a board of Medical Officers for special examination of the troops for tuberculosis, Capt. Ralph L. Byrne, Los Angeles.

To Camp MacArthur, Waco, Tex., from Psychopathic Hospital, Ann Arbor, Mich., to make examinations in his specialty, Lieut. William H. Holmes, Pomona.

To Fort Benjamin Harrison for instruction, Lieut. Clarence H. White, Los Angeles.

To Fort Des Moines, Ia., for instruction, Lieut. Claudius Ballard, Los Angeles.

CANAL ZONE

Par. 55, War Dept., Aug. 27, 1917, as related to Major Thomas D. Woodson, Corozal, modified so as to assign him to permanent duty in the office of the Surgeon General.

COLORADO

To Camp Dodge, Des Moines, Ia., for duty with Red Cross Ambulance Co., No. 30, Lieut. Jesse D. Wilson, Ideal.

CONNECTICUT

To Army Medical School, Washington, D. C., for instruction, Lieuts. Joseph A. Higgins, Manchester; Charles A. Jenkins, Willimantic.

To Camp Jackson, Columbia, S. C., from Walter Reed General Hospital, for duty as tuberculosis specialist and assistant to the Army Medical Staff, Lieut. Wilson Pendleton, Wallingford.

To Fort Benjamin Harrison, for a course of instruction, Capts. Thomas F. Scanlon, Georgetown; from Walter Reed General Hospital, for duty as instructor in tuberculosis examinations, Henry F. Stoll, Hartford.

DISTRICT OF COLUMBIA

To Camp Mills, Garden City, L. I., for inspection and on completion of this duty to return to his proper station, Major General William C. Gorgas, Washington.

FLORIDA

To Army Medical School, Washington, D. C., for instruction, Lieut. James E. Pennington, Wellborn.

GEORGIA

To Fort Benjamin Harrison for instruction, Lieut. Charles J. Woods, Darien.

To Fort Des Moines, Ia., for instruction, Lieut. Frank P. Raiford, Atlanta.

To home from Fort Oglethorpe on account of being physically disqualified, Lieuts. John W. Oden, and Thomas E. Oden, Blackshear.

ILLINOIS

To Army Medical School, Washington, D. C., for instruction, Lieuts. Marcus H. Hobart, Chicago; Guy V. Forney, Walnut.

To Camp Doniphan, Ft. Sill, Okla., from Psychopathic Hospital, Ann Arbor, Mich., to make examinations in his specialty, Lieut. Harry R. Hoffman, Chicago.

To Camp Grant, Rockford, Ill., for duty, Capt. French S. Cary, Chicago.

To Camp Greenleaf, Ft. Oglethorpe, for instruction, Capt. Thomas S. Crowe, Chicago; Lieut. Thomas W. Toler, Astoria.

To Fort Benjamin Harrison for instruction, Major John W. Turner, Oak Forest; Capt. Roy H. Garm, Beardstown; Lorin C. Collins, Chicago; Henry G. G. Schmidt, Elgin; Bernard M. Conley, Wilmette; Lieuts. William C. Cotton, Benson, Ill.; Robert A. Noble, Bloomington, Ill.; Henry S. Zimmerman, Cameron, Ill.; Everett P. Coleman, Canton, Ill.; Ira McKinney, Champaign, Ill.; Norman S. Starr, Charleston, Ill.; Walter E. Bourque, Chicago; Maurice W. K. Byrne, Chicago; Mandel A. I. Cohen, Chicago; William De Boer, Chicago; Karl J. Henrichsen, Chicago; Harry T. Isacowitz, Chicago; Robert R. Kirkpatrick, Chicago; Anthony J. Linowiecki, Chicago; Gilbert M. Loewe, Chicago; Gottlieb A. Lurie, Chicago; Harry G. Martin, Chicago; Frank R. Maurer, Chicago; Clarence McClellan, Chicago; Guy M. McLean, Chicago; Theodore E. Miller, Chicago; Eugene A. Moulton, Chicago; David V. Omens, Chicago; Hans A. Paulsen, Chicago; Ralph W. Petersen, Chicago; Louis W. Pijan, Chicago; Irving A. Porges, Chicago; Carl G. Rydin, Chicago; Samuel Sullivan, Chicago; George C. Talladay, Jr., Chicago; Adolph M. Teixler, Chicago; George B. Wallace, Chicago; Warren O. Wheelock, Chicago; Theodore M. Wiersen, Chicago; Edward Buckman, Chicago; George W. Cusick, Chicago; Louis Savitsky, Cicero, Ill.; Frank A. Stockdale, Coal City, Ill.; James R. Tweedy, Cobden, Ill.; Raymond E. Hillmer, Crescent City, Ill.; Charles J. Davis, Deerfield, Ill.; Walter A. Day, Fosterburg, Ill.; Clair L. Stealy, Freeport, Ill.; Frederick C. Vogt, Gillespie, Ill.; Osmon C. Church, Glen Carbon, Ill.; Harry D. Wiley, Glencoe, Ill.; Paul G. Capps, Herrin, Ill.; Elza F. Tate, Homer, Ill.; Oscar George Culli, Ina, Ill.; Augustus S. Hunt, Jerseyville, Ill.; Hayden F. Threlkfeld, Jerseyville, Ill.; Joel E. Tothaker, Ladd, Ill.; William E. Mercer, Liberty, Ill.; Ralph E. Kleckner, Mattoon, Ill.; George C. Shockey, Melrose Park, Ill.; Anson Leroy Nickerson, Momence, Ill.; Charles J. Poole, Mt. Vernon, Ill.; Ralph S. Sabine, Murphysboro, Ill.; Raymond C. Gillogly, Newmann, Ill.; Marshall Wallis, Normal, Ill.; Arthur K. Spiering, Oak Park, Ill.; Ralph G. Cressman, Oglesby, Ill.; Corwin S. Mayes, Ollipolis, Ill.; John O. Gaston, Park Ridge, Ill.; Harry E. Brown, Peoria, Ill.; James F. Hilgenberg, Pesotum, Ill.; Loran E. Orr, Petersburg, Ill.; Alonzo B. Middleton, Pontiac, Ill.; Orin R. Wakefield, Princeton, Ill.; Harry S. Seiwel, Quincy, Ill.; William E. Park, Rockford, Ill.; Robert B. Miller, Rock Island, Ill.; Ford C. Walsh, Rock Island, Ill.; Benjamin D. Mosher, Serena, Ill.; William D. Chapman, Silvis, Ill.; Clausen M. Wilmot, Speer, Ill.; Ora M. Williamson, Sullivan, Ill.; Asa L. T. Williams, Vandalia, Ill.; Thomas W. Morgan, Virden, Ill.; Clarence W. Chapin, Weldon, Ill.

To Ft. Des Moines, Ia., and report to the commanding officer of that post for duty as chief of the medical service at the base hospital, Capt. Herbert H. Frothingham, Chicago.

To Fort Riley, for duty at Base Hospital, Lieut. Edmon E. Richardson, Mattoon.

To Fort Sheridan, Ill., from duty at Camp Grant, and report for duty to the commanding general, Capt. Theodore S. Proxmire, Lake Forest.

To Washington, D. C., St. Elizabeth Hospital for course of study in his specialty, Lieut. Harry A. Durkin, Peoria.

To his home from Fort Oglethorpe on account of being physically disqualified, Lieut. James A. Emmons, Pinkstaff.

Par. 26, War Dept., July 30, 1917, as relates to Lieut. George D. Guca, Chicago, is revoked.

INDIANA

To Boston, Mass., for a course in orthopedics and on completion of this course to proceed to Post Graduate Hospital, New York, for further instruction, Lieut. Louis A. Bolling, Attica.

To Fort Benjamin Harrison for instruction, Lieuts. Aaron M. Winkleplick, Alfordsville, Ind.; George C. Taylor, Clay Pool, Ind.; Harry H. Ward, Coalmont, Ind.; Homer H. Tallman, Culver, Ind.; Walter W. Wright, Edinburg, Ind.; Warren Wilburn Hewins, Evansville; Reavill M. Walden, Evansville; Ben Webster, Kingsbury, Ind.; Frederick A. Henderson, Kokomo, Ind.; Byron J. Peters, Kokomo, Ind.; Manford M. Clapper, Lafayette, Ind.; Carlos C. Rozelle, La Grange, Ind.; Benjamin T. Teaford, Lanesville, Ind.; James O'Dell Rhea, Linden, Ind.; Otto H. Swantusch, Metz, Ind.; Irving A. Whitlach, Milan, Ind.; Lloyd H. Simmons, Millersburg, Ind.; Earl L. Waite, Rochester, Ind.; Ora L. McCoy, Romney, Ind.; Tony E. Hunter, Versalles, Ind.; Espy K. Schurtz, Waterloo, Ind.

So much of Par. 34, War Dept., Aug. 30, 1917, as relates to Lieut. Lawrence E. Jewett, Wabash, is revoked.

IOWA

To Army Medical School, Washington, D. C., for instruction, Lieuts. William H. Jenks, Jr., Tipton.

To Fort Benjamin Harrison for instruction, Lieuts. Robert S. Moth, Council Bluffs; Robert B. Stephenson, Libertyville; John C. Cranc, Varina.

To Washington, D. C., St. Elizabeth Hospital, for course of study in his specialty, Lieut. Percy B. Battcy, Independence.

Honorably discharged from Fort Riley, Lieut. Corvus C. Lang, Altoona.

KANSAS

To Camp Pike, Little Rock, Ark., for duty with Ambulance Co. No. 44, Lieut. David C. Munford, Montezuma.

To Fort Benjamin Harrison for a course of instruction, Lieut. Paul C. Carson, Ashland.

To Fort Leavenworth, Kan., for duty as ophthalmologist and otolaryngologist in the Post Hospital, Capt. John L. Fryer, National Military Home.

KENTUCKY

To Army Medical School, Washington, D. C., for instruction, Lieuts. Floyd K. Foley, Central City; Nona B. Ellis, Lynnville.

To Fort Des Moines, Ia., for instruction, Lieut. William H. Smith, Louisville.

To Fort Riley, for duty as Chief of the Surgical Service, Capt. Frank T. Fort, Louisville.

To Phipps Clinic, Baltimore, Md., for a course of study in his specialty, Capt. Walter A. Lackey, Hopkinsville.

Honorably discharged from Fort Riley, Capt. William A. Poole, Henderson.

LOUISIANA

To Army Medical School, Washington, D. C., for instruction, Lieut. Henry T. Simon, New Orleans.

To Fort Des Moines, Ia., for instruction, Lieut. Aaron W. Brazier, Slidell.

Letter from War Dept., Sept. 18, 1917, No. 4249, as relates to Lieut. Neely M. Palmer, Leesville, is revoked.

MAINE

To Fort Benjamin Harrison for instruction, Lieuts. Henry K. Stinson, Augusta; Ralph W. Wakefield, Bar Harbor; William J. Young, Orono; Edward L. Sollima, Portland; Preston W. Whitaker, Unitz; Bernard A. Bailey, Wiscasset.

MARYLAND

To Camp Meade, Annapolis Jct., Md., for duty as tuberculosis specialist and assistant to the Army Medical Staff, Capt. Gordon Wilson, Baltimore.

To Fort Benjamin Harrison for instruction, Lieut. Frederick W. Wastell, Jr., Harbor Beach.

To Walter Reed General Hospital, from Fort Myer, Va., for a course of instruction in tuberculosis examinations, Lieut. Charles W. Rauschenbach, Baltimore.

To Washington, D. C., and report in person to the Surgeon General of the Army for duty in the section of surgery of the head, Major James Bordley, Jr., Baltimore.

Par. 80, War Dept., June 2, 1917, so much as relates to Major John A. Clark, Takoma Park, is revoked.

MASSACHUSETTS

To Boston State Hospital, Boston, Mass., for a course of study in their specialty, Lieuts. William T. Ramage, Arlington; George B. Wilbur, Newton.

To Camp Logan, Houston, Tex., from Psychopathic Hospital, Boston, Mass., to make examinations in his specialty, Lieut. Raoul G. Provost, New Bedford.

To Camp Meade, Annapolis Jct., Md., from Fort Benjamin Harrison and report in person to the commanding general 79th Div., for duty with the 23d Engrs., Capt. Timothy F. Goulding, Boston.

To Fort Benjamin Harrison for a course of instruction, Capt. Carlisle Reed, Boston; Charles Dudley, Kingston; Erik St. John Johnson, New Bedford; Charles L. Upton, Shelburne Falls; Lieuts. Louis J. Ullian, Sterling E. Wilhoit, Boston; Henry L. Davis, Lynn; Ridgely F. Hanscom, Newton; John A. Sullivan, Pittsfield; George W. Tully, Southbridge; William L. Connery, Springfield.

To Washington, D. C., and report in person to the Surgeon-General of the Army, for duty in connection with the section surgery of the head, Major Allen Greenwood, Boston.

Par. 204, War Dept., Aug. 22, 1917, as relates to Lieut. William J. McDonald, Brookline, modified so as to relieve him from duty at Fort Snelling, Minn.

MICHIGAN

To Army Medical School, Washington, D. C., for instruction, Lieut. James G. Carr, Detroit.

To Camp Beauregard, Alexandria, La., from Psychiatric Clinic, Ann Arbor, Mich., to make examinations in his specialty, Lieut. George K. Pratt, Flint.

To Camp Shelby, Hattiesburg, Miss., from State Psychopathic Hospital, Ann Arbor, Mich., to make examinations in his specialty, Lieut. Ray S. Moorish, Flint.

To Fort Benjamin Harrison, for a course of instruction, Capt. Clarence M. Williams, Alpena; Edward C. Rumer, Flint; William W. Arscott, Rogers; Lieuts. Frederick S. Baird, Bay City; David D. Todd, Calumet; Edward W. Vis, Central Lake; Benjamin T. Goodfellow, Clio; George G. Rieckhoff, John H. Slevin, Detroit; Walter S. Sharpe, Dowagiac; Horace J. Beel, Grand Rapids; Glenn T. Soule, Henderson; Albert J. Schmalzer, Hillman; James Rhines, Laurium; Isaiah Sicotte, Michigamme; Birge C. Swigt, Middleville; Albert R. Tucker, Mohawk; Theodore S. Crosby, Wakfield.

MINNESOTA

To Army Medical School, Washington, D. C., for instruction, Lieut. Henry V. Hanson, New London.

To Camp Mills, Garden City, L. I., for inspection and on completion of this duty to return to his proper station, Major Charles H. Mayo, Rochester.

To Cornell Medical College, New York, for a course of instruction in military roentgenology, Lieut. Albert J. Wentworth, Mankato.

To Fort Benjamin Harrison for instruction, Lieut. George H. Norris, Annadale.

To Fort Worth, Tex., from Fort Riley, for duty at the Signal Aviation School, Lieut. Arthur J. Lewis, Henning.

MISSISSIPPI

To Camp Wadsworth, Spartanburg, S. C., from Fort Benjamin Harrison, and report in person to the commanding general for duty, Lieut. Paul X. Browne, Jackson.

Par. 4126, Sept. 15, 1917, War D., as relates to Lieut. Paul Z. Browne, Jackson, is revoked.

MISSOURI

To Chicago, Ill., and St. Louis, Mo., for the purpose of establishing schools of plastic and oral surgery, section of surgery of the head and then to Rockford, Ill., to inspect division of plastic and oral surgery at base hospital, and on completion to return to his proper station, Major Vilray P. Blair, St. Louis, Mo.

To Fort Benjamin Harrison for instruction, Lieuts. Cameron A. Rose, Kansas City; Richard L. Russell, Humansville; Elsworth J. Smith, St. Louis.

To Phipps Clinic, Baltimore, Md., for a course of study in their specialty, Lieuts. William G. Patton, Farmington; Charles H. Burdick, St. Louis.

To Post Graduate Hospital, New York, from Army Medical School, Washington, D. C., for a course in orthopedics, and on completion of this course to proceed to Boston, Mass., for further instruction, Lieut. Lee H. Winemiller, Farley.

Letter, Sept. 20, 1917, No. 4448 War Dept., so much as relates to Lieut. Lee H. Winemiller, Farley, is revoked.

So much of Par. 6, Aug. 18, 1917, as relates to Lieut. Frank N. Wilson, St. Louis, modified as to read for service in the British Heaty Hospital.

NEBRASKA

To Fort Benjamin Harrison for instruction, Lieut. Louis E. Hanisch, Omaha.

To Fort Oglethorpe, for instruction, Lieut. Herman A. Gerbig, Friend.

Letter from War Dept., Sept. 12, 1917, No. 3887, for a course of instruction in military roentgenology in Kansas City, relating to Capt. William H. Mick, Omaha, is revoked.

To New York, N. Y., for instruction in military roentgenology, Capt. William H. Mick, Omaha.

NEW HAMPSHIRE

To Fort Benjamin Harrison for a course of instruction, Capt. Charles A. Sturtevant, Manchester.

To Fort Oglethorpe, from School of Military Roentgenology, Boston, Mass., for instruction, Lieut. Stilman G. Davis, Nashua.

To Fort Benjamin Harrison for instruction, Lieuts. Edmund W. Ill, Solomon J. Sambur, Newark.

To Fort Oglethorpe for instruction, Lieut. Charles L. Davis, South Dayton.

To Post Graduate Hospital, New York, N. Y., for a course of orthopedics, and on completion of this course to proceed to Boston, Mass., for further instruction, Lieut. Frank W. Pinneo, Newark.

Par. 2, War Dept., Sept. 10, 1917, which relates to Lieut. Edgar B. Funkhouser, Trenton, is revoked.

So much of Par. 72 and 73, War Dept. Aug. 27, 1917, as relates to Lieut. Abraham J. Gordon, Newark, is revoked.

NEW YORK

To Army Medical School, Washington, D. C., Lieuts. Wilfred V. Egan, Brooklyn; Fred G. Jones, Clark Mills; Arthur Krida, Schenectady.

To Camp Bowie, Fort Worth, Tex., from Neurological Institute, New York, to make examinations in his specialty, Lieut. John J. Hughes, Mt. Vernon.

To Camp Cody, Deming, N. M., from Psychopathic Hospital, Boston, Mass., to make examinations in his specialty, Lieut. Clarence J. O'Alton, New York.

To Camp Custer, Battle Creek, Mich., from Walter Reed General Hospital, for duty as tuberculosis specialist and assistant to the Army Medical Staff, Lieut. Nelson K. Gromm, Albany.

To Camp Lee, Petersburg, Va., from Walter Reed General Hospital, for duty as tuberculosis specialist and assistant to the Army Medical Staff, Capt. John P. Faber, Schenectady.

To Camp McClellan, Anniston, Ala., from Fort Benjamin Harrison to make examinations in his specialty, Lieut. Frederick C. Devendorf, Utica.

To Camp Mills, Garden City, L. I., from Army Medical School, Washington, D. C., for temporary duty in laboratory, Lieut. Fred. M. Meader, New York.

To Camp Meade, Annapolis Jct., Md., and report in person to the commanding general, 79th Division, for duty with the 23rd Engineers, Capt. Waldemar T. Browne, Brooklyn; for duty in connection with venereal diseases, Faxton R. Gardner, New York City.

To Camp Upton, Yaphank, L. I., for duty, Capt. Frederick P. Hammond, Lieut. Ammi B. Edgar, New York City.

To Camp Wheeler, Macon, Ga., from Buffalo State Hospital, Buffalo, N. Y., to make examinations in his specialty, Capt. Robert King, Buffalo.

To Fort Benjamin Harrison for instruction, Major Frank A. Walder, Lockport; Capt. Otto C. J. Von Renner, Buffalo; Walter H. Vosburg, Dunkirk; Raymond E. Longacre, Lee S. Shoninger, Archibald W. Taves, New York City; John D. Shipman, Vernon; Lieuts. Sumner E. Douglas, Adams; Bryan G. Shults, Albany; Arthur H. Wheeler, Albany; Joseph J. Dunnigan, Auburn; Edward Danforth, Bainbridge; Paul E. Betowski, Bath; George B. Reitz, Brooklyn; August M. Sartorius, Brooklyn; Irving S. Schneikraut, Brooklyn; Morris K. Silberman, Brooklyn; Alexander S. Sim, Brooklyn; Arthur E. McCarthy, Buffalo; Windsor R. Smith, Buffalo; Victor A. Tyrasinski, Buffalo; George H. Shaw, Camillus; Henry S. Edmunds, Cassadago; Walther C. A. Steffen,

College Point; Hall G. Van Vlack, Forestville; Maxwell K. Wiloughby, Genoa; Henry E. Clarke, Glens Falls; James H. Van Marter, Groton; William M. Sill, Jamestown; Patrick J. Hirst, Middle Grove; Charles A. Smith, New Rochelle; Henry C. Falk, Joseph Haas, Saul L. Meylackson, Isaac Reitzfeld, Charles P. Roach, Jay B. Rudolph, Harry O. Saunders, William J. Scott, Isadore Seff, Solomon Shlimbaum, Henry B. Siglar, Benjamin J. Slater, Joseph T. Slonimsky, Louis J. Sokol, Oscar Spier, Maurice A. Sturm, Joseph Subkis, Lewis H. Taft, Edward H. Tonolla, Abraham Unger, Henry L. Wanner, Jr., New York City; Hamilton M. Southworth, Old Chatham; Bernard S. Strait, Perin Yan; Roy W. Bury, Philadelphia; Leo R. Tighe, Poughkeepsie; Roy J. Marshall, Le Clare Stuart, Rome; James A. Taggart, George B. Ubel, Salamanca; Stephen J. H. Reed, Sangerties; Leroy D. Sopee, Smyrna; William Trotter, Troy; John Peter Schneble, Wood Haven.

To Fort McPherson, Ga., from Camp Mills, and report to the commanding officer of that post for duty as chief of the medical service at the base hospital, Lieut. Charles N. B. Camac, New York City.

To Fort Oglethorpe for instruction, Lieuts. Johnston MacLeod, Flushing; Arthur G. Pilch, Rochester.

To Neurological School, Philadelphia, Pa., for four weeks' intensive training in brain surgery, Capt. Edwin Beer, New York City.

To Neurological Institute, New York, for a course in his specialty, Lieuts. Vincent W. Weiss, New York City; Samuel W. Hausman, Ogdensburg; Ward W. Millias, Rome.

To Psychopathic Hospital, Ann Arbor, Mich., from Fort Benjamin Harrison, for study in their specialty, Capt. George F. Mills, Oneida; Lieuts. Geoffrey C. H. Burns, Central Islip; Emil Altman, New York City.

To Post Graduate Hospital, New York, for a course of orthopedics and on completion of this course to proceed to Boston, Mass., for further instruction, Major Charles W. Hennington, Rochester; Lieut. William T. Shields, Troy.

To Signal Corps, Aviation School, Hazelhurst Field, from West Point, for duty, Lieut. F. L. Senger, Brooklyn.

To Washington, D. C., and report in person to the Surgeon General of the Army for duty in his office, Major William L. Hart, Madison Barracks; Lieut. Sanger Brown, White Plains.

To be relieved from the duty assigned him by Par. 154, War Dept., Aug. 22, 1917, and return to the inactive list of the M. R. C. of the Army, Major Edward S. Van Duyn, Syracuse.

Now on duty at Plattsburg Barracks, as contract surgeon be ordered to active duty as major, effective Sept. 3, 1917, Major M. S. Gregory, New York City.

To their Homes, Lieuts. Lemuel W. Gorham, Albany; Ambrose A. Scouler, Brooklyn; Abraham Skversky, New York City; John A. Conley, Penn Yan.

NORTH CAROLINA

To Army Medical School, Washington, D. C., for instruction, Lieut. Kelso A. Carroll, Raleigh.

To Camp Beauregard, Alexandria, La., from Camp Wadsworth, Spartanburg, S. C., for duty as Chief of the Surgical Service, Major John T. Burrus, High Point.

To Camp Des Moines, Ia., for instruction, Lieut. William H. Bryant, Henderson.

To Fort Benjamin Harrison for a course of instruction, Lieut. Wilbur G. Jenkins, Raleigh.

Letter, Aug. 31, 1917, No. 3194, War Dept., so much as relates to Lieut. Isaac M. Taylor, Morgantown, is revoked.

Honorably discharged on account of being physically disqualified, Lieut. Isaac M. Taylor, Morgantown.

NORTH DAKOTA

To Kansas City, Mo., for a course of military roentgenology, Lieut. Leslie G. Eastman, Hazen.

OHIO

To Army Medical School, Washington, D. C., for instruction, Lieuts. Maurice L. Allen, Albert L. Jones, Cleveland; Atlee R. Olmstead, Marshallville.

To Boston, Mass., for instruction in orthopedics, Lieuts. Charles M. Paul, Cincinnati; Barney J. Hein, Toledo.

To Camp Taylor, Louisville, Ky., from Cleveland, O., for duty as tuberculosis specialist and assistant to the Army Medical Staff, Capt. Milton J. Lichty, Cleveland.

To Camp Wheeler, Macon, Ga., from Walter Reed General Hospital, for duty as tuberculosis specialist and assistant to the Army Medical Staff, Capt. Samuel Hindman, Columbus.

To Fort Benjamin Harrison for instruction, Capt. Edward D. Sinks, Lima; Lieuts. Clyde K. Startzman, Bellefontaine; Melville D. Saash, Bluffton; Wiley T. Sprague, Chauncey; Walter H. Mytinger, Cincinnati; Samuel Zielonka, Cincinnati; Verner T. Scott, Clarksburg; Adlai E. Callaghan, Cleveland; Paul F. Davidson, Cleveland; Rudolph S. Reich, Cleveland; Ralph H. Sill, Cleveland; John M. Steel, Cleveland; John W. Tippie, Cleveland; James N. Wychgel, Cleveland; Nicholas L. Zinner, Cleveland; Clarence J. Schirack, Coldwater; Elgie R. Shaffer, Columbus; Otto N. Warner, Conneaut; Ivan L. Biggs, Custar; Warde B. Smith, Frankfort; Zalmon O. Sherwood, Geneva; Harry W. Shaw, Junction City; Donald De Costa Shira, Larue; William T. Stewart, Morning Sun; Jaffray J. Vega, National Military Home; Murray E. Reeder, Ohio City; Owen B. Van Epp, Port Clinton; Gale C. Guthrie, Uhrichsville; Edward McD. Cass, Utica; Harvey N. Trumbull, Woodville; David B. Phillips, Youngstown.

To Neurological Institute, New York, N. Y., for a course of study in his specialty, Lieut. John C. George, Dayton.

OKLAHOMA

To Camp Bowie, Ft. Worth, Tex., for duty, Lieut. Albert N. Earnest, Muskogee.

To Fort Worth, Tex., from Fort Riley, for duty, Lieut. Ross D. Long, Oklahoma.

OREGON

To Washington, D. C., and report to the Chief of Staff for temporary duty Army War College, and relieved from duty with the 42d Division, Camp Mills, L. I., Lieut. Spiro Sargentich, Portland.

PENNSYLVANIA

To Army Medical School, Washington, D. C., for instruction, Lieuts. Don C. Kyper, John R. T. Snyder, Altoona; Torrance J. Hanlon, Donora; Harry C. Fulton, Lancaster; Ralph E. Conn, Monessen; Harry F. Bailey, Monongahela; Humbert A. Granelli, David W. Kramer, Philadelphia; Galen D. Castleburg, Ralston; Valentine B. Eiler, Titusville.

To Boston, Mass., for instruction in orthopedic work and on completion of this course to proceed to New York (N. Y.) Post Graduate Hospital for further instruction, Lieuts. Ralph L. Rutledge, McKeesport; Robert E. Davison, James L. Gilmore, Pittsburgh.

To Camp Hancock, Augusta, Ga., from Phipps Psychopathic Clinic, Baltimore, Md., to make examinations in his specialty, Lieut. George P. Ard, Woodward.

To Camp Mills, Garden City, L. I., for duty with 42d Div., Major George S. Crampton, Philadelphia.

To Camp Shelby, Hattiesburg, Miss., from Fort Oglethorpe, for temporary duty to conduct cardiovascular examinations, Lieut. John H. Musser, Jr., Philadelphia.

To Fort Benjamin Harrison for a course of instruction, Lieuts. Eugen G. Reinartz, Solon L. Rhode, Charles A. White, Philadelphia; Howard L. Farquhar, Pittsburgh; Harry E. Garman, Spangler.

To Walter Reed Hospital, Tacoma Park, D. C., and report in person to commanding officer for special instruction in tuberculosis examinations, Lieut. William C. Spalding, Cresson.

To Washington, D. C., and report in person to the Surgeon-General of the Army for temporary duty in that office, Lieut. Floyd E. Keene, Philadelphia.

Par. 4223, Sept. 19, 1917, War Dept., as relates to Lieut. Alexander H. Colwell, Pittsburgh, is revoked.

To his home from Fort Niagara, N. Y., Lieut. David Riesman, Philadelphia.

PHILIPPINE ISLANDS

To Camp Pike, Little Rock, Ark., for duty with Ambulance Co. No. 44, Lieut. Seth L. Cox, Atimonan.

RHODE ISLAND

To Camp Upton, Yaphank, L. I., from Walter Reed General Hospital, for duty as tuberculosis specialist and assistant to the Army Medical Staff, Capt. James L. Wheaton, Pawtucket.

To Fort Benjamin Harrison for instruction, Lieut. Michael H. Scanlon, Westerly.

To Fort Oglethorpe, from school of Military Roentgenology, Boston, Mass., for instruction, Lieut. Jacob S. Kelley, Providence.

TENNESSEE

To Army Medical School, Washington, D. C., for instruction, Lieut. Clarence H. Glover, Memphis.

To Fort Benjamin Harrison for instruction, Lieut. Charles A. Robertson, Ridgely.

To Fort Des Moines, Ia., for instruction, Lieut. Jonathan N. Rucker, Gallatin.

TEXAS

To Camp Kearny, Linda Vista, Calif., to make examinations in his specialty, Lieut. James W. Hill, Dallas.

To Fort Benjamin Harrison for instruction, Lieut. Wallace B. Guign, Tivoli.

To Fort Des Moines, Ia., for instruction, Lieut. Allen A. McDonald, Calvert.

To Watertown, N. Y., from Army Medical School, to inspect ambulance bodies, Major Harold W. Jones, San Antonio.

VERMONT

To Camp Meade, Annapolis Jct., Md., from Fort Sheridan, Ill., for duty, Lieut. Horatio N. Jackson, Burlington.

VIRGINIA

To Army Medical School, Washington, D. C., for instruction, Lieut. Rockwell E. Smith, Crozet.

To Camp Green, Charlotte, N. C., from Neurological Institute, New York, N. Y., to make examinations in his specialty, Lieut. Paul V. Anderson, Richmond.

To Fort Benjamin Harrison for instruction, Lieuts. George B. Harrison, Colonial Beach; Robert J. Styers, Jetersville; John H. Hare, Newland; Ira Hurst, Parksley; Granville Eastham, Rapidan; Robert E. Timberlake, Junius E. Warinner, Richmond; Ernest H. Muse, Roanoke.

To Rockefeller Institute for Medical Research, New York, N. Y., for a course of instruction in laboratory work, Capt. Erasmus G. Hopkins, Richmond.

WASHINGTON

To Los Angeles, Calif., for a course of instruction in military roentgenology, Lieut. Roy C. Baumgarten, Seattle.

To Mineola, Long Island, for the purpose of making inspection of the aviation camp, Col. George H. Crabtree, Fort Lawton.

WEST VIRGINIA

To Fort Benjamin Harrison for instruction, Lieuts. George W. Shriver, Clendenin; James O. Hicks, Huntington; Charles G. Willis, Kingston; Frank C. Shafer, Roanoke; Harry R. Parker, Williamson.

WISCONSIN

To Boston State Hospital, Boston, Mass., from Fort Riley, for a course of study in his specialty, Lieut. Charles C. Rowley, Winnebago.

To Camp Meade, Annapolis Jct., Md., from Fort Sheridan, Ill., for duty, Lieut. Ralph Kayeen, Oconomowoc.

To Phipps Clinic, Baltimore, Md., for a course of study in his specialty, Lieut. William J. Fleming, Wauwatosa.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Rosenow in Rock Island.—At a special meeting of the Rock Island County Medical Society, held in Rock Island, September 27, the essayist of the evening was Dr. Edward C. Rosenow, Rochester, Minn., who spoke on "Infantile Paralysis."

Personal.—Drs. William E. Buehler and Andrew M. Harvey, Chicago, have been elected directors of the public safety commission in Cook County.—Dr. Clara E. Hayes of the Peoria State Hospital has been appointed superintendent of the State Training School for Girls, Geneva.

Work for the Insane.—On account of the shortage of knit underwear and stockings due to the war, the state welfare commission has determined on installing the machinery at the Elgin State Hospital for making needed articles of clothing, as well as brooms, brushes, furniture and shoes.

Sanitary Assignments.—Dr. C. St. Clair Drake, Springfield, director of the public health of the state, has announced the following assignments: Dr. Clarence W. East, Evanston, detached from Camp Grant, Rockford, to investigate poliomyelitis in Cook County; Dr. Arthur Pearman, medical health officer for Camp Grant health district; Dr. Alexander F. Stewart, Oneida, health officer for the Western District; John A. Kappelman, Evanston, relieved as medical officer of the Fort Sheridan District, excepting special assignments, and detailed to the Northwest Health District, with headquarters in Chicago; Major John A. Robison, M. R. C., U. S. Army, medical officer for the Fort Sheridan health district, and Dr. Charles E. Crawford, assigned to supervision of the Northwestern health district, Rockford.

Chicago

Personal.—Dr. Clarence W. Leigh has been appointed city physician, succeeding Dr. Michael J. Purcell.—Dr. James M. Neff, who was on duty with the Murphy Unit in Europe for several months, has returned and resumed practice.

One Million Dollars for Hospital.—At the November election, the people of Cook County will be asked to approve a bond issue of \$1,000,000 for the erection of two hospitals as branches to Cook County Hospital. The first, to accommodate 200 patients, is asked for South Chicago, and the second, in the stock yards district, is intended as an emergency hospital.

Poliomyelitis.—September 28, there were said to be 155 cases of infantile paralysis in Chicago and between forty and fifty cases in Cook County outside of the city. Eleven new cases, with four deaths, were reported in Chicago for the date mentioned. According to a statement of the health commissioner, 50 per cent. of the cases in the present epidemic had proved fatal. Seventeen meetings were held in as many schoolbuildings of the city on the date mentioned at which physicians gave talks to more than 12,000 citizens on the disease and measures for its prevention.

Military Assignments.—Major Harry D. Orr, M. C., assigned to the One Hundred and Twenty-Second Infantry, has been appointed director of Illinois field ambulance companies. Capt. Robert J. Gay has succeeded Major Orr as regimental surgeon.—Major William J. Swift, M. C., has been appointed director of Illinois field hospital companies at Camp Logan, Houston, Texas.—Dr. Cassius C. Rogers has been commissioned major, and Dr. J. Lloyd Hammond, lieutenant, in the Medical Corps, Illinois National Guard, and assigned to the First Reserve Infantry.—Dr. Maurice L. Blatt has been commissioned major, and Dr. Arthur H. Parmelle, lieutenant, in the Medical Corps, and assigned to duty with the Second Illinois Reserve Infantry.

INDIANA

Personal.—Dr. William Shiner, superintendent of the Pathological Laboratory of the Indiana State Board of Health, has been offered the professorship of pathology in the University of Texas.—Dr. Daniel F. Randolph, Waldron, has entered St. Vincent's Hospital, Indianapolis, on account

of injuries received in the overturning of his automobile recently.

State Society Meeting.—The Indiana State Medical Society met in Evansville, September 26, 27 and 28, and elected the following officers: Dr. Joseph R. Eastman, Indianapolis, president; Drs. Victor V. Cameron, Marion; Harvey H. Martin, Laporte, and Eugene A. Sturm, Jasper, vice presidents, and Dr. Charles N. Combs, Terre Haute, was reelected secretary-treasurer. It was voted unanimously to hold the 1918 meeting in Indianapolis.

IOWA

Poliomyelitis.—What appeared to be a new outbreak of poliomyelitis in Davenport occurred, September 25, when three new cases were reported in the preceding twelve hours. In an effort to check the epidemic in Davenport the health authorities made a regulation, September 20, that no mail would be allowed to go out from homes quarantined on account of the disease, and the postal authorities acquiesced in the rule and returned mail from such houses.

MARYLAND

Typhoid Fever Epidemic.—An epidemic of typhoid fever has broken out at Arlington, Baltimore County. To date there are fourteen cases of the disease, among them five in one family and six in another. Dr. Henry A. Naylor, Pikesville, who is health officer of the district, reported the cases to the state board of health.

Personal.—Dr. Thomas B. Fitcher, Johns Hopkins Hospital, will sail shortly for England, where he will be in charge of the Canadian Military Hospital at Orpington, Kent. Although Dr. Fitcher has been living in Baltimore for many years, he is a British subject, being a Canadian by birth. He has been commissioned a lieutenant-colonel in the Canadian Expeditionary Force.

MONTANA

Hospital Addition Completed.—A twenty-room addition has been made to the Park Hospital, Livingston, at a cost of \$20,000. The hospital now has a bed capacity of fifty.

Personal.—Dr. William C. Riddell, Helena, has been commissioned major, M. C., Mont. N. G., and assigned to the Second Infantry.—Dr. Michael J. Casserly, Hamilton, who is on duty with the Canadian Army Medical Corps in France, has been wounded.—Dr. James H. Irwin, Great Falls, has been commissioned major, and ordered to duty at American Lake, Washington.

Epidemic Diseases.—Since January, only twenty-four cases of infantile paralysis have been reported to the state health authorities. This compares favorably with 1916, when 108 cases were reported during the same period. During September, twelve cases of smallpox were reported in Livingston.—In Butte, fifteen cases of smallpox were reported during the first half of September.

NEW YORK

Personal.—Dr. Charles G. Wagner, superintendent of the Binghamton State Hospital, is reported to be seriously ill at his home.—Dr. Moses Rosenberg, Rochester, surgeon on the British steamer *Verdi*, which was reported to have been sunk by a German submarine, was saved.

New Officers.—At the annual meeting of the Eighth District Branch of the Medical Society of the State of New York, held at Buffalo, September 13, the following officers were elected: president, Dr. Albert T. Lytle, Buffalo; vice presidents, Drs. Edward Torrey, Olean, and William R. Thomson, Warsaw; secretary, Dr. Lyman C. Lewis, Belmont, and treasurer, Dr. Fitch H. Van Orsdale, Belmont.

Quarantine at Camp Mills.—The Forty-Second Division of the National Guard Army encamped near Mineola, L. I., is threatened with an outbreak of cerebrospinal meningitis. Dr. Fred M. Meader of the Surgeon-General's Office, who has been sent to the camp to handle the situation, has established three quarantines. Cultures taken in the One Hundred and Sixty-Seventh Infantry have shown a number of meningitis carriers. These have been isolated, and no further spread of the malady is anticipated. There was one death in the regiment which lead to the investigation.

New Vital Economics Department at Rochester.—The University of Rochester is organizing a department, to be known as the Department of Vital Economics, as an extension of the Department of Household Economics of the Mechanic's Institute. The course will be arranged with a

view to preparing young men and women for more rational physical living and to the training of students for positions in public health offices. Dr. John R. Murlin, who for the past eight years has been professor of physiology in the Medical School of Cornell University, has been appointed director. This department, the first of its kind in this country, has been made possible by a bequest of \$800,000 made available by the will of Lewis P. Ross, the income of which may be used "to the end that human life may be prolonged with increased health and happiness."

Civil Service Examinations.—The civil service commission announces that examinations will be held, November 3, to fill the following positions:

Assistant bacteriologist, state department of health; open to men and women; salary \$1,200 to \$1,800; ages 21 to 35 years; candidates must have a thorough knowledge of the principles of bacteriology, and considerable practical experience in that work, including preparation of purified antitoxins.

Assistant physician, regular or homeopathic, to provide eligibles for positions as assistant physician in the state hospitals and other positions of a similar nature; salary \$1,200 to \$1,600, with maintenance; open to men and women, licensed medical practitioners of New York; graduates from a registered medical school, and with at least one year's experience on the resident medical staff of a hospital, or medical intern or clinical assistant in a state hospital, or three years' consecutive practice of medicine.

Applications should be made to the State Civil Service Commission, Albany, prior to October 22.

New York City

New York Academy of Medicine.—The meetings of the New York Academy of Medicine for the season 1917-1918 began on the evening of October 4 with an address by Dr. Alexis Carrel on "Principles of the Treatment of Wounds."

Mental Examination of Troops.—The work of making a mental examination of the men in the Twenty-Seventh Division has been begun by Lieut. Samuel Leopold, formerly of the University of Pennsylvania, who has just completed work of this kind in the Pennsylvania National Guard.

Institution for Feeble-minded Children.—The cornerstone of the first of a group of eleven buildings, to be known as the Institution for Feeble-minded Children, which the Department of Charities is erecting on Randall's Island, was recently laid with appropriate ceremonies. The principal speakers were Mayor Mitchell and Commissioner of Charities John A. Kingsbury.

Draft Board Doctor on Trial.—The trial of Dr. Henry Seligman, a volunteer examining physician for District Board 52, charged with accepting a bribe to release a conscript from military service, was recently reached. The testimony produced by the regular physicians on the board show that the defendant had examined and found unfit for service a man who, on reexamination, easily passed all physical tests.

Columbia University Opens.—The respective institutions of Columbia University opened their doors for the year 1917-1918 by the usual addresses. Among the most notable of these was that of Prof. Hans Zinsser, who made the opening address for the medical school. His theme was "Opportunities for National Service," and his summary is characterized as a suitable profession of faith for loyal Germans in this country.

Springs Cause Typhoid Fever in New York.—The search for the source of a small outbreak of typhoid fever in the Bronx has led to the discovery that the infection was probably transmitted by the drinking of water from an infected spring fed by drainage from fertilized fields in the vicinity. Laboratory tests of the water of several other springs in that section of the city indicate that it is unsafe for drinking. The department of health has placarded a number of these springs as unfit for drinking purposes, and has issued a warning against drinking the water from springs within the city limits.

OHIO

Schools Ordered Closed.—The public and parochial schools of East Liverpool, which opened September 10, were ordered closed for one week on the discovery of two cases of anterior poliomyelitis.

Poliomyelitis.—Opening of the Mansfield schools was postponed until September 17 on account of the fear of the spread of poliomyelitis.—At Wooster a similar postponement was had. September 6, only two patients remained under treatment.—In Cleveland eighteen cases have been treated since June 1, none of them proving fatal.

Academy Meeting.—At the meeting of the Cleveland Academy of Medicine, September 28, Lieut.-Col. Ethelbert B.

Hardy, D. S. O., in command of the Military Base Hospital, Toronto, narrated "Experiences of Medical Officers at the Front," and Lieuts. Benjamin R. McClellan, Xenia, and Murray B. McGonigle, Toledo, spoke on "The Medical Department of the Army."

Schoolteachers Subnormal Physically.—At Cincinnati, twenty-four of the forty-two schoolteachers who took the physical examination for positions in the public schools were found to be underweight. None was rejected; one was conditioned on account of defective vision and six others were advised to consult oculists; two were found to have impaired hearing, and one, diseased tonsils.

Sanatorium Capacity Doubled.—The capacity of the Warrensville Tuberculosis Sanatorium has been doubled since January 1 of last year. The present capacity of the institution is 390. The Children's Colony can admit forty-five more patients than before, and by the remodeling of two old structures accommodation has been provided for sixty additional adults. Three more cottages, with the capacity of twenty each, will be completed within a few weeks.

Personal.—Dr. Charles F. Hoover, Cleveland, assistant director of Lakeside Base Hospital No. 4, has returned on leave of absence.—Dr. O. van der Stricht, Ghent, Belgium, for the last two years fellow in Cytology in the Anatomical Laboratory of Western Reserve University, Cleveland, has been appointed lecturer in anatomy in the Johns Hopkins University, Baltimore.—Dr. Carell S. Mundy, superintendent of the Toledo Contagious Disease Hospital, has resigned to enter the Army medical service.—Dr. Clarence D. Selby, Toledo, has resigned as commissioner of public health, and Dr. Charles Dreyer, city physician, has been appointed his successor.—Dr. Burt A. Marquand, Dover, suffered fracture of several ribs in a collision between his automobile and an interurban car.—Dr. Sterling H. Ashum has been appointed city physician of Dayton, succeeding Dr. Daniel G. Reilly, deceased.—Dr. William K. Ruble, Martinsville, has been elected treasurer of Clinton County.—Dr. Ralph A. Bunn, Dayton, has been appointed assistant chief surgeon at the Dayton Soldiers' Home.—Dr. Roy E. Bushong, Athens, has been appointed acting superintendent of Athens State Hospital during the absence, on leave, of Dr. Ora O. Fordyce.

PENNSYLVANIA

Dysentery Epidemic.—An epidemic of dysentery is reported in the townships on the west side of the Susquehanna River. In Larksville and Plymouth there are reports of 295 persons ill with the disease, with, thus far, fifteen deaths.

Personal.—Dr. Arthur A. Woods, Erie, has moved to California.—Dr. Henry L. Orth announces his approaching retirement, after twenty-seven years' service, as superintendent of the Pennsylvania State Lunatic Hospital.

New Officers.—At the annual meeting of the Seventeenth Censorial District Medical Association, held in Sunbury, September 6, Dr. John W. Bruner, Bloomsburg, was elected president of the Pennsylvania State Lunatic Hospital, Harrisburg.

Branch County Society Organized.—The physicians from the northern portion of Washington County met in Burgetts-town, September 14, and organized the Northern Branch of the Washington County Medical Society, and elected Dr. Audley O. Hindman, president.

Officers Elected.—At the recent meeting of the Pennsylvania State Medical Society, the following officers were elected: president, Dr. Frederick L. Van Sickle, Olyphant; vice presidents, Drs. Walter F. Donaldson, Pittsburgh; Benjamin F. Royer, Harrisburg; David N. Dennis, Erie, and Walter J. Leaman, Lancaster; secretary, Dr. Cyrus L. Stevens, Athens; assistant secretary, Dr. Christian B. Longenecker, Philadelphia; treasurer, George W. Wagoner, Johnstown; trustees, Ira G. Shoemaker, Reading; Frank G. Hartman, Lancaster; Harry W. Albertson, Scranton; Spencer M. Free, Dubois; Donald Guthrie, Sayre, and Jay B. F. Wyant, Kittanning.

Philadelphia

Personal.—Lieut. Howard F. Keating, on duty on the western front, was slightly wounded during the air raid of September 24.

University of Pennsylvania Opening Exercises.—The University of Pennsylvania opened its 177th college year in Weightman Hall, September 28, with a student body much

depleted by enlistments for the war. About 60 per cent. of the old students were missing, although the freshman class is larger than ever. The medical department has an exceptionally large entering class. In spite of the large number from the department who enlisted, the total enrolment of medical students is increased. A number of changes have been made. In the medical school, Drs. Joseph McFarland, Horatio C. Wood, Jr., John C. Heisler and Seneca Egbert have been added to the faculty. Dr. Allen J. Smith takes the place of Dr. William Pepper as dean.

UTAH

Smallpox.—During the week ending September 15, ten cases of smallpox were reported in Salt Lake City.—Lark is under strict quarantine on account of smallpox.

Called to California.—Dr. Daniel H. Calder, for many years superintendent of the State Mental Hospital, Provo, has been appointed a member of the faculty of the Medical College of the University of Southern California, Los Angeles, and a member of the staff of the Los Angeles County Hospital.

State Association Meeting.—The twenty-third annual meeting of the Utah State Medical Association was held at the Hotel Utah, Salt Lake City, September 12-14, under the presidency of Dr. Samuel C. Baldwin, Salt Lake City. Salt Lake City was selected as the place of meeting for 1918, and the following officers were elected: president, Dr. Frederick Stauffer, Salt Lake City; vice presidents, Drs. Andy J. Stewart, Provo; Edward I. Rich, Ogden, and Ernest Van Cott, Salt Lake City; secretary, Dr. W. Brown Ewing, Salt Lake City (reelected); treasurer, Dr. Francis A. Goeltz, Salt Lake City; councillor, Eugene H. Smith, Ogden; delegate to the American Medical Association, Dr. Thomas J. Howells, Salt Lake City, and alternate, Dr. Joseph R. Morrell, Ogden. Among the features of the meeting were the illustrated lecture by Dr. Richard C. Corwin, Pueblo, Colo., on "War Surgery in France and America," in which he detailed the Crel-Dakin treatment of wounds, and the address of Dr. Palmer Findley, Omaha, on "Obstetrics as a Lost Art."

WISCONSIN

Typhoid Fever at Marshfield.—During the week ending September 15, twenty-six cases of typhoid fever were reported to the health officers of Marshfield.

Tuberculosis Board Appointed.—The Surgeon-General has appointed a tuberculosis commission which is making a survey of the troops at Camp Robinson, near Sparta. The personnel of the commission is as follows: Drs. Arthur J. Patek, Lawrence G. Sykes, J. Gurney Taylor, James D. Madison and William B. Ford.

Sanatorium Items.—The issue of bonds for \$40,000 for the addition to Blue Mound Sanitarium has been approved by Judge C. B. Woods.—Work has been commenced on the infirmary building of the Madison Anti-Tuberculosis Association. The general contract has been let for \$6,775. The infirmary will be a frame structure, two stories in height, and 36 by 60 feet.

Personal.—Dr. Frank H. Turner, Frederic, is reported to be ill with pneumonia.—Drs. Raymond G. Arveson and John Diamond have leased the Frederic Hospital to the Sisters of St. Joseph, Superior.—Health Commissioner George C. Ruhland, Milwaukee, has resigned, and has been called to duty at Fort Sill. The employees of the department presented Dr. Ruhland with an alligator writing case and a gold wrist watch.

Changes of Name of Public Institutions.—The following changes in the names of public institutions in Milwaukee County were recently announced: Milwaukee County Alms House to Milwaukee County Infirmary; Milwaukee County Home for Dependent Children to Milwaukee County Home for Children; Milwaukee County Hospital for Acute Insane to Milwaukee County Hospital for Mental Diseases; Milwaukee County Asylum for Chronic Insane to Milwaukee County Asylum for Mental Diseases.

Acts Passed by Last Legislature.—The legislature, during its last session, passed the following bills to strengthen the facilities of the state in its fight against tuberculosis: An act appropriating \$15,700 for the erection of a cottage, workshop and electric plant at Tomahawk Lake Camp, and \$15,000 for a refectory and employees' building at the camp; an act appropriating \$75,000 for the erection of a new state sanatorium in northern Wisconsin, and an act increasing the

state aid for patients in county tuberculosis sanatoriums from \$125,000 to \$141,000 for the first year of the biennium, and \$165,000 for the second year.

Vigilance Committee Advised.—The Wisconsin Antituberculosis Association urges the appointment of a citizens' tuberculosis vigilance committee in every community, the duties of which shall be to request examining boards to obtain records of all active and suspected cases of tuberculosis, to secure the volunteer services of physicians to whom the board examiner may refer all suspected and borderline cases for more thorough examination; to secure proper care and instruction of the patient by the follow-up system, and to assist, where necessary, in securing additional sanatorium facilities for the care of these cases and of others, with special reference to returned soldiers.

Hospital Notes.—The directors of the Plymouth Hospital announce the opening of that institution, October 1. The hospital will accommodate thirty-five patients.—The new Riverview Hospital, Grand Rapids, erected at the cost of \$25,000, was opened for public inspection, September 4. The building is two stories and basement in height, 75 by 81 feet, and is thoroughly equipped.—The Winnebago County Medical Society and the Oshkosh Medical Club have endorsed the plan of Lakeside Methodist Hospital Company, to take over and operate Lakeside Hospital.—Dr. Sylvester G. Pake, formerly of Superior, has moved to Hayward, where he has leased the parochial school building, which is being remodeled for a hospital.

GENERAL

National Board Examination.—The National Board of Medical Examiners will hold its next examination in Chicago, October 10 to 18, inclusive. About sixty-five physicians have applied. Others who desire to take the examination should apply at once to the secretary, Dr. John S. Rodman, 2106 Walnut Street, Philadelphia.

Bequests and Donations.—The following bequests and donations have recently been announced:

Faculty of Medicine, McGill University, Montreal \$500,000; Montreal General Hospital, \$500,000; Montreal Maternity Hospital, \$100,000, and Royal Institute for the Advancement of Learning (McGill), for MacDonald College, \$1,000,000, by the will of Sir William MacDonald, Montreal, Chancellor of McGill University.

Mount Sinai Hospital, New York, \$100,000, to be used for the purpose of Cancer Research Work, by the will of Julian A. Hillman.

Tri-State Physicians Elect Officers.—At the annual meeting of the Tri-State District Medical Society, held in Dubuque, September 5, the following officers were elected: president, Dr. William B. Peck, Freeport (reelected); honorary president, Dr. James R. Guthrie, Dubuque; vice presidents, Drs. Clarence A. McGuire, Dubuque; Edwin S. Gillespie, Wenona, Ill., and Lawrence H. Prince, Madison, Wis., and secretary-treasurer, Dr. Nelson C. Phillips, Freeport, Ill. (reelected).

New Officers for Missouri Valley Society.—At the thirtieth annual meeting of the Medical Society of the Missouri Valley, held in Lincoln, Neb., September 20 and 21, the following officers were elected: president, Dr. Artemas J. MacKinnon, Lincoln, Neb.; vice presidents, Drs. Thomas M. Paul, St. Joseph, Mo., and Paul E. Gardner, West Hampton, Iowa; secretary, Dr. Charles Wood Fassett, Kansas City, Mo. (reelected for the sixteenth term), and treasurer, Dr. Oliver C. Gebhart, St. Joseph, Mo. Omaha was selected as the next place of meeting.

Negro Professional Men Elect Officers.—At the annual meeting of the National Medical Association, composed of colored physicians, dentists and pharmacists, held in Philadelphia, August 29 and 30, the following officers were elected: president, Dr. George A. Cabaniss, Washington, D. C.; president elect, Dr. D. A. Ferguson, D. D. S., Richmond, Va.; vice presidents, Drs. Henry M. Green, Knoxville, and John P. Turner, Philadelphia; chief secretary, Dr. Walter G. Alexander, Orange, N. J., and assistant secretary, A. L. Jackson, Phar.D., Philadelphia.

Tuberculosis Conferences.—Conferences on antituberculosis, under the auspices of the National Association for the Study and Prevention of Tuberculosis, will be held in October and November, as follows:

North Atlantic Tuberculosis Conference at Baltimore, October 17 and 18.

New England Conference in Rutland, Vt., October 4 and 5.

Mississippi Valley Conference in Minneapolis and St. Paul, October 8, 9 and 10.

Northwestern Conference in Portland, Ore., October 15 and 16.
Southwestern Conference in Grand Canyon, Ariz., October 22 and 23.
Southern Conference in Chattanooga, Tenn., November 9 and 10.

The war problems of tuberculosis will be the dominant subject of discussion at all these conferences.

FOREIGN

International Child Welfare Congress.—The second International Child-Welfare Congress will be held in Montevideo in 1918. The first congress was held in Buenos Aires in July, 1916. The president of Uruguay, through the *Diario Oficial* of Aug. 10, 1917, issued a decree providing for the holding of the congress, March 17 to 24, 1918, under the auspices and protection of the government. A monthly sum of 100 pesos gold will be paid by the Uruguayan government to the executive committee appointed by the first congress. Invitations will be sent to all other American countries to participate by sending delegates to the congress.

Society for Research on Medical Biology.—The Swiss Société helvétique des Sciences naturelles was the original model on which Virchow founded the German organization which meets once a year for what are popularly called the *Naturforscher* congresses. The venerable Swiss association now announces the formation of a section or sub-society devoted to medical biology, to be known as the Société de Médecine et de Biologie. Professor Hedingier of the University of Basel is the moving spirit in the matter. The inaugural meeting is to be held this month at Zurich. It is hoped for a large membership among physicians interested in medical biologic questions.

CANADA

Personal.—Capt. Roland W. Young, Oshawa, Ont., recently returned from two years' service with the R. A. M. C. in Malta and Egypt, has been appointed on the staff of the Whitby Military Hospital, Whitby, Ont.—Sir James A. Grant, M.D., Ottawa, Ont., was recently tendered a reception at Detroit by a number of prominent citizens.

Medical Writers Censored.—Articles on medical and surgical subjects connected with the war having been appearing from time to time in various Canadian and other medical periodicals, attention has been called to this by special orders issued by the British Expeditionary Forces, of which the Canadian Expeditionary Forces form a part, and hereafter physicians and surgeons are forbidden to contribute such articles without securing the consent in advance of publication of the Director-General of Medical Services, to whom all articles on such subjects must be submitted.

Canadian Public Health Association Meeting.—The annual meeting of the Canadian Public Health Association was held in Ottawa, September 27 and 28. Dr. Joseph D. Page, Quebec, in his presidential address, dealt principally with the immigration problems of Canada as compared with those of the United States, considering that the holding of steamship companies, by the latter, responsible for the class of immigrants brought to the country, was much in advance of Canadian methods. In advocating a ministry of public health, he thought Canada would not get that until there was a strong public sentiment behind it. There was need for getting ready now in preparation for coming immigrants after the war. Capt. Gordon A. Bates, Toronto, C. A. M. C., read a paper on venereal diseases, contrasting the efficiency with which those diseases were dealt with in the army, and the comparative indifference of the civic authorities. He gave statistics of 417 cases recently analyzed, which showed seventy infected men under 20 years of age and 144 between 21 and 25 years. About 260 were single men and thirty-six were married, the balance being (likely) widowers. In 295 cases the influence of alcohol was denied. Forty-four were classed as professionals, while in 127 cases no money was paid. Sixty cases of infection took place in the boarding houses of the females; 119 cases out of doors in parks, etc. Dr. Bates considered that immediate steps should be taken to facilitate early diagnosis and prompt treatment. Venereal diseases should be made quarantinable immediately, and a law passed in Canada to that effect. Major Maxwell Lauterman, Montreal, stoutly advocated a Minister of Public Health for Canada, as venereal diseases were the greatest menace of the civilized world today, bar none. Mr. Miles M. Dawson, an actuary of New York, and Mr. I. M. Rubinow, New York, dealt with the question of health insurance. They strongly advocated non-commercial insurance. Dr. Charles J. C. O. Hastings, M. O. O. H., Toronto, took up the question of "patent medi-

cines" and alcoholic mixtures. He said there are too many "cures" on the market containing an excess of drugs and alcohol, the latter particularly since prohibition had gone into effect. The consumption and cancer "cures" are robbing the victims of those diseases of the only chance they had of being cured. Manufacturers of such concoctions are criminals of the worst type and highest degree. There is no worse menace to the public than the makers of such alleged cures. Dr. Hastings advocated health insurance on the same plan as in England, and he believed the government would soon have to take action. Dr. Alan G. Brown, Toronto, deplored the fact that Canadian mothers do not do their duty in respect to maternal nursing. He quoted statistics to prove that American women and even foreign women were 50 per cent. ahead of the women of Canada in this respect. Canada, he averred, stands alone for total inactivity on the part of the state in regard to child welfare.

PARIS LETTER

PARIS, Sept. 2, 1917.

The War

PENETRATING WOUNDS OF THE KNEE-JOINT

Dr. Mauclaire, agrégé professor and hospital surgeon at the Faculté de médecine at Paris, has submitted a report to the Société de chirurgie of Paris on a communication sent to the society by Dr. Stern in October, 1916, which dealt with articular wounds of the knee treated before Loubat and Moiraud had extolled the merits, in such cases, of immediate mechanical disinfection followed by primary suturing, a method which Stern has likewise since applied with satisfaction.

From the study of seventy-one cases taken from his former practice, Stern draws the following conclusions as regards indications for operation:

He has encountered several cases of simple intra-articular setons, caused by a rifle bullet, with punctiform orifices at the point of entrance and exit, and without bony lesions. Compression and immobilization sufficed to cure these patients, if carefully attended to, and extensive articular movement was preserved. It goes without saying, furthermore, that, if there is an intra-articular projectile, and there is the slightest sign of articular reaction, it is necessary to intervene in these wounds with punctiform seton. Exploratory arthrotomy is indicated immediately after the wound is received, in order to remove the isolated splinters, or to extract an intra-articular projectile, the presence of which roentgenography has revealed. The U-shaped subpatellar incision should be performed, unless the lesions are diffuse. The parapatellar incision is often sufficient and is not so destructive of tissue as the subpatellar. Arthrotomy and evacuation are indicated at the onset of infectious arthritis with extravasation, and this may suffice, provided immediately afterward the symptoms of articular septicemia are seen to disappear. Typical primary articular resection should be resorted to if there are extensive bony lesions. Secondary resection will be done if the suppurative arthritis becomes complicated by grave septicemic symptoms. Stern favors general anesthesia by means of ethyl chlorid, since it causes only a slight shock to the patient. He strongly disinfects the articulation with ether. He makes as few changes of dressings as possible. He uses a plaster apparatus which consists of two distinct segments (one including the thigh and one including the lower leg), joined together by encircling bands and fitting one within the other, which makes it possible, after the twelfth day, to commence to draw the bony surfaces together, after the manner recommended by Chaput and Alquier. The posture of the foot should be carefully watched, as there is a tendency toward talipes equinus. Amputation of the thigh is, of course, imperative when the infection is very threatening or when the bony lesions are multiple and extensive.

In combating septicemic symptoms Stern uses injections of a 47 per cent. glucose solution, injections of colloidal gold, theobromin (which promotes diuresis), laxatives and perspiration induced by a system of electric bulbs placed under the bedcovers.

The immediate results were eight deaths out of seventy-one cases, or 11.2 per cent. (five deaths, or 15 per cent., out of thirty-three infected cases; three deaths, or 8 per cent., out of thirty-eight noninfected cases). Complete arthrotomies caused four deaths out of thirty-four cases (12 per cent.). Seven unilateral arthrotomies, four total rotulectomies, three partial rotulectomies, and seven typical total resections of the knee-joint did not occasion a single death.

Three partial resections (condyle) caused one death. Ten amputations of the thigh resulted in three deaths (30 per cent.), and three cases in which the surgeon refrained from operating resulted in recovery.

The more remote results may be thus described: Of the twenty-seven arthrotomies that could be followed up to the time of their cicatrization and beyond, there were seven cases of total ankylosis, nine cases of partial ankylosis, eight cases in which the flexure equaled or exceeded 90 per cent. of the normal, and three cases of perfectly normal flexure. It is only proper to state, however, that a number of the patients who came under the second and third categories could be still benefited by mechanotherapy, and this treatment continued to be applied. Of the seven partial or total rotulectomies, cicatrization took place in three cases, in one of which almost complete mobility was secured, and in the other two cases there was almost complete ankylosis. Of the seven cases of typical resection of the knee-joint, it was possible to learn the later history in four instances. The age of the patients varied from 19 to 30 years. Of these four cases there were two cases of complete consolidation after three and a half months, one case of incomplete consolidation after 145 days, and one case of incomplete consolidation after ninety days.

A CENTER FOR VOCATIONAL REEDUCATION ESTABLISHED

Under the auspices of Fernand David, minister of agriculture, Justin Godart, undersecretary of state for the military medical service, and Medical Inspector Polin, director of the medical service of the military government of Paris, a center of vocational reeducation for the war wounded (both the wounded under treatment and the wounded who have been discharged from active service) has been created at the national school of agriculture at Grignon, in Seine-et-Oise.

The instruction at Grignon will comprise practical courses looking toward the reeducation of mind, nerve and muscle, such as courses in gardening, agricultural work, and all the trades that serve the needs of the agriculturist: saddle making, harness making, basket work, carpentry, iron and metal work, horseshoeing, masonry, cooperage, etc. The new institution can accommodate 500 students. For those who are discharged from active service but who cannot continue their antebellum vocation, courses of general instruction, in accountancy, stenography, typewriting, mechanical drawing, prosthetic dentistry, tailoring, hairdressing, domestic science and the manufacture of playthings, all of which are presided over by experts, have been established.

Potatoes in Relation to Bread Production

M. Maurice Viollette, food administrator, sent out recently a circular letter of inquiry addressed to the prefects of the various departments, asking them to express an opinion on the result of the experiments to be conducted with regard to the mixture of potatoes and flour in the preparation of bread. He received a large number of replies testifying to the fact that the experiments gave complete satisfaction. The report that the prefect of the department of Eure-et-Loir received on this subject from M. Carola, director of the agronomic station at Chartres, states that bread made with the addition of boiled potatoes in the proportion of 20 per cent. has been found equally as good, if not better, than the bread now in use. It has also been observed that it keeps fresh longer. A round loaf cut ten days after it was baked was still fit for consumption. On analysis this bread has been found to present the following composition:

| | |
|---------------------------|-------|
| Water | 34.70 |
| Ash | 1.18 |
| Nitrogenous material..... | 6.90 |
| Starch | 56.50 |
| Cellulose | 0.72 |

Total.....100.

This bread is capable of furnishing the human system with 253.6 calories per hundred grams of the material; that is to say, a figure equal to that of the bread now in use (white, rye and barley). In case of need, the potato would, then, constitute no mean resource in view of its power to improve the quality of bread. M. Viollette regards these experiments as conclusive, and has instructed the prefects, from now on, whenever there is a serious shortage in the grain crop, to take the necessary action to avoid waste of the potato supply. The potato is thus given an added importance, since it is possible to utilize it in the preparation of bread.

Marriages

MAJOR NORMAN THOMAS KIRK, M. C., U. S. Army, Fort Oglethorpe, Ga., to Miss Anna M. Duryea of New York City, at Fort Oglethorpe, Ga., September 21.

CAPT. HARRY MUNN GODFREY, R. A. M. C., Charlottetown, P. E. I., to Miss Margaret W. Hawley of Brookline, Mass., in Boston, September 18.

FRANCIS DUDLEY BUCK, M.D., New York City, to Miss Clara B. Moody of East Northfield, Mass., in Brooklyn, September 18.

MARC RAY HUGHES, M.D., St. Louis, to Mrs. Rosalie N. Livingston of Lake Crystal, Minn., at Edwardsville, Ill., September 20.

FRANCIS MARION POTTENGER, M.D., Monrovia, Calif., to Miss Caroline Margaret Lacy of Pasadena, Calif., September 14.

LIEUT. WILLIAM WASHINGTON VAUGHAN, M. C., U. S. Army, Manila, P. I., to Miss Mela K. Fairchild, at Manila, July 13.

FRANCIS BONNEAU JOHNSON, M.D., Charleston, S. C., to Mrs. Ritchie McGann of Washington, D. C., September 11.

PHILIP EDWARD STANGL, M.D., Paynesville, Minn., to Miss Josephine Friberg of St. Paul, in Chicago, September 13.

P. A. SURG. HARRY LEE BROWN, U. S. Navy, to Miss Hazel Robinson of Lewiston, N. Y., September 1.

EERKO SAMUEL AEILTS, M.D., Forreston, Ill., to Miss Grace Engle of McKee, Ky., August 18.

A. LOVETT DEWES, M.D., to Miss Margaret Dakin, both of Haverford, Pa., September 15.

Deaths

William Conner Shaw, M.D., Pittsburgh; Bellevue Hospital Medical College, 1872; aged 71; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania, and the American Academy of Medicine; attending physician to Bethesda Hospital since 1889; physician to the Pittsburgh Free Dispensary from 1876 to 1882; for ten years surgeon to Mercy Hospital; died at the Allegheny General Hospital, September 18.

Lieut. Matthias Miller Wagner, M. R. C., U. S. Army, Albion View, Signal Mountain, Tenn.; University of Tennessee, Nashville, 1898; aged 41; a Fellow of the American Medical Association; on duty at Fort Story, Cape Henry, Va.; was drowned while swimming at Cape Henry, September 18.

Morey Charles Collier, M.D., Painted Post, N. Y.; Albany (N. Y.) Medical College, 1906; aged 38; a Fellow of the American Medical Association; formerly health officer of Corning, and visiting physician to the Corning Hospital; died at his home, September 16, from cerebral thrombosis.

Samuel B. Growdon, M.D., Cherokee, Okla.; Kentucky University, Louisville, 1902; aged 56; formerly a Fellow of the American Medical Association; a member of the Oklahoma State Medical Association, and president of the Alfalfa County Medical Society; died at his home, August 9.

Thomas Jefferson Lee, M.D., Rocky, Okla.; Vanderbilt University, Nashville, Tenn., 1883; aged 56; formerly a Fellow of the American Medical Association; a member of the Oklahoma State Medical Association, and a member of the council; died at his home, August 6.

John Earhart Morris, M.D., Indianapolis; Medical College of Indiana, Indianapolis, 1896; aged 48; formerly a Fellow of the American Medical Association; associate professor of surgery in the Indiana School of Medicine, Indianapolis; died at his home, August 25.

John A. Staral, M.D., Cleveland; Western Reserve University, Cleveland, 1904; aged 36; a Fellow of the American Medical Association; assistant in the tuberculosis dispensary in his alma mater; died in the Lakeside Hospital, Cleveland, September 17.

Alfred De Carre, M.D., Washington, D. C., George Washington University, Washington, D. C., 1889; aged 67; a veteran of the Franco-Prussian War; for many years an employee of the Treasury Department; died at his home, September 16.

Charles Gennerich, M.D., New York City; New York Homeopathic Medical College, New York City, 1896; aged 42; formerly professor of orthopedic surgery in the New York Medical College and Hospital for Women; died at his home, September 14.

Charles J. Ocsek, M.D., Chicago; Rush Medical College, 1893; aged 47; a well known Bohemian physician; while crossing the street, September 27, was struck by a streetcar and died in the ambulance while being taken to the hospital.

Harriet Scudder Mason, M.D., West Brighton, N. Y.; Eclectic Medical College of the City of New York, 1899; for sixteen years house physician of the Little Mother's Aid Association of New York; died at her home, September 17.

William Augustus Muhlenberg Schnecker, M.D., New York; Columbia University, College of Physicians and Surgeons, New York, 1899; aged 40; a member of the Medical Society of the State of New York; died at his home, September 13.

Charles Franklin Wackenhuth, M.D., Picture Rocks, Pa.; Western Pennsylvania Medical College, 1892; aged 56; a member of the Medical Society of the State of Pennsylvania; died in the Williamsport Private Hospital, September 13.

Edson Card, M.D., White Plains, N. Y.; Columbia University, College of Physicians and Surgeons, New York, 1882; aged 61; a member of the Medical Society of the State of New York; died at his home, September 9, from apoplexy.

Premeter Mullinix, Greencastle, Ind. (license, Indiana, 1897); aged 82; formerly a member of the Indiana State Medical Association; for many years a druggist; died at the home of his daughter, in Sioux City, Iowa, September 16.

Lacy Kindred Bobo, M.D., Maquoketa, Iowa; University of Louisville, Ky., 1889; aged 56; formerly a member of the Iowa State Medical Society; died at the home of his sister in Dallas, Texas, September 20, from cerebral hemorrhage.

John Milton Grosvenor, M.D., Middleton, Mass.; Dartmouth Medical School, Hanover, N. H., 1864; aged 78; assistant surgeon of volunteers during the Civil War; a manufacturing chemist; died at his home, September 21.

Howard W. Bassett, M.D., Richmond, Va.; Chicago Homeopathic Medical College, 1889; Medical College of Virginia, Richmond, 1906; aged 55; died in the Tucker Sanatorium, Richmond, July 15, from cerebral hemorrhage.

Thomas G. Boorman, M.D., Celina, Texas; Memphis Hospital Medical College, Memphis, Tenn., 1900; aged 53; a member of the Texas State Medical Association; died at a sanatorium in Terrell, Texas, September 12.

Lieut. Benjamin W. J. Worrall, U. S. Navy, Kansas City, Mo.; University of Kansas, Lawrence and Rosedale, 1906; aged 38; was instantly killed in an automobile accident at North Tonawanda, N. Y., September 15.

J. H. Williford, M.D., Dawson, Ga.; Cincinnati College of Medicine and Surgery, 1874; aged 65; formerly a member of the Medical Association of Georgia; died suddenly from heart disease at his home, September 11.

William Francis Brady, M.D., Scranton, Pa.; Jefferson Medical College, 1884; aged 53; formerly a member of the Medical Society of the State of Pennsylvania; died at his home, September 18, from angina pectoris.

Frederick Whittlesey Peck, M.D., New Britain, Conn.; Cleveland University of Medicine and Surgery, 1897; aged 50; died in the New Britain General Hospital, September 10, after an operation on the intestines.

Samuel G. Wishard, M.D., Watonga, Okla.; Western Reserve University, Cleveland, 1874; aged 74; formerly a member of the Oklahoma State Medical Association; a veteran of the Civil War; died early in August.

I. O. Kemberling, M.D., Colon, Mich.; Homeopathic Hospital College, Cleveland, 1873; aged 76; a veteran of the Civil War; for twenty-eight years a practitioner of Detroit; died at his home, about September 14.

Myron Dwight Gray, M.D., Cambridge Springs, Pa.; University of Pennsylvania, Philadelphia, 1874; aged 65; formerly a member of the Medical Society of the State of Pennsylvania; died recently at his home.

Benjamin Maltby Page, M.D., Pasadena and Redondo Beach, Calif.; College of Physicians and Surgeons in the City of New York, 1864; aged 74; died in his summer home, at Redondo Beach, September 16.

William Izard Bull, M.D., Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1860; aged 79; a surgeon in the Confederate Army during the Civil War; died at his home, July 29.

Pramath Nath Roy, M.D., Boston; University of Glasgow, Glasgow, Scotland, 1885; aged 58; for many years surgeon of the Allan Steamship Line; died at his home, September 5, from heart disease.

Augustine B. Libby, M.D., Smyrna Mills, Me.; Baltimore University School of Medicine, Baltimore, 1894; aged 60; a member of the Maine Medical Association; died at his home, about September 7.

Joseph Charles Myers, M.D., Clinton, Ill.; Miami Medical College, Cincinnati, 1880; aged 59; a Fellow of the American Medical Association; died at his home, September 19, from heart disease.

John J. Weitzman, M.D., Detroit; Michigan College of Medicine and Surgery, Detroit, 1901; aged 38; died in Harper Hospital, September 16, after an operation for appendicitis.

Albert L. Bingham, M.D., Williston, Vt.; University of Vermont, Burlington, 1875; aged 64; a member of the Vermont State Medical Society; died at his home, August 7, from diabetes.

Abner Toothaker Wells, M.D., Kendallville, Ind.; Baltimore University, 1899; aged 42; a member of the Massachusetts Medical Society; died, August 17, in Little Rock, Ark.

Frederick Bernard Baurichter, M.D., Cincinnati; Cincinnati College of Medicine and Surgery, Cincinnati, 1898; aged 41; died in Christ Hospital, September 3, following an operation.

Charles Oliver Sahler, M.D., Kingston, N. Y.; College of Physicians and Surgeons in the City of New York, 1878; aged 63; died in his sanatorium in Kingston, September 17.

Michael O'Farrell, M.D., Shawnee, Ohio; Bellevue Hospital Medical College, 1876; aged 66; for forty-one years a practitioner of Shawnee; died at his home, September 14.

Carlos de Campos, Jr., M.D., Paulista, Brazil; Hahnemann Medical College, Philadelphia, 1917; aged 21; died, September 11, in the Hahnemann Hospital, from pneumonia.

George W. Ling, M.D., Dutton, Ont.; University of Michigan, Ann Arbor, 1864; University of Victoria College, Coburg, Ont., 1866; died at his home, about September 18.

Thomas Henry Hannan, M.D., Hoosick Falls, N. Y.; Bellevue Hospital Medical College, New York, 1891; aged 50; died at his home, July 27, from insolation.

Charles E. Triplet, M.D., Morocco, Ind.; Kentucky School of Medicine, Louisville, 1856; aged 82; a veteran of the Civil War; died at his home, August 28.

Benjamin Sturgis Van Zile, M.D., New York; Bellevue Hospital Medical College, 1875; aged 72; died at his home, September 3, from senile debility.

James Lang, M.D., Pasadena, Calif.; Bellevue Hospital Medical College, New York, 1879; aged 86; died at his home, September 7, from senile debility.

Benjamin Franklin Stark, M.D., Lyerly, Ga.; Chattanooga Medical College, Chattanooga, Tenn., 1909; aged 31; died at his home, June 30, from enteritis.

Abner Osborn Van Horn, M.D., Middle Island, N. Y.; Bellevue Hospital Medical College, New York, 1873; aged 72; died at his home, September 5.

Horace Lee Metts, M.D., Willie, Ga.; Atlanta School of Medicine, Atlanta, Ga., 1912; aged 35; committed suicide at Hinesville, Ga., September 4.

William Minns Caldwell, M.D., New Castle Bridge, N. B.; Harvard University, Boston, 1867; aged 72; died, July 3, at St. John, N. B.

Thomas Edwin Kelly, M.D., Brooklyn; Long Island College Hospital, Brooklyn, 1900; aged 39; died at his home, September 13.

William P. Bouton, M.D., Lebanon, Tenn.; University of Louisville, Louisville, Ky., 1870; aged 69; died at his home, September 3.

Harry Albert Salmon, M.D., New York; Bellevue Hospital Medical College, New York, 1888; aged 59; died at his home, September 10.

Joseph Evans, Jenelew, W. Va. (license, West Virginia, years of practice, 1881); aged 82; died, about September 1.

J. F. Snyder, Hazleton, N. D. (license, North Dakota, 1899); aged 53; died at his home, August 31, from heart disease.

Thomas C. Brady, Marshalltown, Iowa (license, Iowa, 1887); aged 45; died at his home, September 1.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

ZIRATOL

Report of the Council on Pharmacy and Chemistry

Ziratal (Bristol-Myers Company, New York), in compliance with the federal "insecticide law," is declared to contain 32 per cent. water and 30 per cent. glycerin as inert constituents. Regarding its active constituents the manufacturer makes the following and meaningless statement:

"Ziratal is prepared from Phenols of the Naphthalene series and consists of a solution of such Phenols in a mixture of soap, water and glycerin."

In response to inquiry, the A. M. A. Chemical Laboratory examined Ziratal and reported that its essential constituent appears to be alpha-naphthol,¹ and that it has, essentially, the following composition by weight: Alpha-naphthol 18 per cent., soap 20 per cent., glycerin and water sufficient to make 100 per cent.

A Ziratal advertising circular gives a tabulated report of germicidal tests, said to have been made according to the method of the Hygienic Laboratory of the U. S. Public Health Service. When this work was done is not stated. According to these tests Ziratal possesses a phenol-coefficient of 13.66. The claim that Ziratal is ten times more efficient than carbolic acid (phenol) is evidently based on this report.

These claims of high germicidal value are contradicted by an examination made for the Council. A specimen purchased in the open market was examined independently by two operators, to determine the Hygienic Laboratory phenol-coefficient. One observer found the phenol coefficient to be 2.54. The other reported it to be 3.09. Evidently the germicidal value of Ziratal is greatly exaggerated in the advertising claims and, in fact, does not exceed that of the official compound solution of cresol (Liquor Cresolis Compositus, U. S. P.) for which a phenol-coefficient of about three has been established. (See New and Nonofficial Remedies, 1917, p. 82.) The claim that Ziratal is "the Universal Antiseptic and Germicide" is manifestly an unwarranted exaggeration.

The referee in submitting this report to the Council recommended that Ziratal be held in conflict with Rule 1 (secrecy of composition) and Rule 6 (unwarranted and exaggerated claims). After the report had been submitted, it was found that a new advertising circular, accompanying a trade package, no longer contained the claim that "Ziratal is ten times more efficient than Carbolic Acid." The older circular made the following statement:

"1. Strong Activity.—Compared with the bactericidal action of Carbolic Acid by the method of the Hygienic Laboratory of the Marine Hospital Service, ZIRATOL has the Carbolic Acid Coefficient of more than TEN, that is, ZIRATOL is TEN times more efficient than Carbolic Acid,—a strength unapproached by any other of its class. ZIRATOL in dilution of 1:1400 kills the Typhoid Bacillus in 2½ minutes, thus proving that it is strongly active even in very weak solutions."

The new advertising circular reads:

"1. Strong Activity—Extensive bacteriological investigations on many pathogenic organisms, conducted in the Lederle Laboratories of New York, prove conclusively the high bactericidal value of Ziratal in extremely dilute solutions. (A copy of the complete report will be mailed upon request.)"

In response to a request, the Bristol-Myers Company sent a copy of the bacteriologic investigations of Ziratal, said to have been made by the Lederle Laboratories. The organisms employed for these tests were *Staphylococcus aureus*, *Staphylococcus albus*, *Streptococcus*, Green pus bacillus, *B. coli*, and saliva. No tests are given with the typhoid bacillus. The

1. Alpha-naphthol was also found to be the basis of the nostrum Benetol. See THE JOURNAL, April 15, 1911, p. 1128.

conclusion is reached that "in all the tests the solutions of Ziratul have several times greater killing efficiency than those of phenol." The "coefficients" or comparative values which can be calculated from the results after exposure of 15 minutes to the disinfectants range from 2.0 to 4.0. This is in substantial accord with the referee's findings as regards the phenol-coefficient with *B. typhosus* as the test object. While the new advertising circular avoids the former claim that Ziratul is ten times more efficient than carbolic acid, in germicidal value, it still makes the unwarranted claims that Ziratul is the "universal disinfectant."

The Council declared Ziratul inadmissible to New and Nonofficial Remedies (1) because its composition is secret (Rule 1); (2) because the phenol coefficient, determined according to the method of the Hygienic Laboratory, U. S. P. H. S., is not stated on the label (Rule 2); (3) because the label and the circular accompanying the trade package advises its use by the public as a "vaginal douche" (Rule 3); and (4) because the claim that Ziratul is the "universal disinfectant" is exaggerated and unwarranted (Rule 6).

Before authorizing publication of the preceding report the Council submitted it to the Bristol-Myers Company in order to give that company the opportunity of revising its method of marketing Ziratul. In reply the company enlarged on its withdrawal (on "our own initiative") of the claim that Ziratul had a phenol-coefficient of over ten when this claim was shown to be incorrect "by authoritative sources." One wonders whether this is a euphemistic reference to the proceedings of the federal authorities under the Insecticide Act against the Bristol-Myers Company, just made public,¹ because of the false claims made for the germicidal efficiency of Ziratul. This prosecution resulted in the seizure and condemnation of two lots of this proprietary which had passed in interstate commerce.

The Bristol-Myers Company in replying to the Council's report made no offer to declare the exact composition of Ziratul, to state the actual phenol-coefficient, or to remove the other objections pointed out in the report of the Council. In other words, the Bristol-Myers Company has abandoned a definite, but false claim of high germicidal power—a claim which subjected the firm to federal prosecution—and has substituted therefor indefinite statements which do not define the actual germicidal efficiency of Ziratul.

SOME MISBRANDED NOSTRUMS*

DeWitt's Eclectic Cure.—W. J. Parker & Co., Baltimore, Md., was the proprietor of "Dr. De Witt's Eclectic Cure," which contained alcohol, opium and ether. It was sold under the claim that it was an internal and external remedy for cholera, dyspepsia, diphtheria, croup, scarlet fever and other conditions. These claims were declared false and fraudulent. It was declared further misbranded in that while the label declared the presence of 75 per cent. alcohol and 1 grain of opium to the fluid ounce, the stuff actually contained 60 per cent. alcohol and 1.3 grains of opium to the ounce. W. J. Parker & Co. admitted the allegations of the libel. The court ordered that if the company would pay the cost of the proceedings and give a bond not to sell the stuff under claims that would bring it into conflict with the Food and Drugs Act, the 288 bottles of "DeWitt's Eclectic Cure" that had been seized might be delivered to it.—[*Notice of Judgment No. 4470.*]

DeWitt's Liver, Blood and Kidney Cure.—William J. Parker, who traded under the name the W. J. Parker Co., Baltimore, Md., sold "Dr. DeWitt's Liver, Blood and Kidney Cure" under the claim that it would cure diabetes, Bright's

disease, malaria and diseases of the liver, blood and kidneys. Government chemists reported that the preparation, which contained over 11 per cent. alcohol, was essentially an alcohol-water solution bearing a cathartic drug together with Epsom salt, nitrates and iodids. The taste suggested senna. The claims made by Parker were declared recklessly and wantonly false and fraudulent. He pleaded guilty and was fined \$15.—[*Notice of Judgment No. 4440.*]

Lightning Hot Drops.—This nostrum was sold by the Herb Medicine Co., Springfield, Ohio, and admittedly contained 60 per cent. alcohol and 48 drops of chloroform to the ounce. The federal chemists reported also the presence of ether and cayenne pepper. It was sold as a cure for diphtheria, bloody flux, inflammatory rheumatism, *la grippe* and all aches and pains. These claims were declared false and fraudulent and applied knowingly. The company pleaded guilty and was fined \$50 and costs.—[*Notice of Judgment No. 4414.*]

Mother's Salve Mother's Remedy.—The Mother's Remedies Co. of Chicago, Ill., manufactured this preparation, which, according to the government chemists, was a green-colored salve consisting of petrolatum (vaseline) with some glycerin, potassium chlorate and oils of cloves, cinnamon, eucalyptus, sassafras and pine or juniper, together with a gum, like gum acacia, and a small amount of fatty oil. The label declared that the product was "Prepared from vegetable oils," a false and misleading statement, as, actually, it was prepared from animal, mineral and vegetable oils. It was further sold under the claim that it was a preventive of diphtheria and pneumonia, a "cure" for croup and catarrh and a remedy for eczema, piles and salt rheum. These claims were declared recklessly and wantonly false and fraudulent. The company pleaded guilty and was fined \$25 and costs.—[*Notice of Judgment No. 4427.*]

Raney's Blood Remedy.—This preparation was manufactured by Leila J. Raney of Atlanta, Ga., who did business under the name of Raney Medicine Co. The government chemists reported that analysis showed the product to be a solution of potassium iodid ("potash") and corrosive sublimate in syrup of sarsaparilla with 16 per cent. alcohol. It was sold under the claim that it was a "cure" for cancer, pellagra, catarrh, female complaints and rheumatism and as a remedy for carbuncles, eczema, diseases of the kidneys, all blood and nerve diseases and was, in addition, a nerve tonic and a nerve builder. These claims were declared false and fraudulent and applied knowingly, recklessly and wantonly. Leila J. Raney pleaded guilty and was fined \$50.—[*Notice of Judgment No. 4436.*]

Rattlesnake Oil Liniment.—The federal authorities seized 51 bottles of "White Eagle Indian Rattlesnake Oil Liniment" charging that the product was misbranded under the Food and Drugs Act. The name was declared misleading in that it purported to state that the product contained rattlesnake oil, whereas, in fact it contained no appreciable amount, if any, of such oil. The claims on the trade package that the stuff was a positive cure for rheumatism, catarrh, diphtheria, eczema and various other conditions were declared false and fraudulent. No claimant having appeared, the court entered judgment of condemnation and forfeiture and ordered that the United States marshal should destroy the product.—[*Notice of Judgment No. 4442.*]

Rosadalis.—Hall & Ruckel, New York City, sold this preparation which, according to government chemists, was essentially a water-alcohol solution containing over 32 per cent. alcohol and 2.8 grams per 100 c.c. of potassium iodid and a cathartic drug. It was sold under the claims that it would cure all malarial impurities of the blood, consumption in its early stages, rheumatism, "female diseases," chronic diseases of the blood, liver, kidneys and bladder. These claims were declared false and fraudulent and made recklessly and knowingly. The company pleaded guilty and was fined \$25.—[*Notice of Judgment No. 4505.*]

1. U. S. Dept. of Agric., Insecticide and Fungicide Board, Service and Regulatory Announcements, No. 16, issued Aug. 8, 1917. No. 244, Misbranding of "Ziratul." U. S. v. 100 bottles, more or less, of "Ziratul"; consent decree of condemnation and forfeiture; product ordered released on bond, p. 248. No. 256, Misbranding of "Ziratul." U. S. v. 936 bottles and 6 jugs of Ziratul, consent decree of condemnation and forfeiture; product ordered released on bond, p. 260.

* This material, with much additional, appears in the new edition of the pamphlet "Convictions," price fifteen cents.

Correspondence

DRAFTING THE MEDICAL PROFESSION

To the Editor:—An editorial appeared in *THE JOURNAL*, Aug. 11, 1917, p. 474, concerning the selective draft of physicians. The New York State Committee of National Defense, Medical Section, after a most careful and exhaustive study, came to the conclusion that a classification of physicians in the United States should be made with selection of those whose age, physical condition, freedom from family obligation, etc., would make them available and desirable for Army service, such classification to exclude all those whose services were necessary in rural districts, hospitals, health departments and medical colleges, and that authority should be secured to furnish the former to the Army and to keep the latter at home.

The first step in this plan was to send a petition to the Council of National Defense explaining the need and advantages of a selective draft. This petition was printed in *THE JOURNAL*, August 25, and is now being circulated among the physicians in New York state.

Your editorial comment made this proposal appear as an effort to discredit the patriotism of the medical profession. No such thought actuated the framers of the petition. The idea was first formally proposed by the Medical Section of the North Carolina State Committee and has been approved by many prominent members of our profession.

The following statement regarding the selective draft of physicians was prepared by the secretary, Dr. F. T. Van Beuren, Jr., and gives a very clear explanation of the aims and purport of this plan.

1. The principle of Universal Service requires that every individual should serve the Nation in time of need, in that situation which best befits his age, his experience, his talents and education and his economic status.
2. It is founded on the obligation universally owed by every individual to the Nation whose protection and opportunities he has enjoyed.
3. The New York State Committee of National Defense, Medical Section, believes in and affirms this obligation and the principle of Universal Service founded upon it.
4. In war time the medical profession is faced by the duty of
 - (a) Furnishing to the Army an adequate number of physicians fit to become medical officers.
 - (b) Furnishing adequate medical care to civil communities at home.
5. It is obvious that, in an emergency like the present, when a large percentage of the physicians of this country are needed as medical officers for our own Army and to aid the armies of our Allies (whose available supply of new medical personnel is practically exhausted—see "London Letter" in *JOURNAL A. M. A.*, September 8th, 1917), an orderly and efficient plan of procedure is desirable and will sooner or later become necessary. It is obvious, also, that not all physicians are fit to become medical officers.
6. To be effective then, in fulfilling the duties stated in paragraph 1, such a plan must include two essentials:
 - (a) An adequate classification upon which to base the selection of those who are fittest for the Army and those who are most needed at home.
 - (b) Authority to furnish the former individuals to the Army and to retain the latter at home.
7. The most efficient plan so far offered for accomplishing these essentials is the one recommended by the New York State Committee of National Defense, Medical Sections, in its Petition for Selective Draft of Physicians. It provides for:
 - (a) A Federal classification of physicians by a special Federal Medical Census similar to the recent special Medical Census of New York State.
 - (b) Authorizing the President to call into service and commission as medical officers an adequate number of physicians between the ages of 21 and 45 years fit for army service.
8. The selection of these individuals would be made by lot from all those determined by the classification to be available and desirable for army medical service. The selection would be in the hands of the medical profession and the quota to be furnished by each County in the United States would be based upon the number of such available physicians in that County.

The necessary authority would be delegated, in the form of Regulations, to the Surgeon General of the Army and to the County Auxiliary Medical Committee for National Defense. The Judge Advocate General has stated that the legal requirement of such a plan would be constitutional.

It is confidently hoped that when this proposal is thoroughly understood it will receive the cordial support of every red

blooded physician who desires to render the most effective, intelligent and patriotic service to his country in this great emergency.

HENRY L. K. SHAW.

Major, M. R. C., U. S. Army, Madison Barracks, N. Y.

PRIORITY IN APPLICATION OF HEAT IN CORNEAL ULCER

To the Editor:—I take great pleasure in correcting an error which was made by myself in discussing the papers of Drs. Verhoeff and Shahan at the recent meeting of the Section on Ophthalmology of the American Medical Association in New York.

I participated in this discussion on the spur of the moment, after listening, with careful attention, to the various ophthalmic surgeons. It was a surprise that the authors of these papers did not mention the father of this treatment, one of San Francisco's pioneers in ophthalmology. When I began my remarks on the subject I could not recall the name of Dr. Martinache, and appealed to the audience. Dr. Park Lewis of Buffalo mentioned the name of Dr. Barkan, whom I accepted for the moment, thinking that on my return home I would look up the reference and give credit to the proper person, Dr. Martinache. Since reading Dr. Nagel's letter to *THE JOURNAL*, Sept. 15, 1917, p. 933, I have looked up the data on the subject and can confirm Dr. Nagel's statement, giving credit to Dr. Martinache, whom I had in mind all the time, but whose name I could not recall at the time. "Honor to whom honor is due."

L. WEBSTER FOX, M.D., Philadelphia.

A SELECTIVE DRAFT OF PHYSICIANS BASED ON CLASSIFICATION

To the Editor:—After reading the communication of Major Derby on this subject (*THE JOURNAL*, Sept. 22, 1917, p. 1023), I cannot refrain from writing a few words.

Major Derby is most inconsistent in saying the Army wants the best men of the profession and the younger men. We all know that the youngest men are not the best men of the medical profession. They have not had time to become the best men. And it certainly is cruel and unjust to speak of men who have given up everything—homes, families, profession and incomes ranging from five to twenty times what the government is paying them—as failures and an inferior lot. Certainly, judging from the men who have gone from this part of the country, Major Derby is a very poor judge of the profession and of men.

MRS. C. J. COMBS, Oshkosh, Wis.

To the Editor:—In *THE JOURNAL*, Sept. 22, 1917, I see a criticism of the Medical Reserve Corps from Richard Derby, Major, M. R. C. At Fort Riley, Kan., we have specialists in all lines of the medical profession, a very few men having just finished an internship at some hospital, and a few men just out of college a year or two. But 90 per cent. of the men here are good men, who have been taking care of the sick and wounded from five to twenty-five years, have been successful both professionally and financially, and have sacrificed home comforts and incomes of from \$2,000 to \$20,000 a year. If these men can take care of the sick and wounded men at home I do not see why they are not capable of taking care of sick and wounded men in the Army.

Most of the good men under 30 that Major Derby speaks of are the ones that have made a financial failure of their profession. They are staying at home trying to get a practice by the other man's sacrifice. If Major Derby has a fair proportion of the men described in his company, I am glad that I do not belong to his company.

D. E. KISECKER, First Lieutenant, M. R. C.,
Fort Riley, Kan.

Responsibility.—Responsible behavior depends more on sound morals than anything else, and sound morals are sound habits due to sound parentage and a wholesome environment.—George Frederick Arps, *Scientific Monthly*.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

APPARATUS FOR SPRAYING PARAFFIN

To the Editor:—Can you tell me where I can get apparatus for spraying paraffin on burns?

J. MORTIMER CROWE, M.D., Watertown, N. Y.

ANSWER.—The Caldwell Sprayer (described in THE JOURNAL, Aug. 4, 1917, p. 383) and the Pierce Paraffin Sprayer are marketed by the Max Wocher and Son Company, Cincinnati. The Abbott Laboratories of Chicago list an atomizer for melted wax. Also the DeVilbiss Manufacturing Company, Cleveland, makes an instrument for this purpose.

MEDICAL ITALIAN-ENGLISH BOOKS

To the Editor:—Can you inform me whether there are any special textbooks I could obtain or the purpose of acquiring a speaking vocabulary of medical Italian, such as would be of service to a physician practicing among Italian people?

PHILIP KATZEN, M.D., Brooklyn.

ANSWER.—

Thimm, F. J. L.: Italian Self-Taught, Dick & Fitzgerald, 18 Ann Street, New York, 25 cents.

Physicians' Interpreter: in English, French and Italian, F. A. Davis Company, 1914 Cherry Street, Philadelphia, \$1.

Bimanski, F.: Italian for Use in the Clinic, 1076 West Twelfth Street, Chicago, 5 cents.

Waller, E.: English-Italian Phrase Book, Morristown, N. J., 75 cents; supplement, 25 cents.

Book Notices

THE SEX WORSHIP AND SYMBOLISM OF PRIMITIVE RACES: AN INTERPRETATION. By Sanger Brown, Jr., M.D., Assistant Physician, Bloomingdale Hospital. With an Introduction by James H. Leuba. Cloth. Price, \$3 net. Pp. 145. Boston: Richard G. Badger, 1916.

This book, the greater part of whose first three chapters appeared in the *Journal of Abnormal Psychology*, was written with the object of giving the life history of a primitive motive in the development of the race, and to emphasize the dynamic significance of the motive. In the first chapter, on "Simple Sex Worship," the author shows that a simple form of sex worship has been quite generally found among the primitive races of mankind. "In the frank and open form of this worship, it is quite clear that we are dealing with a very simple type of mind." In the next chapter, on "Symbolism," the author says, "As civilization advanced the deification of sex was no longer frank and open. It came to be carried on by means of symbolism." He gives an account of various symbols to illustrate the wide prevalence of sex worship among primitive races, and to give a certain insight into the type of mind which evolves symbolism. In the third chapter, on "Sun Myths, Mysteries, and Decadent Sex Worship," the author discusses the decadence or degeneracy of this worship, which occurred after people had outgrown these simple religious conceptions. In the final chapter, on "Interpretations," the author analyzes the meaning of the worship of sex. He draws a parallelism between nature worship, actuated by the desire of primitive people to meet nutritive demands, and phallic rites which were an expression of the desire for human reproduction. He draws analogies between the individual and the race in a general way, referring to day dreaming of children in the normal person and "a tendency to utilize earlier adaptations, the reactions of infancy and childhood in meeting situations which arise in adult life," in the abnormal.

The book serves an excellent purpose in presenting in an acceptable form certain facts and explanations which, because of certain preformed ideas, have been objectionable to many people. It is interesting to the general reader and psychiatrist alike. Although indicating the author's trend

of mind relative to the pathogenesis of certain morbid mental states, it does so in not quite the shape James H. Leuba wishes us to believe in his introduction, namely: "His theory is that we may expect diseased minds to reproduce, or return to expressions of desire customary and official in societies of lower culture."

Medical Education and State Boards of Registration

COMING EXAMINATIONS

- ARKANSAS: Little Rock, Nov. 13-14. Sec., Dr. T. J. Stout, Brinkley.
 ARKANSAS: Eclectic: Little Rock, Nov. 13. Sec., Dr. C. E. Laws, 803½ Garrison Ave., Fort Smith.
 CALIFORNIA: Los Angeles, Oct. 9-13. Secretary, Dr. Charles B. Pinkham, State Capitol, Sacramento.
 CONNECTICUT: New Haven, Nov. 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.
 CONNECTICUT: Homeopathic: New Haven, Nov. 13. Sec., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.
 CONNECTICUT: Eclectic: New Haven, Nov. 13. Pres., Dr. J. W. Fyfe, Saugatuck.
 DISTRICT OF COLUMBIA: Washington, Oct. 9-11. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington, D. C.
 GEORGIA: Atlanta, Oct. 9-11. Sec., Dr. C. T. Nolan, Marietta, Ga.
 ILLINOIS: Chicago, Oct. 9-11. Superintendent of Registration, Mr. F. C. Dodds, Springfield.
 IOWA: Des Moines, Oct. 9-11. Sec., Dr. G. H. Sumner, State House, Des Moines.
 MAINE: Portland, Nov. 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.
 MICHIGAN: Lansing, Oct. 9-11. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.
 NATIONAL BOARD OF MEDICAL EXAMINERS: Chicago, Oct. 10-18. Sec., Dr. J. S. Rodman, 2106 Walnut St., Philadelphia.
 NEVADA: Carson City, Nov. 5. Sec., Dr. S. L. Lee, Carson City.
 NEW JERSEY: Trenton, Oct. 16-17. Sec., Dr. Alexander MacAlister, 438 E. State St., Trenton.
 NEW MEXICO: Santa Fe, Oct. 8. Sec., Dr. R. K. McClanahan, East Las Vegas.
 OKLAHOMA: Oklahoma City, Oct. 9-10. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.
 SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.
 TEXAS: Dallas, Nov. 20-22. Sec., Dr. M. F. Bettencourt, Mart.
 WEST VIRGINIA: Clarksburg, Nov. 21-23. Chairman, Dr. S. L. Jepson, Capitol Bldg., Charleston.
 WYOMING: Laramie, Oct. 10-12. Sec., Dr. H. E. McCollum, Laramie.

Drugless Healers in Illinois

One of the last acts of the Illinois State Board of Health, before its function as a licensing board ceased,¹ was to issue an official register of the "other practitioners," representatives of the various forms of drugless healing, who have been licensed in Illinois. The list contains 1,512 names, including practitioners of osteopathy, chiropractic, naprapathy, vitapathy, neuropathy, hydrotherapy, mechanotherapy, physcultopathy, magnetic healing and naturopathy. There were 146 for whom the particular form of practice was not given. Under the easy requirements of such practitioners in Illinois, it is not surprising that so many have been registered and that Illinois is the home of more drugless cult schools than exist in any other state. The former practice act of Illinois specified that "only those who are authorized to practice medicine and surgery in all their branches shall call or advertise themselves as physicians or doctors." But evidently no attempt was made to enforce this provision since drugless practitioners have made free use of the words "doctor" and "physician." The practice act also gave the board power to make examinations of drugless practitioners "of a character sufficiently strict to test their qualifications as practitioners." It was not until 1916, however, that these "other practitioners" were subjected to the same examinations as physicians in all subjects except materia medica, therapeutics, surgery and obstetrics. In the latter subjects special examinations were given and papers were graded by men licensed to practice the school of treatment advocated by each applicant. The new law places sufficient authority in the new Department of Registration and Education to make possible a better regulation of all practitioners of healing.

1. On July 1, 1917, the Department of Registration and Education, created by the Civil Administration Code of Illinois, assumed charge of the licensing of physicians, midwives, other practitioners et al., formerly a function of the state board of health.

Medicolegal

Liability of Employers for Services Rendered to Injured Employee

(*Perkins vs. Kilpatrick et al. (Mo.)*, 193 S. W. R. 876)

The Kansas City (Mo.) Court of Appeals, in affirming a judgment in favor of the plaintiff for services rendered to an injured employee of the defendants, contractors in a quarry for furnishing rock to a railway company, says that the defendants relied much on the difference in a request for service from a physician and a request for other character of employment. If one is found in distress or serious sickness or injury, so that he is unable to care for himself, and is seen to be without professional help, it is the instinct of humanity for one observing such dire situation to call a physician; and it is not thought or expected, either by the physician or the one calling him, that a liability for services is incurred. But this case was more than that. When this employee was injured he was placed in a shanty nearby, and the defendants' regularly employed physician was put in charge of him. He remained there for two days, when the defendants' manager or superintendent sent him to a hospital where the plaintiff was a surgeon and had charge of patients, besides which he was division surgeon for the railway company and first knew of the injured man through its superintendent. The plaintiff began attendance on the man the day of his arrival at the hospital, and kept up his service for nearly two years; the defendants' physician having no part therein. During all this time the defendants knew of the serious injury the man had received. They knew of his removal to the hospital, and, of course, of their obligation to him. The court thinks this was a strong circumstance against their denial of liability, properly weighed by the jury. When the railway company learned that the man was not its employee, its superintendent caused its manager at the quarry to seek information concerning the defendants' liability for the plaintiff's services. The manager subsequently received a letter from "Kilpatrick Bros., by W. C. Rich," saying: "Replying to yours of the 16th inst. You may bill on us to cover the expense of the hospital treatment in connection with the case of Benjamin Funk, the man who was injured," etc. There were but two ways to avoid this letter; one to deny Rich's authority, and the other to insist that it could not affect the plaintiff's claim except for the services after its date. Rich was shown to be the defendants' timekeeper, but it was also shown that he signed checks, attended to correspondence, and signed letters for the defendants. There was abundant room for the jury to find authority. The letter, connected with the other evidence, was ample to show a liability for the plaintiff's services, not merely from the date of the letter, but the whole service. The court agrees with the defendants that the mere fact that they collected a fund out of the wages of employees would not necessarily make them liable to the plaintiff or any other particular persons for services. But it was a proper circumstance to be considered by the jury. The question in the case was essentially one of fact, and the court thinks it was shown by abundant evidence, the circumstances considered, that the defendants knew of their obligation to the plaintiff, and through their accredited agent promised to pay him.

Without Power to Compel Vaccination

(*Waldschmidt et al. vs. City of New Braunfels et al. (Tex.)*, 193 S. W. R. 1077)

The Court of Civil Appeals of Texas reverses a judgment obtained by the defendants, and in its stead renders one that they be enjoined from excluding from the public schools of New Braunfels the children of plaintiff Waldschmidt because they had not complied with a city ordinance requiring a certificate of vaccination for admittance to schools, said plaintiff and children being Christian Scientists. That the state, through its legislature, may, in the exercise of its police power, enact all reasonable legislation for the promotion of the public welfare, including the preservation of health, the

court says is too well settled to require citation of authorities. Also that the reasonableness of such measures is primarily a question for the legislature, and will be reviewed by the courts only in clear cases of abuse of such power, is equally well settled. In reference to this rule, as applied to vaccination, courts have frequently said that they were not called on to decide whether or not vaccination was a preventive of smallpox, but only whether the legislature which enacted such legislation had reason to so believe. But the rule is quite different where local authorities have undertaken to pass rules or ordinances with reference to vaccination, without being expressly authorized so to do. Municipal corporations are the creatures of statute, and have no powers except those expressly or impliedly granted by the statute creating them.

The legislature of Texas has never enacted a law to exclude any one from school who has not been vaccinated, nor has it expressly authorized any city council, board of school trustees, or even the state board of health, composed as it is of eminent physicians, to do so. The power to pass the ordinance above referred to is not to be implied from article 838 of the revised statutes, which reads: "To do all acts and make all regulations which may be necessary or expedient for the promotion of health or the suppression of disease." That means only that city councils may "do all acts and make all regulations which may be necessary or expedient" to carry into effect the powers expressly granted them "for the promotion of health or the suppression of disease." Anything that they might do in attempting to carry into execution the powers expressly granted would be sustained by the courts, unless it was clearly shown to be unreasonable. Moreover, the court thinks that the compulsory education law, with its penalty of fines, furnishes another reason, and a cogent one, why it should not be held in Texas that city councils have implied authority to exclude from public schools all who have not been vaccinated. A number of exemptions and excuses are provided for in the act, among which is quarantine, but failure to have been vaccinated is not one of them.

That the state may disregard religious opinions when necessary so to do to protect morals is the effect of the decisions in reference to polygamy as taught by the Mormon church. Whether or not this would apply to compulsory vaccination, the court is not called on to decide. The state has not attempted, either directly or indirectly, to compel any one to be vaccinated, nor has it authorized any municipal corporation to do so.

If, however, it be conceded that the city had implied authority to pass and enforce the ordinance at the time of its passage, such authority arose from the prevalence of smallpox in the city in epidemic form, or its threatened invasion at that time. Courts so holding limit such authority to the continuance of the emergency. So the question was: What was the condition in regard to smallpox in the city when this case was tried? The undisputed testimony showed there was then but one case of smallpox in the city, and it was isolated and practically convalescent. That a portion of the population was Mexican, and that smallpox was of frequent occurrence in San Antonio, 28 miles distant, would not justify the enforcement of the ordinance. A rehearing was denied.

Society Proceedings

COMING MEETINGS

- Amer. Acad. of Ophthal. and Oto-Laryng., Pittsburgh, Oct. 29-30.
- Am. Assn. for Study and Prev. of Inf. Mort., Richmond, Va., Oct. 15-17.
- American Association of Railway Surgeons, Chicago, Oct. 17-19.
- Clinical Congress of Surgeons, Chicago, Oct. 22-26.
- Delaware State Medical Society, Middletown, Oct. 8-9.
- Kentucky State Medical Association, Louisville, Oct. 16-18.
- Medical Association of the Southwest, Kansas City, Oct. 15-17.
- Minnesota State Medical Association, St. Paul, Oct. 10-12.
- Mississippi Valley Medical Association, Toledo, O., Oct. 9-11.
- Nevada State Medical Association, Reno, Oct. 18-19.
- New Mexico Medical Society, Las Cruces, Oct. 4-6.
- Southern Medical Association, Memphis, November 12-15.
- Vermont State Medical Society, Barre, Oct. 11-12.
- Virginia State Medical Society, Roanoke, Oct. 23-26.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Annals of Ophthalmology, St. Louis

July, XXVI, No. 3

- 1 Comfort Test as Method of Refraction. P. Potter, Butte, Mont.—p. 391.
- 2 Cataract Operations. J. J. Smith, San Francisco.—p. 404.
- 3 Use of Sophol in Prevention of Ophthalmia Neonatorum. I. F. Stein, Chicago.—p. 411.
- 4 Operation for Anterior Synechia; Report of Cases of Secondary Glaucoma and Staphylooma in Which It Was Used. C. G. Darling, Chicago.—p. 416.
- 5 Choroiditis of Therapeutically Proved Dental Origin. H. S. Gradle, Chicago.—p. 419.
- 6 Glaucoma and Autointoxication. C. W. Hawley, Chicago.—p. 421.
- 7 Do Moving Pictures Injure the Eyes? C. A. Bahn, New Orleans.—p. 427.
- 8 Intraventricular Injection of Antisyphilitics in Primary Optic Atrophy; Report of Case. M. Goldenburg, Chicago.—p. 433.

Annals of Otology, Rhinology and Laryngology, St. Louis

June, XXVI, No. 2

- 9 Surgical Consideration of Upper Paranasal Cells. G. Sluder, St. Louis.—p. 353.
- 10 Asthma Associated with Ethmoidal Disease. J. M. Brown, Los Angeles.—p. 397.
- 11 Report of Three Cases of Brain Abscess of Otitic Origin. G. M. Coates, Philadelphia.—p. 408.
- 12 Severe Epistaxis in Woman with Diabetes, Myomas of Uterus and Acute Mastoiditis. W. Freudenthal, New York.—p. 416.
- 13 Septal Hemorrhage; Its Cure by Submucous Elevation. J. Leshure, New York.—p. 420.
- 14 Some Interesting Labyrinth and Eighth Nerve Cases. H. B. Graham, San Francisco.—p. 426.
- 15 Acute Suppurating Mastoiditis without Tympanitis, Perisinus Abscess, Phlebitis, Streptococcemia, Operation, Recovery. C. H. Long, Chicago.—p. 432.
- 16 Practical Uses of Recent Work on Internal Ear, to General Practitioner, Otologist, Ophthalmologist, Syphilologist, Neurologist and Surgeon. I. H. Jones, Philadelphia.—p. 436.
- 17 Observations on After-Turning Nystagmus. G. W. Mackenzie, Philadelphia.—p. 445.
- 18 Vertigo; Its Causes and Methods of Diagnosis. L. Fisher, Philadelphia.—p. 511.
- 19 Use of Electric Cautery in Nose. W. A. Hitschler, Philadelphia.—p. 519.
- 20 Facial Paralysis as Complication of Acute Otitis Media. E. B. Jones, Washington, D. C.—p. 523.
- 21 Primary Jugular Thrombosis Due to Tonsil Infection. C. Goodman, New York.—p. 527.
- 22 Transillumination of Larynx and Upper Trachea. F. R. Spencer, Boulder, Colo.—p. 530.
- 23 Relations of Sphenoid Sinus to Semilunar (Gasserian) Ganglion and Their Possible Clinical Importance. G. Sluder, St. Louis.—p. 537.
- 24 Is Modified Radical, or Health Operation, Justifiable Procedure? A. S. Kaufman, Philadelphia.—p. 543.
- 25 Case of Acute Mastoiditis with Enormous Leukocyte Count; Both Mastoids Opened; Recovery. G. F. Keiper, La Fayette, Ind.—p. 548.
- 26 Obscure Case of Sigmoidal Sinus Thrombosis. T. H. Odeneal, Beverly, Mass.—p. 552.
- 27 Complicated Gradenigo's Syndrome; Operation; Recovery. A. Dighton, Liverpool.—p. 554.

Archives of Internal Medicine, Chicago

September, XX, No. 3

- 28 *Etiologic Agent of Rat Bite Disease. J. Kitagawa and T. Mukoyama, Nagoya, Japan.—p. 317.
- 29 *Salicylates. Salicyl Edema. P. J. Hanzlik, R. W. Scott and J. L. Reyecraft, Cleveland.—p. 329.
- 30 Study of Poliomyelitis. Report of Work of Meningitis Division of Research Laboratory in 1916 Epidemic. J. B. Neal, H. L. Abramson and Associates, New York.—p. 341.
- 31 Studies with Schick Test. A. Zingher, New York.—p. 392.
- 32 *Effect of Undernutrition on Muscular Force. Study of Influence of Low Diets, or Allen Method of Treatment on Physical Vigor of Diabetics. J. R. Williams, Rochester, N. Y.—p. 399.
- 33 *Auricular Flutter. Study of Case, and of Literature. J. D. Heard, Pittsburgh, and A. E. Strauss, St. Louis.—p. 409.
- 34 Clinical Studies on Respiration. Mechanical Factor in Production of Dyspnea in Patients with Cardiac Disease. F. W. Peabody, Boston.—p. 433.
- 35 *Id. Vital Capacity of Lungs and Its Relation to Dyspnea. F. W. Peabody and J. A. Wentworth, Boston.—p. 443.
- 36 *Id. Basal Metabolism and Minute-Volume of Respiration of Patients with Cardiac Disease. F. W. Peabody, J. A. Wentworth and B. I. Barker, Boston.—p. 468.

28. **Etiology of Rat Bite Disease.**—The two types of spirochetes, found by Kitagawa and Mukoyama in the guinea-pigs and rat, respectively, not only varied considerably with respect to size, but also showed differences with regard to the distinctness of the spirals and the pointedness of the ends, which facts seem to us to indicate that these spirochetes belong to two different species. Yet, since the staining brought out no definite distinctions between them, and as they showed practically the same number of curves, it appears possible that the above mentioned difference of form was a result of the differences existing between the inoculated animals, or that the spirochetes may have been in different stages of development. At all events, it is interesting to note that the spirochetes obtained from inoculation with the lymph gland and the lymph plasma derived from the same patient also appear to be of different sizes. Whether Type A and Type B are really identical, or, if they are not, which one is the etiologic agent, are points which must be determined.

29. **Salicyl Edema.**—It is claimed by the authors that the anuria produced by the administration of full therapeutic doses of salicylate is due to retention of water as indicated by an increase in body weight unless modified by diaphoresis. This retention is demonstrable about twenty hours after the start of administration of the salicylate and persists until the salicyl excretion is completed, that is, about eighty hours (three and one-third days). The retention occurs chiefly in the tissues, for no dilution of the blood is demonstrable by estimations of hemoglobin. The edema is accompanied by a diminution in phenolsulphonephthalein excretion together with an accumulation of urea nitrogen of the blood, and increased excretion of albumin, all of these elements reaching their previous levels with the disappearance of the edema. There is, therefore, a diminution in renal functional efficiency, and since this generally makes its appearance before an actual increase in body weight is demonstrable (edema) and later coincides with it, it seems that the renal factor plays an important rôle in the production of the edema. These phenomena are not modified by the administration of sodium bicarbonate together with the salicylate, and in doses sufficient to maintain the urine alkaline.

32. **Effect of Undernutrition on Muscular Force.**—Williams' investigation supports the common clinical observation that diabetics, as a rule, are distinctly physically weaker than normal persons. Loss of body musculature may partly explain this, but it is probable that the lessened amount of food metabolized in these cases does not provide sufficient energy for the normal exercise requirements of the body. There appears to be a direct relationship between food tolerance and muscular vigor. As food tolerance increases, so does also muscular tone. Decline in food tolerance is accompanied by loss of physical vigor. The continued use of a low diet for many months, even though it fall far short of the energy requirements of the body, provided it is within the physiologic limitations of the body to metabolize it, will cause an appreciable gain in muscular tone, although the amount of physical effort that such a person may be able to put forth may be considerably below normal. These observations also show that while diabetics living on a diet below normal physiologic requirements possess a diminished muscular vigor, feeding them beyond their metabolic limitations causes not only a further reduction in their tolerance for food, but also an even greater loss of strength. This is contrary to the view commonly held by both physicians and laymen. There is no justification for the common notion that overfeeding causes even a temporary increase in comfort or body strength. The general conclusion from this inquiry is that diabetics gain in physical vigor as they become and remain sugar free, while overfeeding causes a definite and often a serious loss of strength. Attention is called to the use of the dynamometer as a simple and fairly trustworthy method of measuring muscular tone or physical vigor.

33. **Auricular Flutter.**—A case is presented by Heard and Strauss which shows most of the well known characteristics of auricular flutter. The contour of the P deflection is discussed. The origin of auricular impulses is believed to be ectopic. The usual difficulties were encountered in the mea-

surement of A_s-V_s interval in flutter. The A_s-V_s interval was prolonged by digitalis in flutter as in normal mechanism. Emphasis is laid on the variation of auricular rate as found in the individual case of flutter, a fact which has been usually overlooked. Blood pressure studies showed marked daily variation of the systolic pressure as observed during flutter and fibrillation. There was a marked constancy of the diastolic pressure. Vagus stimulation by pressure, either over carotid artery or eyeball, produced ventricular slowing or standstill, as has been noted by previous observers. Vagus stimulation produced like results in fibrillation and in flutter. The prolongation of the refractory stage of heart muscle under the influence of repeated stimuli is noted as a possible explanation of the auriculoventricular dissociation in flutter and fibrillation. Finally, the effect of digitalis during treatment—its very early effect on conduction, its possible effect on auricular rate, the change in the T wave, and the large amount necessary to change the mechanism to fibrillation—is considered at some length.

35. Vital Capacity of Lungs and Its Relation to Dyspnea.—Observations on patients with heart disease show that there is a close relation between decrease in vital capacity and the tendency to dyspnea. Compensated patients, who do not complain of dyspnea on exertion, have a normal vital capacity. Patients with more serious disease, in whom dyspnea is a prominent symptom, have a low vital capacity, and the decrease in vital capacity runs parallel to the clinical condition. Changes in the clinical condition are usually associated with changes in the vital capacity. As a patient improves, his vital capacity tends to rise, and as he becomes worse, it tends to fall. Determinations of the vital capacity in cases of cardiac disease are often of practical value as they give quantitative information as to the tendency to dyspnea, and thus, indirectly, as to the clinical condition and the reserve power of the patient. In various other diseases in which mechanical conditions interfere with the movements of the lungs, the tendency to dyspnea corresponds closely to the decrease in the vital capacity. This is, however, apparently not true of the anemias. In diseases in which dyspnea is not a prominent symptom the vital capacity is usually within the normal limits, although general weakness and old age may cause a slight decrease.

36. Basal Metabolism and Respiration of Patients with Cardiac Disease.—Observations are reported on the gaseous metabolism and pulmonary ventilation of two groups of patients with heart disease. Group 1 consists of subjects in good or fairly good condition, in whom the vital capacity of the lungs was over 60 per cent. of the normal. Group 2 consists of much more severely affected patients in whom the vital capacity was 60 per cent. of the normal or less. The basal metabolism calculated from the oxygen consumption per square meter of body surface averaged 2.5 per cent. above normal in Group 1, and 12.8 per cent. above normal in Group 2. The average volume per respiration was less in Group 2 than in Group 1, and the average rate of respiration was higher in Group 2 than in Group 1. The minute volume of air breathed averaged approximately 30 per cent. higher in the members of Group 2 than it did in those of Group 1. The relation is pointed out between the increase of the minute volume of the more seriously affected patients and the decrease in the vital capacity of the lungs. Finally it is shown that this high minute volume is a factor in the production of dyspnea in persons with severe heart disease.

Boston Medical and Surgical Journal

September 13, CLXXVII, No. 11

- 37 Use of Paraffin Preparations in Treatment of Burns. E. H. Risley, Boston.—p. 343.
- 38 *Treatment of Old Ununited Fracture of Neck of Femur by Transplantation of Head of Femur to Trochanter. E. G. Brackett and M. S. New, Boston.—p. 351.
- 39 *Spina Bifida and Allied Malformations: Thirty-Four Cases. T. W. Harmer, Boston.—p. 353.
- 40 *Results of Radium Treatment at Collis P. Huntington Memorial Hospital by Cancer Commission of Harvard University. W. Duane and R. B. Greenough, Boston.—p. 359.
- 41 Mesothorium and Combination Methods in Treatment of Cancer. F. D. Donoghue, Boston.—p. 365.
- 42 Roentgen Diagnosis of Pathologic Gallbladder. A. W. George and R. D. Leonard, Boston.—p. 375.

38. Treatment of Ununited Fracture of Neck of Femur by Transplantation of Head of Femur to Trochanter.—The method considered by Brackett and New treats the femoral head as if it were a real sequestrum. The head is placed on the inner side of the top of the sawed off trochanter, and in this way the thrust is passed directly from the shaft to the head, so that there is little or no distraction strain in weight bearing, and the head has its most favorable position for a restored function. There is one contraindication. Sometimes, after joint injury, particularly in the older people, there is found a distinct osteo-arthritic change, with thinning of cartilage, as well as the tendency to overgrowths. Under these conditions, a favorable functional result could not be expected, and this operation must not be advised.

39. Spina Bifida and Allied Malformations.—Harmer's series includes seven meningoceles, twenty-three myelomeningoceles, three hydroencephalocoles, and one encephalocole. Twenty-three were rounded and sessile, eight rounded and pedunculated, and three flat. Twenty cases exhibited some degree of paralysis. Of these, the paralysis was increased after operation in three, it was not affected by operation in nine, and improved or cured in eight. In five of these eight the benefit was unimportant, for all died subsequently of acute hydrocephalus or meningitis. However, the paralysis which they exhibited before operation was lessened or disappeared up to the time of death. Three of these patients are still living. One patient exhibited prolapse of the rectum and incontinence of urine and feces. Now, fifteen months later, there is no prolapse, and the mother is convinced that there is increasing control of bladder and rectum. Another case exhibited sensory paralysis of both legs, motor paralysis of right foot, and prolapsed rectum before operation. The motor paralysis of the foot and the prolapse are cured but sensation in the legs is still impaired. The third case presented a myelomeningocole in the sacral region, with leaking sac and paralysis of both feet when seen twenty-four hours after birth. Operation was done at once and the child is perfectly well sixteen months later. Sixteen patients died; eighteen patients were discharged alive; a mortality of 47 per cent. The causes of death were shock, one; acute hydrocephalus, one; continued loss of cerebrospinal fluid, four; umbilical septicemia, one; meningitis, nine. Therefore, deducting the case which died of umbilical septicemia, the operative mortality is 44.1 per cent. Sixty-four and seven-tenths per cent. of the cases exhibited ulcerated or leaking sacs. Of the cases discharged alive, four exhibited some degree of paralysis, three increasing hydrocephalus, ten were well. Of the well cases, three were myelomeningoceles, all with ulcerated or leaking sacs; four were meningoceles with intact coverings, and four were encephalocoles.

40. Results of Radium Treatment.—Of 642 cases treated with radium, 354, or 55 per cent., received definite benefit.

Bulletin of Johns Hopkins Hospital, Baltimore

September, XXVIII, No. 319

- 43 Embryomas in Plants. Produced by Bacterial Inoculations. E. F. Smith, Washington, D. C.—p. 277.
- 44 Carrel Treatment of Wounds Applied to Civil Practice. J. S. Lawrence.—p. 294.
- 45 Placental Transfusion; Total Creatinin in Plasma, Whole Blood and Corpuscles of Mother and Fetus. E. D. Plass, Baltimore.—p. 297.

Bulletin of Lying-In Hospital of City of New York

August, XI, No. 3

- 46 *Accidental Hemorrhage from Premature Separation of Placenta. J. A. Harrar, New York.—p. 151.
- 47 Control of Uterine Hemorrhage. A. B. Davis, New York.—p. 158.
- 48 Case of Cystic Lymphangioma in Newborn. R. McPherson, New York.—p. 165.
- 49 Asepsis in Obstetrics in Tenements. J. W. Markoe, New York.—p. 167.
- 50 Attitude and Responsibilities of Physician in So-Called Birth Control Movement. G. W. Kosmak, New York.—p. 181.
- 51 Cesarean Section for Congenital Partial Occlusion of Vagina. E. D. Truesdell, New York.—p. 199.
- 52 Case of Placenta Praevia in Twin Pregnancy. M. Rosensohn, New York.—p. 200.

46. Accidental Hemorrhage from Premature Separation of Placenta.—Among 100,000 confinements at the New York

Lying-In Hospital premature separation of the placenta took place in 254 cases, the accident occurred twice as frequently in multiparae as in primiparae. In the 152 instances of marked hydramnios in the 100,000 labors, premature separation of the placenta occurred but three times; in 1,478 cases of twins premature separation of the placenta occurred but four times; in twenty-nine cases of triplets it occurred twice. In five instances of premature separation there was evidence of an antenatal infection with elevation of temperature and a foul odor to the uterine contents when delivered. External trauma was a feature in fifteen cases, fibroids in three and a short cord in two. Twenty-two deaths occurred in the 254 cases, a maternal mortality of 8.66 per cent. The mortality was considerably higher in the so-called "concealed" hemorrhage cases. There were twenty-four cases of disruptive concealed hemorrhage with six deaths, a mortality of 25 per cent. Eighteen of these, however, showed some external bleeding as well. In the six with absolutely concealed hemorrhage of the disruptive type but one died, and this one apparently died of an accompanying eclampsia. There were 133 stillbirths, a fetal mortality of 50.8 per cent. in the 262 babies born. Thirty infants died in the first ten days, making a total fetal and infantile mortality of 62.2 per cent. In the concealed hemorrhage group the only child that survived was delivered by cesarean section.

As to the treatment and method of delivery of these 254 cases of accidental hemorrhage; sixty-eight delivered themselves spontaneously after simple rupture of the membranes, with two late deaths, both due to infection; twenty-seven delivered themselves spontaneously after the insertion of a cervicovaginal packing of iodoform gauze, with no deaths; eight spontaneously after the use of a Voorhees bag with one immediate death, due to hemorrhage and eclampsia. Version was performed eighty-one times with ten maternal deaths. It was done fourteen times after cervicovaginal packing, twenty-two times after manual dilatation of the cervix, and twenty times as part of an accouchement forcé. Forceps completed the delivery in twenty-nine cases with three deaths. Breech extraction was done nineteen times. Vaginal cesarean section was done five times with one death. Abdominal cesarean section was done seven times with no maternal death. The highest mortality occurred in the group of cases in which version was done after forcible manual or instrumental dilatation of the cervix. Harrar recommends in the treatment of accidental hemorrhage, rupture of the membranes in the very mild cases, rupture of membranes and the use of the cervicovaginal packing in the more severe cases, reserving the use of the abdominal cesarean section in the grave concealed hemorrhage cases with closed cervix, and doing a hysterectomy only when there is accompanying partial or complete rupture of the uterus.

California State Journal of Medicine, San Francisco

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- 53 Case of Splenectomy in Pernicious Anemia. H. M. Sherman, San Francisco.—p. 338.
- 54 Some Unusual Aspects of Exophthalmic Goiter; Case Reports. G. D. Barnett, San Francisco.—p. 342.
- 55 Disability from Injury to Feet. G. J. McChesney, San Francisco.—p. 344.
- 56 Therapeutic Application of Hypertonic Salt Solution in Conjunction with Leukocytic Extract. R. A. Archibald and G. Moore, Oakland.—p. 345.
- 57 Intestinal Crises Simulating Chronic Appendix Disease Diagnosed by Roentgen Ray Findings. M. P. Burnham and L. B. Crow, San Francisco.—p. 348.
- 58 Aneurysm. C. D. Lockwood, Pasadena.—p. 352.
- 59 Uterine Fibromyomas, Their Causation, Prevention and Conservative Treatment; Case Reports. W. A. Briggs, Sacramento.—p. 354.
- 60 Modern Treatment of Bladder Tumors. M. Krotoszyner, San Francisco.—p. 359.
- 61 Tumors of Kidney. S. Stillman, San Francisco.—p. 363.
- 62 Treatment of Drug and Alcoholic Addictions. A. C. Matthews, Napa.—p. 366.
- 63 Patent Medicine Evil. P. K. Brown, San Francisco.—p. 371.
- 64 Abortion Evil in Small Town. W. B. Smith, Randsburg.—p. 374.
- 65 Use of Aspirator for Removing Pus, Blood, Exudate, Transudate and Bowel Contents During Surgical Operations. E. Butler, San Francisco.—p. 375.
- 66 Practical Roentgenography for General Practitioner. A. Soiland, Los Angeles.—p. 376.

Delaware State Medical Journal, Wilmington

September, VIII, No. 9

- 67 Medical Science in Its Relation to Crime. W. H. Kraemer, Wilmington.—p. 4.
- 68 Spinal Anesthesia. J. A. Mendelson, New York.—p. 7.

Illinois Medical Journal, Chicago

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- 69 Treatment of Catarrhal Deafness. M. F. Arbuckle, E. St. Louis.—p. 153.
- 70 What State Can Do to Prevent Blindness. W. O. Nance, Chicago.—p. 155.
- 71 New Method of Dealing with Nasal Septum. J. A. Cavanaugh, Chicago.—p. 161.
- 72 Treatment of Membranous Cataract. H. W. Woodruff, Joliet.—p. 164.
- 73 Primary Mastoiditis; Report of Case. R. Sonnenschein, Chicago.—p. 167.
- 74 Depressed Nasal Deformities Corrected by Bone Transplantation. L. Ostrom, Rock Island.—p. 169.
- 75 Radical Mastoid Operation—Its Terminations—With Special Reference to Hearing and Suppuration. C. H. Long, Chicago.—p. 171.
- 76 Kronlein Operation; Report of Case. E. E. Edmondson, Mount Vernon.—p. 175.
- 77 Operation for Anterior Synechia Used in Cases of Secondary Glaucoma and Staphyloma. C. G. Darling, Chicago.—p. 177.
- 78 Use of Trichloracetic Acid in Atrophic Rhinitis. W. G. Hatch, Rockford.—p. 178.
- 79 Diagnosis of Acute Mastoiditis and Indications for Operation. A. E. Sherman, Aurora.—p. 179.
- 80 Interpretation of Findings of Transilluminator. W. G. Reeder, Chicago.—p. 181.
- 81 How Eye and Ear Service in General Hospitals Can Be Improved. F. Allport, Chicago.—p. 182.
- 82 Treatment of Vitreous Opacities. W. H. Peck, Chicago.—p. 186.
- 83 Importance of After-Treatment of Tonsillar Fossa During Secondary Period Following Tonsillectomy. C. F. Burkhardt, Effingham.—p. 188.
- 84 Decompression Operation on Hypophysis by Nasal Route. O. J. Stein, Chicago.—p. 192.
- 85 Management of Malignant Diseases of Upper Respiratory Tract. J. C. Beck, Chicago.—p. 194.

Journal of Biological Chemistry, Baltimore

September, XXXI, No. 3

- 86 *Modification of McLean-Van Slyke Method for Determination of Chlorids in Blood. G. L. Foster, Boston.—p. 483.
- 87 *Function of Muscular Tissue in Urea Formation. R. Hoagland and C. M. Mansfield, Washington, D. C.—p. 487.
- 88 *Glycolytic Properties of Muscular Tissue. R. Hoagland and C. M. Mansfield, Washington, D. C.—p. 501.
- 89 Tables for Finding Alkaline Reserve of Blood Serum, in Health and in Acidosis, from Total Carbon Dioxid or Alveolar Carbon Dioxid or pH at Known Carbon Dioxid Tension. J. F. McClen-don, A. Shedlov and W. Thomson, Minneapolis.—p. 519.
- 90 Effect of Temperature on Reaction of Lysin with Nitrous Acid. B. Sure and E. B. Hart, Madison, Wis.—p. 527.
- 91 *Methods for Determination of Blood Sugar in Reference to Its Condition in Blood. H. McGuigan and E. L. Ross, Chicago.—p. 533.
- 92 *Origin of Creatin. L. Baumann and H. M. Hines, Iowa City, Iowa.—p. 549.
- 93 *Production of Creatinuria in Normal Adults. W. Denis and A. S. Minot, Boston.—p. 561.
- 94 *Experimental Studies on Growth. Influence of Tethelin on Early Growth of White Mouse. T. B. Robertson and M. Delprat, Berkeley, Calif.—p. 567.
- 95 *Blood Lipoids in Nephritis. W. R. Bloor, Boston.—p. 575.
- 96 *Dynamics of Process of Death. W. J. V. Osterhout, Cambridge.—p. 585.
- 97 Structure of Yeast Nucleic Acid. P. A. Levene, New York.—p. 591.
- 98 Removal of Nitric Acid from Solutions or Organic Compounds. P. A. Levene and G. M. Meyer, New York.—p. 599.
- 99 Preparation of Lyxose. E. P. Clark, New York.—p. 605.
- 100 Chondrosamin and Its Synthesis. P. A. Levene, New York.—p. 609.
- 101 Relation between Configuration and Rotation of Epimeric Monocarboxylic Sugar Acids. The Phenylhydrazides. P. A. Levene and G. M. Meyer, New York.—p. 623.
- 102 Cerebrosids. Conditions for Hydrolysis of Cerebrosids. P. A. Levene and G. M. Meyer, New York.—p. 627.
- 103 Id. Cerasin. P. A. Levene and C. J. West, New York.—p. 635.
- 104 Id. Cerebrosids of Kidney, Liver and Egg Yolk. P. A. Levene and C. J. West, New York.—p. 649.

86. Determination of Chlorids in Blood.—Foster found that thoroughly reliable results are obtained by applying the original McLean-Van Slyke titration to the filtrates obtained after coagulating the blood proteins with metaphosphoric acid. The additional acidity due to the metaphosphoric acid is not sufficient to interfere with the sensitiveness of the starch iodine end-point, being only about 2 per cent. of that due to

the nitric acid. The coagulum formed by the addition of meta phosphoric acid to the diluted blood or plasma is very finely divided, and the diffusion of chlorids to uniform concentration throughout the mixture is complete in ten minutes if the flask is shaken occasionally.

87. Muscular Tissue and Urea Formation.—The purpose of the experiments reported by Hoagland and Mansfield was to determine whether or not urea-forming enzymes are present in muscular tissue. Taken as a whole, the results show that urea formation is not an important function of muscular tissue. In view of the well established fact that the liver plays an important part in the formation of urea in the body, these findings lend support to the view that urea production is chiefly a function of that organ.

88. Glycolysis of Muscular Tissue.—According to Hoagland and Mansfield muscular tissue autolyzed under aseptic conditions shows appreciable glycolytic properties. Glycolysis takes place most rapidly within a comparatively few hours after the death of the animal. The glycolysis that took place under the conditions of these experiments did not result in the production of carbon dioxide. Muscular tissue apparently has the ability to synthesize carbohydrates. In part at least, and probably in their entirety, the processes by which sugars are utilized by the animal body are enzymatic in nature.

91. Determination of Blood Sugar.—The work done by McGuigan and Ross corroborates the work of von Hess and McGuigan, showing that the sugar in the blood reacts as it does in a water solution.

92. Origin of Creatin.—The authors do not offer any evidence for the methylation of glycocyamin by muscle or liver tissue *in vitro*. The injection of glycocyamin into rabbits and dogs may be followed by an increased excretion of creatin.

93. Creatinuria in Normal Adults.—In two normal women Denis and Minot were able to cause creatin excretion by feeding a high protein (creatin free) diet, and to cause the creatinuria so produced to disappear by the consumption of a low protein diet. In two men to whom a similar experimental procedure was applied the authors were unable to produce creatin excretion even when a sufficient amount of protein was consumed to cause the urinary nitrogen to rise to 34.5 gm. per day.

94. Effect of Tethelin on Early Growth.—From the total lack of effect of the administration of tethelin to the mother on the growth of suckling young the authors believe that one may infer either that tethelin exerts no effect on growth during the first (infantile) growth cycle or else, which is more probable, that the tethelin administered to the mother is not secreted as such to any appreciable extent by the mammary glands of the mother. The administration of tethelin to the young subsequently to the fourteenth day, when their eyes are open and they have access to food other than that supplied to the mother, results in a noticeable acceleration of growth during the second growth cycle (second to the fifth weeks), followed on initiation of the third cycle, by a marked retardation which evidences itself despite the fact that the administration of tethelin is discontinued at the end of the fifth week.

95. Blood Lipoids in Nephritis.—The abnormalities in the blood lipoids in severe nephritis were found to be high fat in plasma and corpuscles and high lecithin in the corpuscles. The cholesterol values were practically normal. These abnormalities are the same as are found in alimentary lipemia and for this reason are regarded by Bloor as the result of a retarded assimilation of fat in the blood, which in turn is thought to be one manifestation of a general metabolic disturbance brought about by a lowered "alkali reserve" of the blood and tissues.

96. Dynamics of Process of Death.—Osterhout found that by measuring the electric conductivity of tissues placed in toxic solutions the process of death can be followed in the same manner as the progress of a reaction *in vitro*. Death proceeds as a monomolecular reaction which is somewhat inhibited at the start. This is easily explained if consecutive reactions are involved in the process of death. This explana-

tion also applies to many other cases of toxic action. In all these cases death behaves as a reaction which is continually going on and which is accelerated by the toxic agent.

Journal of Medical Research, Boston

September, XXXVII, No. 1

- 105 *Periarteritis Nodosa; Report of Two Cases. O. Klotz, Pittsburgh.—p. 1.
106 *Treatment with Bacterial Vaccines of Bronchial Asthmatics Who Are Not Sensitive to Proteins. I. C. Walker, Boston.—p. 51.
107 *Erythrocytic Origin of Blood Platelets. V. E. Emmel, Chicago.—p. 67.
108 Factors which Determine Movements of Tissues in Culture Media. L. Loeb and M. S. Fleisher, St. Louis.—p. 75.
109 *Studies on Common House Fly (*Musca Domestica*, Linn). Bacteriology of House Fly in District of Columbia. J. R. Scott.—p. 101.
110 *Id. Isolation of *B. Cuniculicida*; Unreported Isolation. J. R. Scott.—p. 121.
111 *Production of Acute and Chronic Kidney Lesions with *Bacillus Mucosus Capsulatus*. R. H. Major, Rosedale, Kan.—p. 125.
112 *Phagocytosis *in Vivo* under Various Conditions. C. J. Bartlett and Y. Ozaki, New Haven, Conn.—p. 139.
113 Preparation of Hemoglobin for Clinical Investigations. A. W. Sellards and G. R. Minot, Boston.—p. 161.
114 *Myeloma with Metastasis to Liver and Spleen. O. H. P. Pepper and R. M. Pearce, Philadelphia.—p. 171.
115 *Problem of Acid-Fast Organisms in Distilled Water. R. A. Keilty, Philadelphia.—p. 183.

105. Periarteritis Nodosa.—Two cases of periarteritis nodosa are added by Klotz to the forty cases previously recorded in the literature. The first case was a woman 33 years of age, whose past history does not bear on her final illness. Syphilis was not considered as a possible factor, so that a Wassermann was not performed. Her final illness was of four weeks' duration, beginning with a severe cold following exposure to inclement weather. Muscle and joint pains were prominent, and subsequently these were followed by severe, cramp-like pains in the abdomen. She ran a continuous temperature over 100 F. There was some leukocytosis and albuminuria and slight icterus. Death occurred suddenly in collapse. The necropsy revealed the typical lesions of periarteritis nodosa with aneurysms and thromboses distributed along the hepatic and cystic arteries. Rupture of one of these hepatic arteries led to extensive hemorrhage about the liver and into the peritoneum. There were no other serious acute lesions nor were there any infectious deposits about the heart.

The second case occurred in a man 53 years of age, who previously had suffered considerable illness. He had had acute rheumatic fever. His present illness began after an exposure to rain and cold, from which he was slow in recovering. During his illness he developed tonsillitis, which in a few days was followed by the appearance of bluish nodules in the skin. Dyspnea and cyanosis were evident throughout his illness, apparently associated with an old cardiac lesion. His Wassermann reaction was positive. He had quite a marked anemia, with some leukocytosis. From the time of the onset of his tonsillitis, he ran a continuous through irregular temperature over 100 F. During life one of the skin nodules was removed, but a diagnosis of the arterial lesion could not be made owing to the rather extensive disintegration and hemorrhage which occupied the area excised. Cultures from these nodules were negative, as were also the blood cultures. Clinical manifestations of an intra-abdominal condition were not apparent. The patient died rather unexpectedly, although during the last week of his illness, he was becoming progressively weaker. His total illness extended over a period of about three months. It is evident that the patient was primarily suffering from a cardiac lesion of not uncommon type, and that the acute periarteritis was an associated complication superadded to his other illness.

106. Vaccine Treatment of Bronchial Asthma.—The fifteen patients who were treated by Walker are placed into three groups: Group I, six patients whose serums agglutinated strains of *S. pyogenes-aureus* in a high titer, and for this reason these patients were treated with stock vaccines of this organism; Group II, six patients who were treated with a diphtheroid vaccine because this type of organism was the predominating one in their sputums, and because there was

no positive evidence in favor of any other kind of treatment; Group III, contains three patients who show that conditions or diseases quite remote from bronchial asthma may play some part in the cause of bronchial asthma, or at least may produce symptoms which simulate bronchial asthma. All of the patients of Group I were relieved of asthma and all associated symptoms by stock vaccine of *S. pyogenes-aureus*. Only one patient of Group II was relieved by diphtheroid vaccines. Of Group III one case was associated with hernia, and relief from the hernia by operation was accompanied by relief from asthma. A second case was associated with pituitary disease. The history of the third case would suggest a diagnosis of bronchial asthma and the administration of epinephrin relieved the symptoms. Walker points out that it is quite possible that so-called bronchial asthma in patients who are sensitive to proteins is not true bronchial asthma; it is evident that cardiac, renal, pulmonary and pituitary disease all may cause symptoms which simulate bronchial asthma.

107. Origin of Blood Platelets.—On the basis of a careful examination of the blood of one case Emmel states that the structural changes undergone by many of the red blood corpuscles in anemic blood are such as to be especially conducive to the production of the conditions which have been described as demonstrating the origin of blood platelets from erythrocytes. In such cases a mass of blood platelets may become adherent to the surface of the erythrocyte, the contents of the corpuscles are displaced to one side with a consequent production of a very thin transparent area in the region of contact. These conditions, together with an occasional rupturing of the weakened membrane in this region during the preparation of the material, produce the deceptive appearance of a dehiscent erythrocyte extruding blood platelets. In normal blood, in which the erythrocytes are more stable in form and structure, the so-called eviscerating corpuscles are not so obviously in evidence.

109. Bacteriology of House Fly.—Certain bacteria which might be of importance in the spread of infectious disease were isolated by Scott from the bodies and intestinal tract of flies. Other bacteria, while of themselves not pathogenic under normal circumstances, but which have been universally accepted as being indicators of dangerous contamination by excreta, were frequently found. Such organisms include the colon bacillus, indicating that the insect has recently come into contact with fecal excretions. The finding of the pyogenic cocci on flies suggests the possibility that this insect may be the agent in the transmission of suppurative organisms from man to man, and may afford an explanation of the spread of gangrene in field hospitals under war conditions. The following pathogenic organisms were isolated from these flies: *Staphylococcus pyogenes-aureus*, *albus* and *citreus*; *tetragenus*, *B. acidi-lactici*; *B. coli-communis*; *B. coli-communior*; *B. suis-pestifer*; *B. coli-anaerogenes*; *B. proteus-vulgaris*; *B. cuniculicida*; *Streptococcus fecalis* and *pyogenes*.

110. Isolation of *B. Cuniculicida*.—*B. cuniculicida* was recovered by Scott from two common house flies during the course of investigations. This is said to be the first reported instance of such recovery.

111. Bacteriologic Production of Acute and Chronic Kidney Lesions.—With a single exception all of the twenty-one animals which received the intravenous injections of living cultures of *B. mucosus-capsulatus* showed either acute or chronic kidney lesions.

112. Phagocytosis in Vivo.—Bartlett and Ozaki found that when the leukocytes become less capable of ingesting bacteria, the phagocytic tissue cells of the lung, spleen and the liver act to a greater or less extent in a compensatory way for the deficient part of leukocytes. This fact is of great significance for the elimination of bacteria from the circulating blood. The bacteria introduced into the blood stream are chiefly detained by the spleen and liver, if the lung is excluded, where the detention of bacteria is chiefly temporary. This peculiar biologic property of the spleen and liver is, if not completely, partly lost when these organs undergo a marked degeneration. This probably depends on the lessened vitality of the macrophages present in these organs.

114. Myeloma with Metastasis to Liver and Spleen.—The view that true myeloma does not form metastases has been emphasized ever since the first recognition of this condition. There is, however, a small group of cases in which the tumor described seems truly to belong to the myeloma group, and in connection with which there have been found foci of identical tumor tissue at some distance from the bony involvement. A summary of such cases found in the literature is given by Pepper and Pearce and a case is reported which they believe belongs in this group. This case is of unusual interest in that no definite nodules of myeloma were demonstrable by Roentgen rays or at necropsy, and secondly, because there was found throughout the liver and spleen, which were grossly normal, a diffuse infiltration of microscopic foci of cells identical with those of the bony tumors. These findings seem to justify a claim of true metastasis formation in this case. Most of the features of this case are in close accord with the typical findings in myeloma. The male sex, the advanced age, 52 years, the nature and distribution of the pains, and the fatal outcome after a slowly progressive course are all characteristic. So also are the anemia and the Bence-Jones proteinuria. The white corpuscles were present in a proportion of 1 to 100 red blood cells and the differential count showed 21.9 per cent. myelocytes. The bones affected were those most commonly involved.

115. Acid-Fast Organisms in Distilled Water.—Keilty calls attention to factors not previously reported concerning acid-fast bodies and bacteria in distilled water. He divides distilled water into sterile, sterilized, clean and dirty. Sterile distilled water is free from all bacterial bodies. Distilled water may be contaminated in the still, the tank or collecting bottle, and show different types of organisms, including acid-fasts in most instances. The acid-fasts may or may not be morphologically like the tubercle bacillus. The older the distilled water is and the larger the amount of sediment present, the greater the number of acid-fasts will be found. In perfectly clean, but nonsterile distilled water acid-fasts may appear after standing for a month. Keilty concludes that in all bacteriologic work it is advisable to use sterile distilled water collected in sterile stills, tanks and bottles.

Kansas Medical Society Journal, Topeka

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- 116 Jaundice in Newborn. M. Hahn, Arkansas City.—p. 237.
- 117 Fractures of Lower End of Humerus. J. F. Hassig, Kansas City.—p. 242.
- 118 Intoxication. J. Baird, Coffeyville.—p. 244.
- 119 Therapeutic and Diagnostic Value and Technic of Lumbar Puncture. J. J. Harrington, Osawatomie.—p. 246.

Medical Record, New York

September 15, XCII, No. 11

- 120 Digitalis in Treatment of Auricular Fibrillation; Report of Three Cases of Arrhythmia. H. C. Gordinier, Troy.—p. 441.
- 121 Compromising with Consumptives. J. B. Hawes, 2d, Boston.—p. 447.
- 122 Pathologic Physiology of Heart as Revealed by Polygraph and Electrocardiograph. L. F. Bishop, New York.—p. 450.
- 123 Practical Points in Use of Strophanthus. E. E. Cornwall, Brooklyn.—p. 451.
- 124 Some Suggestions Regarding Urethritis Patient. W. S. Reynolds, New York.—p. 453.
- 125 Time Element in Some Physical Processes. J. A. Hagemann, Pittsburgh.—p. 456.

New Jersey Medical Society Journal, Orange

September, XIV, No. 9

- 126 Observations on Thyroid. J. F. Hagerty, Newark.—p. 341.
- 127 Diagnosis of Ectopic Pregnancy. F. W. Langstroth, Ridgefield Park.—p. 349.
- 128 Parturient and Practitioner. W. B. Warner, Red Bank.—p. 352.
- 129 St. Michael's Hospital Jubilee. E. J. Ill, Newark.—p. 355.

New York Medical Journal

September 15, CVI, No. 11

- 130 Peroral Endoscopy. H. Arrowsmith, Brooklyn.—p. 485.
- 131 Control of Hemorrhage from Upper Digestive Tract. E. L. Kellogg, New York.—p. 487.
- 132 Conclusions Drawn from Comparative Study of Different Methods of Performing Wassermann Reaction. J. Bronfenbrenner, Boston, and M. J. Schlesinger, Pittsburgh.—p. 489.
- 133 Emotional Influences in Gastro-Intestinal Diseases. M. G. MacNevin, New York.—p. 491.

- 134 Use of Term "Hysteria." M. Solomon, Chicago.—p. 494.
135 Serovaccine Treatment of Pneumonia. J. Broder, New York.—p. 499.
136 Causes of Appendicitis. H. P. De Forest, New York.—p. 501.
137 Hygiene of Rural Schools. J. A. Nydegger, Baltimore.—p. 505.
To be concluded.

Philippine Journal of Science, Manila*January, XII, Sec. B, No. 1*

- 138 Experimental Acclimatization to Tropical Sun. A. O. Shaklee, Manila.—p. 1.
139 Influence of Bile on Distribution of Cholera Vibrios in Digestive System of Experimental Cholera Carriers. O. Schöbl, Manila.—p. 23.
140 Common Intestinal Parasites. F. Garcia, Cebu.—p. 25.
141 Case of Advanced Pregnancy in Broad Ligament. P. Guazon, Manila.—p. 33.

Washington Medical Annals*September, XVI, No. 5*

- 142 Ureter Stricture; Report of One Hundred Cases. G. L. Hunner, Baltimore.—p. 281.

Wisconsin Medical Journal, Milwaukee*September, XVI, No. 4*

- 143 Social Service, an Ally of Preventive Medicine. A. L. Murray, Milwaukee.—p. 115.
144 Tests for Estimating Functional Efficiency of Kidneys. J. F. Schneider, Oshkosh.—p. 119.
145 Outlines for County Medical Meetings. E. Evans, La Crosse.—p. 122.
146 County Society and Laboratory. J. M. Dodd, Ashland.—p. 124.
147 Would Old Age and Disability Pension for Aged and Needy Physicians Be Possible? R. W. Cairns, River Falls.—p. 126.
148 Ways and Means of Increasing Income of State Society and of Establishing Trust Funds. T. J. Redelings, Marinette.—p. 128.
149 Training in Camp Life. M. R. Wilkinson.—p. 130.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London*August, XXII, No. 3*

- 1 Suppression of Inverse Current in Discharges from Secondary Terminals of Induction Coils (Including New Method of Exciting Roentgen Ray Bulb, with Special Reference to Coolidge Tube). J. A. Shorten and T. W. Barnard.—p. 65.
2 Some New Mechanotherapeutic Apparatus. J. Hall-Edwards.—p. 82.
3 Roentgenography of Duodenum, with Special Reference to Lesions Beyond First Portion. J. T. Case.—p. 87.

British Medical Journal, London*August 11, II, No. 2954*

- 4 Institutes of Surgery: Historical Review. B. Moynihan.—p. 171.
5 Reconsideration of Principles and Methods of Hugh Owen Thomas. Some Reflection on Thomas' Splints and Practice. J. L. Thomas.—p. 175.
6 Origin of Orthopedic Surgery. A. R. Jones.—p. 180.
7 Use and Abuse of Bone Grafts. T. P. McMurray.—p. 180.
8 *Possible Electrocardiographic Sign of Myocardial Change. S. R. Wells and J. S. Goodall.—p. 182.

September 1, No. 2957

- 9 *Treatment of Wounded Knee Joint. H. G. Barling.—p. 277.
10 *Early Treatment of Gunshot Wounds of Knee Joint. H. M. W. Gray.—p. 278.
11 Results of Sixty Consecutive Cases of Wounds of Knee Joint. W. H. Ogilvie.—p. 280.
12 *Treatment of Gunshot Wounds of Knee Joint. C. M. Page.—p. 282.
13 Treatment of Certain Selected Cases of Septic Arthritis of Knee. W. Rankin.—p. 287.

8. **Electrocardiographic Sign of Myocardial Change.**—As the result of the examination of several thousand cardiac cases Wells and Goodall have become increasingly convinced that the height of the second ventricular or T wave affords some indication of the efficiency with which the ventricles are functioning. They report two illustrative cases with a syphilitic history. One patient complained of pain in the left side, only being able to sleep when lying on the right side, pain over the sternum, slight dyspnea, and a sensation of sickness over his heart on exertion, which was increased by exercise and after meals; there was no cough or edema. The area of cardiac dulness was slightly enlarged, the apex beat being in the fifth space near the nipple line; the first sounds were weak but no murmur was audible; the pulse rate 100, blood pressure 140; he did 10,107 foot pounds of

work in two minutes, there was a poor reaction to work and he showed signs of collapse. The electrocardiogram showed an absence of second ventricular or T waves in Leads 1 and 2 with inversion in Lead 3. He was treated with mercurial inunctions and steadily improved. When examined again in 1916 his pains had disappeared, the cardiac dulness was still slightly increased, but the apex beat was well within the nipple line, the first sound at the apex was flapping and short, the second reduplicated, the aortic and pulmonary second sounds were audible, the blood pressure was 118; the electrocardiogram showed well marked second ventricular waves in Leads 1 and 2 with inversion in Lead 3.

The second patient complained of dyspnea and palpitation on exertion and a constant feeling of lassitude, and said that he fainted on excitement or any overexertion. He was markedly anemic, the pulse rate was 60, volume very small; the apex beat was diffuse and almost impalpable; the area of cardiac dulness was greatly enlarged, extending from 2 inches to the right of the midsternal line to over 5 inches to the left; Roentgen-ray examination revealed a very large heart, the shadow agreeing with the limit as defined by percussion; it was obviously soft and atonic, as it was horizontally placed and seemed to be lying on the diaphragm. The first sound at the apex was very faint and flapping in character, the second sounds were audible at base and apex, no murmurs could be heard; he was not exercised, nor was his blood pressure taken, as he fainted twice during examination. His electrocardiogram showed very poorly marked second ventricular waves in Lead 1, almost absent in Lead 2 and completely so in Lead 3. He was treated with mercurial inunctions and improved. The cardiac area was reduced in size. The electrocardiogram showed well marked T waves in Leads 1 and 2, and distinct T waves in Lead 3.

9. **Treatment of Wounded Knee Joint.**—Barling analyzes 845 cases. In a very high proportion of cases excision of the wound, removal of bone when necessary, removal of any retained foreign body, irrigation of the joint and closure by suture has been followed by a perfectly satisfactory healing without further interference. The proportion of these cases requiring further intervention is 25.5 per cent, and Barling believes that free use of the joint is likely to result in a large majority of those in whom the primary operation was successful. In the group in which complete closure was not possible or was deemed inadvisable, and in which the wound was packed, the results are not so good. This group includes the worst cases of injury to the bones entering the knee joint. Here the proportion of cases in which further operative interference was required is 38.4 per cent. Very useful joint function may result in many cases. Excision of the wound, removal of bone when required, removal of foreign body, suture of the wound, if possible, and packing as an alternative in selected cases, is the program Barling recommends. In a considerable number of instances materials such as formaldehyd solution and glycerin or ether have been injected and retained in the joint cavity. A few surgeons pack the joint with urea, and favorable results were obtained. One operator makes a separate incision at some distance from the wound of entry, thus securing that at all events he drives nothing septic into the joint.

Barling questions whether it matters much what fluid is used to wash out the joint, the main advantage is the mechanical cleaning out of septic material, fibrin and blood clot; but this should be done thoroughly through a free opening; the use of cannulas for this purpose is insufficient. Barling deprecates aspiration of the joint and irrigation or injection with an antiseptic fluid and would only resort to it if the fluid showed only a low corpuscular element, a moderate polymorphonuclear count, and a sparsity of infective organisms, conditions which will rarely be found. Mere aspiration is apt to be followed by a breaking of infection through the capsule of the joint and a spread into the surrounding tissues, a grave addition to the patient's troubles most difficult to overcome. Regarding aspiration as rarely a wise measure, Barling mentions three other courses: (1) free opening up of the joint; (2) excision of the joint, and (3) amputation.

10. Treatment of Gunshot Wounds of Knee Joint.—In dealing with operative cases Gray believes that if the injury has implicated the main vessels so that the foot is already cold and dead, amputation should be done just above the knee if the wound is likely to remain fairly clean, and through the knee if sepsis is present and the condyles are undamaged. In the latter class of cases reamputation is frequently necessary, and when the condyles are left it can be done so as to provide the longest possible thigh stump. If, as sometimes happens, one or other popliteal nerve is shot away so extensively that it cannot be sutured later on, and if the bones are much soiled as well as comminuted, the probability is that primary amputation is the best course. If sepsis is well established in presence of much comminution, especially if there be gas gangrene, and the patient in low condition from hemorrhage or toxic absorption, amputation must be done. If, in less severe cases, the opposing ends of the long bones are so comminuted that smooth articular surfaces are not available, it is probably best to do primary resection in the way recommended by Fullerton. If large fragments have resulted from the injury, if the patient has been received early and is in good condition, and if one is fairly sure of getting away infective material, the patient should be given a chance. As a general rule, if the patella alone has been shattered, as happens fairly frequently, the fragments should be removed.

If possible, the synovial cavity should be closed, except for a small drainage opening, by suturing the lateral edges and aponeuroses, possibly after undercutting the synovial membrane on each side, or by loosening the suprapatellar pouch as already described. If this cannot be done, a "salt pack" should be used. The same procedure should be carried out if concomitant injury to other bones is not extensive. In considering the question of amputation, these points are of great importance: the possibility of removing or neutralizing infective material successfully, the amount and kind of comminution, the concomitant injury to vessels or nerves, and the condition of the patient. When conservative measures are decided on, the following are the most important operative details: determination of the track which leads to the depth; thorough disinfection of skin and track; careful and complete excision of external wound and track, including the edges of the wound in the synovial membrane, if possible in one piece. Pockets must not be cut into. The least little bit of infected tissue left behind may prevent success; provision of ample access to foreign bodies or comminuted surfaces in the joint.

Careful removal, under direct vision whenever feasible, of all foreign material, whether free in the joint or embedded in the articular surfaces. Closure of the wound in layers, using fine catgut for the synovial membrane. Drainage tubing should not project into the joint. If the wound in the synovial membrane cannot be closed, a small "salt pack," separate from any other which may be required for the rest of the wound, should be inserted firmly "down to but not into" the joint, and should be left until it is absolutely loose. Tendinous or ligamentous structures exposed during operation should be covered by skin and subcutaneous tissue; otherwise they are very apt to slough, and this postpones closure of the wound, and therefore prolongs convalescence. If there is much effusion into or from the joint, of whatever nature, or if raw surfaces, whether of bone or soft tissue, are left in the joint, at the end of operation, a tube should always be inserted "down to but not into" the synovial cavity. The injection of ether, formaldehyd solution, glycerin, or hypertonic (5 per cent.) saline solution into closed joints, is of doubtful value. They are all irritants.

12. Id.—In dealing with wounds of the knee joint Page urges that the natural defensive powers of the part against infection should be borne in mind. Primary prophylactic (that is, within twenty-four hours of injury) operations should be radical, and secondary operations undertaken on account of progressing infection, should, short of amputation, be planned on conservative lines. The expectant treatment of wounds of the knee joint is only justifiable in the case of typical perforating injuries due to a rifle bullet. All wounds

of the joint caused by shell fragments or distorted bullets should be considered as primarily infected. The primary prophylactic treatment should consist in the removal of any foreign bodies present and in the excision of the whole wound track at the earliest possible time after injury. The results at present are particularly bad in cases in which gross comminution of the diaphyses is present. A primary excision or erosion of the joint (within twenty-four hours) would probably improve the results in such instances by preventing the development of entomyelitis. Repeated aspiration of the joint and the intra-articular injection of any of the antiseptics in common use are calculated to prejudice the natural defense. It is safest to leave for a few days some drainage along the wound track after operation, certainly when bone injury is present. Any infection then left may become localized in the same way as occurs in the case of the peritoneum. A gauze wick makes a satisfactory form of drain. Immobilization of the joint during all critical periods is essential. An interrupted plaster-of-Paris splint affords the best means of effecting this. When general infection of the joint has taken place treatment by fixation, lateral arthrotomy and immunization gives the best chance of saving the limb. Secondary abscesses are to be expected, and should be evacuated after their complete development. Neither cross section and flexion of the joint or secondary excision of the knee are sound procedures.

Lancet, London

September 1, II, No. 4905

- 14 Meat Inspection, with Special Reference to Developments of Recent Years. W. J. Howarth.—p. 335.
- 15 *Physiologic and Antiseptic Action of Flavine. A. Fleming.—p. 341.
- 16 Nervous Unrest in Infant as Cause of Failure of Breast Nursing. H. C. Cameron.—p. 345.
- 17 Some Principles of Plastic Surgery: Incisions, Contour and Suture.—J. L. Aymard.—p. 347.
- 18 *Method of Applying Antiseptics to Deeper Parts of Wounds. T. H. Kellock.—p. 348.
- 19 Membranous Conjunctivitis Following Squint Operation. S. J. Taylor.—p. 348.
- 20 Clinical Manifestations of Doubtful Case. M. J. Petty.—p. 348.
- 21 Petroleum in Treatment of Pyorrhea Alveolaris. H. J. Corin.—p. 349.

15. Physiologic and Antiseptic Action of Flavine.—Fleming found that flavine has a very destructive action on leukocytes, and if the action on leukocytes and bacteria be each tested for twenty-four hours its leukocidal action is far in excess of its bactericidal action. In serum under certain conditions staphylococci will grow in 1 in 32,000 flavine, *B. coli* in 1 in 1,000, and *B. proteus* in 1 in 2,000. Flavine 1 in 8,000 appears to aid the growth of *B. proteus*. Flavine 1 in 500 is usually unable to sterilize in twenty-four hours an equal volume of pus from a wound. Flavine injected intravenously in large doses immediately disappears from the blood (which acquires no bactericidal power), and is taken up by the tissues, which become yellow but acquire no inhibitory power on the growth of bacteria. Flavine 1 in 100 injected into the pleural or peritoneal cavities loses its antiseptic power within twenty-four hours. If the antiseptic is allowed to act on staphylococci and leukocytes alike for twenty-four hours and the ratio is taken of its toxicity to both of these, phenol has a coefficient ten times better than flavine when the antiseptic acts on the microbes in serum and 250 times better when the bactericidal action is estimated in pus.

18. Method of Applying Antiseptics to Wounds.—The Carrel method, Kellock says, has certain disadvantages. The tubes generally used are perforated with round holes for some distance from the closed end, and if there be much resistance to the exit of fluid at the deepest part the solution finds its way through the openings nearer the surface of the wound and so the deeper parts are not reached. These tubes, too, act to a certain extent as drains. Pus finds its way into them through the openings and is washed back into the wound again when fluid is allowed to flow. Another disadvantage of the method is the necessity of keeping the patient still. Movement on his part is apt to cause the tubes to be drawn out of the wounds, and it is not at all an uncommon experience to find tubes that were originally inserted deeply into a wound lying only just under, or even on, the surface. Attempting to improve on this, Kellock has found the following method

of much service. Taking a piece of drainage tube about 8 or 10 inches in length and of caliber about equal to that of a No. 8 catheter, the end is securely closed by a ligature and a small oblique incision made with sharp scissors as near as possible to the closed end. The incision should cut a small valve with apex directed toward the closed end—the more oblique it is the better—and should at its base divide one third of the circumference of the tube. This incision will be found to act as a most efficient valve, opening under very slight pressure from within and preventing any regurgitation of pus or of the irrigated fluid. The tied end should be inserted to the very depth of the wound and the free end of the tube left projecting through the dressings; the number of tubes used must depend on the size and character of the wound, but it will generally be found that one, or at the most two, will suffice. In cases of a perforating wound of a limb or of a wound with two openings widely separated a very useful modification is to ligature the tube at its center and cut a valve on each side of the ligature and pointing toward it. This is passed through the wound and the irrigation done from both ends. In this way any fluid that is irrigated into the free ends of the tube must certainly find its way to the very bottom of the wound and from there toward the surface.

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- 22 Desert Hospital at Work. R. Macdonald.—p. 135.
23 Impressions of Country Practice. J. G. W. Hill.—p. 136.
24 Prognosis of Pulmonary Tuberculosis. A. Lewers.—p. 139.

Sei-I-Kwai Medical Journal, Tokyo

May, XXXVI, No. 5

- 25 Neutralizing Action of Urea on Tetanus Toxin. H. Sewaki and Y. Tagami.—p. 27.

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- 26 Id. H. Sewaki and Y. Tagami.—p. 71.
27 Accelerating and Inhibitory Actions of Various Micro-Organisms on Tubercle Bacillus. H. Sewaki and Y. Tagami.—p. 86.

Archives Médicales Belges, Paris

July, LXX, No. 7, pp. 577-672

- 28 *Poisoning from Asphyxiating Gases and Its Treatment. A. Colard and P. Spehl.—p. 577.
29 *Repeated Autovaccination in Treatment of Convalescent Typhoid and Paratyphoid Carriers. F. Goubau.—p. 590.
30 Total Laryngectomy for Cancer in Soldier of Twenty-Eight; Recovery. C. Sterckmans.—p. 605.
31 Present Status of the Vitamins. P. van Reeth.—p. 615.

28. **Treatment of Poisoning from Asphyxiating Gases.**—Colard and Spehl combine venesection and oxygen in treatment of the effects of poisonous drift and similar gases. The intoxication is of three types: (1) a brutal and subacute asphyxiated condition from massive intoxication, with intense cyanosis, froth on the lips and vomiting of blood, with rapidly fatal outcome; (2) an acute state of asphyxia developing in those who at first did not seem to be severely intoxicated. The generalization of the bronchitic and fine râles indicates the extent of the pulmonary lesions and explains the asphyxia. The intense cyanosis and changes in the pulse and respiration are characteristic; (3) the third type presents the clinical picture of tracheobronchitis from caustic action, characterized by inflammation of the large and small bronchi and of portions of the lungs, but with enough sound tissue left to maintain the aeration of the blood and ward off asphyxia. Men who have been gassed must be kept under close surveillance, especially during the second week on account of these pathologic changes in the mucosa. Bilancioni produced ulceration in the lungs of gassed animals, and several of the clinical cases here described in detail had a febrile period between the eighth and twelfth days. The clinical picture of the second and third types is much the same at first; then the men in the first group develop asphyxia while those of the second group continue merely their tracheobronchitis. When those of the first group get over their asphyxia, then the clinical picture of the two groups becomes similar once more. In both groups, there is liable to be a febrile period in the second week. The effectual treatment was with venesection and prolonged inhalation of oxygen. Venesection was done at once on every asphyxiated man,

fully 300 c.c. of blood being drawn at the bend of the elbow, repeated the next day in the severer cases. The oscillogram shows high blood pressure, but still the blackish blood flows slowly, evidently owing to its exaggerated viscosity. A weak pulse, therefore, in serious intoxication does not contraindicate venesection. It should be done promptly and a large amount of blood withdrawn, from 300 to 500 c.c. according to the condition. The beneficial action from inhalation of oxygen was even more pronounced. The effect depends greatly on the method of administration. The lack of benefit, of which some physicians have complained, is probably due to incorrect technic. Some wait too late and give it to the moribund patient; others give the oxygen too fast, emptying the tank too soon. The proper way is to administer it continuously under a moderate pressure, keeping it up for hours or even days, the patient thus breathing constantly an oxygen atmosphere until the alarming symptoms are past. With this technic, this soon occurs. They give an illustrated description of the arrangement with which they realize these desiderata. The oxygen from the tank passes through tubing into a Wulff jar with three necks, and then through a jar with two necks, a Carrel comb tube and stopcock interposed between the jars. The middle neck of the Wulff jar is connected with a rubber bag to equalize the pressure. The oxygen is introduced through a catheter pushed through the nostril into the rhinopharynx. It is held in place with a string fastened to the brow with a strip of adhesive plaster. As the oxygen is turned on, the bubbling in the two-necked jar shows the rapidity of the flow. It may become stopped by mucus obstructing the catheter in the nose. By this arrangement, oxygen can be administered to more than one patient at a time from the same tank. The passage through the water in the two-necked jar cleans the gas, and moistens it, while the dosage can be regulated for each of the patients separately. The amount found most effectual was from 100 to 150 liters of oxygen for the first hour per individual. When the distress was relieved and the cough and respiratory spasms less violent, the inflow was reduced to about 50 liters an hour. This catheter arrangement does not annoy or incommode the patient like masks and mouthpieces, and he gets the peace and quiet he needs. In a few particularly grave cases they supplemented these measures by giving a little digitalis and strychnin. To ward off secondary infection, especially for those with pulmonary complications, they placed the men in special, well ventilated rooms in which the air was kept constantly humidified with eucalyptol spray. All the other gassed men were in vast barracks with movable sides, kept open night and day. The beds were at least 6 feet apart, and the men were kept in bed for a week at least, even in the apparently mildest cases. Instillation in the nostrils of medicated oil, and inhalation of tincture of benzoin and eucalyptus completed the array of measures to ward off further pulmonary complications, but these are all subsidiary to the main thing, the venesection and oxygen. The value of the treatment is shown in the fact that all the men recovered. The rapidly fatal cases did not live to reach this hospital, Cabour. The Carrel comb-tube referred to has four prongs, and a rubber tube can be fitted to each and thus supply four men with the oxygen at once from the one tank.

29. **Repeated Autovaccination in Treatment of Typhoid and Paratyphoid Carriers.**—Goubau tabulates the findings as to persistence of the bacilli in 431 persons of all ages and both sexes who had been vaccinated once against typhoid and 246 unvaccinated. Of this total 677, 14.33 per cent. still harbored the bacilli after apparent recovery from the typhoid or paratyphoid, but the vaccinated got rid of them sooner than the nonvaccinated, although the difference is not very striking in the table giving the details in sixty-seven cases. None of the vaccinated were carriers of typhoid bacilli beyond the seventh month, while they were found up to the sixteenth month in 0.43 per cent. of the unvaccinated. No carriers of paratyphoid A were found after the fifth month or of B after the seventh. Another group of thirty convalescent carriers were treated with autovaccine or a Wright monovalent vaccine, in weekly injections, and the bacilli disappeared completely in two months in all of the twenty-three thus treated during the first

five months after the disease. The details are tabulated in full of each of the thirty cases, and Goubau remarks that they apparently establish the efficacy of this autovaccine method of curing carriers. The bacilli disappeared from the convalescents given the vaccine treatment much earlier than in those not thus treated. The effect was prompter the shorter the period after defervescence when the autovaccine was commenced. After an interval of five months no appreciable effect was apparent in 43 per cent. of the cases. When the interval had been only two months, six carriers were cured with three injections; three with four and two others with five and six. The precautions are those for vaccine therapy in general. One case warns to be on the alert for latent tuberculosis as there is a possibility that the repeated vaccine injections may have contributed to the development of frank tuberculosis soon after.

Archives de Médecine des Enfants, Paris

August, XX, No. 8, pp. 393-448

- 32 *Appendectomy on Twelve-Hours Old Infant. M. Vargas (Barcelona).—p. 393.
- 33 *Acute Meningitis in the Newborn. Condat.—p. 404.
- 34 *Meningo-Encephalitis in the Occipital Region. (Ectopie du cer-
velet.) E. Kirmisson and Tretiakoff.—p. 412.
- 35 Obliteration of Inferior Vena Cava in Boy of Twelve. J. Comby.
—p. 418.
- 36 *Hemorrhagic Pleurisy and Sarcoma of the Mediastinum. J. Comby.
—p. 423.

32. **Appendectomy on the New-Born.**—Vargas gives an illustrated description of an infant with a gap in the abdominal wall so that some of the viscera escaped. He was able to reduce the extensive hernia and suture the wall. As the appendix presented under his hand, he resected it as is his practice in such circumstances, and clinically normal conditions were promptly restored. The malformation was of the type of periumbilical cutaneous aplasia. This is the fifth case of the kind he has encountered. The first description of it dates from 1557.

33. **Acute Meningitis in the New-Born.**—Condat relates that three cases of this kind were in the hospital in a recent month. It seems that meningitis is not so rare in the newborn as generally assumed, but it escapes recognition as a rule. Even lumbar puncture may fail to clear up the diagnosis. The symptoms are masked by the general infection of which it is a complication. The streptococcus was found in one case, the pneumococcus in the others.

34. **Meningocele in Young Infant.**—The hernia contained part of the cerebellum in the case described, but this was not suspected before the operation. The base of the tumor was cut away and the pedicle ligated. There were no convulsions or twitchings, and the child seemed to be doing well when it succumbed to an intercurrent violent gastro-enteritis the nineteenth day. The ectopic nervous tissue was evidently a kind of neoplasm, an encephaloma. It included the left lobe of the cerebellum. The right lobe was inside the skull, the cerebellum having evidently twisted sideways.

36. **Hemorrhagic Pleurisy.**—Comby reports two cases of hemorrhagic pleurisy in a girl of 16 and child nearly 3. The particulars of the cases closely resemble two recently published by G. Guidi. They teach that when a pleural effusion is found hemorrhagic, the chances are that malignant disease is already installed in the mediastinum, either in the pleura, lung or anterior mediastinum. In one of Comby's cases the sarcoma had started in the thymus. In all the four cases the onset was similar to that of serofibrinous pleurisy. But soon that half of the chest began to bulge, with exaggerated collateral circulation. Tapping gives only brief relief when the general and local symptoms become aggravated, but the hemorrhagic tint warns of sarcoma.

Paris Médical

August 25, VII, No. 34, pp. 161-176

- 37 *Anaphylaxis to Quinin. J. Hérán and F. Saint-Girons.—p. 161.
- 38 *Hypnotic Suggestion for the Wounded. P. P. Podiapsky.—
p. 165.
- 39 Wounds of the Spleen. J. Fiolle.—p. 170.
- 40 Modification of Haret-Keating-Hart Method for Localization of
Projectiles. A. Badolle.—p. 173.

37. **Case of Anaphylaxis to Quinin and its Cure.**—The young soldier had contracted malaria at Saloniki but was unable to take quinin as it induced vomiting, pruritus, urticaria, colic, dyspnea, distress and lower blood pressure. This tendency to anaphylaxis was overcome by giving him an hour or an hour and a half before the dose an anti-anaphylactic dose of 0.005 gm. quinin sulphate and 0.5 gm. sodium bicarbonate. After this he could take rapidly increasing doses of quinin without any manifestations of anaphylaxis. The case recalls Pagniez' patient whose intolerance for albumin in his food was overcome by his taking a dose of 0.5 gm. peptone one hour before each meal. Quinin, therefore, must now be added to the list of substances which induce anaphylaxis under certain conditions. The case teaches further that in case of drug eruptions and similar disturbances, before renouncing the use of the drug in question it might be well to try this anti-anaphylactic method of a preliminary small amount—the phylactic dose—before the real dose.

38. **Hypnosis in the Field Hospital.**—Podiapsky writes from Saratov in Russia to call attention to the way in which he has sometimes been able to free the wounded from suffering by hypnotic suggestion that there was no pain or by throwing them into a hypnotic sleep. He describes in detail a number of peculiarly distressing cases in which the immediate relief was most welcome. In war conditions he has found that the men responded with exceptional facility to hypnosis; he found only about 2 per cent. quite refractory. In conclusion he exclaims, "Why give chloroform to subjects who at a word drop off into an artificial deep slumber, which can be counted on in about 17 per cent. of the cases." Even the first degrees of hypnosis permit operations with much less of the general anesthetic than would otherwise be necessary. He has found it useful for the wounded of all the nationalities that he has encountered, Slavs, Teutons and Italians. He does not advise the hypnosis for major operations but mainly for the sensory crises of psychic origin, such as the pain felt apparently in a limb after it has been amputated. A single hypnotic sitting may cure completely distressing pains of this nature. Podiapsky's polyglot environment caused trouble sometimes, as he did not always know the word for "wake up" in the patient's own tongue. Now he makes sure of this before attempting the hypnosis.

Presse Médicale, Paris

August 2, XXV, No. 43, pp. 441-448

- 41 *Elimination of Quinin by the Urine. E. Jeanselme and Dalimier.
—p. 441.
 - 42 *Pathogenesis and Evolution of Diphtheria. J. Danysz.—p. 442.
 - 43 *The Oculocardiac Reflex in the Wounded. J. Gautrelet.—p. 443.
 - 44 Arthrodesis of the Foot. A. Broca.—p. 444.
- August 6, No. 44, pp. 449-464
- 45 *Contracture of the Fingers with Traumatic Injury of the Nerves
of the Arm. (Les griffes.) H. Claude and R. Dumas.—p. 449.
 - 46 *Soldiers with Heart Disease. (Les cardiaques du front en 1917.)
C. Aubertin.—p. 451.
 - 47 *What Can be Expected from Radiotherapy for War Wounds
Involving Nerves. H. Bordier and M. Gérard.—p. 453.
 - 48 Small Epidemic of Amebiasis. A. Fuchs and H. Bouchet.—p. 455.
 - 49 Danger of Incomplete Emergency Operations. M. Lagoutte and J.
Le Grand.—p. 455.
 - 50 Technic for Vaccine Therapy of Certain Forms of Chronic Intes-
tinal Disease. A. Berthelot.—p. 458.

41. **Elimination of Quinin by the Urine.**—The tabulated findings show that quinin has to be administered daily to keep the patient under its continuous influence, by whatever route it is given with the exception of the intramuscular. With this route, administration every second day suffices.

42. **Diphtheria.**—Danysz presents theoretical data testifying to the fundamental difference between the evolution of diphtheria and of the majority of other infectious diseases. It seems to be a local infectious disease caused by a colloidal, soluble, directly toxic antigen with a special affinity for tissues of ectodermic origin. There is no incubation. The normal intracellular antibody can fasten the antigen and form compounds with it. The resulting intracellular reactions are immunizing if the quantities of antigen and of antibodies balance each other. They become pathogenic when the antigen is in excess. The intravascular reactions consist in neutral compounds soluble and able to be directly assimilated or eliminated if the antigen and antibodies (antitoxin)

balance each other, or if the latter are in excess. Diptheria never induces anaphylactic hypersusceptibility.

43. **The Oculocardiac Reflex in the Wounded.**—Gautrelet emphasizes the peculiar intensity and constancy of the oculocardiac reflex in most of the wounded when the test is applied several months later. It is exceptionally intense in the men with reflex contracture. The only exceptions are the cases of exclusively bone injuries. These findings suggest that the nervous system is unbalanced, the autonomic nervous system gaining in influence.

45. **Contracture of the Fingers.**—Claude and Dumas give an illustrated description of the various types of claw-fingers that develop after the different types of injury of the nerves in the arm. They must not be regarded as inevitable or necessarily permanent, but should be warded off or overcome by massage of the muscular masses of the forearm, especially of the flexor group, the massage repeated twice a day, at least, under the directions of the neurologist and surgeon. Each finger should be mobilized separately, to the extreme extension possible, repeating this several times a day. In addition to these passive exercises, which will aid in overcoming a tendency to stiff joints, these measures are supplemented by regular immobilization of the fingers in hyperextension on a board, at night only, unless retraction is menacing, in which case the hyperextension immobilization should be kept up the greater part of the day as well as at night. When these measures are applied systematically and efficiently from the first, he says, that day will witness the disappearance of claw-fingers in all cases except with absolutely irreparable section of the nerve.

46. **Heart Disease on the Firing Line.**—Aubertin states that during the three years of the war the men with heart disease have been gradually sifted out and sent back to him as chief of a service for heart disease. Many with mild functional disturbances promptly recuperated and returned to their post at the front. Those with organic trouble have been apportioned to light duty or dismissed from the ranks altogether. In a recent series of "cardiacs" thus received at his service, 9 per cent. were sound and had merely managed to convince the army doctor that something was wrong with their heart. In 12 per cent. the heart symptoms were traceable to incipient tuberculosis, alcoholism, anemia in the young and fatigue in the older men, without actual heart disease. With actual organic trouble he found only two cases of thyroid origin among the thirty-two men with tachycardia and one case of paroxysmal tachycardia. Extrasystolic arrhythmia is generally labeled myocarditis, although his examination always failed to disclose anything abnormal in the functioning of the heart. This type of arrhythmia, he remarks, frightens the unwarned physician more than it frightens the patient. In short, he declares in conclusion, there still are some men at the front with organic heart disease, but nearly all have some slight aortic systolic murmur which escapes detection except at times of unusual physical stress, at which time attacks of tachycardia develop. The soldiers with valvular disease have nearly all been sifted out by this time.

47. **Radiotherapy for Wounds of Nerves.**—Bordier and Gérard report twenty-five cases to confirm the great benefit liable to follow exposures to the Roentgen rays after war injury of nerves. The response to electric stimulation returns to normal when the exposures are given early. They advise surgical intervention when the reaction of degeneration is complete. Then radiotherapy applied at once may promptly restore normal conditions. They are hopeful that it may be possible by this means to ward off paralysis and other infirmities consecutive to severe injury of nerves. But to accomplish this, the men with one or more nerves which fail to respond to electric stimulation must be kept in the hospital long enough for the different measures applied to realize their full and complete therapeutic effect.

Progrès Médical, Paris

August 11, XXXII, No. 32, pp. 265-272

- 51 *Reaction to Pinching of Muscle over Pleuropulmonary Tuberculous Lesion. (La réaction myotonique du trapèze dans la tuberculose pleuropulmonaire.) M. Loeper and H. Codet.—p. 265.
52 *Simple Contusion of the Knee. A. Chalié.—p. 266.

53 Symptoms with Lesions of the Cauda Equina. J. Lhermitte.—p. 267.

54 *Occupational Training of War Cripples. A. Marie and A. Rodiet.—p. 269.

51. **Reaction to Pinching of Muscle Over Tuberculous Pleuropulmonary Lesion.**—Loeper prefers to call this the myotonic reaction, as elicited by pinching the trapezius. Whatever the response, it is normally alike on both sides, and when it is exaggerated on one side only it points to irritation of the muscle fibers from some cause. In his experience with 300 tuberculous patients examined, the myotonic reaction was more accentuated on the side of the active pleuropulmonary lesion. Congestion of the apex was always accompanied by exaggeration of the reflex, while it was always reduced with pleurisy without effusion. Of course sclerous lesions and other torpid trouble are not accompanied by the myotonic reaction, but it may be found an aid in locating a pulmonary lesion, in estimating its depth beneath the surface, and whether it is active or not.

52. **Contusion of the Knee.**—Chalié calls attention to two mistakes constantly made by army surgeons, the undue clinical importance attributed to simple slight hydrarthrosis, and the inadequate treatment given sprain and hemarthrosis. The latter requires immediate and absolute immobilization in bed for several days, with a cotton compressing dressing. If the effusion persists or increases, by the fourth or fifth day it should be evacuated by puncture and the knee should be immobilized in plaster. One puncture is generally enough, and massage should be applied, still keeping the man in bed, with automassage, active contraction of the quadriceps, raising and lowering the leg. By the eighth or tenth day the man can be allowed to walk a little, the knee still in the plaster ring until the fifteenth day. After this the knee can be gradually used, and the man is ready to resume his active service in about six weeks from his trauma.

54. **Occupational Training of War Cripples.**—Marie and Rodiet discuss a bill that has passed the lower house and is now before the French senate. It is based on the two principles of the obligation to ensure professional reeducation of the wounded and mutilated soldiers, and that this should not encroach on their pension. By ensuring assistance to all disabled soldiers who are yet capable of steady occupation, the law thus provides for the most numerous category of the mutilated. It does not apply, however, to the severely crippled or to those incapable of sustained wage-earning occupation who will find their place in the soldiers' homes, and those unable to benefit sufficiently by training after it has been given a thorough trial. Marie and Rodiet urge that the present bill should be amplified to include special provision for the "mentally disabled," the neurasthenic, the depressed, the confused, and those disabled by derangement of the nerve centers. Most of them have a home and a family to return to. But those who have no home, what is to become of them? Some provision should be made for them instead of keeping them on indefinitely in the hospitals. Their suggestion is that the nervously and mentally disabled of this type should be boarded out in families in country districts. This method of assistance offers a more cheerful and a saner life than hospital existence in towns. It conforms better to the aspirations of the individual and to mental and physical hygiene. It also spares the public funds the enormous expense of hospital care for so many with grave chronic affections and those disabled beyond steady wage-earning capacity. This plan of boarding out in the country the chronic invalids was proposed before the war by P. Fleuret to relieve the overcrowded Paris hospitals.

This method of boarding invalids out in country families has long proved its usefulness in the other countries of Europe, and in France it has been successfully applied since 1892 for a large number of the chronic insane who are not getting any further benefit from hospital treatment. The board in charge of the war cripples, provided for in the bill, could assemble these mentally disabled in certain villages or small towns, letting them choose the family with which they wish to make their home. The board paid must not encroach on the man's pension. These disabled might be capable of

some light work, possibly home work. Bergonié has recently reported astonishingly fine results obtained in the correction of motor sequels of war wounds by graduated farm labor. The authorities in consequence are already organizing small agricultural sanatoriums in connection with the institutes for physiotherapy. By extending this system, the mentally and nervously disabled would find homes and excellent conditions for restoration to normal.

Revue Médicale de la Suisse Romande, Geneva

April, XXXVII, No. 4, pp. 173-252

- 55 Mycelic Concretions in Lacrymal Canals. L. G. Welt.—p. 173.
- 56 Benefit from Arsenobenzol in Case of Echinococcus Disease of Peritoneum and Liver. H. Curchod.—p. 186.
- 57 Surgery at Swiss Base Hospital. H. Vulliet.—p. 195.
- 58 Management of Calculus in Child's Ureter. C. G. Cumiston.—p. 212.
- 59 *The Iodin Urine Reaction. A. Thury.—p. 215.
- 60 Large Tuberculoma of the Mesentery in Child of Eight. C. M. Du Pan.—p. 222.
- 61 Multiple Paralysis of Cranial Nerves from "Shell Wind." D. Pachantoni.—p. 226.

August, No. 8, pp. 473-524

- 62 *Operations for Hernia in Children and the Remote Results. J. Brossy.—p. 473. To be continued.
- 63 *Indicanemia as Symptom of Insufficiency of the Kidneys. J. Tchertkoff.—p. 487.
- 64 *Phosphaturia as Cause of Hematuria. C. Perrier.—p. 496.
- 65 Favus from Spontaneous Inoculation with Achroion Quinckeanum; Two Cases. C. Du Bois.—p. 506.

59. **Iodin Urine Reaction.**—Thury reports that the findings with Petzetakis' urine iodine reaction were so contradictory in her experience that it does not seem to have any value for either diagnosis or prognosis.

62. **Operations for Hernia in Children.**—Brossy here presents the findings nine years or more after an operation for hernia on 287 children. He states that nine died soon after the operation among the 642 children treated for hernia since 1888, but death in one instance was of the thymus-death variety and in another was the result of iodoform intoxication. Children liable to thymus death should not have any operation done that can possibly be deferred. In four other cases the children succumbed to infection probably acquired in the hospital. These cases show that the sojourn in the hospital is liable to entail grave consequences, and hence an operation should not be advised lightly for children; not without absolute necessity or special quarters, with one or at most two beds in the room, and no visitors allowed. The other three deaths had probably no connection with the operation. Among the 287 with an interval of at least nine years since the operation, seventeen have died during this period, including nine that were under 2 years old at the time. Two years seems to be the lowest safe limit for these operations. The article is to be continued.

63. **Indicanemia as Symptom of Renal Insufficiency.**—Tchertkoff expatiates on the importance of indican in the blood as a sign of grave incompetency on the part of the kidneys. The technic he describes for estimation of the indicanemia reveals it only when it is within a pathologic range: to 8 or 10 c.c. of serum (obtained fasting by wet cupping or puncture of a vein), he adds an equal quantity of 20 per cent. trichloroacetic acid, and filters. Then, to 10 c.c. of the filtrate he adds an equal quantity of concentrated hydrochloric acid containing 5 gm. of ferric chlorid to the liter. The whole is agitated, and then 3 c.c. of chloroform is added. After having agitated it several times in the course of fifteen minutes, he examines for the color reaction. The chloroform changes to a light or dark blue according to the proportion of indican in the serum. If there is no indican, the chloroform has no color. If there is iodine in the serum, the chloroform turns pink or a pinkish violet. This technic is reliable also for detection of iodine in the serum, but as this may interfere with the indican reaction, no iodine should be given the patient before the test. In his examination of 300 serums, indicanemia was invariably found when the azotemia reached nearly 1.5 gm. to the liter, but it sometimes disappeared before the latter—a favorable sign. It persists to the end in the fatal cases. Experimental research con-

firmed these clinical findings. There may be indicanemia with slight uremia, but the prognosis should be based on the persistence of the former. He thinks there is no need for quantitative estimation of the indican; the fact that it is within pathologic range is enough. The range shown by the technic described is about 2.5 mg. Any amounts above this show merely that the production of indican is large; they reveal nothing beyond the fact of renal incompetency already shown by the 2.5 mg. As the kidneys fail to allow the passage of any of the substances produced in or introduced into the organism, he remarks that "uremia" or even "urinemia" is a better term than "azotemia." Whatever we term it, the condition calls for a diet which can be oxidized without waste, little albuminoids and little salts, while the caloric demands should be reduced to the minimum. Indicanemia with chronic nephritis indicates a fatal outcome in a few months or weeks.

64. **Hematuria with Phosphaturia.**—In the four cases reported by Perrier there was slight but frequent hematuria, sometimes almost continuous, with periods of exacerbation, either spontaneous or following pain in the kidney or fatigue. The general health was not impaired and micturition was normal. The urine, however, constantly contained a mineral sediment, phosphates alone or associated with urates and uric acid. There was no tendency to hemophilia, tuberculosis, lithiasis or tumors. The patients were two young men, a woman of 26 and a man of 38. He prescribed hydrochloric acid and in the one case in which his directions were followed, the urine became limpid and there have been no further disturbances. The phosphaturia is unmistakably a factor, but probably the kidneys are exceptionally sensitive.

Correspondenz-Blatt für Schweizer Aerzte, Basel

August 18, XLVII, No. 33, pp. 1057-1088

- 66 *Clinical Study of Cerebellar Cysts. M. Düring.—p. 1057.
- 67 Experiences with Vaccination against Typhoid. F. Oeri.—p. 1067.
- 68 Medical Certificates and the Honorarium. (Zum Krankenschein-Wesen.) C. Bühner.—p. 1072.

66. **Cyst in the Cerebellum.**—Düring's patient was a woman of 32, with three healthy children. She had been healthy except complaining of pains in the back of the neck since childhood. During the last four or five months there had been much headache, dizziness and vomiting and a brain tumor was suspected in the left cerebellum. The woman succumbed to respiratory paralysis while being prepared for the operation at the fifth month. A cyst as large as an egg was found in the left cerebellum, with a small glioma projecting into it, relics of a larger tumor, possibly. He discusses the symptoms in this case, particularly those for which the disturbance in the adjoining pons and oblongata were responsible. These remote deficit symptoms are particularly important for differentiation of intracranial tumors. The total paralysis of the left vestibular nerve was accompanied by total left facial paralysis, but the fact that the hypoglossal escaped excluded hemiplegia from a focus in the frontal lobe or anterior segment of the internal capsule. The data of this case sustain the assumption that paresis of the extremities has a cerebellar basis. Sensory disturbances are rare with tumors in the posterior cranial fossa. Puncture of the brain seems to be the only safe means to differentiate between cysts and tumors. It has given good therapeutic results, also, in the hands of some. Palliative puncture of the ventricle may be indicated in certain cases, Düring adds, puncturing at the point where pressure is highest. He calls attention further to the very high pressure noted in the ventricle on the opposite side in his case. Internal hydrocephalus is largely occipital as there is less white substance here to interfere. The occipital lobe stands puncture well.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 22, XXXVIII, No. 58, pp. 809-823

- 69 Multiple Factors in Trench Foot. U. Tassone.—p. 811.
- July 26, No. 59, pp. 825-832
- 70 Splint with Elastic Traction. (Ferula a trazione elastica.) M. Zanini.—p. 825.
- July 29, No. 60, pp. 833-848
- 71 *Induced Linear Goose Flesh as Sign of Hyperexcitability of Sympathetic System. N. Pendc.—p. 834.

71. **Circumscribed Goose-Flesh or Trichographism.**—Pende calls attention to a form of dermatographism which indicates hyperexcitability on the part of the sympathetic nervous system. Like the white or red line of ordinary dermatographism it is induced by marking on the skin with a blunt point, a line of goose-flesh minute papules following the mark. He has coined the terms trichotony and trichographism to express this induced localized contraction of the arrectores pilorum, a circumscribed localized cutis anserina or goose-flesh.

Policlinico, Rome

August 26, XXIV, No. 35, pp. 1061-1088

- 72 Unusual Cases and Experiences with Syphilis. C. Verdozzi.—p. 1061. To be continued.
- 73 Gunshot Wounds of the Limbs. V. Calo.—p. 1067.
- 74 Increased Infant Mortality during the War and Means to Combat it, especially in Foundling Asylums. (Riforma dei brefotrofii.) M. Flamini.—p. 1075.

Riforma Medica, Naples

August 18, XXXIII, No. 33, pp. 809-828

- 75 Treatment of Complications outside the Joint with War Wounds of the Knee. G. Razzaboni.—p. 810.
- 76 The Declining Birth Rate. A. Botti.—p. 824.

Rivista Critica di Clinica Medica, Florence

August 18, XVIII, No. 33, pp. 325-332

- 77 *Residual Chronic Suprarenal Insufficiency Left After Epidemic Jaundice. G. A. Notari. Commenced in No. 31, p. 309.

77. **Chronic Suprarenal Insufficiency after Epidemic Jaundice.**—Notari describes six new cases of this type, giving the findings in detail from day to day. The pigmentation resembled that of Addison's disease and the weakness was extreme; in one case there were two periods of acute suprarenal insufficiency. The exaggerated oculocardiac reflex and the organic reactions to atropin and pilocarpin show that in these cases the sympathetic hypotony seems to be compensated for by the hypertony of the autonomic system. It seems to be evident that next to the liver and kidneys the suprarenals suffer most from the spirochete infection. The spirochetes accumulate in them in enormous numbers. In the cases described the blood pressure was not abnormally low or but very little below normal and epinephrin depressed instead of raising it or did not modify it at all, or only slightly. There was no epinephrin glycosuria. The data reviewed confirm, he says, Monti's statement that besides the direct action of the spirochetes on the suprarenals, they suffer additionally, indirectly, from the alterations observed at necropsy in such cases in the solar plexus.

Prensa Medica Argentina, Buenos Aires

July 20, IV, No. 5, pp. 53-64

- 78 Case of Roentgen Ray Cancer. A. H. Roffo.—p. 53.
- 79 Inefficacy of Ready Made Vaccines in Puerperal Septicemia and Endometritis. M. T. F. de Gaudino.—p. 57.

Semana Medica, Buenos Aires

June 21, XXIV, No. 25, pp. 727-766

- 80 *Retention of Bile. G. Segura.—p. 727.
- 81 Partial Colectomy on Still Filled Megacolon. A. Ceballos.—p. 735.
- 82 Memoirs of a Hygienist. E. R. Coni.—p. 737. Continuation.
- 83 The Specific Factors in Coagulation. A. Bergman.—p. 740.
- 84 Mechanism of Ileus in Parturients. E. Mazzini.—p. 747.

80. **Retention of Bile.**—Segura reports eight cases to show the difficulty of differentiation in certain cases of jaundice. They emphasize that surgical treatment is imperative when jaundice has lasted for two months at farthest. The laparotomy may reveal a benign curable process when everything seems to indicate malignant disease. The retention of bile injures the liver and is liable to induce a hemorrhagic diathesis. This proved fatal in two of the cases reported in which the operation came too late, the whole trouble being merely from an echinococcus cyst in the liver. In another case the liver opened into the bile passages, and there was transient obstruction at intervals, probably from expulsion of daughter cysts. As these were finally passed along, the obstruction was only temporary and there was no tendency to hemorrhages. Even when the laparotomy discloses malig-

nant disease, gastro-enterostomy may permit long survival as the retention of bile otherwise is liable to prove fatal before the patient succumbs to the cachexia. One of his patients was a man of 23 with primary cancer of the biliary passages, inoperable when first seen. There was no history or trace of gallstones in this case. Necropsy in the case of a man of 58 showed cancer developed in a duodenal ulcer. The ulcer symptoms had been unmistakable for two or three months and then jaundice developed within a few days, evidently from invasion of the bile duct by the carcinoma. In another case a hard drinker developed suddenly pain in the liver, and jaundice, but in the course of six weeks of rest and careful dieting the jaundice had almost disappeared and the man of 60 had gained several pounds in weight. Catarrhal jaundice was the diagnosis, but the jaundice grew more intense by the end of three weeks, with subcutaneous extravasations of blood and ascites. Necropsy revealed a primary nodular cancer in the liver. In a case of Hanot's cirrhosis of the liver there was no jaundice or fever for a year and a half, but then jaundice gradually developed with intense pruritus and a loss of over 40 pounds in weight. The stools were absolutely clay colored, and a passage for the bile was made by joining the gallbladder and duodenum. The patient succumbed to pneumonia not long after. Another man of 33, with drinking habits had long had frequent digestive disturbances, ascribed to the stomach, when a very severe attack of indigestion followed eating five melons. The bowels did not move, even under repeated doses of castor oil, and the fifteenth day jaundice developed. The liver could be palpated at the fifth rib but it was not tender through the interspaces; the lower margin was slightly tender. He improved in the hospital, gaining over 11 pounds in weight in two months and returned to work, but the liver increased in size and ascites required tapping. The diagnosis wavered between four different liver diseases after the assumption of catarrhal jaundice had been dropped, but necropsy, eighteen months after the first sign of jaundice, disclosed cancer of the ampulla of Vater.

Siglo Medico, Madrid

July 28, LXIV, No. 3320, pp. 545-564

- 85 Symptomatic Value of the Drawings of the Insane. R. P. Valdes.—p. 546. To be continued.
- 86 Primary Acute Congestion of the Lung. B. Gil y Ortega.—p. 549.

Russkiy Vrach, Petrograd

XVI, No. 14, pp. 313-336

- 87 *Operative Treatment of Tumors in the Bladder. S. P. Fedoroff.—p. 313.
- 88 Changes Proposed in the Curriculum of the Medical Schools of Russia. N. I. Ratchinsky.—p. 319.
- 89 Ulcer in the Bladder Induced by Colon Bacilli. G. I. Baradulin.—p. 323.
- 90 Agglutination after Vaccination against Typhoid. V. V. Pezharskaya.—p. 324. Conclusion.
- 91 Comparative Typhoid Morbidity in the Vaccinated and the Non-vaccinated. P. N. Triudin.—p. 329.

87. **Tumors in the Bladder.**—The title of Fedoroff's article is "My Views on the Modern Treatment of Tumors in the Bladder," as he is convinced that when there is a suspicion of malignant disease or the tumors are multiple or are located in what he calls the neck of the bladder, the usual treatment does not guarantee against recurrence. His experience with 165 operative cases of bladder tumor and review of the literature have shown that a single tumor can be removed by an intravesical intervention without fear of recurrence. But recurrence is the rule after an intravesical operation for multiple tumors or cancer. He knows of only one case on record (Pawlik) of survival for fourteen years without recurrence. In his own series, 20 per cent. of the 165 patients have had no recurrence during the two and a half to thirteen years since operative treatment, and nothing is known of the ultimate outcome of 50 per cent. The remaining 30 per cent. had recurrence of the tumor within two years except in two cases in which the interval was three years and one in which it was five. Fedoroff presents further arguments to prove the necessity for extending the indications for removing the bladder and transplanting the ureters at an early stage of malignant disease and with multiple tumors. The otherwise

doomed patients are thus restored to comparative clinical health and their sufferings are terminated at one stroke. He reports a few cases in detail to show the value of this dual intervention. One physician of 39 had had occasional hematuria since the age of 17, and three suprapubic operations and one intravesical had been done to clear the bladder of recurring multiple papillomas in turn by Guyon, Nitze, Casper and Bazy. Pains and tenesmus were finally almost continuous, requiring up to 0.4 gm. morphin daily, and a suprapubic fistula into the bladder complicated matters. Then, in March, 1911, Fedoroff transplanted both ureters into the lower sigmoid flexure, and, in April, shelled out the bladder with part of the prostate. The relief from pain after the transplanting of the ureters was like magic. In June the physician was able to resume his practice as if raised from the dead. When the bladder was removed the microscope showed traces of cancer in the tumor but it had not invaded the walls of the bladder or lymphatics. The bladder seems to be peculiar in this respect. But still, two and a half years later, other papillomas and a cyst developed in the small pelvis. Evidently the pelvis had been inoculated with tumor cells during the removal of the fistulous bladder. Another serious feature of the case is that the otherwise fairly healthy man has had several attacks of pyelitis during the last five years although he has been able to keep up his practice and has felt well otherwise. Fedoroff remarks that we must not forget that the kidneys in such cases must be already suffering from obstruction of the outlets by pressure from the tumors.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

July 7, II, No. 1, pp. 1-128

- 92 *History of a Hospital through Six Centuries. D. Schoute.—p. 3.
July 14, No. 2, pp. 129-204
- 93 *Chronic Headache from Loss of Muscular Balance between the Eyes. J. P. van der Brugh.—p. 132.
- 94 Unusual Type of Favus Traced to Achiorion Crateriforme. W. L. L. Carol.—p. 140.
- 95 White or Whole Grain Bread. G. A. Prins.—p. 149.
- 96 *Suspension of Pulse and Respiration at Onset of Epileptic Seizures in Man with Complete Heart Block. W. Kouwenaar.—p. 151.
- 97 Participation of the Spinal Cord in Coordination of the Movements of Running. G. Van Rijnberk.—p. 156.

92. **History of Modern Hospital in Holland, Founded in 1308.**—Schoute has compiled from the archives of the hospital at Middelburg and from other local sources a valuable contribution to the history of medicine in the fourteenth century and during the centuries since. A number of illustrations show the ancient building and its administrators. The actual founder is not known, but a deed showing a bequest to the hospital from a widow is on record, dated 1308. The hospital archives were kept with minute record of details, and the financial ups and downs of the hospital reflect the political events of the various centuries. The directions for greater economy in administration at various periods are interesting. During the first centuries of its existence the archives show that the hospital combined the functions of an asylum for the aged, for foundlings and orphans, an inn for transients, charity work in general, and church, school and political headquarters, in addition to its regular hospital work. The very name for hospital in the Netherlands language, *Gasthuis*, "guest house," suggests its original manifold uses. The earliest picture of St. Barbara's dates from 1696. It required a very active and energetic campaign by two local physicians, preaching the necessity for ventilation, pure water, etc., to bring about the destruction of the antiquated building. Their pamphlet published in 1857 preaching modern hygiene told, among other records, of their own school days in the old building, the dark rooms, the ink freezing. Their campaign was reenforced by a smallpox epidemic spreading from the hospital, and the old building was demolished in 1866, but its records were preserved and the *Leggerbocks* dating from 1604 and 1687, with the rules and regulations for the administration of the hospital.

93. **Chronic Headache as a Manifestation of Asthenopia.**—Van der Brugh remarks that so many factors are liable to bring on headache, that no one physician is able to master all the specialist methods of investigation of its etiology. He

devotes this communication to the habitual headache resulting from disturbance in the motor apparatus of the eyes, especially a loss of balance between the external eye muscles. He has had seventy-one cases of the kind in less than three years, and has completely cured fifty-eight with prisms. The general practitioner, the laryngologist, rhinologist and otologist, who are the ones generally consulted on account of chronic headache, can differentiate it as a case of heterophoria by bandaging one of the patient's eyes and letting him go around otherwise as usual. If the headache improves in the course of a few days under the use of the bandage, then some loss of balance is the cause of it, in all probability, and this can be readily corrected with prisms. There is a special group of sufferers in this class, he says, those who come home from the theater, lecture, concert or church with a raging headache. He has found esophoria in all such cases and with the aid of correcting prisms the tendency to headache disappeared. He describes the other types of heterophoria, and warns that girls and young women do not like to wear glasses, but when they discard their prisms the headache returns. Still more convincing is the experience that those with hypermetropia, besides the esophoria, still have their headache persist when glasses to correct the former, but not the latter, are fitted. Not until they are supplied with prisms do they lose their headaches. A special characteristic of headache from esophoria and hyperphoria is that the tendency to headache subsides in the dark and at night. Such patients usually relate that they have had the headaches a long time and have been treated for them by the family physician for weeks, months or years, without relief. They have been repeatedly examined by nerve and nose specialists but no cause for the headache could be found. They finally gave up hope and resigned themselves to their suffering, so that the prompt and complete cure when fitted with proper glasses is an overwhelming surprise. The loss of balance to which he refers used to be called latent strabismus, but time has shown that this term is incorrect. He describes a typical case in a boy of 7, showing the cure of the headache after he had been fitted with prisms, its return when he broke his glasses, and its banishing anew with the repaired glasses, while the general health improved remarkably when relieved from the depressing headaches.

96. **Heart Block with Epilepsy.**—The elderly man in question had had complete heart block for the last five years. From his thirtieth year he had attacks resembling epileptic seizures. They began with suspension of heart action and respiration. In the attacks while under observation, the pulse stopped abruptly for 105 seconds and possibly longer, while the respiration was suspended for two and three-quarters minutes. Kouwenaar discusses whether this combination of epileptic seizures and heart block is casual or there is some causal relation between them. The convulsions were bilateral, symmetrical tonic-clonic cramps with episthotonus. They bore a suggestion of Hughlings Jackson's "cerebellar attitude." This is instructive, in connection with the bulbar theory of the causes of convulsions in persons with heart block as *claudicatio intermittens* of the bulbar vessels.

Ugeskrift for Laeger, Copenhagen

April 5, LXXIX, No. 14, pp. 515-558

- 98 *Roentgen Treatment of Cancer. S. Nordentoft.—p. 515.
- 99 Case of Cerebral Syphilis. C. Gram.—p. 522.
- 100 Case of Keratomalacia in an Adult. Saunte.—p. 525.
- 101 *Foods and Dietaries. (Ernæringsspørgsmaal.) M. Hindhede. p. 528.

98. **Roentgen Treatment of Cancer.**—In this article Nordentoft describes his experiences with roentgenotherapy of mammary cancer in particular, with the ultimate outcome. The fact that the neoplasm subsides under the influence of the Roentgen rays testifies to its malignant nature as other growths do not seem to be influenced by them.

101. **Foods and Dietaries.**—Hindhede's study of the basal protein requirement in health was summarized from the other instalments (*THE JOURNAL*, June 16, 1917, p. 1880). This belated number completes his article, giving the tabulated details of some of the extensive diet experiments mentioned in the abstract.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 15

CHICAGO, ILLINOIS

OCTOBER 13, 1917

RECENT BIOCHEMICAL INVESTIGATIONS ON BLOOD AND URINE

THEIR BEARING ON CLINICAL AND EXPERI-
MENTAL MEDICINE *

OTTO FOLIN, PH.D., S.D.

Professor of Biologic Chemistry, Medical School of Harvard
University

BOSTON

It is generally recognized that progress in the development of any experimental science is more often due to the discovery of new methods than to new and more ingenious applications of old ones.

An unending procession of new remedies and new procedures moves across the field of clinical medicine. The wide attention bestowed on Abderhalden's pregnancy test may be cited as a specific illustration of the eagerness with which the medical profession is waiting for new methods. Brugsch's new nitric acid test for syphilis is another illustration. This test will doubtless prove even more alluring to those who have opportunity to try it; for, whereas the Abderhalden test was complicated and admittedly full of pitfalls, this new test for syphilis seems almost ideal in its simplicity. Its lack of "rhyme or reason" will not deter many from trying it.

In the science of biochemistry, too, we have had a constant succession of new methods, and a very important phase of the biochemical research of today is still the development of analytic technic. In the last few years there have been very great changes in the methods used for the analysis of urine, while the advancement in the field of blood analysis has been ever more remarkable.

The foremost characteristic of the successful modern analytic method is speed. With reference to the value of time, the biochemical investigator of today is no less keen than are the leaders in modern industry. Many of the older methods in use, say fifteen years ago, as, for example, Salkowski's method for uric acid, the Mörner-Sjöquist method for urea, or the Schlösing method for ammonia, were accurate enough, but they were slow, and they did not encourage the application of chemical methods to the study of clinical problems. When a physician had to wait four days before he could learn how much ammonia a given urine contained, he did not bother himself very often about determinations of ammonia. And, as a matter of fact, this good old method for the determination of ammonia was so little used that investigators gradually forgot how the method must be employed in order to yield correct results.

Today any analytic method in urine analysis which cannot be finished within less than two hours stands in need of further revision. Most of the common determinations in urine and blood will become from fifteen to thirty minute methods for single determinations, and also several determinations will be made with little extra expenditure of time.

Almost every material reduction in the time and labor required for a given determination is followed by an increase in the number of investigators who make researches based on that determination. But it is only when we come down to the very shortest of biochemical methods that they begin to appeal to clinicians, and it is, I think, no small triumph for the modern technic that clinicians have begun to compete with laboratory specialists in the fields of research suggested by these new methods.

A considerable and constantly growing number of American physicians now possess laboratories in which chemical determinations are made. It is difficult as yet to appraise the probable value of this kind of work contributed by clinicians. A large proportion are busy practitioners who have considered their own time too valuable to permit them to acquire any personal mastery over the methods. Hence they hire technicians to do the work without themselves being competent to judge of the quality of the work. The net gain to science from such work must be distinctly problematic.

There is a legitimate and important use for technical assistants in the innumerable little laboratories springing up in connection with private and with hospital practice of medicine, but it seems to me extremely important that this use should conform to some reasonably honest standard of responsibility. The physician should know at least as well as his technician each and every kind of determination that the technician makes for him. Every method goes wrong now and then, and the physician who is as helpless as is the technician when something does seem to be wrong has but meager qualification for the work he is trying to do.

The current misuse of technicians does impair somewhat the credibility of laboratory observations recorded by clinicians, but this represents presumably only a passing phase, and it does not obscure the fact that many clinicians are keen and alert for every new chemical method which is sufficiently practical for their needs. It is unfortunate that the laboratory expert and the competent clinician cannot be united in one person. It is unfortunate that methods must be simple and easy, as well as quick, before they can find any very widespread and sound application within the medical profession. The modern methods are wonders in quickness in comparison with the old ones, and

* Third Mellon Lecture under the auspices of the Society for Biological Research, University of Pittsburgh, May 18, 1917.

they are not very complicated; but no man knows them who does not know how to check up his own results by working against theoretical figures.

A second characteristic of modern analytic technic, as distinguished from the old, is the tendency to make the methods microchemical. Formerly a full twenty-four hour quantity of urine was scarcely large enough to permit a complete analysis. Today 10 c.c. of urine is abundant for a determination of all the more common nitrogenous constituents. We still demand twenty-four hour samples of urine, and have gone on the assumption that we must have them to secure a satisfactory picture of the waste products; but we do not need them for the analyses. Indeed, many modern researches are based on analyses of urine representing periods much shorter than twenty-four hours.

The importance of being able to make quantitative studies on the basis of less than twenty-four hour urines is shown in the recent communications by Dr. Denis on creatin. We still do not know for certain some things which we must find out about the origin of this product. We know that the muscles contain creatin, or its precursor, and that in the urine we find normally (except in children) a great deal of creatinin, but only traces of creatin. It now turns out that these traces are not excreted, as is creatinin, at a substantially uniform rate from hour to hour. On the contrary, the creatin excretion is confined to a short period after each meal.

The time honored twenty-four hour system of urine analysis has been and will remain important; indeed, it will remain indispensable in some kinds of metabolism work. The twenty-four hour system is, nevertheless, largely a relic of what might be called the nitrogen equilibrium period in the history of the science of nutrition. But nitrogen equilibrium has largely ceased to be a factor to which we must pay attention in metabolism studies on human beings. For we know perfectly well that it is only by means of carefully selected diets that we can give a person enough food to meet his energy requirements without at the same time giving him enough protein for the maintenance of a normal level of nitrogen equilibrium. We may often enough wish to determine the general level of nitrogen elimination, but it is rare indeed that we need to know or actually do determine any little discrepancy that may occur between the intake and the outgo of nitrogen. Nor can such discrepancies be determined except on the basis of experiments a great deal longer than one twenty-four hour period. Twenty-four hour urines are no longer needed even for very comprehensive analyses, and I am convinced that for many purposes, and particularly for clinical studies, we shall find that urine analysis based on definite three hour, or at most four hour periods of urine collection, will yield considerable new information and will greatly simplify the application of quantitative methods to the study of metabolism problems. The change will increase enormously the possibilities for doing quantitative metabolism work on patients, very few of whom can be relied on to collect twenty-four hour urines. The use of standard three hour urines will reduce to a minimum the extent to which the work can be ruined by carelessness or incompetence on the part of nurses; in fact, the nurse's part of the work will be almost eliminated. Private patients, even office patients, and outpatients in the hospitals, can be included in our metabolism investigations if we once get our metab-

olism period reduced from twenty-four hours to three hours.

For such work we shall need a large series of normal figures corresponding to the twenty-four hour figures which have been used in the past. I hope shortly to furnish such figures for the first three hour morning period and for a second period representing the effect of a standard test meal.

The practical advantages to urine analysis derived from the speedy microchemical colorimetric methods are less fundamental than are the advantages gained from the application of the same principles to the analysis of blood. Before the introduction of these methods one could hardly say that there was such a thing as quantitative blood analysis. There were no definitely recognized methods, and in the scattered analyses attempted each investigator usually improvised some sort of procedure according to his own light and without reference to any general need for some system of blood analysis. For a qualitative test for uric acid in blood, from 100 to 200 c.c. were required, and even then positive results were obtained only with blood abnormally rich in uric acid. Today we can make quantitative uric acid determinations on any kind of human blood, and do not need more than 10 c.c. for the determination. If necessary we can make the determination with 5 c.c. or less.

The merit of the newer microchemical system of blood analysis was convincingly demonstrated in connection with studies on the problem of protein absorption. For more than a generation different investigators had tried over and over again to demonstrate the nitrogenous digestion products in the blood stream, but had failed, and we had nothing but unproved hypotheses with which to explain the absorption of albuminous food. This problem became acute when it was shown by Kutscher, at the beginning of the present century, that the pancreatic digestion is capable of completely destroying the protein character of albuminous materials. The earlier investigators worked with anywhere from 100 c.c. up to several liters of blood in attempts to solve this problem, and failed. Working with from 2 to 5 c.c. of blood by the micromethods, it was shown with absolute certainty that the old hypotheses were false, that the simple digestion products elucidated by Kutscher were readily and rapidly absorbed. The products could be traced through different parts of the circulation and even into the various tissues of the body.

The methods were equally applicable to the determination of the waste products produced within the tissues. In studying these phenomena, the results obtained were as clear as if we had actually seen the digestion products (the amino-acids) pass into the blood and into the tissues, there to linger awhile, and finally break down and yield urea. To any one who has actually followed this process, as Dr. Denis and I followed it in cats, there can be no doubt as to the essential features of protein metabolism, and the ability of muscular tissues to form urea. Nor can there be any doubt about the important fact that metabolism products pass with great speed and readiness from the blood into the tissues, and vice versa. There is every reason to believe that when we determine the urea content of the blood we are at the same time determining approximately the urea concentration of the muscles.

The speed with which a condition of approximate equilibrium is established between the blood and the

tissues in the case of ordinary soluble products has never received the consideration and study that this phenomenon deserves. The literature abounds in explanations of clinical or metabolism problems based on the assumption that the blood is almost a closed system with reference to the general tissues of the body. I doubt not but that there is such a thing as selective affinity between this or that product and this or that tissue. There must be some specific cause, however, for every case of such selective accumulation, for each case must be regarded as more or less of an exception to a general rule.

As an interesting erroneous explanation of an important metabolism problem based on a misconception as to the equilibrium phenomenon between the blood and the tissues may be mentioned the old hypothesis that creatin is the intermediate product in the breakdown of body protein into urea.

The muscles are relatively loaded with this simple crystallizable product, creatin, and it was indeed plausible to assume that this highly nitrogenous extractive, a hundred times as abundant in the muscles as in the blood, must be the connecting link between the broken down tissue protein and the urea. Feeding experiments with creatin did not yield urea; but to this Bunge retorted that creatin, when fed as such, does not have time to get into the tissues and is eliminated before there has been a chance to accomplish the conversion into urea. Both the original hypothesis and Bunge's auxiliary hypothesis advanced in its defense are thus clearly seen to assume the absence of the equilibrium phenomenon referred to. The fallacy in Bunge's argument has never been pointed out so far as I know, and it was not until three or four years ago that it was shown by microchemical analysis that Bunge's argument was false; that, in point of fact, creatin is readily absorbed from the blood by the tissues.

While the view that creatin is the chief precursor of urea was long ago abandoned, many still believe that a part of the urea is so produced. The important point, however, is that creatin is not to be regarded as essentially a precursor of urea, and that we accordingly must find some other explanation of why the muscles contain such large amounts of creatin. This is a problem of normal metabolism rather than of clinical or experimental medicine. Whether out of it will grow any clinical problems we cannot yet tell. Human beings do not lend themselves to tissue analysis.

Before I go any further it is perhaps well that I should indicate a little more definitely the character and scope of the microchemical methods already in use for the analysis of blood. We have then, first of all, the colorimetric methods for the determination of each of the chief nitrogenous substances found in urine, that is to say, the total nonprotein nitrogen, the urea, the ammonia, the uric acid, the creatin and the creatinin. In addition we have Bloor's micro-methods for the lipoids-fat, lecithin, and cholesterol; Marriott's nephelometric methods for the acetone bodies; Benedict's method for the blood sugar, and finally Lyman's very recent method for calcium. The remarkable thing about this series of methods is that they are devised with reference to a single instrument, the colorimeter, which can also be used as a nephelometer. With the combined instrument we simply measure the amount of color which the substance to be determined can be made to give with some suitable

reagent, or we measure the cloudiness, if the characteristic reaction used results in a precipitation instead of a color. In principle these methods are somewhat similar to the clinical method of determining the hemoglobin in blood. In the analytic methods of earlier times the investigators proceeded on the principle that the amount of material taken for each analysis must be inversely proportional to its concentration of the substance to be determined, and this principle, for obvious reasons, virtually excluded human blood or blood from small laboratory animals. In the microchemical system of analysis, on the other hand, the guiding principle is to overcome the lack of concentration and the limited supply of blood by the application of correspondingly intense and sensitive reactions. The amount of blood used for each determination in the series mentioned above varies from a fraction of 1 c.c. up to 10 c.c. To be strictly practical, a blood method must not require more than 10 c.c. of blood, and its value is greatly increased if it can be applied to 5 c.c. or less. On the other hand, when one attempts to work with too insignificant quantities, that is, with drops of blood, the technic again ceases to be practical, because this can be done only by a complicated system of weighing instead of measuring the blood taken. This modern system of blood analysis has all been developed within the past six or seven years, and it is still not complete.

I have made no reference to other recent useful analytic procedures, such as Van Slyke's methods for amino-acid nitrogen and for chlorids.

We are still in the early stages of a pioneer period of research opened by means of all this new technic, but it is clear that much research lies ahead of us with reference both to physiologic and to clinical problems. As yet there is not always sufficient agreement as to the values which should be accepted as strictly normal. Take the nonprotein nitrogen and urea, for example. There is no doubt, I think, that in case of strictly normal persons such as we find among medical students (or outside of hospitals), the nonprotein nitrogen content and urea content of blood are low. The nonprotein nitrogen will not exceed 28, or at the most 30 mg. per hundred c.c. of blood, and the urea nitrogen will be almost exactly one half of the nonprotein nitrogen. Nor are these levels materially affected by reasonable variations in the nitrogen content of the food. To me it seems a matter of considerable significance that we have to accept as normal considerably higher levels just as soon as we begin to work on hospital patients. Here values lying between 30 and 40 are quite as common as values under 30. There can be no doubt about the fact that efficiency of the kidneys is the chief factor which determines the level of waste products which any individual carries in his blood and tissues. The higher levels of waste products found among hospital patients must therefore indicate that at least one half of these persons have kidneys which are no longer perfect, kidneys which at one time or another and in one way or another have been damaged. Is this a clinical problem? As yet there has, of course, not been time enough to find out whether the less efficient kidneys are in a stationary condition or whether they are in a slow process of deterioration. In time the records of physicians and of hospitals ought to throw light on this problem.

One interesting aspect of the nonprotein nitrogen and urea problem is the question as to the effect of the

food protein on the level maintained. In the case of strictly normal persons it makes practically no difference whether the diet is rich or poor in nitrogen. In persons having clinically damaged kidneys, the protein content of the food makes a great deal of difference. In many such cases (but not in all) it is possible by means of low nitrogen diets to reduce the nitrogen level of the blood to nearly or quite the normal level. The further elucidation of this point is, I should say, a clinical problem. In this connection one would naturally ask whether it makes any practical difference, or any difference, to the well-being of patients whether they carry a normal or high level of waste products in their blood. This is an obscure problem. As the level of nonprotein nitrogen in blood is raised, the percentage of the urea fraction of that nitrogen increases. When the nitrogen is very high, as in certain cases of threatened uremia, by far the greater proportion of the blood nitrogen (nonprotein nitrogen) is represented by urea.

Urea is believed to be harmless, and it is certainly true that a good many nephritic patients can go about feeling well, and yet carry as much as 100 mg. of urea nitrogen in their blood, while others go into so-called uremic coma without carrying any unduly high levels of nonprotein nitrogen or urea. Uremic attacks with low levels of blood nitrogen happen perhaps most frequently in cases of so-called toxic pregnancy. All this has been known for a long time.

We have lately taken up the study of blood in pregnancy partly for the purpose of verifying the findings previously reported by others, and partly with the hope of being able to advance the subject a little further.

The results which we have obtained have proved rather surprising, and are at least interesting. Our subjects are obtained from the Boston Lying-In Hospital, and we are indebted to Dr. Newell for the privilege. Indeed, the research is essentially a cooperative one between Dr. Newell, Mr. Foster and myself.

We have thus far analyzed the blood of about 100 pregnant women, most of them clinically normal. As yet we have paid attention only to the nonprotein nitrogen and urea. From the class of patients to which these women naturally belong we should expect to find substantially the same rather high level of nonprotein nitrogen and urea as we find in other hospital patients.

Such is not the case. Very few pregnant women, except the toxemic ones, give a nonprotein nitrogen over 30 mg. per hundred c.c. The more interesting fact, however, is that the urea of blood obtained from normal pregnant women is practically without exception very much smaller than the amounts of urea found in other normal human blood. Such other human blood does not contain less than 11 or 12 mg. of urea nitrogen per hundred c.c. The bloods of pregnant women, on the other hand, run between 5 and 9 mg., and very few indeed run as high as 9 mg. of urea nitrogen for 100 c.c. of blood. Whereas in other normal persons the urea nitrogen represents 50 per cent. or more of the total nonprotein nitrogen, in these bloods it represents only from 20 to 35 per cent. of the total.

Several investigators have recently published some observations on blood in pregnancy, and I am at a loss to explain their results. They have, to be sure, found a few low urea figures, but these have been

exceptional, and they have thus failed to find this peculiar characteristic of pregnancy.

I would hesitate as yet to try to explain this remarkable phenomenon. The problem is complicated by the fact that we do not possess full information as to the percentage distribution of the nonprotein nitrogen of normal blood. We have been going on the assumption that this nitrogen, so far as it is not accounted for by the ordinary waste products, must be largely amino-acids, that is, valuable food products. This assumption is probably not quite correct, for the figures obtained by Van Slyke's method for amino-acids leave a considerable proportion of the nonprotein nitrogen of blood unaccounted for. Two thoughts naturally suggest themselves in connection with our peculiar analytic findings. A low proportion of urea should leave a higher proportion of amino-acids and other similar products (possibly peptids), and it is conceivable that this is the result of a mechanism for providing a more abundant and constant supply of the kind of nitrogenous food materials needed by the growing fetus. The other thought is this: The pregnant organism may be more susceptible than others to the toxic effects of certain waste products, and in self defense may be compelled to keep these waste products, including urea, at a subnormal level. This thought is rather attractive, for it contains the added hint that the blood in toxemic pregnancies may be abnormally rich in toxic products, even when the total amount of nonprotein blood nitrogen is not very high; from 35 to 40 mg. of nonprotein nitrogen in such blood may be an entirely different proposition from the same amount in other subjects. Whatever the correct explanation may be, the fact itself is, I think, decidedly interesting.

I have already referred once to Abderhalden's pregnancy test. The thought has, of course, occurred to us that urea determinations in the blood may have some diagnostic value with reference to pregnancy. But as yet we have had only a few cases representing the third month of pregnancy and no earlier ones. I therefore make absolutely no claims in this direction.

Before leaving the subject of the nonprotein nitrogen and urea, I ought perhaps to refer briefly once more to the use and value of these determinations as means of estimating the renal efficiency, and to the "refinement" represented by the so-called Ambard coefficient, which is simply a combination of urea determinations in blood and in the urine. The underlying idea of this combination is to eliminate any confusion which might arise because of changes in the blood concentration (in urea) due to the level of the general protein metabolism. In normal persons, as I have already indicated, there is no material change in the urea content of the blood because of changes in the level of the nitrogen metabolism. In nephritics, considerable variations can be produced by changes in the diet; but these changes are produced very slowly so that it usually requires several days of low protein feeding to produce a marked alteration in the urea content of the blood. Yet nephritics, like normal persons, adapt themselves promptly to changes in the protein content of the food, and, like normal persons, tend to remain in a condition of nitrogen equilibrium. The complicated mathematical formulas introduced in connection with the Ambard coefficient do not tend to increase one's confidence in that coefficient. It is difficult to see how square roots and cube roots can help to elucidate such a simple metabolism proposition.

Work along the lines of the Ambard coefficient is one of the researches I had in mind in stating that many metabolism investigations based on metabolism periods shorter than twenty-four hours are now being made. The Ambard period, seventy-two minutes, seems to me, however, to be too short. I believe that a more suitable condition for studying the effects of the metabolism level on the urea retention will be found in connection with the three hour metabolism period to which I have already referred.

Determinations of nonprotein nitrogen and urea in blood have up to date proved the most popular in the study of blood. This is natural enough, at least so far as it concerns clinicians, because these determinations stand for concepts which to them are perfectly clear.

A theoretically equally interesting determination in connection with certain clinical problems should be that of the ammonia. Ammonia determinations in urine have become important in connection with the study of acidosis. Very few, however, have ventured to undertake the determination of ammonia in blood, notwithstanding the fact that it has figured very extensively in attempts to make ammonia responsible both for uremic and for diabetic coma. It is not difficult to see why this field is being neglected. No one recognizes more clearly than I do that the method for the determination of this substance in blood is far from easy. Moreover, the amount of ammonia present in blood is so small that it is difficult to see how these traces can be of much clinical significance. It is an interesting and remarkable fact that even in diabetic acidosis, when the daily urine may contain several grams of ammonia, the concentration of ammonia does apparently remain at an extraordinarily low level in the blood. If any one should here attempt to apply an "Ambard coefficient," he would doubtless be led into the very highest fields of mathematics before a satisfactory formula could be obtained. I sometimes suspect that there is something wrong about our ammonia determinations in blood. Dr. Denis and I have repeatedly returned to the investigation of the subject; we have spent several weeks on it again this year, but as yet have found nothing to indicate that our earlier work is not substantially correct. Henriques, in Denmark, has recently published an apparently very thorough research on the same topic, and has in the main verified our findings. For the present, therefore, the problem of the ammonia in blood remains as before, theoretically interesting, but practically unfruitful.

For several years the determination of creatinin in urine has been used and accepted as an indispensable feature of every metabolism investigation involving urine analysis. In hospital work this determination is absolutely necessary as a check on the work of the nurses. It is the only means we have for detecting gross errors in the collection of the urine. Every other urinary constituent may vary up and down, but the creatinin remains practically constant; so that when a patient's creatinin output begins to show remarkable variations it is time to give up the experiment or begin all over again.

The creatinin in the blood is normally not large, 1 or 2 mg. per hundred c.c. of blood, but it is normally constant and easily determined. I say this advisedly, though I recognize that one investigator has lately published results purporting to prove that the values as ordinarily obtained are several times as great as the true creatinin content of blood.

The creatinin is one of the last waste products to accumulate in the blood as a result of kidney insufficiency. It is apparently only in rather advanced uremic conditions that this product begins to increase in the blood. A great many more observations are needed, however, on this point, and as the determination is easy and simple when a standard creatinin solution has once been obtained, it is a determination which should be taken up by clinicians. The only reason why clinical workers have not already stepped into this field is the fact that pure creatinin, or a pure creatinin salt, is needed for the standard solution which must be used in connection with the colorimetric determinations.

It seems strange that no chemical manufacturer has yet undertaken to prepare creatinin zinc chlorid to meet the demand for this salt.

Pure creatinin can, as a matter of fact, be dispensed with in connection with this determination. It takes only a few minutes' work to determine colorimetrically the creatinin content of normal urine by the help of my older potassium bichromate method. By appropriate dilution of such urine with half normal hydrochloric acid a perfectly serviceable standard creatinin solution is obtained, and this solution will keep for weeks, if not indefinitely, so far as the creatinin content is concerned. The changes which do occur, darkening in color, precipitation of uric acid, etc., do not destroy the value of the solution as a creatinin standard.

Among the waste products of the animal metabolism there is none more interesting, alike to the laboratory worker and to the clinician, than uric acid. From the standpoint of normal metabolism it is generally believed that the uric acid problem is very nearly settled. I am less sure on the subject now that I would have been two or three years ago. The remarkable results reported by S. R. Benedict on the presence of extraordinary quantities of latent uric acid in beef blood, his demonstration of a synthesis of uric acid in Dalmatian dogs, and his findings indicating that the allantoin in dog urine does not represent decomposed uric acid, all indicate that we may yet have to revise in radical fashion views which but a short time ago seemed firmly established. The many vague clinical hypotheses which used to be associated with uric acid have, however, been swept aside. The uric acid crank has all but disappeared from among the medical profession. As a problem of comparative physiology, uric acid is exceedingly interesting, and from the standpoint of both clinical and experimental medicine it is yet destined to be the subject of many investigations.

The human organism has the almost unique distinction among mammals of not being able to destroy any of the uric acid which it produces. The human kidney is also less competent to get rid of this waste product than we could wish. In consequence of this combination of circumstances, the quantitative determination of uric acid in the blood is one of great promise and importance. The method for this determination is of such recent origin that the modern literature on the uric acid in blood is not large, and yet there is already considerable diversity of opinion concerning both the uric acid content of normal blood and the pathologic fluctuations which may occur. How far these differences may be due to imperfections in the analytic method or to lack of skill in the use of the method I am not prepared to say.

It is absolutely certain, however, that some kinds of human blood carry abnormally large amounts of uric acid and at the same time substantially normal amounts of nonprotein nitrogen and urea. It is equally certain that other kinds of blood carry substantially normal amounts of uric acid, yet exceedingly large amounts of total nonprotein nitrogen and urea. The former condition, as was to be expected, is most frequently found in gout, the latter in nephritis. The high uric acid in the blood of the gouty, like the high urea in the blood of nephritics, is due to lack of excretory power on the part of the kidneys and not to increased production of uric acid (or of urea).

With reference to the origin of the uric acid produced within the body, we cannot yet say how large a proportion comes from the muscles and how much from glandular organs. That the glands, at least in proportion to their size, are by far the most important centers of uric acid production follows as a matter of course from our present day teachings and beliefs to the effect that uric acid is formed in or from the nuclei of cells. The validity of this view can be experimentally demonstrated. Even in laboratory animals whose blood and muscles contain very minute traces of uric acid, we find in the spleen, liver, etc., as much as from 10 to 14 mg. per hundred gm. of organ, that is, fully twenty times as much as we find in the blood or the muscles.

I have confined this discussion to a consideration of only a few familiar waste products. As we get into the field of blood and tissue analysis, as we get into experimental touch with the chemical processes going on within the body, we must also begin to pay more attention to products which never find their way into the urine. I must not close without having called attention to the very interesting and promising line of research in the field of the lipoids—a field opened by the application of micromethods worked out by Dr. Bloor. Already Bloor has established the normal relationship existing between these lipoids—fat, lecithin, cholesterol—and the results obtained seem to furnish a basis for a more detailed knowledge concerning the intermediate processes involved in the metabolism of the fats. The extraordinarily practical character of the analytic procedures developed for this work should insure the attention of the clinician, for the fats, no less than the proteins, are associated with many metabolism disorders; I need but refer to malnutrition in infants, pathologic obesity, lipemia, and diabetes.

Before closing I wish also to make just one brief reference to another class of products in the study of which a beginning has been made on the basis of microchemical methods. I mean the phenols. As yet we have not gone beyond the urine, however, in the study of these substances (which, as you know, are chiefly the products of intestinal putrefaction, and at least some of which are distinctly poisonous). I had hoped before this to have definite methods for the determination of phenols in blood, for it is their concentration in the blood, not the amount in the urine, which is significant in relation to diseases. We have run into these products both in connection with studies on epinephrin, which is a phenol, and in connection with uric acid, which in chemical constitution and in many of its reactions is also similar to the phenols. These very similarities are the difficulties against which we have to contend when endeavoring to deter-

mine the ordinary phenols in blood. It is a difficult problem, but in time it will be solved.

It will seem to you that I have discussed little else than analytic methods—a subject which cannot be made very interesting outside of the laboratory. I am convinced, however, that both the biochemist and the clinician must pay more and more attention to this least interesting but most important aspect of research. Scientists of earlier generations discovered a great many important facts in the realm of metabolism and of medicine. It will be found on scrutiny, however, that their discoveries were accidental or of such a character that they were bound to be made by one or another reasonably keen observer. That pioneer stage is over. The surface problems have been solved.

It is now only by means of finer and ever finer technique that progress can be made toward the solution of the many metabolism problems which must be solved by us and those who follow us, in order to secure an increasingly better basis for clinical, experimental, and, above all, preventive medicine.

DECENCY AND SAFETY AS PUBLIC HEALTH FACTORS

CHARLES E. NORTH, M.D.

NEW YORK

The detached point of view is often mentioned in modern literature as the property of a few select minds. To be impersonal, to get away from detail, and especially to get away from the narrow point of view of the specialist, is extremely difficult in this age of specialization. The strongest objection that can be raised against specialization is that it anchors the mind in a narrow channel, and creates habits of thought that prevent the specialist from estimating the value of even his own specialty.

The truly scientific point of view should be sufficiently detached to see the relation that things bear to each other in their true proportion. It should be close enough to recognize clearly the character of the data available on special subjects, and distant enough to make a comparison of values. The correct balance must be one that does not overestimate or underestimate.

A survey of the progress that has been made in public health science shows that it has been marked by the rapid development of a number of branches of special knowledge. Public health science has created a new field for the specialist. The chemist, the bacteriologist, the physician, the sanitarian, the statistician and the engineer have all found new territories for the rapid and fruitful development of their specialties. The field of effort is so new that it has been largely unexplored, and the pioneers have found their work as yet uncoordinated, and the value that should be put on it still undetermined.

Numerous important factors have been discovered which contribute in marked manner to the public health. The development of these has not been regular, but irregular, and some have been pushed forward while others have lagged behind. Just what qualifications justify the recognition of a principle as an important factor in public health science is still debatable.

Like other sciences, the science of public health has been accompanied by a background of philosophy, and

the philosophers have been divided into a school of realists and a school of idealists. The irrepressible conflict between the practical and the academic is again being fought out in this new realm. In this instance, the issue at stake is of more importance to the vitality of civilization than any previous battle between these two groups of philosophers. There are, on the one hand, those who consider that public health should concern itself only with direct causes of disease. They are pragmatists, and look with some degree of ridicule on their more esthetic opponents. Their slogan is safety. Safety first, it must be admitted, is the foundation stone of public health science. Life comes before health. To this extent the realists are justified in their practical point of view. They are supported by the character of the public health laws that have already been written. They are also supported by the attitude of the courts. To them the main question at issue is always between safety and danger. In their catalogue, public health is concerned chiefly with quarantine as a remedy for epidemics, with sanitation as a remedy for contagion, and with sterilization as a remedy for infection. All they ask of the courts is to enforce the law against those things which are dangerous to health.

On the other hand, there has been a steady growth of the ranks of academic philosophers who are devoted to the cultivation of sentiment. Sentiment and the esthetic sense, they believe, have a value which has been neglected by the school of pragmatists. In their survey of the progress of the race, as well as of the individual, they lay claim to the discovery that sentiment lies at the basis of all joys. Even the desire for life, they maintain, is only a sentiment. They refuse to draw the line sharply between the practical and the academic. They assert that it is the stage that has been reached in the evolution of the species or of the individual which dictates what should be included or excluded from consideration by public health science. They point out that the word "health" is a large word, and that it should include much more than the question of safety. They admit the importance of safety, but assert that safety alone is not enough. They join the framers of the constitution in believing that the individual is entitled, not only to life and liberty, but also to the pursuit of happiness. They firmly believe that the enjoyment of life is just as important as life itself, and that health in its true sense must include "living" as well as existence.

THE ELEMENT OF DECENCY

"Decency" is a word that formerly had a rather limited meaning. In recent years this word has been broadened so as to signify much that contributes to the enjoyment of one's food and drink, and one's surroundings. For example, sanitation has contributed very largely to the decency of dwellings through the removal of objects offensive to the eye, and perhaps also to the nose, although not necessarily directly dangerous to health. Cleanliness of streets and houses and of the environment was formerly urged by the realists in the belief that disease originated mainly in the environment. The discovery that sources of infection are mainly human and animal, and that disease is transmitted for the most part by direct contact, has justified the abandonment of sanitary inspection and sanitation so far as they are concerned with the environment as the cause of disease. Nevertheless, the idealist still insists on cleanliness and sanitation as

necessary public health measures. The cleaning of streets and of dwellings will still continue, but not for the old reasons. The sense of decency properly describes the sentiment that at the present time stimulates the carrying out of clean-up campaigns.

A much more important application of the sense of decency is found in relation to food and drink. It is instinctive among well bred people to desire only food and drink that is clean, irrespective of considerations of safety. While this instinct may have had its origin in a race experience that proved the connection often existing between dirt and disease, yet culture has developed this instinct to such an extent that the enjoyment of food and drink is destroyed if these are known to be insanitary.

Legal recognition of the requirements of decency are contained in the federal pure food law, which prohibits the sale in interstate commerce of any food or drink that is "filthy, putrid or decomposed." While these words may have been embodied in the law because they were believed to provide the element of safety, yet they cannot be interpreted otherwise than as words that also include a large element of decency. Filth may not be dangerous, and still be filth. A food that is correctly characterized by all three of the words "filthy, putrid or decomposed" might be boiled or sterilized until it was safe, so far as disease is concerned, but still be unfit for food according to the provisions of this law.

For example, eggs that have become decomposed have been put on the market in a liquid or dried or frozen condition, and have been condemned without positive evidence of danger, but on the ground that they are offensive because filthy, putrid or decomposed.

The single service package is coming into use. Paper wrappings are being adopted for bread, and crackers, and other foods that were formerly dispensed loose. The safety element may also be a factor in this campaign for single service; but in the minds of the consumer the decency element is a much more powerful factor. The consumer prefers clean bread, clean crackers, clean fruit, clean candy, because cleanliness contributes to pleasure in consuming food.

The consumer is entitled to the enjoyment of food and drink, as well as to their being safe. The factor of decency is creeping into health regulations almost imperceptibly. One of the most notable examples of this is the recent adoption of the grading system for the control of municipal milk supplies. In this system milk is graded according to its sanitary character into three grades, labeled A, B and C. In all three grades the milk is pasteurized, and if the process of pasteurization is properly carried out, the milk is entirely safe because those species of bacteria causing disease have been destroyed. Most sanitarians are inclined to believe that as a measure of safety, pasteurization is, in fact, effective in rendering all milk safe, irrespective of its previous sanitary condition. It is true that some experts assert that there may be toxins remaining in unclean milk after pasteurization, or that some spore-forming bacteria outside of the list of recognized pathogenic species may be injurious to infants and children. In general, however, there is good evidence that the differences in safety between milks that are sanitary and insanitary, provided these are properly pasteurized, are comparatively slight. This being so, the question arises, Why should milk be graded? The answer is that the masses of milk consumers have the sense of decency sufficiently developed actually to pre-

fer as a beverage a milk that has had a clean history to a milk that has had an unclean history, even if they know that the two milks are equally safe. Analyzed more closely, this is because there is more enjoyment in drinking clean milk, and less enjoyment in drinking unclean milk.

THE PURITY OF WATER

Of late the esthetic philosophers have brought up the same issue in connection with public water supplies. The words "pure and wholesome" appear in almost all water contracts as describing the quality of the water to be used by municipalities. The definition of the word "pure" as applied to water seems still to be a debatable question. There are apparently many kinds and degrees of purity. The introduction of laboratory tests by chemical methods was at first thought to be a fair means of settling this controversy. The refinement of chemical methods seemed to promise the discovery of all forms of water impurity, so that a water free from impurity could be distinguished from one that had been contaminated in any way. The fallacy of this belief became apparent immediately on the advent of bacterial methods of water analysis. It was soon recognized that water apparently pure by chemical tests might be exceedingly impure by bacterial tests. Sanitarians once more believed that in the bacterial test they had at last discovered a criterion by which the purity or impurity of water could be judged. And now the integrity of the bacterial test as a measure of impurity has been shattered by the advent of methods of sterilization. Chlorinated lime (bleaching powder) or chlorin gas can be applied to any water—no matter how impure or how badly infected with bacteria—and after such application the bacteria will be so completely destroyed that so far as the laboratory test for bacteria is concerned, the water will appear to be practically sterile. Thus, the measurement of purity by the bacterial test can be completely nullified by previous sterilization processes.

It is now a very lively question as to what public health experts mean by the word "pure" as applied to water. For example, if one assumes that a water comes from a surface supply and receives on the watershed large quantities of sewage, but that it is then impounded in a reservoir in which considerable sedimentation takes place, and is then sterilized with hypochlorite solution so that the bacteria are killed, is such a water to be accepted as qualified to receive the designation "pure"? Or, on the other hand, if one assumes that a municipal water supply comes from an uninhabited territory, such as woodland lakes, and receives no sewage from human habitations, and hence no form of treatment is necessary, is such a water more deserving of the term "pure" than the water in the former case?

Most of the cities on the Great Lakes, both in Canada and in the United States, use the Great Lakes not only as sources of water supply but also as mechanisms for sewage disposal. Projecting from one part of the city are pipes discharging sewage into the lakes, and more or less close by, from another part of the same city, extend pipes through which lake water is pumped into the city for drinking purposes. From time to time public sentiment has contended that the two pipe lines were too close together. Chicago actually decided to withdraw most of the sewage from the lake and discharge it into the Illinois River, which flows into the Mississippi above St. Louis, thereby handing the sewage which Chicago citizens disliked to

the citizens of St. Louis for drinking purposes. In Cleveland and other cities, public sentiment from time to time has forced the city to extend the pipe line drawing water from the lakes beyond the zone supposed to be invaded by sewage. At Toronto and Milwaukee, systems of purification and sterilization have been installed on the theory that though the sewage is mixed with the drinking water, it can be rendered pure by sufficient treatment. The St. Louis courts, when appealed to, decided that the Mississippi River water, even though polluted with the sewage of Chicago, corresponded to reasonable standards of purity.

The city of Fulton, N. Y., has a public water supply coming from a well known spring, and the streets are sprinkled with the same spring water that is sold in bottles to other municipalities.

It is a fair question to ask whether a distinction should be made between a purity of water due to prevention of contamination, and a purity due to various forms of treatment. From the consumer's standpoint, this question can be judged just as in the case of milk and foods. When the consumer is presented with two glasses of water and informed that both of them are free from bacteria, and can observe that both are clear and free from odor and sediment, and is assured that both taste equally well, the question arises, Will the consumer be prompted to exercise any serious choice when informed that one of these waters was polluted with sewage while the other was not? I think it is reasonable to suppose that the masses of the people have a sense of decency developed to such an extent that without hesitation they will voluntarily choose to drink the water that has never been contaminated with sewage.

It is undoubtedly for this reason that all of the offices of the city hall at Jersey City, N. J., are supplied with bottled spring water for politicians to drink, in spite of the fact that the courts have decided that the municipal water supply of Jersey City is pure and wholesome, though it is contaminated with the sewage of the cities on the watershed, because the water is sterilized with chlorinated lime. It is undoubtedly for the same reason that the office buildings of New York City are supplied with bottled spring water for the business men of New York to drink in spite of the fact that the Croton and Catskill supplies are also sterilized with chlorinated lime. In these instances, the politicians and business men referred to seem to have allied themselves with the ranks of the esthetic philosophers, as opposed to the pragmatists.

THE DETERMINATION OF DECENCY AND PURITY

But our friends among the pragmatists are prepared to assert that there is no practical way of determining purity in the esthetic sense. They will maintain that the courts cannot recognize the sense of decency because regulations cannot be written in such terms. They are inclined to limit our public health propaganda, not only to measures of safety, but also to standards of cleanliness that can be determined by the chemical and bacterial laboratories. They assert that there is no other method of measurement feasible, and that public health officials and the courts cannot give consideration to distinctions that are purely academic. For example, cow manure in milk is academic, or sewage in water is academic, if the quantity cannot be accurately determined by chemical or bacterial tests. The answer to this objection, so far as the courts are

concerned, is that the courts can always apply the general method of measurement that is commonly used by them in determining the meaning of other defining words. This method consists in the use of the meaning commonly accepted by the masses of the people. For example, if the word "pure" as applied to water means "free from sewage" in the minds of the masses of the people, and this feeling is so strong that the masses of the people prefer to drink a water free from sewage to a water that has been contaminated with sewage, the courts will accept this attitude of the people as a proper means of determining the significance of the word "pure" as applied to water. The degree of importance that must be attached to the element of decency as it relates to any particular thing can at any time be determined by testing public sentiment on this subject.

What attitude should the leaders in public health science take with regard to decency as a public health factor? Shall they encourage the development of the sense of decency on the part of the public as a desirable thing, and as something that can be applied to public and private environment, and to food and drink, in a way so practical that a reasonable degree of decency can be enforced by public officials? Or shall the leaders in public health science conclude that decency is academic, and that the esthetic sense has no place in the list of considerations on which the activities of public health officials are based? If health means more than life, if health includes the enjoyment of life, if health is to include the enjoyment of one's environment, and the enjoyment of things one eats and drinks, then public health administration cannot ignore the demands of common decency in the steps that it takes to safeguard public health.

The progress of the people toward better things seems to be constantly marked by improved sanitation. Public sanitation and private sanitation contribute directly and indirectly in so many ways to better living, better thinking and better working that they seem to be an essential part of the process of development. Whether or not the workers in public health science recognize decency as an important factor in public health science, the common people themselves have already given decency such recognition. The reason the instinct for cleanliness and decency has developed with the race is that these contribute in a marked degree to the satisfaction of living. If public health includes anything more than the element of safety, then decency for its own sake deserves a place in the catalogue of public health administrators.

30 Church Street.

Marching.—While the present war especially in the western regions has involved much trench fighting, besieging, etc., it must be borne in mind that marching still occupies much of the soldier's time, much more than does combat. This is clearly seen in the Russian campaigns. For this reason it is of prime importance that the soldier be able to march well. The general public have a mistaken idea of the length of a heavy march, the tendency being to place the estimate altogether too high. A fair day's marching for any army is 12 miles. The strenuousness of the march depends to a large extent on the size of the marching force. A good day's march consists of 15 miles while 20 constitutes a forced march. Quick time for the English armies consists in about 120, 30-inch steps per minute, which gives 100 yards per minute. From 2½ to 3 miles per hour is good marching. It takes a brigade six hours to march 15 miles while a division needs eight for the same distance.—Hygiene and War, by George Ellis Jones, Ph.D.

TREATMENT OF CHANCROID*

FREDERICK W. ROBBINS, M.D.

Fellow of the American College of Surgeons

AND

FRANK P. SEABURY, M.D.

DETROIT

We recognize four clinical varieties of chancroid:

1. *Ulcus molle*, the ordinary variety of ulcer, has the characteristic punched-out appearance, with edges cleancut and often undermined.

2. *Ulcus molle miliare* begins as a small papule, which rapidly becomes a pustule, the center of which is a deep craterlike ulcer. It occurs most frequently on exposed surfaces in the loose skin, just posterior to the mucocutaneous junction of the prepuce in man and about the labia majora and the perineum in woman.

3. *Ulcus molle elevatum* is the sore most frequently confused with indurated chancre. Its incubation period is from nine to twenty-one days. The sore is slightly raised above a mildly infiltrated base. The edges are not undermined, and it has little tendency to spread. This form is resistant to ordinary treatment and is prone to persist for from four to eight weeks.

4. *Ulcus molle phagedenicum* is the most severe and the most resistant form with which we are familiar, and occurs as a complication of both chancroid and syphilis. It spreads rapidly, is made worse by any half-way measures, and, unless checked early, is capable of destroying a part or even the whole of the penis.

To these McDonagh adds a fifth classification, the *ulcus molle serpiginosum*. This ulcer may occur as a complication of bubo or it may begin as a furuncle in the groin. It is found chiefly in the tropics, is highly resistant to all forms of treatment, and frequently remains a slowly spreading ulcer for years. We have never encountered it in this country.

The treatment of chancroid, at the best, is unsatisfactory, as is evidenced by the great variety in the methods of treatment advocated by different authors. If seen early, a fair percentage of patients do well under nearly any antiseptic treatment, particularly if they are cleanly in their habits. In fact, we believe that 60 per cent. of chancroids, taken as they come, of anywhere from two days to two months' duration, will heal in from four to eight weeks with no treatment except rigid cleanliness, a little calomel, or other dusting powder, if the sore is within the preputial cavity, or a moist dressing of black wash if the sore is exposed. If seen within the first two or three days, thorough cauterization with nitric acid is quite successful, but great care must be used not only to destroy completely every sore, but to keep the surrounding tissue covered with an antiseptic until healing of the cauterized areas is complete.

It is the sores that are not seen early, or that are not favorably influenced by cauterization, which cause the trouble and for which we have never been able to find in the literature a thoroughly satisfactory method of treatment.

Zinc ionization gives good results, but requires special apparatus and consumes considerable time. Argylol crystals applied directly to the sore for three

* Read before the Section on Genito-Urinary Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

or four minutes, followed by a moist dressing of 10 per cent. argyrol or 1 per cent. protargol, have been satisfactory in a few cases; in others they have not even checked the spreading of the ulcer.

A satisfactory method of treatment for the large majority of cases of chancroid in the preputial cavity is the thorough application of a 25 per cent. solution of copper sulphate crystals in water. The ulcer is first anesthetized with a 10 per cent. cocain solution and then lightly curetted with an applicator wound firmly with cotton, after which the copper solution is applied. It is left in contact with the sore for three

In order that a method of treatment of chancroids may be regarded as satisfactory, it must not only effect a complete sterilization of the sore and thereby a cure of practically all cases within a reasonable length of time, but in order to be available to the large majority of physicians, it must also be comparatively simple in form and means of application. Such a method, or combination of methods, we believe we have devised, and we base our conclusions on the observation of about sixty cases during the past year. In this series we have had practically 100 per cent. of early cures.

RESULTS OF AUTHORS' METHOD OF TREATMENT IN THIRTY-FOUR CASES

| Case No. | No. of Lesions | Incubation Period | Previous Treatment | Duration Before Fulguration | Darkfield or Stain | Diagnosis* | Number of Treatments with Violet Ray | Healed | Bubo | Wassermann | Remarks |
|----------|----------------|-------------------|--------------------------------|-----------------------------|--------------------|------------|--------------------------------------|---------------------|-----------------|---------------------|--|
| 1 | 1 | 7 days | No | 2 weeks | Negative | U. M. | One | 8 days | No | None | |
| 2 | 2 | 13 days | Argyrol dusting powder | 2 months | Negative | U. M. M. | One | 9 days | Yes, not opened | Negative | Bubo subsided |
| 3 | 1 | 7-8 days | Argyrol crys. | 4 weeks | Not made | U. M. | One | 7 days | No | None | |
| 4 | 3 | 7 days | No | 1 day | Negative | N. M. | One | 11 days | No | Negative | 2 or 3 sores healed in 4 days |
| 5 | 2 | 4 days | Caustic argyrol and violet ray | 6 weeks | Negative | U. M. M. | One | 7 days | No | None | Exposed sore |
| 6 | 1 | 4-5 days | Caustic aristol argyrol | 5 weeks | Negative | U. M. | One | 9 days | No | None | Exposed sore |
| 7 | 1 | Indefinite | None | 3 weeks | Negative | Chancre | One | 5 days | No | None | Hard chancre developed at site of sore |
| 8 | 4 | 4 days | Antiseptic wash | 3 weeks | Not made | U. M. | One | 5 days | No | None | |
| 9 | 1 | 10-12 days | None | 12 days | Negative | U. M. E. | One | 5 days | No | None | |
| 10 | 1 | Indefinite | None | 4 days | Negative | U. M. | One | 4 days | No | None | |
| 11 | 2 | Indefinite | None | 17 days | Negative | U. M. M. | Three | 16 days | Yes, not opened | Negative | |
| 12 | 1 | Indefinite | Salve | 7 days | Negative | Chancre | Two | 14 days, not healed | No | Positive | |
| 13 | 2 | 2 weeks | Caustic and calomel | 2 weeks | Negative | U. M. E. | One | 6 days | No | None | Circumcised 2 days after healing; 1/2 circumference became chancreoid, healed in 2 weeks |
| 14 | 1 | Indefinite | None | 3 days | Negative | U. M. | One | 5 days | No | None | |
| 15 | 1 | 10 days | Dusting pow. | 7 days | Refused | U. M. E. | One | 6 days | No | Refused | |
| 16 | 1 | Indefinite | None | 8 days | Negative | U. M. M. | One | 7 days | No | None | |
| 17 | 3 | 9 days | None | 1 day | Negative | U. M. | One | 6 days | No | +++ | Hard chancre developed at site of sore |
| 18 | 1 | Indefinite | None | 10 days | Negative | U. M. | One | 5 days | No | None | |
| 19 | 1 | 4-5 days | None | 7 days | Negative | U. M. M. | Two | 14 days | Yes | None | Bubo incised, healed slowly; applied CuSO ₄ and violet ray, healed rapidly |
| 20 | 4 | 9-10 days | Calomel | 3 weeks | Not made | U. M. E. | Two | 9 days | Yes, subsided | Refused | |
| 21 | 3 | 2-3 days | Antiseptic | 6 weeks | Refused | U. M. P. | Three | 25 days | No | Refused | Phagoclinic ease; patient very uncleanly |
| 22 | 1 | 12-13 | Antiseptic | 8 days | Negative | U. M. M. | One | 5 days | No | None | |
| 23 | 2 | Indefinite | None | 2 weeks | Negative | U. M. | One | 10 days nearly | Yes | None | |
| 24 | 1 | Indefinite | ? | 2 months | No | U. M. | Two | 5 days nearly | Yes, incised | Negative | Nearly healed on 5th day; not seen afterward |
| 25 | 2 | Indefinite | None | 10 days | Negative | U. M. | One | 10 days | No | ++++ (2 wks. later) | |
| 26 | 3 | 2 weeks | Ointment | 4 weeks | None | U. M. | Two | 5 days | No | None | |
| 27 | 2 | 5 days | None | 3-4 days | None | U. M. | One | 5 days | No | None | |
| 28 | 1 | 2 weeks | ? | 5 days | Negative | U. M. M. | One | 6 days | No | None | |
| 29 | 1 | 10 days | None | 2 days | Negative | ? | One | 6 days | No | ..... | Has been sent for Wassermann test; think there is a hard chancre at meatus |
| 30 | 3 | 4 days | Calomel | 14 days | Negative | U. M. E. | Two | 7 days | No | None | |
| 31 | 1 | 5 days | None | 3 days | Negative | U. M. | One | 4 days | No | None | |
| 32 | 2 | Indefinite | None | 11 days | Negative | U. M. | Two | 7 days | No | None | |
| 33 | 5 | Indefinite | Calomel | 8 days | Negative | U. M. | Two | 9 days | Yes, subsided | None | |
| 34 | 1 | Indefinite | Aristol | 2 weeks | Negative | ? | Three | 12 days, not healed | No | Positive | |

* Names in diagnosis column: U. M., Ulcus molle; U. M. M., Ulcus molle miliare; U. M. E., Ulcus molle elevatum; U. M. P., Ulcus molle phagedenicum.

or four minutes and then sponged off. On the dry sore a light dusting powder, calomel or a morphin-narcotin mixture is used, and one or two thicknesses of gauze, moistened with black wash or tap water, are applied and the foreskin drawn forward over the whole. This is changed two or three times daily; and every second day, unless granulation is progressing satisfactorily, a 10 per cent. solution of copper sulphate is applied. The majority of chancroid ulcers do well under this treatment, but from 15 to 20 per cent. tend either to persist many weeks, or to grow gradually larger and deeper in spite of treatment. The direct cause is the failure to sterilize the wound.

Regardless of the appearance, duration or previous treatment of a venereal sore before it is destroyed, it is always examined for spirochetes.

If antiseptics have been used, it is our custom to apply a moist dressing of cotton wet with tap water for from twenty-four to seventy-two hours, during which time two or three microscopic examinations are made. If no treatment has been previously given, the examination and destruction of the sore is accomplished at the first visit.

A small pledget of cotton is wet with 10 to 20 per cent. solution of cocain and applied to each lesion. After four or five minutes the field is carefully

cleansed with soap and water and dried. Each lesion is then thoroughly wiped out with a cotton wound applicator until bleeding ensues. This is arrested by sponging, and when only serum exudes from the wound, this is collected for examination by dark field or stain, as may be the choice of the operator.

A 25 per cent. solution of copper sulphate in distilled water is now applied to the sore, and the short high frequency spark from a rather fine-pointed vacuum electrode is applied directly to the sore for one to three minutes, depending on the extent of the ulceration. Especial care is exercised in carrying the point of the electrode well down into any fissure or undermined edge, and the area of application should extend over the edge of the sore about one sixteenth inch into the doubtfully healthy area.

The current is not turned off until every crack and crevice has been thoroughly treated and the surface of the sore is changed to a dark greenish gray. It is then wiped dry and some antiseptic powder is lightly applied to the entire mucous surface of the preputial cavity. If the sore is exposed, it should be covered with a thick moist dressing, for which any very dilute antiseptic solution may be used, as a 1:10,000 or 1:20,000 mercuric chlorid solution; or even tap water answers nicely in most cases. This should be changed once or twice daily, and must not be allowed to stick.

The patient is instructed to return in two days, and, if the work has been carefully done, the wound will present a perfectly healthy granulation that will go on to complete healing in a few days. If the sore does not look clean, the application is repeated at the second visit. The patient returns each second day. If the original sore was large, or if a small sore does not seem to be closing rapidly, we have made it a practice to apply, at each visit, either a 10 per cent. copper sulphate or a 5 per cent. silver nitrate solution. We do not hesitate to repeat the original cauterization at any time we have reason to think the chancroidal infection is not completely eliminated.

The complete success of this, as of any other method, is dependent on careful, thorough work. There is more danger of too little cauterization than of too much, and thorough cleansing at the time the sore is destroyed must not be forgotten. Again, the after-care, especially with *ulcus molle* outside the preputial cavity, and with *ulcus molle miliare*, is of the utmost importance. If one fails to carry the electrode to the bottom of the cavernous ulcer, then one is lost. It heals over the surface, and in two or three days breaks out anew, larger and deeper than before.

If the dressing on an exposed surface is not changed once daily, and moistened at least three or four times, in many cases one will not succeed.

The accompanying table gives our results in all cases in which data are complete. A number of patients failed to return after the first treatment. Several of these have been seen later, and reported uneventful healing in a few days. In no case have we been able to record a failure.

Three or four cases in which the lesions did not heal well or recurred later developed a positive Wassermann reaction, notwithstanding the fact that careful microscopic examination was negative for spirochetes.

To be thoroughly scientific, one should always be able to explain and prove the *modus operandi* of any treatment presented to the profession. Unfortunately,

we are not able to do just that, but we believe that by this combined treatment we have been able to produce deep sterilization of the chancroid ulcer with a certainty not heretofore effected. This has been done with great satisfaction to ourselves and our patients. We present the method with the hope that our friends may find in its application the same assurance of success that we enjoy.

1212 Kresge Building.

ABSTRACT OF DISCUSSION

DR. NOAH E. ARONSTAM, Detroit: The method of procedure in the treatment of chancroids as outlined by the essayists is neither novel nor unique. Old French authors on the subject as far back as 1880 advocated the use of strong solutions of copper sulphate. In the *Allgemeine Krankenhaus* of Vienna the same method was pursued twenty-five years ago. In the issue of 1902 of the *Russkiy Vrach* a similar method was mentioned.

The use of the high frequency tube on the lesions after the preliminary cauterization with copper sulphate is somewhat obscure and questionable to me. A pellicle is formed after such procedure on the sore, and hence the violet ray is unable to diffuse or penetrate and thus sterilize the lesion. My experience has been that it requires an untreated and unmolested lesion in order that the ray may prove efficacious.

As regards the varieties of chancroids, I am in the habit of classifying them as follows: (1) simple erosive chancroid; (2) miliary ulcer, or *ulcus erosive miliare*; (3) serpiginous form; (4) phagedenic; (5) pultaceous or necrotic; (6) gangrenous.

In the last four varieties the prognosis is unfavorable; the lesions prove very obstinate. Even in the simple variety a definite prognosis cannot always be ventured, and we should be guarded in expressing a decided opinion. There is no uniform method by which we can accomplish results. In my hands equal parts of phenol and iodine have proved useful. I refrain from using such caustic agents as strong solutions of silver nitrate, nitric acid and the methods promulgated by the authors for fear of inducing an indurated condition which may closely resemble the primary lesion of syphilis and thus mask and obscure the clinical features of the sore.

I wish to lay stress on the employment of bacterins in chancroidal lesions. I use a mixed staphylococcus vaccine, as frequently the chancroid harbors a mixed infection, superimposed on its causative agent, the *Ducrey-Unna bacillus*. I also desire to object to the term "chancroid." It should be changed to infective venereal ulcer, and the inadequate and antiquated term "chancroid" should be abolished.

DR. H. L. KRETSCHMER, Chicago: The results that Dr. Robbins obtained with his combination treatment are better than the results we have obtained. We have been using the copper in 25 per cent. solution, preceded by 95 per cent. phenol, then applying the wet dressings just as he has done; that has given us very satisfactory results. I should like to ask Dr. Robbins how much of his good results he attributes to the action of the caustics and how much to the action of the high frequency current. I should like to ask whether or not in any of the cases of multiple chancroids he cauterized some of the lesions with copper and used high frequency, and treated some with the high frequency alone.

DR. CHARLES W. BETHUNE, Buffalo: I should like to ask Dr. Robbins whether he obtained his high frequency current from the regular, standard high frequency machine which we use in fulguration, or from one of these small machines costing about \$35. Is the latter sufficient to cause the penetration of the copper sulphate?

Dr. Robbins mentioned the use of mercurials in the treatment of chancroids. One can never tell absolutely that there is not a double infection with the spirochete. In that case one may mask the secondaries, possibly the general adenitis, and very probably the Wassermann reaction.

DR. B. S. BARRINGER, New York: Dr. Livermore of Memphis, Tenn., sometime ago suggested that an ounce of argyrol

crystals would cure all the chancroids in the United States, if properly applied. That was a rather vigorous statement, but we at Bellevue started to use the argyrol treatment. The ideal way that we found to use it was to cocainize the chancroid first and put argyrol crystals directly on it. Our results have been so good that we have practically given up every other form of treatment. We are rather inclined to agree with the gentleman who first published this statement.

DR. LELAND J. BOOGHER, St. Louis: This subject has been the *bête noire* of all of us. I have seen some cases that I did not believe any form of treatment would touch, and I remember one or two cases that ran on for a year or two until the tissue was almost entirely denuded. I have used crystals of argyrol and also another proprietary silver preparation. There are some cases in which I would like very much to have Dr. Robbins try his form of treatment. I have one such patient now, whom I have been treating about three months, and he is getting worse every day.

DR. G. G. SMITH, Boston: No one has yet mentioned the use of the actual cautery for very severe forms of chancroid, and I should like to mention it as having been in our hands a real weapon of reliance in cases which were not to be cured by applications of phenol, nitric acid and other caustics. We have had to anesthetize the patient either locally or by gas, and then apply the actual cautery until the whole thing is burned out to a dry crisp. I have seen some chancroids which resisted one treatment of that kind, but a second treatment always cured them.

DR. IRWIN E. COLGIN, Waco, Texas: I have used a high frequency spark, using an electrode which approached the roentgen ray, and have had some very good results, but I think Dr. Robbins' method is superior to this, due to the fact that the copper in 25 per cent. solution will act as a conductor. The ordinary effluve from a high frequency electrode, using a long spark, cauterizes the surface, and I do not doubt that using an electrode in conjunction with the copper sulphate in 25 per cent. solution would cause the current to be carried to a greater depth and would sterilize deeper than if the electrode were used by itself.

DR. F. W. ROBBINS, Detroit: In this class of cases we have tried copper sulphate, Dr. Morton's use of zinc chlorid, high frequency—all these various things alone, without unusual results. Is there any one here who has not seen a chronic ulcer of the inguinal region, after a bubo has been opened, that has run on and on, the patients looking tuberculous and the condition continuing in spite of everything done? One such patient was in the hospital and in bed from four to six weeks. We used argyrol crystals and tried to cleanse that wound as thoroughly as possible, but without success as far as results were concerned; the patient simply remained in the same condition with this miserable sore that would not heal. Within a week after combined treatment was instituted the ulcer had healed and he was well.

Dr. Aronstam mentions the former use of copper; that is all right; but whether they used any strong metallic caustic in connection with the high frequency I very much doubt, because in those days they had no knowledge of high frequency or violet rays.

As to the machine from which we obtained this current, I use the Wappler larger battery; Dr. Seabury uses the smaller portable one. One is just as effectual as the other.

Insurance Company Studies Automobile Fatalities.—The Metropolitan Life Insurance Company has made a statistical study of the death rate from automobile accidents which discloses the fact that the mortality rate from automobile accidents has more than trebled since 1911. In 1911 the death rate from this cause was 2.3 per hundred thousand; in 1916, it increased to 7.4. The rate for 1916 shows an increase of more than 37 per cent. over that of 1915. Nearly one third of those killed are children under 10 years of age. Another condition developed by this study is the fact that so far as the industrial population is concerned, more deaths are caused by automobiles than by surface cars, subway trains, elevated trains, bicycles and horse-drawn vehicles combined.

A MORE DELICATE WASSERMANN REACTION DEPENDING ON THE USE OF INCREASED QUANTITIES OF BLOOD SERUM *

P. T. BOHAN, M.D.

AND

L. A. LYNCH, M.D.

KANSAS CITY, MO.

This paper is based on observations made on 200 patients examined serologically for evidences of syphilis. The work done has covered a period of one and one-half years. The material was obtained from the medical wards of St. Margaret's Hospital. The data given represent our effort to develop a Wassermann technic which would check up in a larger percentage of cases with the clinical diagnosis of syphilis and which would enable us to attach some significance to the negative Wassermann reaction.

Our method consists essentially in the use of graded increasing amounts of blood serum and spinal fluid, each serum being tested in the following amounts: 0.1 c.c., 0.3 c.c., 0.5 c.c. and 1 c.c., while amounts of spinal fluid as high as 10 c.c. are used in a single test.

Our investigation shows that as much as 1 c.c. of serum may be safely used, and that a negative reaction with 0.1 or 0.2 c.c. of serum is of little or no value in excluding syphilis in the latent or inactive stage, such as locomotor ataxia. In the cases here reported, which required the use of increased amounts of serum to obtain a positive reaction, the diagnosis of syphilis could be made by other means, such as a history of chancre, the clinical findings and by tests of the spinal fluid. In fact, in not a single case that gave a positive reaction only when as much as 1 c.c. was used did we fail to obtain positive findings in the spinal fluid, such as a positive globulin test, a typical colloidal gold chlorid test, as well as a positive Wassermann reaction when a sufficient amount of fluid was used. Seldom, however, was it necessary to use to exceed 5 c.c. of spinal fluid.

Lange,¹ in 1912, was using as high as 10 c.c. of spinal fluid for a single reaction, but he was not using large amounts of blood serum. Kromayer and Trinchese² were using as high as 0.4 c.c. of blood serum in 1913, obtaining more specific results than with the smaller amounts.

We have tested over 2,500 blood serums in amounts as high as 1 c.c. This report is made on but 200, which we checked up by a complete examination of the spinal fluid, a complete clinical history and a careful physical examination.

Of the 200 cases, 143 were known syphilitic. There were forty-one cases of paresis, forty-eight of tabes dorsalis, twenty-nine of cerebrospinal syphilis, seven of congenital syphilis and eighteen cases of syphilitic heart involvement. Eighty-three of these gave complete inhibition of hemolysis with 0.1 c.c. of blood serum; twenty-two gave partial inhibition when 0.3 or 0.5 c.c. was used. In fifteen there was no inhibition until done with 0.5 c.c., and in eighteen cases it was necessary to use 1 c.c. before any degree of inhibition was noted. Six blood serums were negative when 1

* Read before the Section on Pathology and Physiology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Lange: Berl. klin. Wchnschr., 1912.

2. Kromayer and Trinchese: Med. Klin., 1912, 8, 404.

c.c. was used. Five of these were long standing inactive cases of tabes, the other being a case of congenital syphilis.

It is to be noted that if only the ordinary small amounts of serum had been used, a total of but 59 per cent. positive would have been obtained; while, when 0.5 c.c. was used, the percentage was increased to 74 per cent., and if an amount as high as 1 c.c. was employed, 96 per cent. gave fixation of complement. This is a degree of specificity which has not heretofore been approached.

Of the 200 cases, forty-seven gave no suspicious history, and there were no physical findings suggesting syphilis. None of these gave any inhibition of hemolysis with 0.1 c.c. of serum; two gave a ++ reaction with 0.3 c.c., and + + + + when 0.5 c.c.

those instances that manifested any activity of the process. Also a positive spinal fluid Wassermann test was obtained in all the instances in which the blood was positive with increased amount, in some cases as much as 10 c.c. or more of spinal fluid being required. It is often possible and practical to determine the minimal amount of spinal fluid necessary to use in obtaining a positive Wassermann reaction by the intensity of the colloidal gold chlorid test and the amount of globulin present.

The complement fixation test is essentially a quantitative one, probably dependent on lipid substances resulting from antibody formation. The concentration of these substances depends on the activity of the process; hence the frequency of the negative reaction in those cases of long standing in which scar tissue

REACTIONS WHEN INCREASING AMOUNTS OF BLOOD SERUM WERE USED

| | Quantity of Serum Used | | | | Remarks |
|---|------------------------|----------|----------|----------|--|
| | 0.1 c.c. | 0.3 c.c. | 0.5 c.c. | 1 c.c. | |
| Congenital syphilis, 7 cases: | | | | | Examination of spinal fluid showed positive globulin, typical gold curve and positive spinal fluid Wassermann in all cases. In two cases 5 c.c. of spinal fluid had to be used to obtain a + + + + reaction. In four cases cell count was below ten to the cubic millimeter. In only one case was the cell count above twenty-five. |
| 1 case..... | + + + + | | + + + + | | |
| 1 case..... | ++ | ++ | ++ | + + + + | |
| 3 cases..... | Negative | Negative | ++ | + + + + | |
| 1 case..... | Negative | Negative | ++ | + + + + | |
| 1 case..... | Negative | Negative | Negative | Negative | |
| Tabes dorsalis, 48 cases: | | | | | Diagnosis of tabes made by clinical manifestations and physical findings, increased globulin, typical gold and positive spinal fluid Wassermann in all cases. In 34 cases spinal fluid Wassermann was positive with 0.5 c.c. Largest amount required 5 c.c. In 22 cases cell count was below 10 to c.mm. Only 4 cases had counts above 50 to c.mm. |
| 24 cases..... | + + + + | | + + + + | | |
| 10 cases..... | ++ | ++ | + + + + | | |
| 3 cases..... | Negative | ++ | + + + + | + + + + | |
| 1 case..... | Negative | Negative | ++ | + + + + | |
| 5 cases..... | Negative | Negative | Negative | + + + + | |
| 5 cases..... | Negative | Negative | Negative | Negative | |
| Paresis, 41 cases: | | | | | Clinical diagnosis made in all cases. In thirty, spinal fluid Wassermann was positive with 0.5 c.c. In only 6 cases was it necessary to use more than 1 c.c. Paretic curve with all cases and an increase in globulin. In but 4 cases was the cell count below 25 to c.mm.; in 12 it was above 100 c.mm. |
| 38 cases..... | + + + + | | + + + + | | |
| 2 cases..... | ++ | ++ | ++ | + + + + | |
| 1 case..... | Negative | Negative | ++ | | |
| Cases with heart involvement, 18 cases: | | | | | All were cases of aortic insufficiency. All gave precipitation of colloidal gold in syphilitic curve with increased globulin, and in 5 there was no increased cell count. |
| 8 cases..... | + + + + | | | | |
| 4 cases..... | ++ | + + + + | | | |
| 1 case..... | Negative | Negative | + + + + | | |
| 2 cases..... | Negative | Negative | ++ | + + + + | |
| 3 cases..... | Negative | Negative | Negative | + + + + | |
| Cerebrospinal syphilis, 29 cases: | | | | | Diagnosis made by clinical manifestations and physical findings. Positive spinal fluid Wassermann in all. In fourteen cases it required more than 1 c.c. The colloidal gold test was positive in all cases, with increase of globulin. The cell count was below 10 to the c.mm. in 8 cases. It was above 75 to the c.mm. in but 4 cases. |
| 10 cases..... | + + + + | | | | |
| 1 case..... | ++ | ++ | + + + + | | |
| 3 cases..... | ++ | ++ | + + + + | | |
| 1 case..... | Negative | ++ | + + + + | | |
| 2 cases..... | Negative | Negative | + + + + | | |
| 2 cases..... | Negative | Negative | ++ | + + + + | |
| 3 cases..... | Negative | Negative | Negative | + + + + | |
| 1 case..... | Negative | Negative | Negative | ++ | |
| 6 cases..... | Negative | Negative | Negative | ++ | |

was used. These were, clinically speaking, cases of chronic nephritis. Three gave complete inhibition of hemolysis with 0.5 c.c. One of these patients had auricular fibrillation, one had typhoid fever, and the other nephritis. Two gave a partial inhibition with 1 c.c.; one was a patient with multiple sclerosis, and the other was a pneumonia patient. One gave complete fixation of complement with 1 c.c., negative in less amount, this being a case of multiple sclerosis. There were, of course, cases of latent syphilis.

It is of especial interest to note that in those patients in whom we obtained a positive complement fixation reaction with the use of increased amounts of serum, both in the group of known syphilitics and those presenting no evidences of syphilis, a precipitation of the gold has always been obtained in the tubes characteristic of the syphilitic curve, along with a demonstrated increase in globulin and an increased cell count in

is the immediate cause of the symptoms and the spirochetes to a certain degree inactive, as in tabes dorsalis. It is in this group of cases that, by the use of increased amounts of serum, we are able to obtain a larger percentage of positive results than we would with 0.1 or 0.2 c.c. of serum, which contains an insufficient amount of reacting bodies.

This technic indicates a more definite guide in the control of treatment, a graded increasing amount of serum being required to produce fixation of complement, depending on the intensity of the treatment. We have, of course, those cases of the latent and tertiary states in which prolonged, intensive treatment has failed to diminish the degree of complement fixation; however, it is the rule that cases under treatment become negative in the smaller amounts of serum first, requiring much longer courses to become negative when 1 c.c. is used.

Concerning the significance of a serum becoming negative with 1 c.c. of serum during the course of treatment, we can only say that this means much more than when only the ordinary small amount is used.

TECHNIC

At least 10 c.c. of blood should be obtained and as much spinal fluid as can be taken with safety, from 10 to 15 c.c., if possible. After the blood is centrifuged and the clear serum inactivated, it is transferred to a small centrifuge tube to which is added 0.1 c.c. of pure undiluted thoroughly washed sheep corpuscles, shaken and allowed to stand for one-half hour in the ice chest. The serum is again centrifuged, throwing down the sheep corpuscles, and the clear serum pipetted off ready for the test. In this way natural antishoop hemolysin is removed by absorption.

A titration for the proper unit of complement is made with a 2.5 per cent. suspension of sheep corpuscles, a known titer of immune rabbit serum and a 1:10 dilution of fresh guinea-pig serum. This is done in the presence of the different amounts of serum or spinal fluid to be used in the test: in the case of blood serum, 0.1, 0.3, 0.5 and 1 c.c. The serum is taken from a known negative case. When working with spinal fluid, the titration is done for amounts as high as 10 c.c. The spinal fluid being hypotonic for sheep cells, it becomes necessary to add sufficient sodium chlorid to make an isotonic solution.

The proper units of complement having been determined, the tests are set up, each serum being run in the amounts mentioned, namely, 0.1, 0.3, 0.5 and 1 c.c. Two units of complement are used for each different amount of serum, and each individual amount is controlled for anticomplementary properties. An alcoholic extract of human heart muscle, to which was added 0.2 per cent. of cholesterin, was used as antigen in this technic. Sufficient 0.9 per cent. salt solution is added to each tube, so that when the test is complete there will be 4 c.c. in each, for it is for this total amount that the titration for the complement unit is made.

One and one-half hours in a water bath at 37 C. is allowed for the fixation of complement, after which the unit of amboceptor and the sheep cells are added, and the final readings are made at one-half hour intervals for two hours. It is to be noted that with the larger amounts of serum the end-reaction is slower in taking place, but with an active amboceptor the final reading can safely be made at the end of two hours.

CONCLUSIONS

1. With larger quantities of serum a higher percentage of positive reactions is obtained.
2. With this technic, if the serum is fresh, 1 c.c. is not more anticomplementary than smaller quantities.
3. Normal serum does not cause complement fixation when 1 c.c. is used.
4. Our investigations corroborate the statement by Lange that in nonsyphilitic cases negative reactions are obtained in the spinal fluid with 10 c.c.
5. A negative reaction with an increased quantity of serum does not positively exclude latent syphilis. In 4 per cent. of known syphilitics there was no inhibition of hemolysis when 1 c.c. of serum was used.
6. A Wassermann test made with graded quantities of serum is not only an index of the activity of the syphilitic process, but is of value in indicating the progress of the case under treatment.

923 Rialto Building.

ABSTRACT OF DISCUSSION

DR. B. GRUSKIN, Chicago: No doubt much significance should be placed on any modification in the technic of serologic tests, and any change in the technic that will lead to clearer and better understanding should be encouraged; but there is a limit to this and one must be sure before adopting a new technic whether this is not misleading to a certain extent. From what I gathered from the paper I see nothing different than the original complement fixation test, and the reason the laboratory men decided to use small quantities is because a lot of negative cases had proved positive when large quantities were used. I do not doubt the essayists' statements, but I know that I have tried the same technic in using large quantities and I have obtained slightly positive results in negative serums, due to the fact that large quantities of serums will bind complement to a certain extent. In conclusion I wish to say that unless there are clinical manifestations, or when the spinal fluid shows a high cell count, one must be very careful in pronouncing a case positive when large quantities of serum are used.

DR. J. W. SMITH, JR., New York: What was the amount of serum used in the serum control?

DR. S. S. HINDMAN, Toledo, Ohio: In these Wassermann tests with large quantities of serum, was the active serum used, making use of the native complement? I did not understand this point.

DR. JAMES EWING, New York: It is interesting to note the constant appearance of new serologic tests for syphilis. I have often wondered why some one did not revive the old Justus test, which consisted in a sudden drop in the hemoglobin following a mercurial inunction. This test enjoyed considerable vogue at one time. The great limitation to the significance of all these tests is that they are not specific. So long as their application is restricted to clinical medicine they may be of much service, but when the attempt is made to establish new rules regarding syphilitic infection and immunity or new conditions as to syphilitic origin, they must be rated as unsafe guides. Not long since it was announced, on the basis of Wassermann reactions, that syphilis insonitum could be transferred to the third generation. In order to avoid serious errors I think pathologists in general feel that there is only one way of positively establishing the syphilitic nature of a lesion, and that is by the finding of *Spirochaeta pallidae* in the tissues.

DR. LLOYD D. FELTON, Baltimore: Instead of using a great amount of serum I have decreased the dose of complement. The Wassermann reaction is a quantitative fixation of the complement, so that the greater the amount of the complement used the greater the amount of the antibody needed to give a positive reaction. In the use of the method suggested by Bronfenbrenner—hypersensitive cells, these cells hypersensitized by 5 to 8 amboceptor units—one is able to reduce the dose of the complement to 0.01 c.c. of a 1:10 complement. This technic, in my mind, is equivalent to using a large amount of serum. The objection that this technic would make the test too sensitive cannot be sustained. It is not a question of giving too many positive reactions, but the danger of getting a negative result in serum which really is from a case of syphilis. As a rule it is easier to rule out a non-specific positive reaction from a clinically negative case and much safer than to prove an individual has syphilis when the Wassermann reaction is negative.

DR. L. A. LYNCH, Kansas City, Mo.: From the beginning of this work we have been particularly watchful for non-specific reactions. Although the technic described has been used with good results on over 1,000 blood serums and spinal fluids, we have included in this report only 200 cases, which have been checked up by a complete examination of the spinal fluid, physical findings and clinical history. We can safely say that when one is working with a hemolytic system with which he is perfectly acquainted, 1 c.c. of normal blood serum does not cause fixation of complement. The serum and spinal fluid are controlled in each of the different amounts used; also the serum is always inactivated. Both complement and amboceptor are titrated for each different

amount of serum and spinal fluid used. Observing the necessary precautions, one can safely use larger amounts of blood serum and spinal fluid, obtaining a much larger percentage of positive results in true cases of syphilis.

THE ETIOLOGY AND DEVELOPMENT OF NEPHRITIS*

WILLIAM OPHÜLS, M.D.

SAN FRANCISCO

Before entering on a discussion of my subject I wish to state that I have included in the scope of this paper only cases in which the renal tissue showed well marked diffuse hematogenous inflammatory lesions. I have excluded all focal lesions of lesser importance, whether abortive forms of true nephritis, as the embolic focal nephritis described by Löhlein¹ and Baehr,² or other focal conditions which are coincident with vascular disease and in which the disease of the blood vessels evidently constitutes the more important feature.

The cases here spoken of are those which may be designated as cases of diffuse glomerulonephritis, because the inflammatory lesions of the glomeruli play an important part in this disease and form the one connecting link in an often bewildering multiplicity of other developments. The more I study the situation both from an etiologic and a broad anatomic point of view, the more I become impressed with the more general applicability of this old term of glomerulonephritis, not only to those cases that have been commonly so designated (chronic parenchymatous nephritis, secondary contracted kidney), but also to many of those that used to be attributed to primary changes in the interstitial tissue (chronic interstitial nephritis, primary contracted kidney), or to primary changes in the blood vessels (arteriosclerotic nephritis). In this light, these various types of nephritis become mere different manifestations of one and the same disease. The differences that have been so carefully studied by the pathologic anatomists and have given rise to our complex, and, it must be acknowledged, often confusing nomenclature, naturally remain, but as purely descriptive subdivisions. They should be relegated to that point of relative importance to which they may still lay claim, and should not be permitted to cloud the real picture by the introduction of a mass of perhaps interesting but evidently subsidiary detail.

The idea that bacteria might be concerned in the production of nephritis may be said to date back almost as far as bacteriology itself. It found its simplest expression in an inaugural dissertation of Ernst,³ who worked under Klebs in Zürich, in which it is stated that true nephritis, being a genuine inflammation, was probably due to infectious agents. The support given this theory by Ernst's actual observations naturally was far from adequate. He reported two cases of acute nephritis in pneumonia in which he demonstrated bacteria in microscopic sections of the kidneys and similar findings in an instance of chronic

parenchymatous nephritis. It may be stated here that the more careful histologic examinations of a later date have failed to furnish additional proof along these lines except in rare, unusually severe cases, and bacteria, if they were present in sections, were observed not so much in the tissues as in the blood contained in the blood vessels as a part of a general septicemia.

Even before Ernst, in 1880, Kannenberg⁴ had called attention to the fact that pathogenic bacteria might be encountered in the urine in cases of acute infectious diseases, "especially when they were associated with nephritis." Kannenberg also seems to have been among the first to emphasize the fact that tonsillitis is a very common cause of nephritis, and he says that in three such cases he found micrococci in close connection with the casts, with the epithelial cells and free in the urine, an observation which recently has been reported as somewhat of a novelty. Ten years later, Agnes Blum,⁵ working under Eichhorst in Switzerland, made a careful study of the relation of various acute infections to nephritis, mostly of the acute type, but she expresses the opinion that infections may perhaps be more frequently the cause of chronic diffuse nephritis than was then commonly believed, and she mentions a case which clinically appeared to be one of chronic interstitial nephritis following repeated attacks of tonsillitis, and mentions a similar case, anatomically confirmed, following rheumatism and endocarditis.

In the same year (1890) some interesting experimental work was done by Mannaberg⁶ with streptococci isolated from the urine of patients with acute nephritis of obscure origin. By means of intravenous injections of the cultures so obtained, he reproduced severe acute nephritis in dogs and in rabbits. Mannaberg had an idea that these streptococci were specific organisms, which affected the kidneys electively. He noticed also two important points: first, that although the streptococci produced the nephritis and appeared in the urine, they did not proliferate in the kidneys, and second, that if the nephritis became chronic, the streptococci were apt to disappear from the urine. Mannaberg's investigations and experiments were performed carefully with good modern technic and therefore deserve considerable attention.

A few years later (1894) Pernice and Scagliosi,⁷ two Italian investigators, described the acute lesions which they observed in the kidneys of dogs, rabbits and guinea-pigs that had been inoculated either subcutaneously or intravenously with various bacteria (*Bacillus anthracis*, *Bacillus pyocyaneus*, *Bacillus prodigiosus* and *Staphylococcus pyogenes-aureus*), and came to the conclusion that their observations furnished the experimental proof of the existence of a form of glomerulonephritis caused by bacteria. Since inoculations of the toxins of these bacteria had much less effect on the kidneys, they concluded that the bacteria themselves played an important part in the production of the renal lesions. There was nothing specific about these experimental lesions, because they were produced similarly by different types of bacteria, among them even a nonpathogenic organism (*Bacillus prodigiosus*).

* Read before the Oregon State Medical Association, Portland, Ore., June 28, 1917.

* From the Pathological Laboratory of the Leland Stanford Junior University School of Medicine.

1. Löhlein: Ueber hemorrhagische Nierenaaffektionen bei chronischer ulzeröser Endocarditis (Embolische nichteitrige Herdnephritis), Med. Klin., 1910, 6, 375.

2. Baehr: Glomerular Lesions in Subacute Bacterial Endocarditis, Jour. Exper. Med., 1912, 15, 330; Am. Jour. Med. Sc., 1912, 144, 327.

3. Ernst: Zur Aetiologie der Nephritis, Inaug. Diss., Zurich, 1884.

4. Kannenberg: Ueber Nephritis bei acuten Infektionskrankheiten, Ztschr. f. klin. Med., 1880, 1, 506.

5. Blum, Agnes: Ueber die Aetiologie der Nephritis, Deutsch. Arch. f. klin. Med., 1890, 47, 193.

6. Mannaberg: Zur Aetiologie des Morbus Brightii acutus nebst Bemerkungen über experimentelle bakteriische Endocarditis, Ztschr. f. klin. Med., 1890, 18, 223.

7. Pernice and Scagliosi: Beitrag zur Aetiologie der Nephritis (Experimentelle Nephritis von bakterischem Ursprung), Virchows Arch. f. path. Anat., 1894, 138, 521.

In his careful work on acute diffuse nephritis, Councilman⁸ mentions the fact that in eighteen out of twenty-eight cases of acute glomerulonephritis, bacterial infection was found either in the kidneys or in other parts of the body. Fourteen of these cases were evidently streptococcus infections, and in eleven of them there was present endocarditis and general septicemia. Councilman states that bacteriologic examination did not reveal anything suggestive in his cases of subacute and chronic glomerulonephritis.

It is to be regretted that Asch's⁹ interesting monograph on the influence of bacterial toxins on the kidneys is not accompanied by illustrations, because he seems to have obtained some remarkable results by the injection of dead pure cultures of bacteria into the abdominal aorta near the openings of the renal arteries. He introduced a catheter into the abdominal aorta from below through the femoral artery with the idea of injecting the bacteria directly into the kidneys by way of the renal arteries. He worked largely with organisms of the colon group.

The same idea has recently been utilized by Winternitz and Quinby¹⁰ of Johns Hopkins, who have injected living cultures of *Bacillus bronchisepticus* directly into the renal artery of dogs with the following results: Three groups of experiments were distinguished: (1) those in which no demonstrable general infection occurs; the kidney, however, shows immediate and acute inflammatory lesions which rapidly subside and result in focal scars associated with intermittent albuminuria and cylindruria; (2) those which die acutely with fulminating renal lesion and an acute general infection; (3) those in which there was definite evidence of general infection as well as renal involvement. The first (the general infection) subsided, while the kidney changes progressed and led rapidly to functional impairment to such an extent that the organ was unable to maintain its efficiency after the other kidney had been removed. As shown in the illustrations which accompany the article, the lesions are those of acute, subacute and chronic glomerulonephritis with congestion and enlargement of the kidney in the acute cases and fibrosis and shrinkage in the chronic cases. The advantage in working on one kidney in this way is that one may produce severe lesions without necessarily killing the animal, and may then test the functional capacity of the injured kidney after it has reached the chronic stage, by removing the healthy kidney.

That it is not necessary, however, to inject the bacteria into the arterial blood stream in order to obtain the characteristic lesions in the glomeruli had already been shown by Le Count and Jackson, in 1914. These investigators injected rabbits intravenously with streptococci, and, as their photomicrographs show, produced very characteristic acute lesions in the glomeruli of the kidneys of some of their animals. Their results have been confirmed and amplified in our own laboratory.

Dr. E. W. Smith, under my direction, made repeated intravenous injections in rabbits of streptococci obtained from various sources, in order to study the more chronic changes which might arise in the various organs of these animals. Among forty-eight

rabbits, fourteen developed renal lesions, and in seven of them the lesions were well marked and extensive. These seven rabbits lived from thirty-two to 142 days. That certain streptococci seem to have a fairly definite affinity for the kidneys seems to be shown by the fact that two pairs of these rabbits had been treated with the same streptococcus, one pair with a non-hemolytic diplostreptococcus from the tonsils of a case of acute duodenal ulcer, and another pair with a similar organism from an acute gastric ulcer. That this affinity, however, is not very strong is shown by the fact that the lesions in the other three cases were due to different streptococci, and that in other rabbits the same streptococci did not produce any renal lesions. None of the streptococci which caused severe renal lesions in the rabbits were obtained from cases of human nephritis, although we used several such in the experiments. The lesions produced in the glomeruli were very characteristic of acute and subacute glomerulitis, as shown by the accompanying illustrations. The lesions were quite diffuse, so much so that in some of the specimens the great majority of the glomeruli were involved. The tubules contained blood and casts. The epithelium exhibited granular and hydropic, more rarely fatty degeneration. Some of the rabbits presented also well marked focal lesions in the interstitial tissue which, however, were probably due to spontaneous nephritis. Otherwise a moderate round-cell infiltration about the blood vessels was all that could be observed even in the animal which lived 142 days and received eleven inoculations. Three of the seven animals had developed endocarditis, and in three others the condition in the kidneys was associated with amyloid degeneration which is apt to follow repeated intravenous injections of all sorts of bacteria. The arteries in the kidneys and elsewhere were normal in all cases.

These experimental results obtained by us and others seem to prove that the suggestion made by me some years ago on the basis of my findings on human material, that the glomerular lesions in glomerulonephritis are probably embolic and due to the rapid lysis of the bacteria within the vascular loops of the glomeruli, is probably true. The type of bacteria concerned does not seem to be of much importance, provided they possess certain endotoxins which become liberated on lysis. Asch's experiments seem to show that the same results may be obtained with dead organisms as with living bacteria. In the human being we have reason to believe that streptococci, colon bacilli, influenza bacilli and probably other bacteria may act in this way, although streptococci seem to be by far the most common organisms concerned in the causation of human nephritis.

The definite knowledge of the importance of streptococcic infections in acute and subacute glomerulonephritis and much of our modern knowledge on nephritis we owe to Löhlein's¹¹ careful anatomic and clinical investigations. His observations have been abundantly confirmed since, and are thoroughly accepted in Volhardt and Fahr's¹² important monograph on nephritis. It has also been gradually recognized that the most dangerous forms of nephritis are those associated with streptococcic infections of the tonsil, in which cases the persistence and recrudescence

8. Councilman: Anatomical and Bacteriological Study of Acute Diffuse Nephritis, Am. Jour. Med. Sc., 1897, 114, 23.

9. Asch: Ueber den Einfluss der bakteriellen Stoffwechselprodukte auf die Niere, Strassburg, 1904.

10. Winternitz and Quinby: Experimental Nephropathy in the Dog. Lesions Produced by Injection of the Bacillus Bronchisepticus in the Renal Artery, Jour. Urol., 1917, 1, 139.

11. Löhlein: Ueber die entzündlichen Veränderungen der Glomeruli der menschlichen Nieren und ihre Bedeutung für die Nephritis, Arbeit aus dem path. Inst. zu Leipzig, 1907, No. 4.

12. Volhardt and Fahr: Die Bright'sche Nierenkrankheit, Klinik, Pathologie and Atlas, 1914.

cences of the renal disease are probably due to the persistence of a septic focus in these organs. Similar results naturally may follow when there is a persistent septic focus elsewhere, and especially when the bacteremia is aggravated by septic endocarditis; but the latter is by no means necessary. I have been suspicious from the beginning of my investigations that chronic nephritis might also be due to such continued septic processes, and I believe that a careful clinical and anatomic study of such cases bears out this supposition.

I shall now attempt to sketch briefly the development of the different forms of glomerulonephritis.

I. ACUTE GLOMERULONEPHRITIS

The condition is usually due to some septic infection, preferably with streptococci arising in the tonsils or elsewhere. In the gross the kidneys are intensely congested, full of petechial hemorrhages, swollen and often quite edematous, so that they may be considerably enlarged. The capsule is tense and peels off readily. The glomeruli are intensely inflamed, permitting the escape of albumin, blood and leukocytes into the capsular space and the tubules. The connective tissue is in a state of inflammatory edema and is also full of leukocytes. The epithelium of the tubules is more or less degenerated, and these are filled with casts. The urine is usually scanty, but sometimes increased in quantity, and is naturally loaded with albumin. It is full of casts and leukocytes and sometimes contains blood in sufficient quantity to be easily seen with the naked eye, while at other times the amount is so slight that it has to be searched for with the microscope. Sometimes there is complete anuria. A bacteriologic examination of the sediment, when obtained with proper precautions, often reveals the causative agent. Often there is injury to the capillary endothelium not only in the kidneys but elsewhere, and we then observe general edema. Unfortunately, this general edema is not well developed in all cases, and there is only a slight puffiness of the face, or even this may be missing. In the absence of general edema, the condition is apt to be overlooked, especially if the primary infection (the tonsillitis, for instance) is not very severe, and the patient may never consult a physician. The disease is especially common in children, and urinalysis should never be neglected in any case that seems at all suspicious, especially when the patients do not recover promptly and completely. A "generally run down" condition and continued anemia are important signs. This early stage apparently is the only one in which the disease may be cured by proper treatment of the septic focus, rest in bed and proper diet. Therefore, it certainly is better to examine 100 or even 1,000 urines unnecessarily than to miss one case. Unless the original septic infection kills the patient or the infection heals completely and the patient recovers, a subacute condition is apt gradually to develop.

II. SUBACUTE FORM

These cases, however, often develop insidiously without preliminary acute attack, so that when symptoms arise it is impossible to ascertain the date of onset. The kidneys become even more congested and swollen, and the hemorrhages continue. The necrotic spots in the diseased glomeruli and the coagulated exudate in them gradually become replaced by cellular connective tissue, which eventually destroys the glomeruli completely and converts them into an inert mass of fibrous connective tissue. At the same time the inflamed connective tissue between the tubules begins to proliferate. In the later stages, when the connective tissue becomes more massive, evidences of shrinkage may make their appearance. The tubules still contain blood, leukocytes and casts. The epithelium usually exhibits very severe degenerative processes. In some of the cases the blood vessels in the kidneys begin to develop serious lesions which are especially well marked in the arterioles in the vicinity of the diseased glomeruli. They consist in a lateral thrombosis evidently due to injury to the endothelial lining, which process eventually may completely close these small arter-

ies. Eventually organization follows, and a fibrous thickening of the walls of the small blood vessels results. The larger arteries may also be the site of a beginning fibrous thickening of the intima. The large veins in such cases may be entirely occluded by massive thrombi. The urine continues full of albumin, casts and usually leukocytes. Although the hemorrhages persist in the kidneys, the blood does not seem to be carried out so readily, but it can usually be found by repeated microscopic study of the sediment. While at first more or less scanty, the urine in the later stages may become thin and plentiful. Bacteria are more rarely found in the sediment except in early cases.

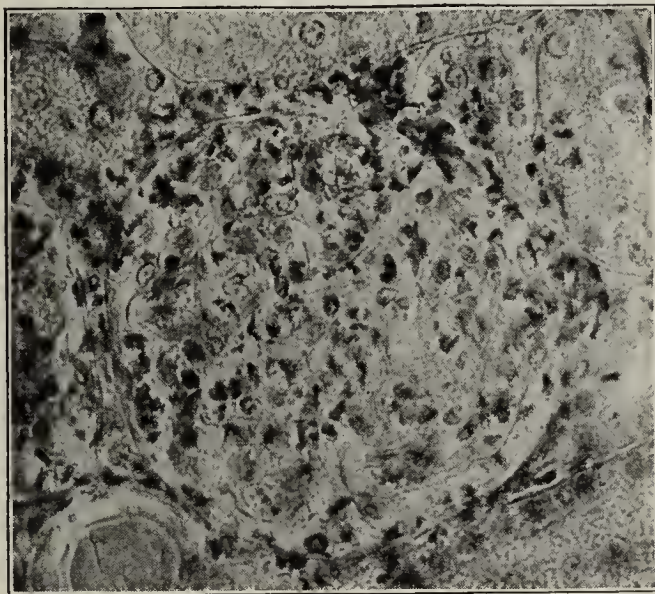


Fig. 1.—Acute glomerulonephritis in a rabbit that had received eleven intravenous injections of a pure culture of a long-chained hemolytic streptococcus obtained from the pleural exudate in a case of carcinoma. Glomerulus congested and infiltrated with leukocytes.

There is usually more or less general edema, although in this form also edema may be missing. Headache, nausea and vomiting make their appearance, and there may be typical convulsions. The anemia commonly is severe and progressive. Neuritis optica with retinal hemorrhage may be observed, and in the later stages the blood pressure climbs up to from 160 to 180, even to 200 and more. This rise of pressure is possibly due to the irritative effect of the same substance or substances which cause the damage to the endothelium of the blood vessels, the irritation causing an increased tonus in the arterioles all over the body which forces up the general blood pressure. The rise of pressure certainly precedes any noticeable general anatomic change in the small arteries, and may persist for long periods of time without being followed by any such change. Whether or not the irritation is to be followed by anatomic changes appears to be purely accidental. It is interesting to note that with these exceedingly severe lesions in the kidneys the phenolsulphonephthalein excretion still may be fair (from 25 to 30 per

cent. in two hours), in spite of the fact that the blood urea may go up to 100 mg. and more. These cases last for months and years with exacerbations and remissions. Sometimes the patients are fairly well for a long time and the condition is discovered only accidentally, or in the last stages, when severe symptoms begin to arise. The patients die of their septic condition, or more commonly of asthenia or uremia.

III. CHRONIC FORM

It is naturally impossible to draw sharply the dividing line between this form and the preceding one either clinically or anatomically. In this group are the largest number of cases. Since the publication of my last papers¹³ on this subject, I have been able to find seventeen new cases of true nephritis among about 400 necropsies. One of these was an acute one following a streptococcic peritonitis after confinement, of two months' duration. Four were of the subacute type. One of these was caused by a streptococcic osteomyelitis of the sternum of seven months' duration, and three followed tonsillitis. The remaining twelve were chronic cases. In four of the latter the history and the examination were incomplete, usually because the patients entered the hospital in a moribund condition, or because a complete necropsy was not permitted. In the remaining eight there was either a definite history of severe, often repeated attacks of tonsillitis, with or without rheumatic symptoms, or a very characteristic condition of the tonsils was discovered at necropsy, which to me appears to be of great interest.

The tonsils in these cases were not enlarged; in fact, usually they were more or less shrunk. In several of these cases they were carefully examined by the clinicians and pronounced to be normal or practically so. At necropsy one finds them retracted behind the pillars of the fauces. The surface is smooth, more or less white and cicatrized, and the openings into the crypts and the supratonsillar fossa are much narrowed, often practically obliterated. When one squeezes these tonsils, grumose material and pus, often in large quantity, squirts through the narrow openings from the dilated pockets behind. In the pus one finds great numbers of diplostreptococci either in pure culture or mixed with other bacteria. The supratonsillar fossa especially is usually very much distended and full of purulent material, and its walls may be more or less necrotic, although in sections of such tonsils the epithelial lining of the crypts may be entirely intact. Such sections usually show also heavy bands of old scar tissue throughout the tonsils, the contraction of which caused the partial occlusion of the orifices of the crypts. These old "pus bags" probably keep the process in the kidney going by more or less intermittent activity, and I wish to

emphasize again that this condition may be present without any knowledge on the part of the patient, and that it is difficult to discover clinically. Why such a condition, which undoubtedly is quite common in persons not afflicted with nephritis, should cause chronic progressive nephritis in some cases, chronic rheumatism in others, or both, or sometimes no general trouble whatever, is quite as difficult to explain as the experimental observation that if one injects rabbits intravenously with various strains of streptococci one sometimes observes a severe reaction on the part of the kidneys and sometimes none at all, nor does one always get the same effect with the same strain of bacteria.

The development of these chronic cases is usually very insidious. The course extends over many years. The original lesion in many of them undoubtedly dates back to childhood. The existence of the condition is often not noticed by the patient until quite late because the symptoms may not be pronounced and the patients are accustomed to them. The clinical history usually begins only a few months or at best a few years before death, when there is often quite a sudden change for the worse from a condition of apparently continued well-being. The kidneys at necropsy are always much shrunk, either smooth or granular or sometimes more coarsely lobulated. Whether they ever were swollen considerably at any stage of development of the disease appears to me doubtful. They show the characteristic microscopic picture of an advanced renal sclerosis with small remnants of badly degenerated or sometimes fairly intact hypertrophic kidney tissue. Even in this late stage, subacute lesions indicating more recent recrudescences may still be present. The remnants of renal tissue are often so exceedingly small that one never gets over wondering how the individuals have been able to exist so long before they

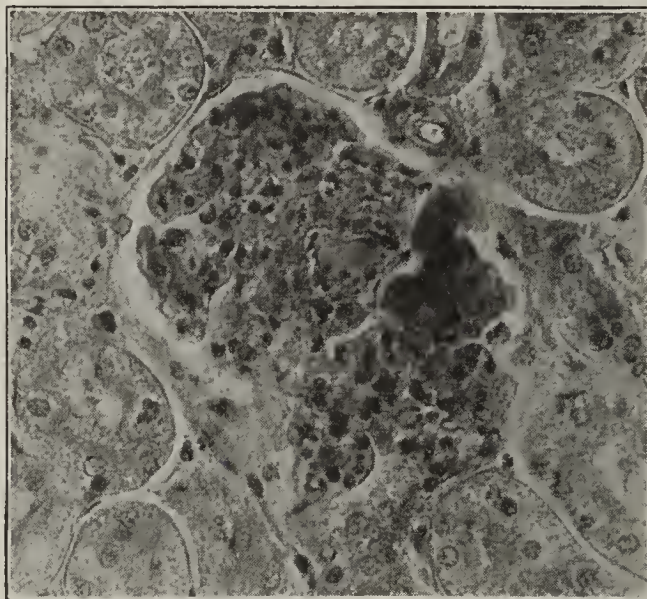


Fig. 2.—Recent glomerular lesion in a rabbit that had received seven intravenous injections of a pure culture of a nonhemolytic diplostreptococcus from the heart blood of a patient with acute leukemia. One of the loops contains a mass of micrococci, another is filled with a hyaline thrombus.

finally die of the disease. The arteries in the kidneys are usually severely affected, but there are striking exceptions to this rule. There may be a good deal of general arteriosclerosis, but this also is by no means constant. The blood pressure is usually high (from 200 to 250) and there is a marked hypertrophy of the heart, but as I have pointed out before, there seems to be a group of cases in which extreme destruction of the kidneys is observed without hypertension or cardiac hypertrophy.

When these patients come to the hospital the urinary changes are usually well marked. While they are still fairly well, they usually have polyuria and hyposthenuria. Toward the end the amount of urine naturally decreases. At this stage there is always considerable albumin in the urine. Casts may be plentiful or appear in showers; occasionally there is a slight admixture of blood or leukocytes. The phenolsulphonephthalein secretion in the later stages is always diminished, sometimes practically entirely suppressed; toward the end the blood urea goes up with the appearance of true uremia and often reaches very high fig-

13. Ophüls, William: Nephritis: A New Series of Cases with Review of Recent Literature, *THE JOURNAL A. M. A.*, Nov. 13, 1915, p. 1719; *The Pathology of Nephritis as Illustrated by Thirty-Two Consecutive Cases*, Stanford University, 1916.

ures. Edema may be a prominent symptom, but there are the well known "dry cases." The first symptom which in many of these cases drives the patient to the physician is interference with the eyesight due to albuminuric retinitis. The anemia is often well marked and sometimes very severe. The temperature is often quite fluctuating, frequently subnormal. The pulse is usually high and the pulse rate varies greatly. The patients most commonly die in uremia. Sometimes the condition is aggravated, or sudden death is produced, by lesions of the brain, due either to vascular obstruction or to hemorrhage.

The patients included in this last group vary so much in their rate of development, in the gross and microscopic appearance of the kidneys and in their symptomatology, that one can readily understand why both from an anatomic and from a clinical point of view numerous efforts have been made to subdivide this group into subgroups, according to whether, anatomically, the disease of the blood vessels in the kidneys or elsewhere plays a prominent rôle, or whether, clinically, the signs of cardiovascular disturbance predominate over those of renal origin, or vice versa. So far as I can see, and I have now studied about thirty cases carefully, both from the clinical and from the anatomic point of view, such a subdivision does not seem feasible. I acknowledge that the number is too small to arrive at any final conclusion. I wish to emphasize, however, that from this group have been rigidly excluded all cases in which anatomically the disease of the kidney was not well marked and extensive, which procedure, so far as the clinical histories go, has eliminated all the ordinary cardiovascular cases. I believe that the chronic cases collected by me correspond to Group 3 of Christian's¹⁴ most recent clinical classification, and probably take in part of his Group 2.

SUMMARY

1. There is a well defined disease of the kidneys caused by general sepsis arising from some infected focus and often made progressive by the persistence of such a focus.

2. Since the glomeruli in this disease show the most characteristic and constant lesions, we may speak of it as glomerulonephritis, and as the lesions are so distinctly of an inflammatory character, as true nephritis.

3. The disease occurs in three forms: the acute, the subacute and the chronic type.

4. The characteristic glomerular lesions may be reproduced in animals by injection of bacteria into the blood stream.

5. The majority of cases in man are due to streptococci, but other bacteria may cause similar lesions in the kidneys and elsewhere.

6. Many of the chronic cases seem to be caused by a peculiar form of chronic suppurative tonsillitis due to diplostreptococcal infection.

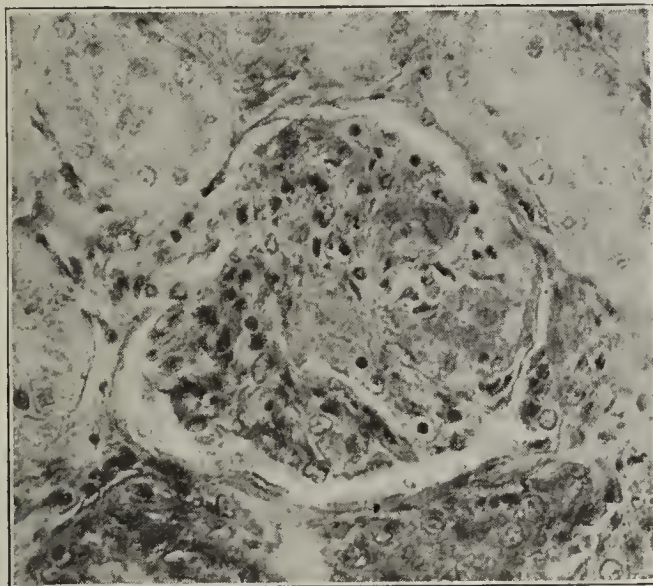


Fig. 3.—Later glomerular lesion in another glomerulus of the same rabbit, showing hyaline necrosis of a large part of the glomerulus and beginning adhesion to capsule.

JUXTA-ARTICULAR BONE LESIONS OF THE HIP*

HENRY LING TAYLOR, M.D.

Fellow of the American College of Surgeons

AND

GEORGE BARRIE, M.D.

Fellow of the American College of Surgeons

NEW YORK

The beginner in bone surgery is apt to think of the diagnosis of disease of the hip joint as a simple matter, but longer experience will convince him of his error. As pointed out by Gibney in 1884,¹ the diseases of the hip are many, owing to different infections and pathologic processes, and may be located in the joint, in the bone adjacent to it, or in the soft parts. Many affections which were formerly classed as hip disease or tuberculosis of the hip, especially since the wide use of the roentgen ray in diagnosis, have come to be recognized as distinct conditions. Such conditions, now classed as separate affections, are coxa vara and slipped epiphysis, lesions fairly well known and not difficult to diagnose. More recently,

osteochondritis of the hip, Perthes' disease, or quiet hip disease (Taylor²), a perfectly benign affection, has been studied and separated from tuberculosis of the hip. While studying Perthes' disease, characterized by its mild symptoms and course, our attention was called from time to time to lesions in the neck of the femur or in the trochanteric region, benign in character and causing mild symptoms extending over a considerable period. These cases, usually brought to the surgeon on account of a persistent lameness with little pain or stiffness, could not be distinguished clinically from early osteochondritis; but the roentgen ray revealed instead of a

flat and irregular epiphysis, a perfectly normal head and epiphysis with a spot of osteolysis (light spot) in the neck or trochanteric region.

These cases are often due to the process known as hemorrhagic osteomyelitis (Barrie³), which never results in pus formation. In another class of cases, localized infectious foci with pus formation are found, the so-called "bone abscess," which may result from the acute invasion of any pus-forming organism, or may arise from the lighting up of a local process in an old osteomyelitis. Several examples of roentgenographic bone spots, both of infectious and of noninfectious origin, will be given in this paper. Similar processes may occur about the acetabulum, but these will not be considered here, nor will malignant or benign neoplasms, tuberculous and syphilitic disease, or other

* Read before the Section on Orthopedic Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Gibney, V. P.: The Hip and Its Diseases, Birmingham, New York, and London, 1884.

2. Taylor, H. L., and Frieder, W.: Quiet Hip Disease, Surg., Gynec. and Obst., February, 1916.

3. Barrie, George: Cancellous Bone Lesions, Ann. Surg., February, 1915.

14. Christian: A Consideration of the Clinical Classification of Chronic Nephritis, Cleveland Med. Jour., 1917, 16, 223.

rarer conditions which may produce local bone lesions in the neck and trochanteric regions.

It is well to know that lesions of soft parts adjacent to the hip, such as abscess of the soft parts, bursitis, and hematoma, may affect the function of the hip

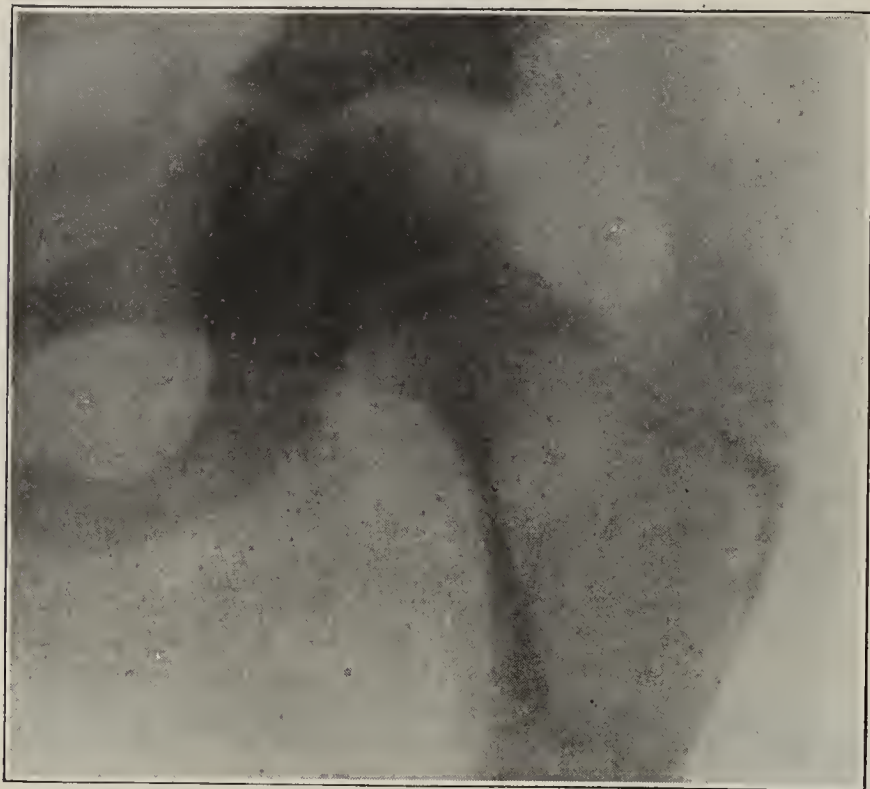


Fig. 1 (Case 1).—Hemorrhagic osteomyelitis in a girl, aged 7; there were mild symptoms for four weeks.

joint without affecting the bone, or even the synovial membrane. Acute and transitory conditions simulating an acute synovitis may result from strain or mild infections and pass away after a few weeks, leaving no impairment; but our discussion will be confined to the two classes of local bone lesions mentioned above, when occurring near the hip. They also occur near the knee and ankle and in the upper extremity, and may rarely be multiple; it is hoped to describe these conditions in later papers.

The one common symptom of the various hip conditions, at least when somewhat advanced, is lameness, and when a child suffering with lameness of longer or shorter duration is brought to the physician he should never rest satisfied until a positive diagnosis is made, no matter how mild the symptoms. This means that, besides a thorough clinical examination, the roentgen ray should be used in every doubtful case. Repeatedly we have seen, in cases of mild lameness with few or no other symptoms, the diagnosis established at once by the presence of a light spot on the roentgen plate.

Certain light spots are due to focal osteolysis caused by hemorrhagic osteomyelitis (Barrie). The process may exist without causing any symptoms, as in a case (Case 3) recently observed, in which a roentgenogram of the hips was made, simply because the boy had a spot in the lower end of the opposite femur. In several of these cases, the lesion was of large size and in an advanced stage, though the lameness had lasted only a few weeks. In many instances there is a history of a near or remote fall or injury. Usually the lesion is as large as a dime or a nickel before the advice of a bone surgeon is sought. By this time there is a little wasting of the thigh and leg muscles, and a little pain about the hip or knee. As the lesion becomes larger, the lameness and pain increase, the activity of the child is diminished, and his condition is

not quite up to par, though often the general health is entirely unaffected; there is no fever. In a few cases there are sudden exacerbations with severe pain and inability to walk. The process may go on until the entire area at the base of the neck and the trochanter is involved, leaving only a cortex of egg shell thinness.

In two of our patients (Cases 8 and 9), the femur broke on slight violence, in both instances healing kindly under splinting. These cases are usually called tuberculosis of the hip and treated as such (over-treated), even by experienced diagnosticians; they are occasionally called sarcoma.

Among our cases there are several with spontaneous healing, with fibrosis or ossification and complete restoration of function, under general or symptomatic treatment and regulation of activity, and sometimes without treatment. In other cases, the cavity becomes larger with or without expansion of the bone cortex, and sometimes perforation occurs. A piece of the wall may come away as a flake, but there is no real sequestrum, no involucrum, and no pus formation. In these advancing cases evacuation of the focus with moderate curettage of the cavity, and in the larger ones the introduction of autogenous bone chips, give uniformly good results. The cavity becomes obliterated and usually reossified. When the cavity is opened it is found filled with reddish or grayish granulations, much like spleen pulp, or by a yellowish or grayish mass like custard, or by mottled fibrous material, or again by a straw-colored serum. The cavity may or may not have trabeculae or a lining membrane; it is sometimes multilocular. The mild curettage and the introduction of bone chips stimulate osteogenesis, and the result is usually perfect or nearly perfect restitution of structure and function.



Fig. 2 (Case 3).—Hemorrhagic osteomyelitis in a boy, aged 7; there were no symptoms.

General hygienic management and a reasonable curtailment of activity, and short periods of splinting and recumbency when indicated, are effective in the milder cases without operation. The lesion and lameness may last for several years.

THE PATHOLOGIC PICTURE IN HEMORRHAGIC
OSTEOMYELITIS (BARRIE)

In about 75 per cent. of our series of bone lesions termed hemorrhagic osteomyelitis, a definite history of initial trauma or injury has been obtained. These injuries, not necessarily severe, produce numerous minute fractures of some of the delicate bone trabeculae that compose a great part of the osseous structure. In turn, there follows a disturbance of the normal anatomic circulatory apparatus. As the venous supply is here composed of vessels that are without any muscular coat, the lack of support of trabecular framework causes dilatation of the lumen of the vessels, varicosities, venous stasis, and rupture with effusion. The size of the initial lesion, through solution of continuity, may now be increased by pressure from within, exerted against the very delicate normal surrounding osseous structure, causing inhibition of nutrition, rarefaction and further destruction of the bone trabeculae, with repetition of circulatory disturbance noted above.

Efforts at regeneration and restoration are brought about in the formation of highly vascular granulation tissue. As no virulent or infective process is here involved, the injury being due apparently to mechanical insult to tissues that are sterile, and as there is no great massive destruction of structure, the inflammatory process is of a mild type.

It is a well known fact that a low grade inflammation producing granulation tissue always causes proliferation beyond its given need. In these bone lesions it is found that, when the bony defect is filled, several changes take place.

1. If the chemotactic properties in the blood of the individual cause a sufficient stimulant reaction, the vascular granulations are converted into final osseous structure, and full anatomic restoration and architectural arrangement of tissues result.

2. The host may possess the power to produce a metaplasia in the lesion by converting the granulation tissue that fills the bony defect into fibrous structure only. In this event the further progress of the lesion is stayed. It is Nature's effort at cure. While the stimulant reaction of the blood is not enough to give normal restoration of structure, it marks the end of any further progress in the lesion. The fibrous metaplasia causes contraction and retraction of the former exuberant vascular granulations. This stage of the process gives a picture of a fibrocystic osteomyelitis. Absorption or disappearance of all connective tissue apparently sometimes occurs, leaving a bone cavity without any lining membrane, but with bony walls rather more dense than the adjoining outlying tissue. Such a cavity may contain sanguineous fluid only or, what is perhaps more frequently observed, a thin straw-colored fluid. The fluid is sterile; and pus is never present.

3. If conditions pertaining to the host are hostile to either of the foregoing reactions, we observe little or no change in the granulation tissue occupying the bony defect. The attempts at regeneration are feeble, apart from the proliferation of granulation tissue. A vicious circle is thus established. Overproduction of granulations causes pressure on the osseous structure that it is apparently unable to withstand. Nutritional inhibition of the framework produces rarefaction and further bone destruction, followed by circulatory disturbances and changes. This stage of the lesion, when it attains any size, is quite commonly

wrongly termed, clinically and roentgenologically, "giant cell sarcoma." The histopathologic picture presented in this stage of the lesion is marked particularly by the presence of numerous multinucleated giant cells that are apparently performing their scavenger function of removal of debris. They are practically never present in the second phase of the lesion.

BONE ABSCESS

An infective bone spot may result from acute pneumococcus, staphylococcus, or other acute infection, when the invasion may be sudden, with fever, pain and constitutional symptoms. The symptoms are much more severe and the disability greater than in the noninfective bone lesions. The acute stage may

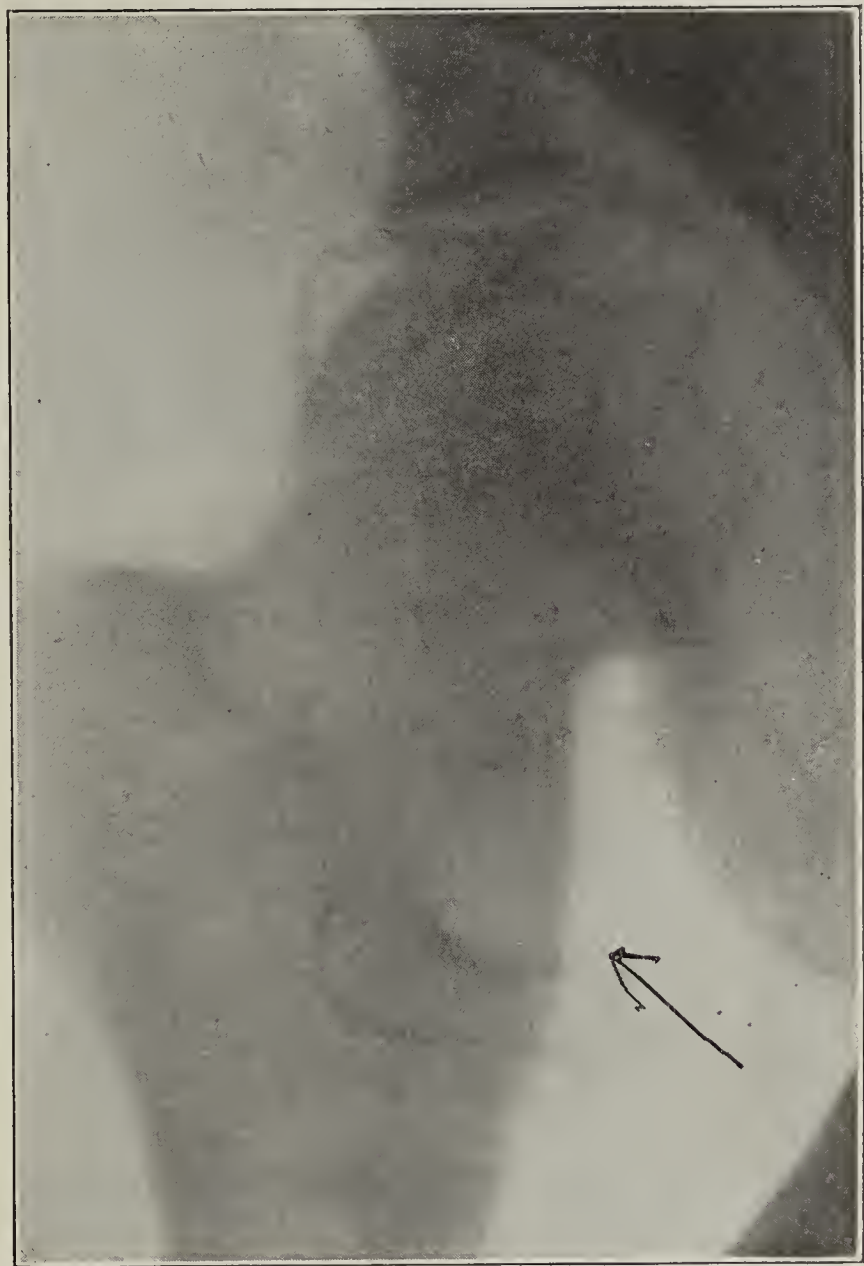


Fig. 3 (Case 4).—Hemorrhagic osteomyelitis in a boy, aged 17; there were mild symptoms for one year.

pass over into a chronic stage, when the symptoms are moderate, more like those of a beginning hip tuberculosis, for which it is usually mistaken. Some cases begin without any acute symptoms and generally acquire a slight lameness which may persist for a considerable time, and cannot be distinguished clinically from either hemorrhagic osteomyelitis or beginning Perthes' disease. The roentgenogram will help, but is not always decisive as between a benign bone spot and a bone abscess. If the cavity at operation is filled with pus, which, however, may be sterile, the lesion is a bone abscess.

One of our patients (Case 13) was treated for several years for hip tuberculosis, when the bone abscess finally discharged itself in the trochanteric region, with

later ossification of the spot and complete restoration of function. These lesions, when extrinsic and virulent enough, cause hip joint symptoms by secondary infection or through extra-articular soreness.

In another class of cases, an old osteomyelitis of the upper end of the femoral shaft or the trochanteric



Fig. 4 (Case 5).—Hemorrhagic osteomyelitis in a girl, aged 7; there were symptoms for two weeks.

region may, after years of quiescence, light up into a local focus, showing a light spot on the plate (Cases 17 and 18). This is because bone once infected may become quiescent, but probably carries infective organisms ever after. They may light up locally after trauma or impaired nutrition, or without any visible cause, not becoming infected throughout but only causing one or more local bone abscesses.

The invariable treatment is to open the bone and evacuate, scrape out and disinfect the abscess. Pus is always found. The cavity should be wiped out with tincture of iodine, drained, and allowed to granulate from the bottom. Such cases do not always heal at once, but many heal in a short time, and most of them do so after a few weeks or months, while the pain and disability are quickly relieved.

Similar treatment is also suitable for tuberculosis confined to the trochanter or base of the neck, and such timely measures will often prevent an extension of the process to the joint.

COMMENTS ON ROENTGENOGRAPHIC APPEARANCES (BARRIE)

The roentgen-ray diagnosis of hemorrhagic osteomyelitis is not, as a rule, difficult to make. The plate shows a light spot with smooth outlines and no sclerosis; it may appear to be reticulated or multilocular. It is, however, frequently impossible to state positively, even with the combined clinical and roentgen-ray pictures, the exact stage which the lesion presents, that is, whether it retains its primitive form of a highly vascular granulation tissue mass (solid type so-called giant-cell sarcoma); whether the lesion is fibrocystic in character (metaplastic stage), or whether the contents of the localized area of osteolysis or bone disintegration are wholly fluid (so-called bone cyst). Our experience does not coincide with that of some

roentgenologists, who state that they are able to differentiate between the roentgen-ray appearance of the solid and fluid lesions by the presence of trabecular division or septa. We have found identical roentgen-ray shadows in all stages of this lesion.

The roentgenographic picture in bone, exhibited by tuberculosis, syphilis, the acute infections, and benign and malignant neoplasms may readily be differentiated from the type lesions coming under the classification "chronic hemorrhagic osteomyelitis."

A conclusive and positive diagnosis regarding the exact type and stage of the lesion may be made only during operative interference. The light spot on the plate due to a bone abscess may be of irregular outline, may contain a sequestrum, or may be surrounded by sclerosed bone, but roentgenologically it is sometimes difficult to differentiate between a hemorrhagic osteomyelitis and a circumscribed medullary bone abscess that does not contain any sequestrum. The pus in such lesions is usually sterile.

Most of the cases on which the preceding study is founded were observed in the remarkably interesting material which has been at our disposal at the Hospital for Ruptured and Crippled, New York. Abstracts of the histories follow. In all, the descriptions of the lesions are founded on roentgen-ray plates.

CASES OF HEMORRHAGIC OSTEOMYELITIS OF NECK AND TROCHANTERIC REGION⁴

CASE 1.—A girl, aged 7, Jan. 28, 1917, had a heart shaped light spot $1\frac{1}{4}$ by 2 inches in the left trochanteric region. Her health was good but she had stigmata of previous rickets. The patient slipped, four weeks before; this accident was followed by lameness and pain in hip and knee. At present all hip motions are painless and free; she has a moderate limp, and also slight atrophy.

CASE 2.—A boy, aged 3, Sept. 24, 1914, had a light spot the size of a robin's egg in the left trochanteric region. There had been no injury; twelve days before he had moderate pain in the knee and could not walk. The pain was soon relieved by plaster-of-Paris spicas, which he wore eighteen months.



Fig. 5 (Case 8).—Hemorrhagic osteomyelitis in a boy, aged 6; he limped for four weeks. The roentgenogram was taken soon after the fracture through the pathologic area.

CASE 3.—A boy, aged 7, April 24, 1917, had a light spot in the left trochanteric region the size of a robin's egg; there were no symptoms. The hip was examined with the roentgen ray for information on account of pain, swelling, and lameness in the right knee, beginning three years before. The patient was treated for tuberculosis of the right knee at

4. Cases 7, 8, 9 and 10 correspond to Cases 11, 12, 13 and 14 in Barrie's paper, "Cancellous Bone Lesions," which gives histories and illustrations.

Neponsit Hospital, and wore plaster-of-Paris splints one and a half years. At present the knee function is perfect; there is no limp and no pain. A roentgenogram of the knee shows an extensive light area from changes due probably to hemorrhagic osteomyelitis. This is the first case of multiple lesions of this character observed.



Fig. 6 (Case 12).—Bone abscess, secondary to chronic osteomyelitis of tibia of opposite side, in a girl, aged 9.

CASE 4.—A boy, aged 17, Sept. 14, 1905, had a light spot the size of a lima bean in the region of the left trochanter minor. He had been slightly lame for over a year; he had mild hip-joint symptoms, and was put on crutches and high sole, and hygienic management. A month later a roentgenogram showed an oval light spot the size of a dime near the lower trochanter; the bone of the neck was much thickened.

Feb. 22, 1906, the spot was increasing. The patient was running down, and the hip motions were somewhat limited. The patient was put under ether and the small cavity that was filled with granulations was scraped out. The patient has recovered perfect function of the leg and has remained entirely well.

CASE 5.—A girl, aged 7, Nov. 11, 1916, Dr. Whitman's case, had a multilocular light spot occupying the whole of the right neck, as revealed by a roentgenogram. The symptoms had existed two weeks.

CASE 6.—A boy, aged 11, July 12, 1914, had a light spot in the neck of the right femur. He had been hit by a horse one year before. He had pain in the right hip for six months, which was worse at night; he had limped for two months. A diagnosis of arthritis of the right hip was made.

Oct. 9, 1914, motion of hip was limited; the boy had worn spicas until two weeks before; there was no spasm; roentgenoscopy revealed a spot in the neck the size of a large pea.

March 8, 1915, the focus was curetted by Dr. Barrie. The patient had continued to wear a spica and to get worse. The pathologic report was extreme acute osteitis.

April 11, 1917, the patient was well, with excellent function and no limp. Roentgenoscopy was negative for spot.

CASE 7.—A girl, aged 8, October, 1913, had a light spot in the left neck and in the trochanteric region. The patient fell, bruising the left hip, six months before; she had had pain in the left hip and had limped for the last three months; there were night cries for two months; there was slight atrophy and limitation of motion. Clinical diagnosis was acetabular tuberculosis of the hip. A roentgenogram revealed a light area the size of a pigeon's egg occupying the base of the neck and trochanteric region to the cortex. The Wassermann test was negative. A plaster spica was applied in June, 1914, with increase in the size of the lesion and of stiffness at the joint. Operation was performed by Barrie, July, 1914.

Exposure exhibited a hemorrhagic fibrocytic loose edematous mass easily removed and separated with the curet. There was free bleeding from the cavity walls, which had no lining membrane. The naked eye appearance of the lesion was that of the transitional stage of localized hemorrhagic osteomyelitis, in which the solid mass was undergoing fibrocystic changes.

Microscopic examination made from material curetted away revealed a variable histologic appearance. The bone trabeculae exhibited a slight degree of disorganization and the medullary tissue evidence of fibrosis. The principal feature appeared to be the presence of new-formed tissue composed for the most part of medium-sized fibroblastic cells. Here and there a multilobulated nucleus and a rare mitotic figure were seen. A few giant cells of the scavenger foreign body type were observed about the areas of disintegration, together with moderate hemorrhage, scattered foci of pigmented cells, and round cells.

In May, 1917, recent roentgenograms had shown reossification of the cavity. Three months before, the patient walked perfectly and was free from disability of any kind.

CASE 8.—A boy, aged 6, March, 1914, had large light area in the left neck and trochanteric region, as shown by roentgenogram. He had fallen down stairs a year before, bruising the left hip; he limped four weeks; there was no pain; there was tenderness over the trochanter, with slight limitation of motion. Wassermann and von Pirquet tests were negative. A plaster spica was applied. Several weeks later the patient was brought to the hospital unable to walk after a fall. Roentgenoscopy revealed a pathologic fracture through the light area.

June, 1914, operation, by V. P. Gibney, revealed a cavity without lining membrane filled with straw-colored fluid. A plate taken several months later showed union of fracture, filling in of cavity, and considerable reossification.

CASE 9.—A girl, aged 4, May 29, 1914, had a large, light spot in the trochanteric and adjacent regions, as shown by roentgenogram. Eighteen months before, the patient fell out of bed. Four weeks before, the child began to limp; there were no joint symptoms, and measurements were equal, but there was tenderness over trochanter.

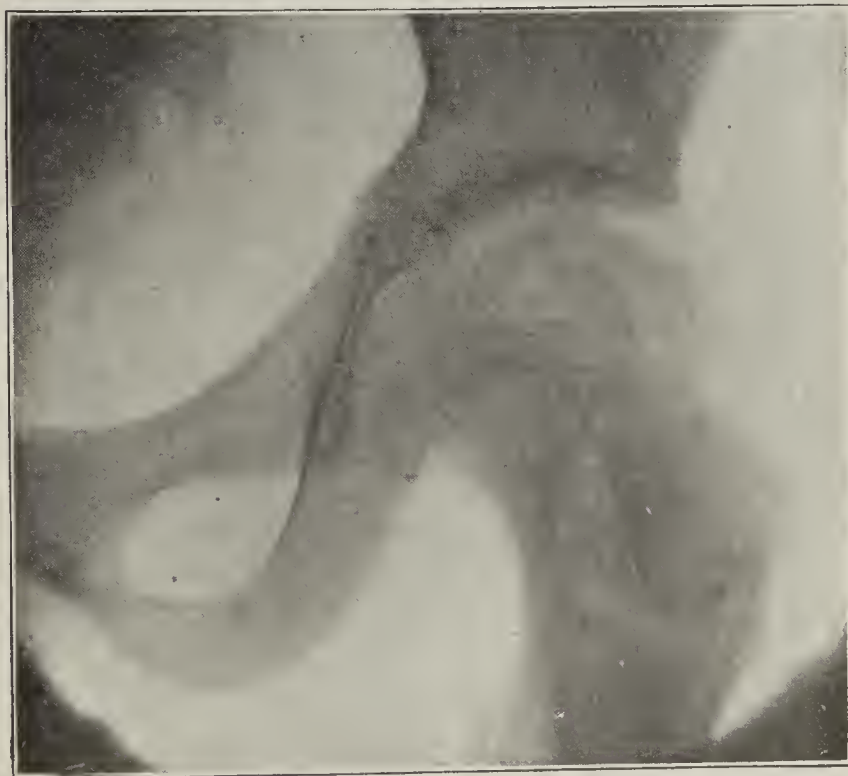


Fig. 7 (Case 13).—Bone abscess in a girl, aged 9; there were symptoms for three years.

Three days later the child tripped and fell and was brought at once to the hospital unable to move the leg. A roentgenogram revealed a fracture below the trochanter through the pathologic area.

CASE 10.—A girl, aged 18, Feb. 28, 1911 (patient of Dr. William Frieder), had multiple light spots in the right trochanteric region, which was enlarged. Six years before

the mass had been curetted out, and a pathologic diagnosis of giant-cell sarcoma was made. Several Wassermann tests were negative. This patient was recently seen, ten years or more after the operation. She was in good health and walked well.

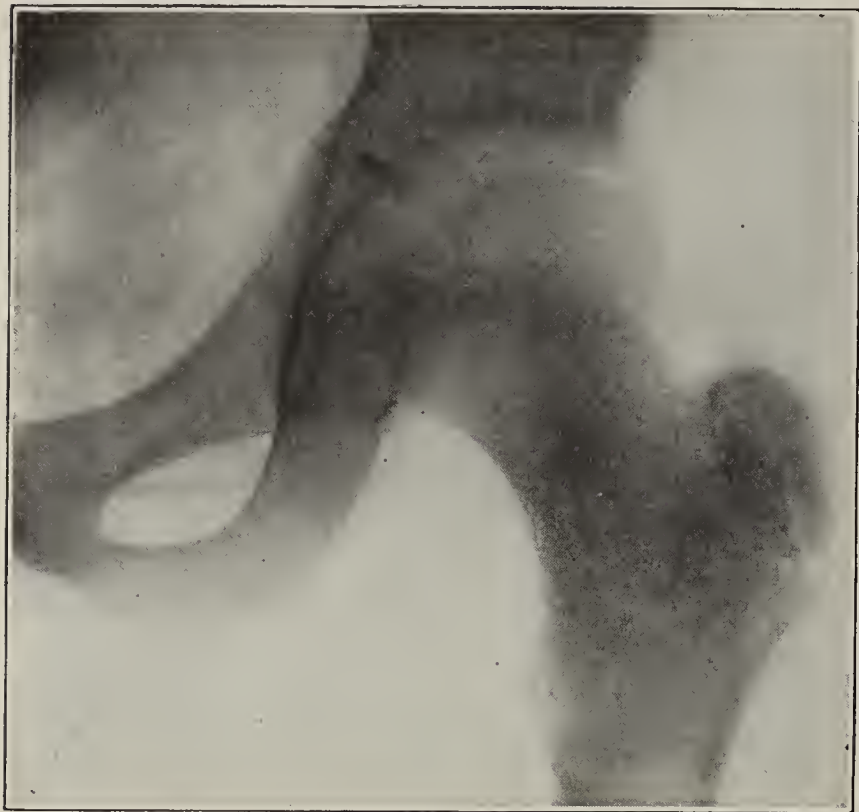


Fig. 8 (Case 13).—Roentgenogram taken one year and eight months later; there was a cure after spontaneous discharge of the abscess.

BONE ABSCESS CASES

CASE 11.—A girl, aged 2, Feb. 15, 1915, had large focus at the base of the right neck, with sequestrum, the size of a pea. Limp had been noticed six months before; her general condition was poor; the right leg was one-quarter inch shorter than the left; there was slight limitation of hip motion. The Wassermann test was negative.

CASE 12.—A girl, aged 9, April 8, 1916, had a small focus at the middle neck of the left femur. Five years before she had had osteomyelitis of the right tibia with four operations. She had had pain in the knee the last six months; lately there had been swelling in the left adductor region; there was considerable limitation of motion.

April 11, 1916, the neck of the femur was tunneled from below the trochanter by Barrie; sequestrum was removed; the abscess in the adductor region was incised.

Nov. 9, 1916, the sinus was closed, the patient walked easily, with a slight limp.

CASE 13.—A girl, aged 6, Oct. 6, 1912, had a bone abscess in the right neck; she had had scarlet fever and pneumonia in 1910; her general condition was poor; there had been discomfort in the knee and night cries for two months. A diagnosis was made of tuberculous hip. She wore spicas for three years. An abscess several inches below the trochanter was opened in July, 1914; closed in December, 1916. A roentgenogram revealed a large light spot in the neck.

March 1, 1917, walking had been without limp or complaint for twenty months; her general condition was good; her legs were equal, hip motion was normal; roentgenograms were now negative for the spot.

CASE 14.—A girl, aged 14 months, Oct. 26, 1911, had a bone abscess of the right neck; there were atrophy and pain in the right leg. The first diagnosis was poliomyelitis with history of attack four months before.

May 1, 1912, the child had night cries and was losing flesh; rotation was limited; the diagnosis was changed to tuberculosis of the hip. Soon after the roentgenogram showed a large spot in the neck and atrophy of head. The diagnosis was again changed to bone abscess.

March 5, 1913, the child was plump and rosy; she had almost full hip motion; she still walked lame, with no pain.

May, 1917, the patient had been in a home for convalescent cripples for two years.

CASE 15.—A boy, aged 9, Aug. 11, 1915, had a bone abscess of the left hip. He had pain in walking and at night. The attack came on suddenly four months before. There was some limitation of motion at the left hip. Roentgenoscopy was negative. The diagnosis was tuberculosis of the hip, and a plaster spica was applied.

Oct. 22, 1915, the thigh was flexed and adducted; two weeks before, the pain suddenly became severe and the patient could not walk; the hip was painful on motion; he was admitted to the hospital; the pain was relieved by traction in bed. A roentgenogram revealed a spot in the inferior lip of the neck, apparently containing a sequestrum.

Feb. 7, 1916, the patient was readmitted for pain and night cries; the abscess had appeared below Poupart's ligament and was incised.

July 14, 1916, the patient was free from pain, and was discharged in fair condition; a short spica was supplied and crutches were used.

CASE 16.—A girl, aged 18, Jan. 29, 1916, had a bone abscess of the neck of the left femur. Twelve years before she had an abscess back of the trochanter, which healed in six months; she had had no further trouble until recently; she had had pain in the left thigh, knee and hip. She had no pain or stiffness on moving the hip. A roentgenogram revealed a light spot the size of a dime near the trochanter. Operation was advised and declined. The pain got worse and was considerably relieved by fixation in a spica.

CASE 17.—A man, aged 23, Oct. 9, 1916, had chronic osteomyelitis of the upper end of the right femur, with bone abscess near the trochanter. Pain in the right hip and groin to the toes came on slowly five years before; the patient could not get off his chair for five weeks; he did not feel sick; since then he had had similar but milder attacks lasting about a week, every two or three months. Two years before, a sinus appeared 4 inches below the trochanter, which was still discharging. Two weeks before an abscess appeared below the trochanter. The patient's health is good; he is not lame, has



Fig. 9 (Case 16).—Bone abscess in a girl, aged 18; there were symptoms for a few weeks, but she had had abscess twelve years ago.

no pain, with hip movements free. A roentgenogram shows a spot near the base of the trochanter.

October 18, curettement of the focus was performed by Taylor. The pathologic report was chronic inflammation and fibrosis.

CASE 18.—A man, aged 34, Dec. 4, 1916, had chronic osteomyelitis of the upper third of the right femur, with bone

abscess. The patient had osteomyelitis of the upper third of the right femur at the age of 9 years, resulting in several sinuses, which did not entirely heal until eight years later. He was in bed one year at the beginning of the attack. He had been well and free from pain for seventeen years, until a month ago, when he had a dull pain in the upper part of the thigh, growing worse. There is acute tenderness at the outer and posterior aspect of the shaft of the femur below the trochanter and some induration. The leg is in good position with about 10 degrees of motion at the hip. The affected leg is a quarter inch longer than the other. A roentgenogram shows an area of bone induration, with a light spot the size of a pea in the middle.

Dec. 20, 1916, curettement of the focus was performed by Taylor.

March 1, 1917, the pain was relieved at once; the wound healed and the patient walked well.

SUMMARY

Local bone osteolysis may cause a light spot in the neck or trochanteric region on the roentgen plate. This may be due (a) to hemorrhagic osteomyelitis, which is a benign process usually running a chronic course with mild symptoms, notably lameness, and frequently ending in recovery, sometimes with and sometimes without an operation. Pus is never present; or (b) to a bone abscess with the formation of pus, which may run an insidious course with mild symptoms, or a more acute course with severer symptoms, and if evacuated and drained, usually ends in recovery with good function.

Both classes of cases are often diagnosed as hip tuberculosis, and sometimes as sarcoma. An early correct diagnosis enables the surgeon to simplify the treatment and save the adjacent joint by a timely operation, when its integrity is threatened.

125 West Fifty-Eighth Street—24 East Forty-Eighth Street.

ABSTRACT OF DISCUSSION

DR. E. D. OPPENHEIMER, New York: I should like to know which of the patients with these local lesions had also lesions in other bones; also what is the relation between this disease and the general metaplastic osteitis described by von Recklinghausen. Does the pathologic picture resemble that of the other disease?

DR. ARTHUR STEINDLER, Iowa City, Iowa: My understanding is that it is now being recognized that osteitis deformans and the osteitis fibrosa of von Recklinghausen are not entirely different diseases. The osteitis deformans (Paget) is a generalized form of the other. From the roentgenogram I had the impression that the cysts had developed on the basis of an old osteitis fibrosa. They had a hemorrhagic content. I should like to know the differential point between that form and the cases that we diagnose as the osteitis fibrosa of von Recklinghausen.

DR. HENRY LING TAYLOR, New York: I would call attention to the importance of distinguishing infective and noninfective bone spots near the hip from hip tuberculosis, and to their more favorable prognosis under proper management. Dr. Barrie will answer the pathologic question.

DR. GEORGE BARRIE, New York: The lesions of hemorrhagic osteomyelitis are single lesions; that is, they have been single in the cases observed, numbering about forty. Three fourths of our patients have given a history of initial trauma. I think probably 75 per cent. of the lesions that start as a hemorrhagic osteomyelitis later result in a so-called bone cyst. The remainder retain their primary pathologic picture of hemorrhagic osteomyelitis, which is frequently termed medullary giant-cell sarcoma. I think they are not sarcomas, because we know that the giant cells found in the mass are not tumor cells. Further, I have been able experimentally to produce the lesion simulating so-called medullary giant-cell sarcoma.

THE TREATMENT OF SCOLIOSIS *

FRANK E. PECKHAM, M.D.

PROVIDENCE, R. I.

From the earliest times, scoliosis has been written about and described in such a way as to make it the most complex subject in orthopedics. It would seem that if the explanations and descriptions could be reduced to simpler terms, the principles of treatment would be fewer and simpler, even though the ultimate results were still difficult of attainment. Rational treatment of any disease or abnormal condition is founded directly on etiology and pathology. In these later days, physiology is a little better known and is becoming of tremendous importance in giving a clearer understanding of many conditions.

In the first place, there must be a decision as to whether scoliosis is a deformity unaccompanied by disease of the structures involved, or whether there is a diseased condition of the bones and ligaments. My studies have convinced me that the bones and ligaments in these cases are in a softened condition, otherwise deformity of this type could not have developed. Also, it would seem to me that the term "scoli-

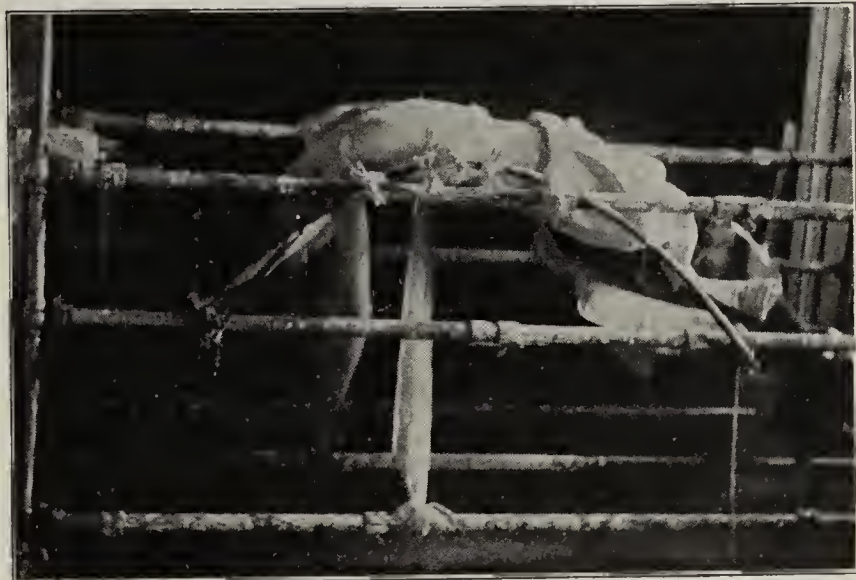


Fig. 1.—Patient in position on frame.

osis" should be used only to indicate a syndrome of a deformity dependent on such softened and yielding structures. I cannot agree with the idea that scoliosis is deformity without disease. There are thousands of children habitually assuming faulty positions every day, but only in the few does scoliosis develop, and in those few, the bones and ligaments are too soft to support the superincumbent body weight.

There are deformities simulating scoliosis. A child may have a short leg, thereby producing a tilting of the pelvis, in consequence of which curves appear in the spinal column and one shoulder is carried lower than its mate. Raising the shoe on the short leg immediately corrects the deformity, thus demonstrating the absence of the syndrome of a "deformity dependent upon softened and yielding structures."

CASE 1.—A mill girl consulted me complaining of a low shoulder and a curved spine. She had been carrying a heavy basket every day in her work and always on the same shoulder. A change of occupation was followed by a restoration to correct form. Here also there was entire absence of the syndrome. These cases, therefore, are not real scolioses,

* Read before the Section on Orthopedic Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

and some other nomenclature should be applied, possibly "pseudoscolioses."

CASE 2.—A young married woman with a moderate deformity of the spine presented herself with the following conditions: Her first child was 4 months old and very greedy.



Fig. 2 (Case 3).—Condition, March 24, 1917.

In this way, the strength of the mother had been much diminished. One shoulder was low, the spine was becoming curved, and there was an increasing amount of pain in the back. In other words, calcium metabolism had been interfered with. As I did not wish to apply a plaster jacket while the breasts contained milk, the advice was given to wean the baby and report for a jacket when the milk had completely disappeared. Here was a developing deformity dependent on softened and yielding structures; in other words, a scoliosis. This patient waited about three months before returning, at which time the back had completely straightened, the pain had disappeared, and the young woman presented every appearance of perfect health.

I have previously reported the case of a girl, aged 7, with a severe grade of scoliosis due to much softened bony and ligamentous structures following an attack of influenza, and another presenting the condition of hypothyroidism. Here the deformity disappeared, under the administration of thyroid extract.¹

The foregoing cases appeal to me as representing the difference between a real scoliosis and what perhaps might be considered a pseudoscoliosis, the one without disease of the involved structures, the other with. Deformity of the spine following an infantile paralysis might be termed a paralytic scoliosis, just as, similarly, we speak of a paralytic clubfoot.

If the hypothesis be accepted that scoliosis is dependent on a softened condition of the bones and ligaments, due presumably to some interference with calcium metabolism, then it seems fair to consider that it is the downward pressure of the head and body

weight on this disease-weakened structure which produces the deformity. The comparison should not be with a clubfoot, but with a bow-leg or knock-knee; in other words, softened bony structures yielding to superincumbent body weight.

The etiologic factor then becomes the process which interferes with calcium metabolism. This may be rachitis, infections (including autointoxications), or the rapid growth which sometimes takes place in adolescence. The physiology of the endocrine organs is of great importance, and the thyroid gland, in particular, is supposed to preside over calcium fixation. When these physiologic processes go wrong, trouble arises.

These are some of the factors which produce a softening of the vertebrae and ligaments. These vertebrae and ligaments, yielding to the superincumbent body weight, become pushed downward and thus the deformity of scoliosis is produced. It is a scoliosis from the earliest stages. There may be different degrees of severity, both of symptoms and of deformity, but it is scoliosis all the way through. The duration of this softened condition usually extends through quite a period of time, and it is the treatment of this condition to which sufficient attention has not been given. This is pure physiology. In cases of hypothyroidism, the thyroid gland may be indicated. In the rapid growth of adolescence when there has been no scoliosis, but the symptoms have been backache and headache, swollen eyelids, the entire lack of strength and often the appearance of stupidity, the admin-



Fig. 3 (Case 4).—Spine of a girl, aged 18, before beginning the present form of jackets, Jan. 6, 1916.

istration of thyroid extract will usually produce the desired result. One case referred to above, in which scoliosis was present in addition to all of these symptoms, the deformity disappeared, as illustrated in the original article. In other cases when it was uncertain

1. Peckham, F. E.: Am. Jour. Orthop. Surg., December, 1916; Rhode Island Med. Jour., January, 1917.

what process was going on, I have used the mixed gland tablets. With more definite knowledge along these lines, much better physiologic results must be obtained.



Fig. 4 (Case 4).—March, 1916; second jacket.

Regarding the mechanical treatment, I have tried to make it such that these patients could continue their customary duties without interruption. Consequently some of them are attending school daily, others are working in the shops, and one stenographer is continuing her work without any difficulty. The patient is still placed face down over a curved frame (Fig. 1), so that the spine becomes lengthened and some of the curves are improved by the position alone. With the body in different degrees of flexion, rotary pulls are made, thus correcting as much as may be possible, and the patient still remain comfortable. Traction on head and feet, which was used in earlier attempts, has been omitted. It caused so much pressure on the stomach that nausea and vomiting resulted. In my work thus far, a new jacket has been applied once a month, in order to start all over again at frequent intervals, with the body in as good a position as the patient will tolerate.

CASE 3.—J. S., first reported in May, 1916, is retained in plaster, as shown in Figure 2.

CASE 4.—E. M., a girl, had practically attained her growth when the present method of treatment was begun. For the preceding year, other forms of jackets and braces had been tried, but the deformity was increasing, until in January, 1916, the condition was as is shown in Figure 3. Jackets have been reapplied monthly, and Figure 4 shows the condition in March, 1916. Figures 5 and 6 show the condition as late as April, 1917. She is now 19 years of age, and still improving. The last picture shows still further improvement, but came in too late for publication.

266 Benefit Street.

ABSTRACT OF DISCUSSION

DR. ALBERT H. FREIBERG, Cincinnati: Many years ago I was associated as assistant with the late Dr. J. Wolff in Berlin, at the time when discussion of the law of the transformation of bones was going on. It had been the theory of many before this time, twenty-five years ago, that cases of adolescent scoliosis, particularly, were produced by some softening disease of bone, which they used also to explain other deformities such as flatfoot and coxa vara, which they considered akin to rickets. So they spoke of adolescent rickets. Wolff came back at them with the argument that they were unable to produce any tangible evidence of its existence, and they were not able to do so. It is not fair to assume that there is no such distinction as that between attitudinal or postural and structural scoliosis. To any one who has examined persons in the third or fourth decade of life who have had a short leg uncorrected, with a curve of the spine, disappearing entirely when in the recumbent position, showing the absence of any structural change, and especially to any one who has made roentgenograms of such patients, as I have done, and demonstrated that no structural changes had occurred, it seems to be impossible that we should hold longer the belief that no such distinction should be made. That the one condition may pass into the other must, I think, be assumed for the present, but that they are distinct conditions must also, I believe, be assumed. Of course the old views regarding adolescent rickets were expressed when we knew nothing of endocrine physiology. We know little enough about it now to be willing to say that it is possible to tell in any case whether it is the thyroid, the suprarenal or the thymus, or simply a disturbance of the endocrine balance, which is responsible for such changes in the bones, which we assume, after a study of physiologic experiments, to result sometimes, at least, from a disturbance



Fig. 5 (Case 4).—June 24, 1916; sixth jacket.

of the endocrine balance. I have had the experience, as many others have, of being surprised at a very marked difference in the response to treatment in physically similar cases of structural scoliosis. I have been unable to tell by the severity of the physical changes the degree in which the patient would respond to corrective attempts on my part. I have found

sometimes that comparatively slight deformities yield practically not at all, while at other times, rather severe deformity yields easily. It has been my assumption for some time, with a more or less theoretical basis, I will acknowledge, that the differences in these cases were to be explained by differences in that individual, as compared with others of similarly severe deformity, in the resistance of the tissues—perhaps not in the bone alone. I have for some time felt that in certain individuals there is probably a great disturbance of the whole endocrine balance that is to be considered in connection with the disturbance occurring at the time of puberty, and that these things may occur under similar circumstances at later periods in life. I should like to ask whether Dr. Peckham has reason to believe that there is any mechanical advantage in applying jackets with the patient face downward rather than face upward in a flexed position.

DR. E. H. ARNOLD, New Haven, Conn.: I can do no better than to draw attention to the classification of deformities in Hoffa's book on orthopedics, which I think is serviceable at present. If he defines deformity as a change of shape in a bone or a joint, I think any or all of these symptom complexes must be scoliosis, if they are changes in direction of two bones. Therefore, there is no such thing as pseudoscoliosis, even in cases that show no change in bone structure. Hoffa classified the deformities into congenital and acquired, and divided both into contractures and weight deformities. Then you simply need to go down his list of contractures, section by section—skin, muscle tissue, nerve tissue, etc.—to find the particular kind. This classification covers a great many cases. I think it will throw light on a statement by Dr. Allen in regard to the possible use of scar tissue in holding a spine of the paralytic type; and it will help Dr. Hibbs and others in establishing the correctability of these cases by fusion, and also assist in the correction of weight deformities. These etiologic factors have always been, to me, the determining factors. If one has the symptom complex one must find the etiologic factor; and that has a great range in variety. We cannot always find out why bone softens. It sometimes softens from defects in the several internal secretions, and the deformities may be immense. Hoffa's table has always helped me to make the etiologic diagnosis. That, once established, leads to more intelligent treatment.

I also wish that Dr. Peckham would tell us how to apply these jackets. Dr. Abbott, some years ago, owing to some rather painful experience, changed his mind about the use of the heroic method of treatment. He told me that within one year he had changed from a corset that overcorrected markedly and was kept on for a long time, to one less heroic and more frequently applied, believing that the latter would give better results. I think that Dr. Peckham's is an attempt in that direction.

DR. ROYAL WHITMAN, New York: I think scoliosis should be divided etiologically into many different classes. We all recognize the fact that certain weak individuals are predisposed to scoliosis and other postural deformities, but preliminary softening of the bone can hardly be a general cause. In order to support such a contention one must explain why

five or six girls are affected to one boy. Also, why the deformity of scoliosis often increases in later years, long after any original softening of the bone has disappeared. Furthermore, all the postural deformities must be included. I am much interested in the paper quite apart from the question of etiology and should like to hear more of the details of the application of the jacket.

DR. VIRGIL P. GIBNEY, New York: I should like to have Dr. Peckham say in closing what real evidence he has that the bones are softened.

DR. SAMUEL KLEINBERG, New York: The severity of the deformity affords no basis of judgment as to the outcome of treatment. We often see cases of mild rotation deformities that resist treatment for a long time and more stubbornly than the severe types. It seems to me that the long total curves are more amenable to treatment than the double curves, particularly the S-shaped curve to which I called attention some time ago. A curve with the dorsal deformity equal to the lumbar is difficult to correct by any known

method. The types that have resisted all manner of treatment are the razorback deformity and those with congenital lesions. I have had twenty or twenty-five with congenital malformations of one or more vertebrae, and it is difficult to make any impression on them, even when the curve is very mild. When one has a malformation of the lumbar, or possibly the dorsal, vertebrae, it is impossible to make a serious impression on it. With the milder forms that have not existed a long time we not only can make an impression on the deformity, but correct it in great part by more than one method; not only by the Abbott method, but also by others; for instance, treatment in the erect posture. I have had some patients whom I have treated with jackets in the erect posture, in whom the deformity has become reduced and the patient improved as much as by the more severe method suggested by Dr. Abbott.

I should like to call attention to one type that has interested me, namely, the paralytic back. Paralytic scoliosis is often of a severe type. Can we gain a great deal by placing these patients on their back for a long time? I have recently had two patients who have improved a great deal. Both have been on their backs for six months, using corrective jackets, with a great deal of attention to the proper application of pressure over the deformity and allowing for expansion of the other side. I think it is a mistake to allow these patients to walk about.

DR. JAMES W. SEVER, Boston: As a matter of fact, in the normal mechanics of the spine, as shown by the experiments carried out by Dr. Lovett, the dorsal spine in the flexed position increases very little in total length; but he has also shown that rotation is freest in the dorsal region when in the erect position and less in the flexed. The more the person is flexed forward, the more the spine is locked against rotation; and what is gained in the total length of the spine is very little. So I imagine that mechanically this position is largely an empirical one.

DR. FRANK E. PECKHAM, Providence, R. I.: The frame that I employ is the gas pipe frame, with cross strips of can-



Fig. 6 (Case 4).—Condition of spine, April 16, 1917.

was placed between the sides and canvas going from one end of the frame to the other, so that the curve is kept tight. When the rotary pulls come it is easy to encircle the patient with plaster.

It appears to me as I perform my experiments that when the patient is laid down on a curved surface with the spine upward there is some lengthening and untwisting, simply from position; and if to that is added a rotary pull, more is accomplished. I hope this answers the question about the way of putting on the jacket.

It is rarely that bone softening is not found. We cannot, of course, cut these patients up in order to see how soft the bones are. I was interested to see a patient whose case I have reported straighten up on the administration of thyroid extract. There must have been something to cause restoration of form. Nature tries to grow a thing straight when it has a chance, and with restoration of normal physiology that was what took place. I had an interesting case in a little girl with a slight curve that absolutely resisted treatment. I could push it straight, but it would not stay. I gave her thyroid and she braced up immensely. Then she suddenly went to pieces physically and it was discovered that she had old roots in her gums. They were removed and she has braced up and done well since. Her spine is about straight, and is, I believe, on the road to permanent recovery. That was a mild case, but it was extremely resistant.

PAIN IN THE ARM: SUBDELTOID (SUBACROMIAL) BURSITIS

A FURTHER STUDY OF ITS CLINICAL TYPES, PATHOLOGY AND TREATMENT*

WALTER M. BRICKNER, M.D.

Fellow of the American College of Surgeons; Associate Surgeon, Mount Sinai Hospital; Captain, Medical Reserve Corps, U. S. Army
NEW YORK

The statement may appear bold, even to a gathering of orthopedists, that most of the cases of persistent

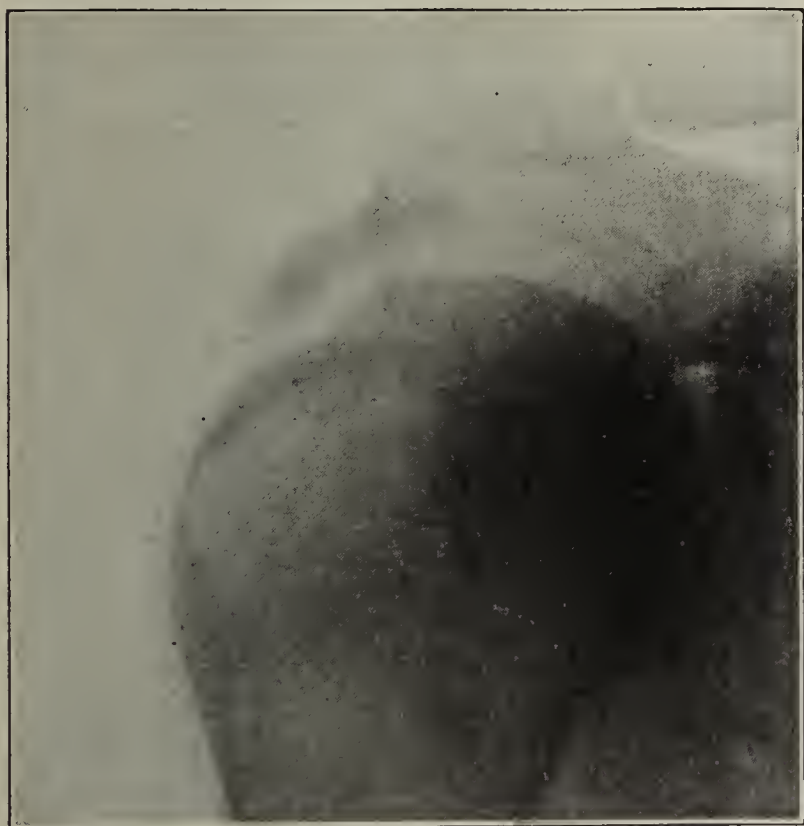


Fig. 1.—Large semifluid lime deposit beneath the bursa.

pain in the upper arm, so often treated for "rheumatism" and "neuritis," are surgical affections, at least in that they require mechanical treatment.

* Read before the Section on Orthopedic Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

In the absence of arthritis or of symptoms in other parts of the body, the diagnosis of rheumatism, as an explanation of pain in the arm, is quite untenable, and need not detain us.

Brachial neuritis is a real condition but a comparatively uncommon one. When well established, it



Fig. 2.—Very small deposit near the supraspinatus insertion.

should be marked by motor, trophic or sensory signs, as well as by nerve tenderness. In all cases it is important to determine, by careful examination, including roentgenography, whether the neuritis is not simulated or produced by some other lesion. Pain in the left arm, usually referred especially to the flexor aspects of the elbow and wrist, may be associated with an anginal condition and, as such, may be symptomatic, among other things, of tobacco poisoning.

Of the surgical conditions, aside from grosser and more evident lesions, that cause pain in the arm, we must bear in mind cervical rib, fracture of the greater tuberosity of the humerus (which may occur from comparatively mild internal as well as external violence), spontaneously reduced luxation of the shoulder, subluxation¹ of the shoulder (either of which may be produced, in some persons, by slight violence), mild sprain of the shoulder, periostitis of various origin, and neoplastic and inflammatory diseases of the bones, especially the humerus (among which chronic bone abscess, cortical or medullary,² should be mentioned as an occasional cause of severe, persistent pain).

Far more common than any or all of these causes of pain in the arm and sometimes, but by no means always, also in the shoulder, is subdeltoid (subacromial) bursitis. It is, indeed, so often the cause of the complaint, that it should be thought of first.

In earlier communications³ concerning the pathology, pathogenesis and operative treatment of subdel-

1. Brickner, W. M.: Traumatic Forward Subluxation of the Shoulder: A Clinical Entity, *Am. Jour. Surg.*, February, 1915.

2. Brickner, W. M.: Chronic Medullary Abscess of the Long Bones, *Ann. Surg.*, April, 1917.

3. Brickner, W. M.: Prevalent Fallacies Concerning Subacromial Bursitis: Its Pathogenesis and Rational Operative Treatment, *Am. Jour. Med. Sc.*, 1915, **149**, 351; Shoulder Disability: A Further Study of Its Varieties and their Treatment, *Interstate Med. Jour.*, April, 1915; The Location and Cause of Lime Deposits Associated with Subacromial Bursitis: "Excision of the Bursa," *Am. Jour. Surg.*, April, 1916.

toid bursitis, I presented the conclusions reached by several years of observation. These have been so much misquoted that I wish to restate and further elucidate some of them; and, especially, it is my purpose to describe the affection in its various clinical



Fig. 3.—Deposit in the supraspinatus tendon.

aspects, its nonoperative treatment and what I believe to be the indications for operation. I shall exclude from consideration the uncommon tuberculous and metastatically suppurative subdeltoid bursitides.

ETIOLOGY

Although a history of injury or of muscular violence is often unobtainable, I believe that the immediate cause of subdeltoid bursitis is traumatic, usually a squeezing of the supraspinatus tendon (occasionally the infraspinatus) and the bursa between the acromion process and the greater tuberosity of the humerus when the arm is abducted. This injury may, and often does, happen from a fall on the outstretched arm or other external violence. More often it happens from internal violence, as in raising the arm to beat a rug, hanging from a car strap, etc. This squeezing of tendon and bursa between the bony surfaces is easily demonstrable at operation or on the cadaver by abducting the arm. In operation in acute cases, recent hemorrhage into and tear of the tendon are plainly to be seen. Codman⁴ reported three cases, and demonstrated, by operation in two of them, complete rupture of the supraspinatus tendon and tear of the bursal floor, from internal violence. Bucholz⁵ also reported a case, likewise demonstrated at the operation.

Small fractures of the greater humeral tuberosity, which, as I have said, may also be produced by muscular violence, are probably also associated with inflammation of the overlying subdeltoid bursa (which accounts in part for persistence of the shoulder disability after this injury, if it is not treated, as it should

be, by abduction). Indeed, the lesion is much the same as subdeltoid bursitis without fracture—in one case there is a tear of the supraspinatus tendon above its attachment, and in the other, a tear through its bony attachment.

I believe there is another etiologic factor, at any rate, as far as concerns the commonly, but by no means always, associated subbursal deposit of lime and other mineral salts in or on the supraspinatus (occasionally the infraspinatus) tendon. This factor is some metabolic predisposition to the deposit of these mineral salts. I am of this belief for the following reasons: As far as I know, subdeltoid bursitis occurs only in adults (in my cases, between the ages of 20 and 61); it occasionally is encountered first in one shoulder, then in the other; in some persons the deposit (or deposits) undergoes absorption, in others it persists; although a common affection, many persons using their arm in the same way, and subjected to the same influences, never develop it; it occurs among the muscular and athletic as well as the sedentary and asthenic, in females as well as in males; no other hypothesis explains why in some persons, within a day or two after a mild internal violence or an external injury, the roentgenogram will reveal this characteristic deposition of lime above the greater tuberosity of the humerus.

I have reason to believe that subacromial bursitis is neither infectious nor toxic in origin. Tissue specimens removed at operation in acute as well as in chronic cases proved sterile. Even the sometimes liquid deposits often indistinguishable in appearance from pus contain no pus cells—only mineral salts, fat cells and detritus. Although in the acute stage there is sometimes a subfebrile elevation of tempera-



Fig. 4.—Deposit in the supraspinatus tendon.

ture, I have not found, in the more than 200 cases I have seen, any coexistent infection, nor have I been able to connect the lesion with any antecedent infection, tonsillar or otherwise.

I confess that my hypothesis of trauma and a biochemical predisposition as an explanation of subdel-

4. Codman, Ernest: Complete Rupture of the Supraspinatus Tendon: Operative Treatment with Report of Two Successful Cases, *Boston Med. and Surg. Jour.*, 1911, **164**, 708.

5. Bucholz, C. H.: *Therapeutic Exercise and Massage*, Philadelphia, Lea & Febiger, 1917, p. 231.

toid bursitis and the subbursal lime deposit leaves much to be desired. What the metabolic fault is I have not learned. (It is a difficult laboratory problem.) Certainly there is no clinical evidence of gout. The occurrence of these lime deposits, and, indeed the



Fig. 5.—Very large, dry, caplike deposit, only partly in the tendon.

bursitis itself, have no exact analogue elsewhere in the body. It is a curious, and curiously common condition, and affords an interesting field for speculation and investigation.

PATHOLOGY

In all of the eighteen patients I have operated on, I found the same lesion in the bursa—adhesions between its two walls. These adhesions may be moderately long, or short and dense, gluing the two surfaces together over a limited area. They are always demonstrable if the operator is careful not to do what so many, I am sure, have done, namely, cut through the adherent floor and roof of the bursa with one incision. Beyond the area of adhesions, which is usually in the region of the greater tuberosity, the bursa can be freely entered with finger or instrument, and its free surfaces can be demonstrated. Here and there the bursal wall is sometimes thickened, but usually not much so. I have not encountered "villous" thickenings referred to in Codman's⁶ article. Sometimes there is a small amount of serum. This I have found locked in the subacromial portion of the bursa by the adhesions below it, and it is liberated when these are divided. In most cases, I have found no fluid accumulation in the bursa. Probably there is always a serous effusion at the outset, but it usually soon disappears.

The lime deposit is not in the bursa, or in its walls. It lies under the bursa, either wholly within the supraspinatus tendon, or on it, or partly within and partly on it. The tendon may have to be split to reveal the deposit or deposits, or the calcareous mass may be plainly seen lying in the tendon. Occasionally the deposit is in the infraspinatus tendon. Sometimes it

will be found scattered about on the periosteum in the neighborhood of the greater tuberosity. Irrespective of the severity of the symptoms, the deposit may be small or large, dry and gritty or semifluid, single or multiple, near the insertion of the tendon or at a considerable distance from the tuberosity (Figs. 1 to 6). In early cases, there may be plainly seen a small transverse tear in the tendon near its termination, and a hemorrhage into the neighboring tendon tissue. The histology of the tendon lesion and of the lime formation has been studied from my cases, and adequately described, by Moschcowitz.⁷ The lime deposition takes place, it would seem, as a result of necrosis of tendon tissue.

It can be seen from Figure 7 why so many surgeons have felt sure that they found the lime in the bursa. If the two bursal walls, adherent over the deposit, are divided at a single incision, the surgeon, believing he has cut only through the outer wall or "roof," will expose the lime mass, unless it is concealed in the tendon; on removing this mass he will encounter the broad supraspinatus tendon, which he believes to be the inner wall of the bursa. If, however, the operator will lift up the outer wall with tissue forceps and incise it carefully, and then divide the adhesions between it and the bursal floor, he will find that he can explore the interior of the sac without encountering the deposit. The latter will not be exposed until he has then separately cut through the inner wall or floor of the bursa, and not even then if, as is very common, the deposits are quite within the tendon.

I would emphasize again that the lime deposit takes place, not slowly, but very speedily after the injury.



Fig. 6.—Multiple deposits in the supraspinatus.

In some cases it is slowly absorbed; in others it persists for years, perhaps for life. This, too, suggests some biochemical influence.

6. Codman, Ernest: Bursitis Subacromialis, or Periarthritis of the Shoulder Joint, Boston Med. and Surg. Jour., 1908, **159**, beginning October 22.

7. Moschcowitz, Eli: The Histopathology of Calcification of the Spinatus Tendons as Associated with Subacromial Bursitis, Am. Jour. Med. Sc., July, 1915.

SYMPTOMS

The symptoms of subdeltoid bursitis are two: pain, and disability in shoulder movements.

Pain is present in almost all cases. It is usually referred to the upper arm, anteriorly or externally,

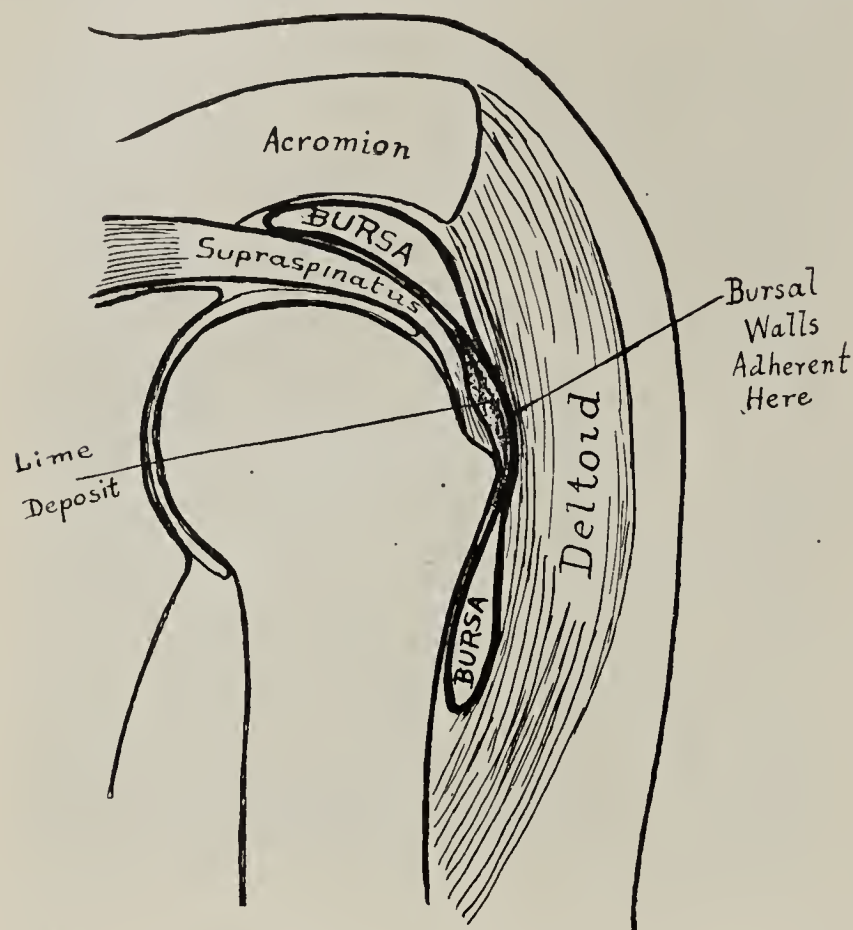


Fig. 7.—Diagram showing why many surgeons think they find the deposit in the bursa. Over the mass the two bursal walls are adherent and, unless separated by the operator, they are incised as one.

from the level of the deltoid insertion toward or to the elbow. Very often, but by no means always, it is referred also to the shoulder, usually its outer aspect. Sometimes it radiates into the forearm, the hand, the fingers or the neck. The pain may be fairly constant, or intermittent, or only on motion. Often it is worse at night.

Disability of movement may be entirely absent, especially in chronic cases. In the early stage, however, abduction, at least, is inhibited or painful. This movement and internal rotation are chiefly affected, but in varying degrees. The patient may be able to raise his arm only a little, or he may be able to abduct insufficiently to brush his hair. The interference with internal rotation may be very great or moderate; the patient may be unable to put his hand in his trousers pocket, or unable to reach behind his back, or unable to raise his hand on his back to the opposite scapula. External rotation is usually little affected; but sometimes is much inhibited. The arm can be swung backward and forward. There is no ankylosis.

PHYSICAL SIGNS

In the early stage there may be slight swelling due to serous effusion. In most cases, when the patient presents himself there is no swelling. On the contrary, there is often to be noted a flattening, due to atrophy of the deltoid. The supraspinatus and infraspinatus muscles may also be atrophied. Pressure on the bursa below the tip of

the acromion process is sometimes painful, but it is usually painless. The only tender point that I find quite constantly is anteriorly, over the lesser tuberosity. When this point is very tender (comparison should be made with the opposite shoulder) it is fairly diagnostic in association with the symptoms described.

Roentgenography is important. If nothing is shown, it does not deny, rather it supports, the diagnosis of bursitis. If the shadow of a lime deposit is seen, however small it may be, the diagnosis is established beyond doubt.⁸ Finally, the roentgenogram may show some unsuspected lesion, namely, syphilis or tuberculosis of the head of the humerus, or a small fracture of its tuberosity (the latter, as I have said, clinically the same lesion as supraspinatus injury and, like it, probably also having a bursitis associated with it).

CLINICAL FORMS

Codman's⁶ classification into three types, "acute or spasmodic, subacute or adherent and chronic or non-adherent," is unsatisfactory from the anatomic side, for in all cases, acute or chronic, the pathology is, I believe, the same—an adhesive bursitis. We cannot recognize, therefore, a nonadherent and an adherent type, nor it seems to me, can we make a satisfactory distinction under the titles "subacute" and "chronic."

In my experience the cases present themselves in the following forms which, however, are not to be sharply separated: acute, "hyperacute," chronic, chronic with exacerbations.

In acute cases, pain and stiffness develop rapidly and reach a maximum in about three days. The pain is quite severe and constant, and subsides little or not at all at night. The arm can be only slightly abducted without great pain. There is spasm of the shoulder muscles, increased by attempted abduction or internal rotation, active or passive.



Fig. 8.—My easily regulable method of automatically restoring abduction in the treatment of shoulder disability.

The term "hyperacute" I use to indicate not so much the rapid development of the symptoms as their severity. The pain is very great. The patient hugs his

8. Occasionally the tendon lesion exists without an overlying bursitis, but the symptomatology and treatment are the same.

arm to his chest, and the slightest attempt to raise it causes severe spasm. There is a rapid development of atrophy of the deltoideus and the spinati. Radiation of the pain into the fingers, with this atrophy, may deceive even a neurologist into the diagnosis of brachial neuritis. Indeed, the early appearance of atrophy of these three muscles suggests that there may be some associated localized neuritis; disuse for a short period seems not quite sufficient to explain it.

In both the acute and the "hyperacute" forms, tenderness at the point I have described is exquisite.

Acute subdeltoid bursitis may gradually subside completely. More often it passes into the chronic form.

Chronic subdeltoid bursitis begins in the acute form, or is of the same severity throughout. The pain is often annoying rather than unendurable. It may be quite intermittent, varying in severity. Often it is present only on certain motions (as in pulling on an overcoat sleeve, or attempting to comb the hair). Abduction may be limited to 45, 90 or 130 degrees; internal rotation may be much or little retarded. Passive movements are usually a little freer than active. External rotation is sometimes limited. In many cases the movements are perfect, but usually they are then more or less painful. Tenderness on pressure over the lesser tuberosity is usually present and often great. There may or may not be atrophy of the deltoideus and spinati.

This chronic form persists for months or years. Usually it subsides, with or without treatment, sometimes in spite of certain treatments. The lime deposit, if there is one, may gradually disappear completely.

The "chronic form with exacerbations" is of those cases, lasting for years, in which there is often a recession of symptoms, more or less complete, for long periods, but in which every few weeks or few months there is a severe exacerbation in which the symptoms approach those of the acute or even the "hyperacute" form.

TREATMENT

I am not inclined to place much confidence in electricity, baking, violet ray, internal medication or even massage. It is true, no doubt, that patients have recovered, by reason of such measures, or in spite of them. On the other hand, most of the patients referred to me have abandoned these treatments because their symptoms were unrelieved or even aggravated by them.

My first object, in the management of subdeltoid bursitis, is to overcome the abduction disability, the spasm (if there is any) and thereby, to a large extent, the pain. This I do by a simple automatic abduction method elsewhere described.⁹ I put the patient to bed supported on several pillows and with his arm raised as far as he comfortably can abduct it. A towel or bandage sling is passed from the wrist or elbow to the head of the bed, and this end of the bed is raised on blocks or chairs (Fig. 8). It will often be noted that as soon as the patient is comfortably recumbent he can abduct his arm more than when standing. As he gradually slides down in bed his arm correspondingly goes up; and it is no rare experience in a patient who has not abducted his arm more than 45 degrees in many months to find it thus fully and painlessly abducted in twenty-four hours. Usually it

takes a few days longer. If the patient cannot sleep with his arm in this sling, or cannot maintain that position continuously, he may intermit this gradual traction. Codein and acetyl-salicylic acid are helpful aids in overcoming the pain the first day or two. When passive abduction is thus fairly secured, active abduction is restored with it, and the pain soon disappears also in most cases. The abduction is maintained, and internal rotation is secured by after-treatment with Indian club exercises.

This plan of treatment is equally applicable to acute, "hyperacute," and chronic cases. It is of little or no value in chronic cases with no loss of motion. These cases, in which pain is the only symptom, are, in my experience, the most difficult to cure. Fortunately, the patients usually recover spontaneously.

I have come to the belief that most patients who have subdeltoid bursitis recover under this plan of treatment in bed with automatic abduction, or the trouble subsides spontaneously, though slowly. There are some, however, that do not thus recover and some that, though they may eventually do so, meanwhile suffer so much pain, loss of function and interference with occupation that operation is to be recommended as a means of prompt cure. I would therefore advise operation in the following cases: 1. In the chronic form with exacerbations. These patients have been through all sorts of treatment for years; their sufferings during the periods of exacerbation are severe; they show no tendency to spontaneous recovery. 2. In acute, "hyperacute" and chronic cases in which the automatic abduction in bed fails to restore function and to relieve pain and spasm.

The operation I employ I have previously described.¹⁰ It consists in: splitting the deltoid; raising the outer wall of the bursa from the inner and incising it; dividing all adhesions in the bursa; incising and retracting the floor of the bursa; removing the deposit, if extratendinous, and suturing any tear in the supraspinatus tendon; or incising the tendon wherever indicated by the roentgenogram and excising the deposits with surrounding tendon fibers, and reuniting the tendon with chromicized catgut (if the defect is not too large); suturing the floor of the bursa with a fine running catgut stitch; anointing the interior of the bursa with a thin layer of petrolatum; suturing the outer wall of the bursa; suturing in layers, without drainage, the deltoid muscle, the deltoid fascia and the skin; abducting the arm in plaster of Paris for about a week.

The petrolatum may not be important. The reconstruction of the bursal walls is not essential, but it aims at an anatomic operation. The abducted position is also not essential, but I believe that it shortens the after-treatment, which consists in Indian club exercises and other devices to restore internal rotation and full abduction.

All the patients thus operated on have been promptly relieved of pain and early restored to full activity. In only one patient, a physician, was there any complication—a brachial phlebitis which retarded his recovery a few weeks.

In one case of chronic bursitis without any lime deposit, in which the pain and disability continued, with exacerbations, for years, division of the adhesions and abduction for one week were followed by permanent cure. This is the only case without lime deposit in which I have operated. It illustrates, first,

9. Brickner, W. M.: A Simple Easily Regulable Method of Applying Abduction in the Treatment of Shoulder Disability, *Med. Rec.*, New York, Jan. 2, 1915.

10. Brickner, W. M.: Footnote 3, first reference.

that the roentgenogram of a deposit is not essential to a diagnosis of subdeltoid bursitis and, second, that division of the adhesions (and placing petrolatum in the bursa) will effect a cure when conservative measures fail, even in the absence of the lime mass.

30 West Ninety-Second Street.

ABSTRACT OF DISCUSSION

DR. ELI MOSCHOWITZ, New York: [Dr. Moschowitz demonstrated lantern slides made from specimens of portions of supraspinatus tendons submitted by Dr. Brickner for pathologic examination.] The lesion is a tendonitis, characterized by necrosis or hyaline degeneration of the tendon with secondary calcification, and a reactive granulation tissue around these areas of necrosis or calcification. The morphologic changes parallel the duration of the disease; thus, in long standing cases abundant scar tissue is present, while in early cases the granulation tissue is richly cellular. I believe that the necrosis was due to actual death of tendon tissue and was not of hemorrhagic origin because blood pigment was entirely absent. The necrosis is, in all probability, due to cutting off of the meager blood supply of the tendon consequent on the trauma. Calcification inevitably follows in those portions of the tendon that have undergone necrosis or hyaline degeneration. This is the usual consequence in other tissues of the human frame. The remarkable feature is the early incidence of the calcification. We are accustomed to think of calcification as occurring only after the tissue has been dead for some time, but in the cases that Dr. Brickner reports calcification occurs as early as forty-eight hours after the onset of symptoms. The only possible explanation of this early calcification is found in the results of the experiments of Litten and Schujeninoft, who found lime twenty-four hours after traumatic necrosis of the kidney and muscle, respectively. Perhaps the peculiar predilection to early calcification may be due to certain biochemical products in the tendon itself (collagen?).

DR. J. BION BOGART, Brooklyn: I want to say a word from the standpoint of one who suffered for four and a half years and has not been cured. Four and a half years ago I had a surgical infection through the index finger which resulted in metastatic infection of the shoulder joint and which was opened and drained and afterward had extension for four weeks. I was able to work after that, though I still have limitation of motion in the joint, but not ankylosis. My chief symptom, in addition to limitation of motion, is pain, which is not present except on motion or pressure. One of the most serious difficulties that I labor under is inability to turn on my left side to sleep at night. I cannot lie on that shoulder because the pressure causes too much pain. When I raise my arm it causes pain, which runs down the arm.

In my own case, so far as I know, there was no injury. I think that the same infection that caused the metastasis to the shoulder joint produced the bursitis, which was not, however, recognized at the time. Following recovery from the early symptoms, I had treatment with baking and massage for two months, after which I gave it up, because I did not gain anything in motion and the treatments were followed by pain. This kind of treatment did not seem to do me any good, but harm, if anything. I have done nothing since for the last four years. I was roentgen rayed at the time of my infection, and since then, a year and a half ago. The gentleman who did it later, Dr. Wasch, is here. There was no calcareous deposit then, and, so far as I know, there is none now.

Now what is it that causes my pain? I have none when the arm is at rest, but only on pressure or motion. If adhesions cause it in the cases in which there are no deposits, I think they are sure to be reformed after operation; and I do not see how relief can come from the operation in such cases as mine. I do not see, either, how relief could come from forcible stretching of the arm upward. It cannot be done immediately, but only gradually; but, as the scapula moves with the arm, I do not see how benefit could come in that way.

DR. FRED J. FASSETT, Seattle: Have any of those present seen the very rapid disappearance of these lime deposits? I have seen one case, reported by Dr. Risley of Boston, and also one of my own, in which the disappearance of the calcification was so rapid as to cause a question as to the authenticity of the plates.

DR. MILTON G. WASCH, Brooklyn: I have been fortunate enough to have made roentgenograms in a great many of these cases. Within the last six months I have seen twenty-five. It has always been my custom to make roentgenograms of the opposite shoulder for comparative study, and I have been surprised, in a good many cases, to find lime salts in the opposite shoulder, in which the patient had not complained of any symptoms either at that time or previously. I, therefore, feel that the statement that deposits of lime salts form in one or two days is doubtful. I think when the patient complains of symptoms due to subacromial bursitis the probability is in most cases that the calcium has already been deposited and that the condition and suffering are from an acute exacerbation of a chronic calcifying bursitis.

DR. WILLIS C. CAMPBELL, Memphis, Tenn.: I should like to emphasize a point that Dr. Brickner made in his paper, that mild trauma is the frequent cause of this condition; and also that this injury may be overshadowed when other parts are seriously damaged. I had such a case in a young man. The injury was received in an automobile accident and he did not recognize the trouble in his shoulder for six weeks. By that time there was beginning atrophy. I did not see him for six months after the accident; then there was extreme atrophy and considerable trophic disturbance in the arm with abduction totally limited. Relief was soon given by simple abduction in a plaster cast, followed by massage, etc.

DR. HEINRICH WOLF, New York: I have had occasion to treat a few hundred cases of subacromial bursitis and should like to know what stand Dr. Brickner takes now regarding the infectious origin of some of these cases. We know that a great many are traumatic.

With particular reference to the remarks of the last speaker, I would say that I have noticed a great many cases following Colles' fracture of the wrist. If a patient falls on his hand and gets a fracture of his wrist, the pain in his wrist is so severe that he neglects a probable slight injury in the shoulder joint. I have seen about twenty cases of this in the dispensary of the Mount Sinai Hospital, in which subacromial bursitis developed five or six weeks after the injury to the wrist.

Then I have seen patients get a similar condition after infectious conditions in the hands. I cannot explain in what way an infection in the hand can be followed by subacromial bursitis, but I have seen it too often to consider it an accident. I hope that Dr. Brickner will be able to answer this question, particularly about the infectious condition. I have seen lately quite a number of cases of acute bursitis in which I was positively able to trace it to infection in the teeth. I know that Dr. Brickner does not believe that this is possible; but I mean, of course, only a certain number of cases. I want to say that I have seen other etiologic factors, but that in these particular cases removal of the teeth relieved the pain.

DR. JOHN DUNLOP, Washington, D. C.: In some cases with a lime deposit in which operation was performed I found absolutely no adhesion. I should like to ask Dr. Brickner whether he considers that all cases of lime deposit have subacromial bursitis. I think in most cases they are quite separate conditions.

I believe there is nothing in Dr. Brickner's exposition, other than what Dr. Codman brought out in his paper in 1908. I have seen four cases of such deposits, in one of which operation was performed. In the first three cases that I saw operation was refused. I put the arm up in the abducted position and the patients got as well as any other cases of subacromial bursitis that I have seen. The fourth case was in a man who had so much pain that half a grain of morphin every four hours would not quiet him. I tried to put his arm up in the abducted position under nitrous oxid anesthesia. This increased the pain so markedly, however, that I operated. Dr. Brickner showed that he found adhesions. I found no adhesions in this case. I cut down to the bursa and

demonstrated it to be as large, as Dr. Codman explained, as the palm of the hand. I saw the white mass shining through the base of the bursa and cut down on this and was able to scoop it out with a spoon. It was of the consistence of a soft toothpaste and quite white. I sent it to the laboratory of the Army Medical School and hoped to get a report on it from there; but it was lost. I did, however, get a negative bacteriologic report. I passed a probe well up within the sheath of the supraspinatus muscle and was sure that I was within it. The lower and upper surfaces of the bursa were closed and the man got a perfect functional result.

The day after I heard Dr. Brickner read his paper I had a case in an officer in the Marine Corps who refused operation. I put his arm up in abduction and he got well. Later, he had symptoms in the other shoulder, of which I had not made roentgenograms when I operated on the first shoulder. I treated that, and he got so well that he now plays tennis and golf every day. He still has the deposit in the shoulder, eighteen months after the diagnosis was made.

I do not agree with Dr. Brickner that these deposits occur within a few hours. We have no evidence that they do, for we do not take roentgenograms of our patients before. I think the symptoms come on from some trauma due to the deposit which may have been there for weeks, months or years before. It seems to me, from my four cases, in three of which there was no operation, that these patients will get well without operation.

DR. WALTER M. BRICKNER, New York: Dr. Dunlop reports that he found a lime deposit in the tendon in a case in which there were no adhesions in the bursa. That does occur. I referred to it in an earlier paper as "calcareous tendinitis without bursitis." I do not wish to claim anything that belongs to Codman, who was the first to suggest, in three cases, that the deposit is under the bursa. He speaks of it, however, as wenlike and cystlike, which it is not; and the conception of it as being often wholly within the tendon was not brought forth by Codman.

Concerning the rapid formation of the deposit, you are right in questioning my statement. The deposit may have been there before the symptoms called for a roentgenogram. but I have, not only once, but several times, found patients who, two days after a fall on the shoulder, or a lurch of the body while hanging to a car strap, showed this deposit in the picture, patients who never previously had any symptoms, but who had the characteristic symptoms after the injury. In one such case, "hyperacute," I operated a few days after the injury. The deposit had been shown by the Roentgen ray three days after the injury. I found a fresh tear in the ecchymosed supraspinatus tendon, and the lime deposit in the tear and in the surrounding bruised tendon tissue. Whether I am right in the assumption of very rapid lime formation, I am willing to leave open. I have not seen rapid disappearance of the deposit. I have seen it occur within two to six months, but not earlier.

I believe that I have fully answered Dr. Wolf's question. Occasionally one encounters metastatic suppuration in the bursa in connection with a septic process; but I believe that the cases of subdeltoid bursitis of which we have been speaking are not infectious in origin. Sometimes a man reports an isolated case in which the patient had tonsillitis previously, and then he jumps to the conclusion that the tonsillitis was the cause of the disease. That is unscientific.

I hope that I have made it clear that these patients often get well without operation.

School Medical Inspection and Local Government.—Were it not for the fact that the Cumberland schools and the county schools are one unit, we might be able to see our way clear to establish medical inspection of schoolchildren, but this cannot be under the present system of one school unit for the entire county. Ample laws now exist that would enable the county school commissioners to establish this inspection, but somehow or other, as with all other advanced movements, some public bodies are slow to comprehend their value. We urge all parents to advocate medical inspection for the sake of their children.—*Health Bulletin*, Cumberland, Md.

THE USE OF BAKERS' YEAST IN DISEASES OF THE SKIN AND OF THE GASTRO-INTESTINAL TRACT *

PHILIP B. HAWK, PH.D.
FRANK CROZER KNOWLES, M.D.
MARTIN E. REHFUSS, M.D.

PHILADELPHIA

AND

JAMES A. CLARKE, M.D.

NEW YORK

WITH THE COLLABORATION OF OLAF BERGEIM, PH.D., H. RODELL FISHBACK, M.D., SC.D., CLARENCE A. SMITH, PH.D., AND ROBERT A. LICHTENTHAELER, M.S.

That yeast possesses curative properties was appreciated in the olden times. Hippocrates recommended its use in leukorrhea, and the monks used it for the treatment of plague. Not until the middle of the nineteenth century, however, did the medical profession look favorably on its use. About that time, it was used successfully in furunculosis, anthrax and diabetes.

TABLE 1.—CLASSIFICATION OF NINETY-ONE DIFFERENT CASES IN WHICH THE YEAST TREATMENT WAS USED

| Type of Case | Number |
|---------------------------------|--------|
| Normal | 15 |
| Furunculosis | 17 |
| Acne vulgaris | 17 |
| Acne rosacea | 8 |
| Constipation | 10 |
| Gastro-intestinal catarrh | 3 |
| Intestinal intoxication | 1 |
| Eczemas | 5 |
| Arthritis deformans | 1 |
| Psoriasis | 4 |
| Erythema and urticaria | 1 |
| Bronchitis | 2 |
| Urethritis | 2 |
| Pruritus | 1 |
| Folliculitis | 1 |
| Conjunctivitis | 1 |
| Duodenal ulcer | 1 |
| Swollen glands | 1 |
| Total | 91 |

Later it was shown to be effective in diseases of the skin, suppurative processes, diseases of the respiratory passages, gastro-intestinal diseases, vaginitis, general infectious diseases, etc. In fact, for an interval of many years yeast was used as a curative agent in a long list of widely differing disorders. Then came a reaction, and yeast was used comparatively little by the medical profession during the latter part of the nineteenth century.

In 1899 the researches of Brocq¹ emphasized anew the therapeutic importance of yeast, and from 1900 to 1907 many important contributions were made to the subject of yeast therapy. For the last ten years, however, comparatively little attention has been paid to the use of yeast in medicine.

Owing to the fact that the great majority of the yeast researches have been carried out with brewers' yeast or various dried yeast preparations, and since several investigators have asserted that bakers' yeast was not a satisfactory therapeutic agent, we have thought it of importance to make a comprehensive study of the curative value of ordinary bakers' yeast,

* From the Laboratory of Physiological Chemistry of Jefferson Medical College, the Philadelphia General Hospital, and the Roosevelt Hospital, New York.

1. Brocq, A. J. L.: *Presse méd.*, Jan. 28, 1899, p. 45.

since that is the most available kind. In all of our tests we used Fleischmann's Compressed Yeast, as that is the best known and most widely used of bakers' yeasts. The fresh yeast was used in all cases, a new supply being secured from two to three times a week and kept in the refrigerator until used.

TABLE 2.—SUMMARY OF RESULTS IN THE SERIES OF CASES

| Condition | Number of Cases | Improved or Cured |
|--------------------------------|-----------------|-------------------|
| Furunculosis..... | 17 | 16 |
| Acne vulgaris..... | 17 | 17 |
| Acne rosacea..... | 8 | 8 |
| Constipation..... | 10 | 9 |
| Gastro-intestinal catarrh..... | 3 | 3 |
| Intestinal intoxication..... | 1 | 1 |
| Eczemas..... | 5 | 0 |
| Arthritis deformans..... | 1 | 1 |
| Psoriasis..... | 4 | 1 |
| Erythema and urticaria..... | 1 | 1 |
| Bronchitis..... | 2 | 2 |
| Urethritis..... | 2 | 2 |
| Pruritus..... | 1 | 1 |
| Folliculitis..... | 1 | 1 |
| Conjunctivitis..... | 1 | 1 |
| Duodenal ulcer..... | 1 | 1 |
| Swollen glands..... | 1 | 1 |
| Totals..... | 76 | 66 |

The literature of the yeast question is so voluminous that we make no attempt in this connection to give a comprehensive survey of previous work. Our main purpose is to present a brief summary of the cases we have studied. Those who are interested in the literature of the subject we would refer to Lardier,² Krause³ and Hedrich,⁴ in whose articles a very full bibliography will be found.

We have made a study of ninety-one cases, which have been classified as explained in Table 1. We made

tests on normal persons to learn the action of yeast in the stomach when given suspended in water, beef tea or orange juice, with meals or between meals. We also studied the comparative effect of living and dead yeast. The yeast was killed by treating it with boiling water for a few minutes. All stomach examinations were made by means of the fractional method.⁵

From these tests it is apparent that yeast may be administered satisfactorily either with meals or on the empty stomach. It is also apparent that killed yeast (that is yeast placed in boiling water for a few minutes) acts much the same in the stomach as living yeast. If the patient is troubled with gas formation it is preferable to use killed yeast, or to administer living yeast between meals.

These tests also demonstrated conclusively that yeast is not readily destroyed in the human stomach, but that on the contrary, especially when taken between meals, a large part of the yeast passes into the intestine in the living condition. Hence, it is possible that in certain disorders, especially those involving constipation, the living yeast has a more pronounced action than dead yeast.

From Table 2 it will be seen that yeast treatment gave the best results in furunculosis, acne vulgaris, acne rosacea and constipation. The treatment was also useful in acute bronchitis, urethritis, conjunctivitis, swollen glands, folliculitis, gastro-intestinal catarrh, intestinal intoxication, arthritis deformans and duodenal ulcer. The laxative effect of the yeast was observed in cases other than those of constipation. In fact, in some instances the laxative effect was so pronounced that it was necessary to reduce the dosage. Both the fresh yeast and that killed by boiling water

2. Lardier, Jean: Thèse de Paris, 1901-1902.
3. Krause, P.: Therap. d. Gegenw., 1904, 45, 101.
4. Hedrich, K.: Deutsch. Aerzt. Ztg., 1904, 49, 75.

5. Reh fuss, M. E.: Gastro-Intestinal Studies: The Question of Residuum Found in the Empty Stomach, THE JOURNAL A. M. A., July 4, 1914, p. 11. Hawk, P. B.: Practical Physiological Chemistry, Ed. 5, Philadelphia, P. Blakiston's Son & Co., 1916.

TABLE 3.—REPORTS OF CASES OF FURUNCULOSIS IN WHICH THE YEAST TREATMENT WAS USED

| Case, Sex and Age | Complaint | Treatment | Results |
|-------------------|--|--|---|
| 16— F —22..... | Series of deep-seated boils for over two months; five lanced in one week. | Five injections of vaccine. One-half cake yeast t. i. d. after meals. | No effect. Almost immediate improvement; cure in two weeks. |
| 17— F — *..... | Several large boils, which did not yield to vaccine. Boil started on leg after yeast was stopped. | Three cakes daily for two weeks. Yeast resumed. | Boils disappeared. Boil soon cured. |
| 18— M —38..... | Succession of boils; many on back of neck, several on body; one carbuncle. | One-half cake t. i. d. after meals; arsenic internally. | All cleared up; patient has increased in weight. |
| 19— M —42..... | Disease present several years; six small boils in six weeks. | Three cakes daily before meals for seven days. | Boils cleared quickly. |
| 20— F — *..... | Large boil draining on face; one just coming to a head. | Three cakes daily before meals for two weeks. | Cured; no more appeared |
| 21— F —26..... | Boils a week apart for about two months; when treatment started, one on neck and one on wrist. | Three cakes daily before meals for two weeks. | Both healed; no more in four weeks. |
| 22— M —33..... | Carbuncle treated surgically; later boils developed. | One-half cake t. i. d. after meals. | Cured; eructations and looseness of bowels after yeast. |
| 23— M — *..... | Boils on buttocks for period of nine months. | Three cakes daily before meals for two weeks. | All boils healed. |
| 24— M — *..... | Nine large boils during a period of about two years. | Three cakes daily before meals for six weeks. | Felt much better; no recurrence. |
| 25— M —25..... | Five boils in two months. | Three cakes daily before meals. | Boils soon subsided; no recurrence. |
| 26— M —42..... | Stye in left eye; boric acid treatment four days with no improvement; patient subject to this trouble. | One-half cake dead yeast t. i. d. before meals next four days. | Cure more rapid than ever before noted. |
| 27— M —20..... | Boils periodically for several years; large one on right buttock lanced after ten days and yeast treatment started. | Three cakes daily before meals for three weeks. | Healed quickly. |
| 28— M —25..... | Two weeks after first boil healed a much smaller one appeared on abdomen. | Yeast continued. | Cured quickly; no recurrence after four months. |
| 29— M —52..... | Troubled with boils for several months; large one on back of neck. | Three cakes daily before meals for three weeks. | Boil disappeared. |
| 30— M —24..... | Boils periodically for years; two large ones on neck. | Two cakes dead yeast daily. | Boils disappeared. |
| 31— M —26..... | Troubled with boils at short intervals for several years; large boil in left axilla lanced after one week and yeast treatment started. | Three cakes daily before meals for one month. | Boils cleared rapidly; second small one failed to head; no recurrence in four months. |
| 32— M —50..... | Boils at intervals for some months; several dozen large ones on different parts of body, usually not more than two or three at a time. | One cake t. i. d. after meals for three weeks. | Boils continued to appear. |
| | For three months had not been free of boils, most of which were of hazel-nut size. | One cake t. i. d. after meals for four weeks. | Boils stopped appearing after one week; no recurrence in six weeks. |

* Adult.

TABLE 4.—CASES OF ACNE VULGARIS TREATED WITH YEAST

| Case, Sex and Age | Complaint | Treatment | Results |
|-------------------|---|---|---|
| 33— M —21..... | Disease had been present for nearly two years; deep-seated papules and pustules covering practically entire face. | Zinc sulphate and potassium sulphid with laxatives. Above treatment and one cake yeast t. i. d. after meals. | Only very moderate improvement. At end of two weeks lesions almost entirely dried up; at end of four weeks no active lesions; no new spots in two weeks. |
| 34— F —22..... | Moderate case, chiefly papular type, of two years' duration. | Boric acid locally for some weeks; then one cake t. i. d. for three weeks. | More improvement in ten days with yeast than in one month local applications; no active lesions in one month. Active lesions disappeared. |
| 35— M —20..... | Moderate eruption, mostly papular, during one year. | One cake t. i. d. for three weeks. | Marked improvement. |
| 36— M —23..... | For four years, a marked case with numerous pustules and papules. | One cake t. i. d. for four weeks; boric acid locally. | Marked improvement. |
| 37— M —25..... | For five years, numerous deep papules and pustules. | Zinc sulphate and potassium sulphid locally; one cake t. i. d. for four weeks. | |
| 38— F — *...... | Moderate eruption on face for one year. | Three cakes daily before meals for three weeks. | Marked improvement; face clear when last seen some weeks later. Eruption disappeared. |
| 39— M —42..... | Slight eruption on back and abdomen for about one month. | One-half cake dead yeast t. i. d. before meals for seven days. | Eruption cleared. |
| 40— M —21..... | Moderate eruption for two months. | Three cakes daily before meals for two weeks. | |
| 41— M —19..... | Numerous pustules and papules on face and body for five years. | Three cakes daily before meals for three months. | Improvement rapid; marked improvement after three months. |
| 42— M —20..... | Acute eruption. | Three cakes daily for two weeks. | Eruption disappeared; no recurrence. |
| 43— M —21..... | Pronounced case of five years' duration. | Two cakes daily for four weeks. | Eruption cleared; began to return one month later. |
| 44— M —23..... | Marked eruption on face and body for three years. | Two cakes daily for four weeks. | Eruption disappeared, but returned one week after yeast was discontinued. |
| 45— M —21..... | Very moderate eruption on cheeks and chin for one month. | Three cakes daily for four weeks. | Eruption disappeared. |
| 46— M —22..... | Moderate eruption on cheeks for two months. | Three cakes dead yeast t. i. d. before meals for two weeks. | Eruption entirely disappeared. |
| 47— M —24..... | Moderate eruption, chiefly papular, during several years. | Three cakes daily before meals for two months. | Eruption disappeared in two weeks; no recurrence. |
| 48— M —21..... | Moderate eruption on face and body during three years. | Two cakes daily before meals for five weeks. | Cleared almost completely in four weeks. |
| 49— M —20..... | Case of long standing with some indurated follicles; local sulphur treatment had yielded no results. | One-half cake t. i. d. after meals. | Unquestioned improvement; no other medication or change of diet. |

* Adult.

TABLE 5.—RESULTS OF YEAST TREATMENT IN ACNE ROSEACEA

| Case, Sex and Age | Complaint | Treatment | Results |
|-------------------|--|--|---|
| 50— M —50..... | Typically marked case of fifteen years' duration; numerous large red papules, congested arterioles, and bright red nose. | One cake yeast t. i. d. after meals for four weeks. | Improvement in few days; nose and cheeks normal in color in four weeks except for arterioles; papules gone. |
| 51— M —45..... | Marked case of ten years' duration; numerous bright red, deep-seated papules; scarlet nose, cheeks and forehead. | Boric acid locally; one cake yeast t. i. d. after meals for four weeks. | Lesions cleared; redness disappeared in three weeks; unusually quick result. |
| 52— F —40..... | Marked case of five years' duration; chiefly papules with considerable congestion of nose and face. | Boric acid locally; one cake t. i. d. after meals for three weeks. | Improved in a few days; practically cleared in ten days. |
| 53— M —35..... | Moderate case of three years' duration. | One cake t. i. d. after meals for two weeks. | Skin normal and lesions gone in two weeks. |
| 54— F —30..... | Moderate case of two years' duration; typical papules, congestion, and few pustules. | One cake t. i. d. after meals for three weeks. | Face cleared in less than two weeks. |
| 55— M —35..... | Moderate case of three years' duration; typical papules, a few pustules, bright red nose, cheeks and forehead. | One cake t. i. d. after meals for three weeks. | Lesions cleared in two weeks' time. |
| 56— F —38..... | Marked case of eight years' duration; numerous papules and pustules, scarlet nose, red cheeks and forehead. | Boric acid locally; one cake t. i. d. after meals for four weeks. | Markedly improved. |
| 57— M —52..... | Bright red nose for several years. | Two cakes daily for four weeks; living yeast at first, dead yeast later. | Marked improvement. |

TABLE 6.—THE SUCCESS OF YEAST TREATMENT IN CONTROLLING CONSTIPATION

| Case, Sex and Age | Complaint | Treatment | Results |
|-------------------|---|--|--|
| 58— F —46..... | Slight constipation for a few weeks. | One-half cake dead yeast t. i. d. before meals for one week. | Movements so frequent yeast was discontinued. |
| 59— F —26..... | Mild case of chronic constipation of several years' duration. | One-half cake dead yeast t. i. d. for ten days. | Much improvement. |
| 60— M —48..... | Chronic constipation for a year or more; receiving three compound cathartic pills daily to regulate bowels. | Three cakes yeast daily before meals. | Movements became regular without other medication. |
| 61— M —52..... | Mild constipation for several years. | Two cakes daily before breakfast and dinner for four weeks. | Living yeast regulated well, killed yeast did not. |
| 62— M —21..... | Slight constipation for a few weeks. | Two cakes daily before meals for a month. | Regular movements from the start of yeast. |
| 63— M —24..... | Constipation for several months. | Three cakes daily before meals. | Regular movements soon occurred. |
| 64— M —21..... | Mild constipation. | Two cakes daily for five weeks. | Regular movements soon and remained so after yeast was discontinued. |
| 65— F —69..... | Constipation for several years. | Three cakes daily for several days. | Regular movements in two or three days. |
| 66— M —20..... | Constipation for several years with periodic headache. | Three cakes daily before meals. | Regular in four or five days; general physical condition improved. |
| 67— F — *...... | Subacute appendicitis, high intestinal stasis, and constipation. | Yeast and dietary measures. | No relief from constipation; appendiceal condition worse. |

* Adult.

showed laxative power. In one case the patient became constipated under yeast treatment.

So far as gastro-intestinal conditions are concerned, it is apparent that yeast has its greatest usefulness in conditions accompanied by cutaneous manifestations. It seems to us that yeast is essentially indicated in chronic nonobstructive bowel conditions and contra-indicated in the acute conditions.

Whether the success of yeast in acne vulgaris and acne rosacea is due alone to its laxative action or to some fixed effect on the intestinal tract, we are unable to say. The preparation was laxative in all these cases, in two so much so that a half dose was given for a few days. There was considerable gas formation, but no complaints were made on this score.

In furunculosis, yeast is a remarkably efficacious remedy. Its curative action in these cases is no doubt aided by the leukocytosis which is developed.

TABLE 7.—CASES OF GASTRO-INTESTINAL CATARRH TREATED WITH YEAST

| Case, Sex and Age | Complaint | Treatment | Results |
|-------------------|---|--|---|
| 68— F — *..... | Chronic gastro-intestinal catarrh, stubborn, and of several years' duration. | Lavage, applications of silver, dietary measures, one-half cake yeast t. i. d. | Bowel condition improved; slight increase in gastric hydrochloric acid. |
| 69— M —35..... | Ethmoidal sinus disease, gastric and intestinal catarrh, intestinal stasis, and constipation. | Low protein diet, magnesium perhydrol, nose and throat treatment; one-half cake at first, then one-quarter cake t. i. d. | Bowel condition improved; catarrhal tendency lessened; movements more complete. |
| 70— M — *..... | Chronic gastric catarrh, low grade catarrh of the colon, chronic constipation, and tinnitus aurium. | Dietary and local treatment gave improvement; one-half cake t. i. d. added. | Definite improvement in ringing of ears and bowel condition. |

* Adult.

TABLE 8.—YEAST TREATMENT IN FIVE CASES OF ECZEMA

| Case, Sex and Age | Complaint | Treatment | Results |
|--|--|---|--|
| 71— M —35..... 72— F —30..... 73— M —45..... 74— F —40..... 75— M —48..... | All five were extensive, long standing cases, papular, papulo-vesicular, vesicular, or rubrum in type. | Petrolatum locally with three cakes of yeast daily was the treatment in all of these cases. | No improvement although yeast was given in some cases for four months. |

TABLE 9.—RESULTS OF YEAST THERAPY IN THE TREATMENT OF PSORIASIS

| Case, Sex and Age | Complaint | Treatment | Results |
|-------------------|---|---|--------------------------|
| 76— M —12..... | Typical case of two years' duration; general distribution with lesions mostly the size of a dime. | One-half cake t. i. d. and petrolatum locally; previous petrolatum and arsenic treatment had little effect. | Very marked improvement. |
| 77— M —50..... | Very marked case of eight years' duration; large plaques, some palm-sized, were present. | One cake t. i. d., and petrolatum locally. | No improvement. |
| 78— M —40..... | Very marked case of six years' duration; large plaques with very thick patches. | One cake t. i. d. for three weeks; petrolatum locally. | No improvement. |
| 79— F —30..... | Moderate case of five years' duration. | Three cakes daily for three weeks; petrolatum locally. | No improvement. |

TABLE 10.—REPORTS OF MISCELLANEOUS CASES IN WHICH THE YEAST TREATMENT WAS USED

| Case, Sex and Age | Complaint | Treatment | Results |
|-------------------|--|--|--|
| 80— F —13..... | Acute bronchitis. | One-half cake dead yeast t. i. d. for seven days. | Marked improvement. |
| 81— F —27..... | Acute bronchitis. | One-half cake dead yeast t. i. d. for one week. | Marked improvement. |
| 82— M —28..... | Mild case of urethritis of three months' duration. | Three cakes daily for three weeks. | Marked improvement. |
| 83— M —26..... | Mild case of urethritis of one month duration. | Three cakes daily for three weeks. | Condition cleared up. |
| 84— F —30..... | Long standing case of arthritis deformans, with marked intestinal stasis and obstinate constipation. Frequent acute exacerbations with redness and swelling of joints. | Ductless gland therapy, intestinal irrigations, B. coli vaccine, etc., for years. | Not much effect. |
| 85— M —19..... | Enlarged liver, high intestinal stasis, hyperacidity, hypersecretion, gastric motor delay, and marked intestinal putrefaction. | One-half cake yeast t. i. d. after meals. | Acute exacerbations disappeared. |
| 86— F —46..... | Pronounced conjunctivitis of the right eye. | Three cakes daily after meals. | No relief. |
| 87— M —22..... | Folliculitis; hundreds of hair follicles from ankles to knees much inflamed; two months' duration. | One-half cake dead yeast t. i. d. for seven days. | Eye became normal. |
| 88— M —50..... | Pruritus with generalized itching of two years' duration; patient neurotic. | Three cakes daily and petrolatum locally for three weeks. | Cured in two weeks; no recurrence after one month. |
| 89— M — 9..... | Swollen superficial cervical lymph glands. | One cake t. i. d. for three weeks. | No improvement. |
| 90— F — *..... | Erythema and transient urticaria. | One-quarter cake dead yeast t. i. d. in orange juice for eight days. | Glands became normal. |
| 91— M — *..... | Medical diagnosis of duodenal ulcer with gastric hypermotility. | One-quarter cake t. i. d. after meals. | Unquestionable improvement and pronounced laxative action. |
| | | Frequent feedings; one-half cake t. i. d. after the three main meals; bromids, atropin and alkalies. | Symptoms disappeared and bowels made regular. |

* Adult.

SUMMARY

1. Bakers' yeast was found to be a useful remedy in the treatment of furunculosis, acne vulgaris, acne rosacea, constipation and in certain other cutaneous and gastro-intestinal conditions

2. The conditions which respond most favorably to the yeast treatment were (a) furunculosis, (b) the acnes (vulgaris and rosacea), and (c) constipation. Of seventeen cases of furunculosis, all but one of the patients were improved or cured. Of seventeen cases of acne vulgaris, all patients were improved or cured. Of eight cases of acne rosacea, all patients were improved or cured. Of ten cases of constipation, nine were improved or cured. In other words, fifty out of fifty-two cases of furunculosis, the acnes, and constipation were improved or cured by yeast treatment.

3. We consider that yeast is fully as successful as any other remedy in furunculosis, acne vulgaris and acne rosacea.

4. In many of the cases which came under our observation, the yeast treatment caused an improvement in the general physical condition of the patient quite unassociated with the improvement of the symptoms associated with the particular disease in question.

SPECIFIC SERUM THERAPY OF
EPIDEMIC POLIOMYELITIS

A REPORT ON ONE HUNDRED AND FIFTY-NINE
CASES TREATED WITH ANTIPOLIOMYELITIC
HORSE SERUM *

JOHN W. NUZUM, M.D.

AND

RALPH G. WILLY, M.D.

CHICAGO

This report describes in detail the mode of production, technic of administration and the results obtained in a series of 159 cases of epidemic poliomyelitis treated with antipoliomyelitic serum prepared in the horse by injections of the poliomyelitic coccus. These patients were treated in the Cook County Hospital during the present epidemic which has prevailed throughout the summer and autumn months of 1917 in the city of Chicago.

The epidemic first appeared during the latter part of July, 1917. It may be said to have reached its height during the first twenty days of September, when more than 200 cases were reported to the health department and over 100 patients were admitted to the isolation ward of the Cook County Hospital. With the advent of cool weather the number of daily admissions appears to be decreasing somewhat, and accordingly it now seems pertinent to report the results attained up to October 1 of the present year.

We have been fortunate, indeed, in having the opportunity to study two different outbreaks of infantile paralysis. The first epidemic visited Chicago during the summer of 1916, when there were 285 cases reported with a mortality of 15 per cent. The present epidemic of 1917 has already exceeded the first both as regards the total number of cases reported and more especially the extreme virulence of the causative micro-organism and the unusually high death rate. From statistics kindly furnished by the Chicago Health Department, 301 cases of poliomyelitis have been

reported during the period of July 20 to Oct. 1, 1917, with a mortality of 32 per cent. The majority of deaths have occurred in those cases of an ascending or Landry's type of paralysis with progressive involvement of the diaphragm, intercostal and accessory muscles of respiration. It should be mentioned that in a considerable number of patients the disease has terminated fatally within from twenty-four to forty-eight hours after the onset of the symptoms, and not a few patients have died in the ambulances en route to the hospital.

The detection of neutralizing substances in the blood serum of both monkeys and human beings¹ following an attack of poliomyelitis, and the observations of Flexner and Lewis² of the protection of inoculated monkeys by means of injections of serum of recovered monkeys and human beings apparently has furnished the basis for serum therapy in man. Netter³ and more recently several others have reported favorably on the treatment of poliomyelitis in man by injections of immune serum from convalescent patients. Unfortunately, however, it would seem that there are several disadvantages attendant on this method. Chief among these is the difficulty in securing serum in sufficient quantity properly to treat any considerable number of patients, and what is of still greater importance, the probable low antibody content of human serum as compared with an immune serum produced in the horse by injections of the causative micro-organism. The independent observations of Mathers,⁴ Rosenow⁵ and Nuzum and Herzog⁶ on the presence of a peculiar gram-positive coccus in the central nervous system of poliomyelitic patients was soon followed by the isolation of the same coccus from the spinal fluid⁷ of patients during the early stages of poliomyelitis. An intensive bacteriologic study of the spinal fluid of poliomyelitic patients during the present epidemic has served to confirm with striking regularity the presence of the same micrococcus. Thus in 128 cases the coccus has been isolated in pure culture in 109, or 85 per cent.; in ten, or 8 per cent., *B. subtilis* was present as a contamination, and nine cases, or 7 per cent., remained sterile. In many cases repeated punctures on successive days have yielded pure cultures of the coccus. Cultures are obtained with ease by inoculating a 1 per cent. glucose broth medium with from 1 to 2 c.c. of freshly drawn spinal fluid, and incubating under aerobic conditions for from twenty-four to forty-eight hours. Initial cultures on solid mediums are difficult to obtain. The majority of these different strains have been identified in subcultures on human blood agar-plates as fine, pin point, slightly green colonies often surrounded by a hazy zone of hemolysis. Moreover, we have found it possible to identify the coccus by the use of immune horse serum, employing the dilution method for estimating the point of opsonic extinction. This reaction is specific for the poliomyelitic coccus. Finally, we have recently shown, as has Rosenow,⁸

1. Levaditi and Landsteiner: Compt. rend. Soc. de biol., 1910, 68, 311. Flexner, Simon, and Lewis, P. A.: Experimental Poliomyelitis in Monkeys, THE JOURNAL A. M. A., May 28, 1910, p. 1780.

2. Flexner and Lewis (Footnote 1).

3. Netter, A.: Bull. de l'Acad. de m d., 1915, 74, Series 3, p. 403.

4. Mathers, George: The Etiology of Acute Epidemic Poliomyelitis, Jour. Infect. Dis., 1917, 20, 113-124.

5. Rosenow, E. C.; Towne, E. B., and Wheeler, G. W.: The Etiology of Epidemic Poliomyelitis, THE JOURNAL A. M. A., Oct. 21, 1916, pp. 1202-1205.

6. Nuzum, J. W., and Herzog, Maximilian: Experimental Studies in the Etiology of Acute Epidemic Poliomyelitis, THE JOURNAL A. M. A., Oct. 21, 1916, pp. 1205-1208.

7. Nuzum, J. W.: Bacteriologic Findings in the Cerebrospinal Fluid in Poliomyelitis, THE JOURNAL A. M. A., Nov. 11, 1916, pp. 1437-1439.

8. Rosenow, E. C.: The Production of an Antipoliomyelitic Serum in Horses, THE JOURNAL A. M. A., July 28, 1917, pp. 261-266.

* From the Laboratory of Pathology of the Cook County Hospital.

independently, that repeated intravenous injections of the coccus in the horse produce an immune serum rich in agglutinins, complement fixation bodies and especially opsonin, and such a serum has been shown to possess protective and curative properties against fatal doses of virulent virus in experimental poliomyelitis in monkeys.

On the basis of these results it becomes a matter of the greatest moment to determine the therapeutic efficiency of such an immune serum in acute poliomyelitis in man.

IMMUNIZATION OF HORSE

A large horse, 6 years old, weighing 1,400 pounds, was selected and immunized, at first, according to the method described by Amoss and Wollstein,⁹ which we previously employed to produce an antipoliomyelitic serum in sheep. The horse received intravenous injections of living organisms in increasing doses on three successive days, followed by periods of rest of from seven to ten days. For the first injection the twenty-four hour growth on a glucose agar slant was suspended in 2 c.c. of sterile physiologic sodium chlorid solution, and 0.3 c.c. of this suspension in 10 c.c. of saline solution was injected intravenously. Twenty-four hours later, 0.5 c.c. of the foregoing suspension of bacteria in 10 c.c. of physiologic sodium chlorid solution were injected intravenously, and a similar dose was given on the third day. This was followed by a period of rest, when a second series of injections was instituted. Small desensitizing doses have been regularly employed during the first injection of each series, and after the lapse of an hour the full dose is given. The organisms injected have all been originally cultivated in 1 per cent. glucose broth, and later subcultures were made on glucose agar slants and incubated at 35 C. for from eighteen to twenty-four hours. All of the strains employed for immunization have been subcultivated through several generations, always under aerobic conditions, and each strain injected has regularly been plated on blood agar prior to injection into the horse.

The first serial injections were begun, Jan. 30, 1917, and consisted of the poliomyelitic coccus isolated from the brain and cords of two recent human patients. The following six serial injections contained strains isolated from the spinal cord and the central nervous system of six fatal cases of human poliomyelitis, all of which were confirmed by necropsy and by microscopic sections of the spinal cord. The next seven serial injections consisted chiefly of the coccus isolated from the central nervous system of five different monkeys recently paralyzed with virus. Injections of bacteria were given usually intravenously but also by intramuscular injections and subcutaneously into the neck, shoulder and buttocks of the horse. The maximum dose has consisted of the twenty-four hour surface growth of three glucose agar slants in 8 ounce nursing bottles. Regular serial injections of both human and monkey coccus were continued up to July 1, 1917. A test bleeding made, June 6, revealed a potent immune serum. At this time 5,000 units of tetanus antitoxin were injected subcutaneously into the left buttock of the horse. From July 1 to September 15 a mixed culture of ten different strains of the coccus recently isolated from the spinal fluid of patients has been injected intravenously according to the schedule of serial injections followed above. The horse has been bled as

follows: June 6, 500 c.c.; July 11, 2,000 c.c.; July 28, 2,000 c.c.; August 8, 3,500 c.c.; August 23, 2,500 c.c., and September 14, 3,600 c.c.

PREPARATION OF SERUM

After serial injections with different strains of the coccus over a period of four months according to the method outlined above, the horse was bled, June 6, and the antibody content of the serum determined. With the employment of homologous strains of the coccus, agglutination was found to be complete at 1:5,000 dilution, while the point of opsonic extinction as estimated by the dilution method of Klein was 1:6,144. From ten to fourteen days after the last injection the horse was bled from the jugular vein and the blood collected in sterile flasks under aseptic conditions. The blood was allowed to clot, at first at room temperature, and later the flasks were placed in the ice box for from twenty-four to forty-eight hours. The serum was decanted and centrifuged in sterile rubber capped containers. After repeated cultural tests for sterility the clear hemoglobin-free serum is bottled in sterile flasks of 2 ounces capacity plugged with rubber stoppers and sealed with paraffin. The serum for intraspinal administration is preserved in glass containers similar to those utilized in the preservation of antimeningococcic serum.

The serum employed by us has been used unactivated and unpreserved. The addition of 0.2 per cent. tricresol as a preservative has in our experience given rise to rather severe reactions in two patients and been found to aggravate the local irritant effect. It is highly essential that only serum free from hemoglobin be employed, as its presence definitely increases the irritative effect. Regarding the duration of potency of the serum, it has been found that the antibody content as determined by opsonic extinction and agglutination tests of a specimen preserved in the ice box has thus far remained unaltered over a period of three months.

METHOD OF ADMINISTRATION

All of the patients have been treated with serum both by intraspinal injections and at the same time by intravenous administrations. A considerable number have also received intramuscular injections. Intraspinal injections of from 5 to 15 c.c. were given slowly by the gravity method after the previous withdrawal of an equal or greater amount of spinal fluid. It is well known that in poliomyelitis the lumen of the blood vessels is constricted by the encircling ring of mononuclear lymphocytes—the so-called perivascular infiltration. Accordingly it would appear that the amount of serum which can be safely injected intraspinaly in children without danger of producing further injury to the brain stem must be small. At the same time it seems highly desirable to inject larger amounts intravenously in order to effect as rapid a neutralization of the virus as possible. In young children, in whom the median basilic vein is too small to find, we have regularly turned the head to one side; and if pressure is made with the finger just above the clavicle, the external jugular vein stands out very prominently even in infants, and can be readily entered by the needle. From 15 to 30 c.c. of serum are slowly injected intravenously.

CLINICAL PICTURE FOLLOWING SERUM THERAPY

In many of the acute cases the administration of serum has been followed by a critical fall in the temperature occurring from twelve to thirty-six hours.

9. Amos, H. L., and Wollstein, Martha: A Method for the Rapid Preparation of Antimeningitis Serum, *Jour. Exper. Med.*, 1916, **23**, 403.

after injection. Coincident with this there is a slowing of the pulse rate and definite clinical evidence of general improvement. The initial rise in the temperature usually attributed to the injection of human serum has occurred in only a very few cases. When the temperature has remained high we have repeated the intravenous injection in a few patients within twelve hours after the first treatment. It has seemed to us that the temperature may well serve as a guide to the optimum dosage of serum. Serum reactions have occurred in approximately one third of our cases usually from five to eight days after injection, and manifest themselves as an urticaria which disappears within from twenty-four to forty-eight hours. These have always rapidly disappeared, and beyond the transient discomfort to the patient, have appeared of little consequence.

ANALYSIS OF CASE HISTORIES

During the latter part of the Chicago epidemic of 1916, one of us (J. W. N.) first treated a small series of ten cases of typical poliomyelitis by intraspinal and intravenous injections of the immune serum produced by injections of the poliomyelitic coccus in the sheep. The first patient was treated, Dec. 29, 1916.¹⁰ Ten patients in all were treated, with one death. Two patients who received early treatment recovered completely and warrant brief consideration:

CASE 1.—G. S., girl, aged 8 years, Dec. 27, 1916, had headache and vomited. December 28, there was weakness of both legs. December 29, she was admitted to the hospital, with temperature of 99.6 F. She was stuporous. The pupils were dilated and unequal. The right leg was flaccid, and the patellar jerk was absent. The left leg was weak. There was paralysis of the urinary bladder, and incontinence of both urine and feces. The bladder was distended to the level of the umbilicus.

December 29, 15 c.c. of immune serum were injected intraspinally and 20 c.c. serum intravenously. January 6, the child appeared bright and took nourishment. Twenty c.c. of serum were injected intravenously, January 9. The bladder and the bowels were acting. The paralysis never progressed, and after a sojourn of five weeks in the hospital the patient was discharged with a complete return of function of both legs.

CASE 2.—Mrs. B., aged 25, March 1, 1917, had headache, coryza and drowsiness. March 4, she was unable to move her legs. There was incontinence of urine and feces. March 5, she was admitted to the hospital. There was flaccid paralysis of both legs, with loss of Achilles and knee jerks. The bladder was distended with urine. There was apparent weakness of both hands. There was bilateral ptosis. The cerebrospinal fluid was clear, with 85 cells per cubic millimeter and positive globulin tests. March 6, 15 c.c. of serum were injected intraspinally and 20 c.c. intravenously. March 8, 25 c.c. of spinal fluid were withdrawn and 15 c.c. of serum injected intraspinally. March 9, the temperature was normal and there had been no spread of the paralysis. March 14, the patient talked irrationally and complained of difficulty in seeing objects. March 20, a plaster cast was applied to the legs by Dr. Parker.

The patient made a complete recovery, and walked out of the hospital, April 12, 1917. She has been examined on two subsequent occasions, and has regained her tendon reflexes and apparently complete function of her legs.

The foregoing cases served to emphasize the possible value of serum therapy and the importance of early administration of serum. The first patient was treated within forty-eight hours after definite symptoms of meningeal invasion. The second patient came under treatment at a later date when the paralysis was marked and rather disseminated over the cerebrospinal axis. Both patients received repeated injections of

serum intravenously and intraspinally, and both made a good recovery.

During the present epidemic of 1917 and up to October 1, we have treated a total of 159 patients. During the same period, 250 patients have been admitted to the isolation wards of the Cook County Hospital on the services of Drs. Francis, Hoyne, Blatt and Irish, to whom we are indebted for the opportunity to treat and study these patients. All patients have been admitted in rotation to the services of these different attending physicians, and all patients admitted on one of these services have served as controls so far as they have not been treated with immune serum. The observation was made early in the course of serum therapy that patients with respiratory paralysis represent the end-picture in infantile paralysis and are not benefited either by serum therapy or by any other known treatment. Seven patients with typical respiratory paralysis have been given serum as a last resort without any apparent beneficial effects. These seven patients have been included in our total number of nineteen deaths in cases in which the patients received serum therapy. More recently we have not treated patients exhibiting an advanced respiratory paralysis at the time of admission to the hospital. With this possible exception there has been no selection of cases for serum treatment.

We have thus far treated 159 patients admitted to the Cook County Hospital in all stages of infantile paralysis. Of these 159 cases, nineteen patients have died, giving a mortality rate of 11.9 per cent. Excluding seven patients admitted to the hospital with advanced respiratory paralysis and dying within a short time after admission, to whom serum was given as a last resort, we have twelve deaths with a mortality rate of 7.5 per cent. At first glance these figures are in striking contrast to the total number of 100 patients admitted to the hospital during the same period of time and not receiving serum therapy. Of these 100 patients, thirty-eight died, a mortality rate of 38 per cent. However, it must be stated in all fairness that of these 100 untreated cases, twenty-five patients had an advanced respiratory paralysis on admission.

MORTALITY IN PATIENTS TREATED WITH SERUM IN THE COOK COUNTY HOSPITAL AS COMPARED WITH UNTREATED CASES FROM JULY 20 TO OCT. 1, 1917

| | Total Cases | Deaths | Mortality, Per Cent. |
|---------------------------|-------------|--------|-------------------------|
| Untreated cases | 301 | 97 | 32 |
| Serum treated cases | 152 | 12 | 7.5 |

The mortality rate of a series of serum treated cases as compared with a series of untreated cases occurring during the same period of time and during the same epidemic of 1917.

For purposes of analysis and comparison we have divided the patients treated with serum into two groups. Group 1 comprises a series of fourteen cases in which no definite paralysis could be detected at the time serum treatment was instituted. This group has been further subdivided into Class 1, comprising ten typical preparalytic cases in all of which the history, clinical examination and spinal fluid findings were positive for poliomyelitis, and Class 2, consisting of four patients presenting the clinical picture of the meningeal or encephalitic type of the disease, namely, rigid neck, opisthotonos, stupor, muscular twitchings, spastic extremities, etc. Group 2 comprises a series of 141 patients, all exhibiting varying degrees of paralysis at the time of treatment. This group has for convenience been subdivided into Class 1, composed of patients in whom the paralysis appeared to be spreading, and Class 2, consisting of patients with definite

10. A brief preliminary report of the results attained appeared in the Bulletin of the Chicago Medical Society, April 21, 1917.

paralysis of varying duration. Brief summaries are given of instructive case histories illustrating the various group divisions:

GROUP 1. NO PARALYSIS AT THE TIME OF TREATMENT
(TEN CASES)

CLASS 1. PREPARALYTIC CASES

CASE 98.—Boy, aged 18 months, Sept. 17, 1917, had fever and showed irritability. September 18, he complained of

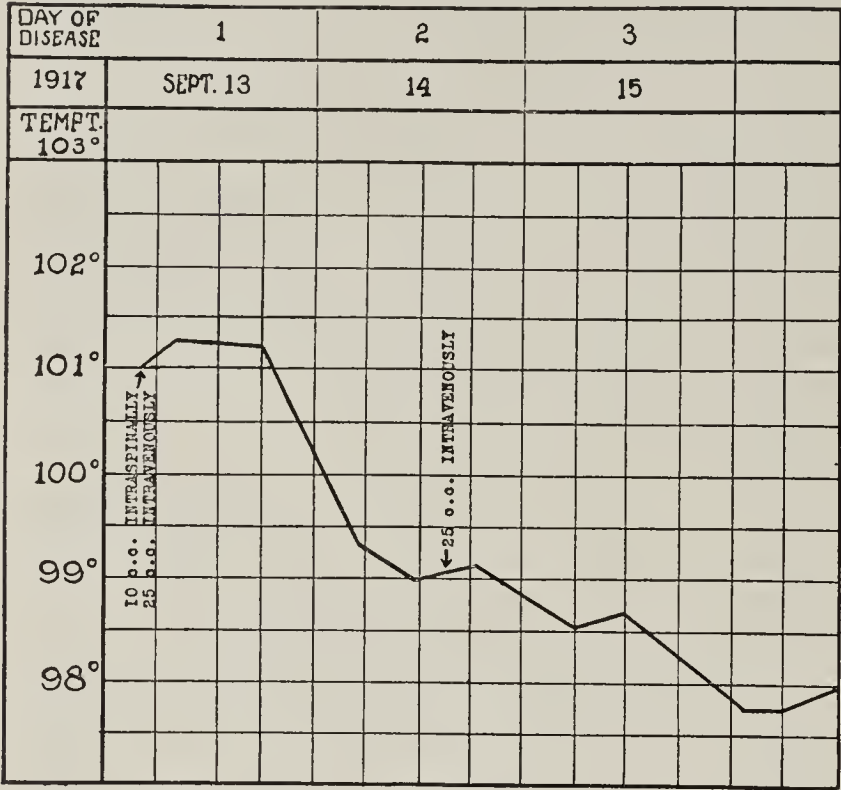


Chart 1 (Case 79).—Temperature curve in a typical preparalytic case of poliomyelitis in which the patient developed a transitory right sided facial paresis thirty-six hours after the first injection of serum. This patient made a complete recovery.

pain in the legs when made to stand. September 19, he was admitted to the hospital. The temperature was 101.4, the pulse 120, and respirations 26. The cerebrospinal fluid revealed 120 cells per cubic millimeter. Globulin tests were positive. No paralysis was detected. September 19, at 2 p. m., 5 c.c. of serum were injected intraspinal and 15 c.c. intravenously. September 20, the temperature was normal and no paralysis ever developed.

Serum was given forty-eight hours after the first symptoms, and the temperature fell from 101.4 to normal within twenty-four hours and paralysis never developed.

CASE 79.—Boy, aged 3 years, Sept. 13, 1917, was brought to the hospital by the mother, who stated that the patient complained of headache, pains in the legs and the back of the neck, and felt too sick to get out of bed that morning. On admission the temperature was 101. The spine sign was positive. The cerebrospinal fluid revealed 27 cells per cubic millimeter. Globulins were + + +. No paralysis was detected. September 13, 10 c.c. of serum were injected intraspinal and 25 c.c. of serum intravenously. September 14, the temperature was 99.2. Twenty-five c.c. of serum were injected intravenously. September 15, the temperature was normal. September 18, a definite right sided facial paresis had appeared, which, however, was transitory, and the patient recovered completely.

This patient received serum within twelve hours after the first symptoms appeared. The interesting feature of this case is the appearance of a facial paresis five days later, which lasted only two days, and recovery was uneventful.

CASE 13.—Girl, aged 3 years, Aug. 15, 1917, on admission to the hospital, had a temperature of 101; the pulse was 120, the respirations, 22. There were fine twitchings of the muscles of the entire body. There was left sided facial paresis, with ptosis of the left upper eyelid and drooping of the left

corner of the mouth. No paralysis was detected. The cerebrospinal fluid was clear, with 59 lymphocytes. The globulin was increased. August 15, 10 c.c. of serum were injected intraspinal and 18 c.c. intravenously. August 16, the temperature was normal. Ten c.c. of serum were injected intraspinal. Recovery was complete.

CASE 46.—Girl, aged 6 months, Sept. 2, 1917, had fever and vomited. September 4, the child was drowsy and irritable. September 5, she was admitted to the hospital. The temperature was 99.6, the cerebrospinal fluid, 170 cells per cubic millimeter. The globulin was + + +. No paralysis was detected. Ten c.c. of serum were injected intravenously. September 8, 10 c.c. of serum were injected intravenously. The temperature was normal the following day, and paralysis never developed.

CASE 17.—Girl, aged 10 months, Sept. 18, 1917, was admitted to the hospital with a history of fever and vomiting two days before. The temperature was 99, the pulse, 120, and respirations, 26. No definite paralysis was present, but the right arm and shoulder appeared paretic. The cerebrospinal fluid revealed 42 lymphocytes per cubic millimeter. The globulin test was + + +. September 18, 12 c.c. of serum were injected intravenously. The weakness of the right arm and deltoid rapidly disappeared, and recovery was uneventful.

Ten patients, all undoubted instances of preparalytic poliomyelitis, have been treated with immune serum in the early stages of the disease, with prevention of paralysis and complete recovery in 100 per cent. Whether or not paralysis would have developed in all of these patients without serum treatment cannot be determined. As to the apparent advantage of the early administration of serum, there can be no doubt.

CLASS 2. MENINGEAL TYPE (FOUR CASES)

CASE 30.—Girl, aged 22 months, Aug. 24, 1917, was admitted to the hospital. No history of the duration of the illness was available. The temperature was 101.6. The child was extremely rigid and stuporous. There were involuntary twitchings of the arms and hands. The legs were spastic.

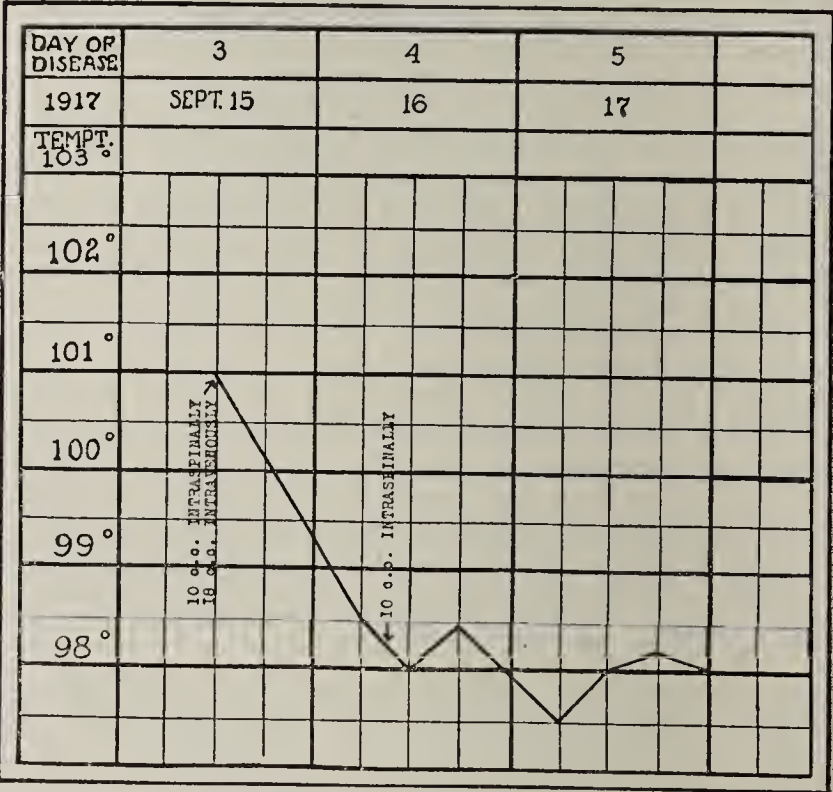


Chart 2 (Case 13).—Temperature curve of a patient admitted to the hospital with a marked left sided facial paresis. Fine muscular twitchings of the face and extremities. Complete recovery following serum treatment.

There was marked tremor of the neck and face muscles. No paralysis was detected. The cerebrospinal fluid was clear; pressure was markedly increased, and there were 154 cells per cubic millimeter, with globulins increased. August 25, 20 c.c. of serum were injected intravenously. August 26, the temperature was 101. Five c.c. of serum were injected intraspinal and 15 c.c. intravenously. The temperature reached

normal within forty-eight hours, stupor and rigidity of muscles disappeared, and the patient made a complete recovery.

CASE 36.—Boy, aged 3 years, Aug. 30, 1917, was admitted to the hospital. Illness began five days before. The patient lay quiet on the bed, the head retracted and rigid, with marked spasticity of both arms and legs. The reflexes were exaggerated. No paralysis was detected. He cried out when the chin was flexed on the abdomen. The cerebrospinal fluid was

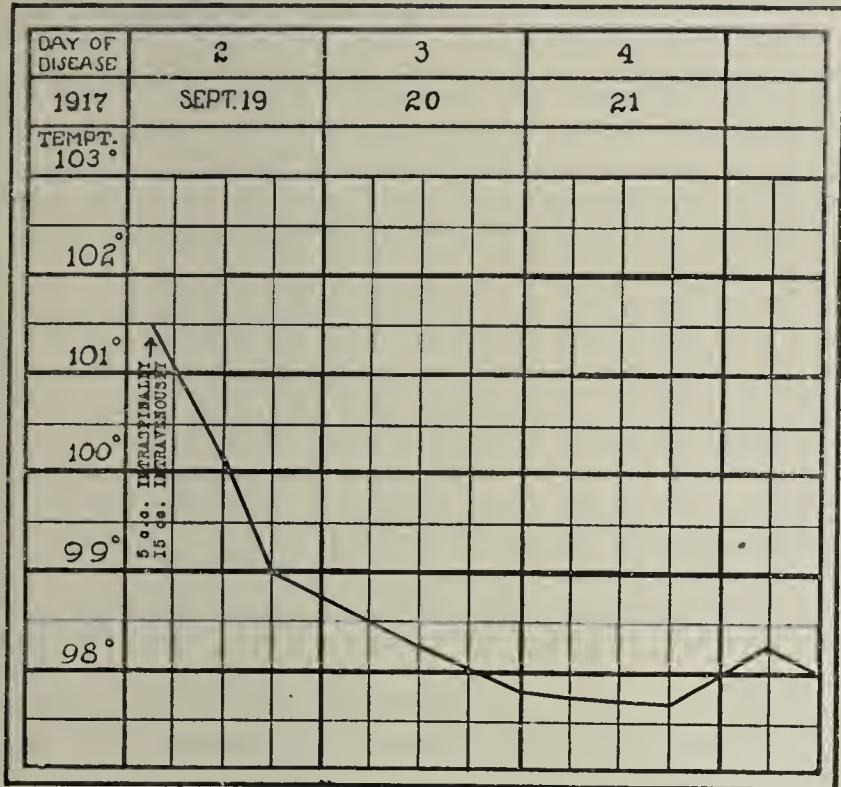


Chart 3 (Case 98).—Temperature curve in a typical preparalytic case of poliomyelitis. Spinal fluid contained 120 cells per cubic millimeter with positive globulin tests. Serum injected thirty-six hours after onset of fever and pain in legs. Note the critical fall of the temperature; with rapid and complete recovery.

clear and contained 320 cells per cubic millimeter, with positive globulin tests. August 30, 5 c.c. of serum were injected intraspinal and 12 c.c. intravenously. August 31, 6 c.c. of serum were injected intraspinal and 15 c.c. intravenously. The patient made a complete recovery.

The foregoing cases are instructive in that they simulate the clinical picture of meningitis. The disease expends its greatest insult on the upper motor neuron, and the mortality of this type of cases is high. We have treated four meningeal types of poliomyelitis with one death, a recovery rate of 75 per cent.

GROUP 2. CASES SHOWING PARALYSIS AT TIME OF TREATMENT

CLASS 1. PARALYSIS EXTENDING

CASE 26.—Boy, aged 5 years, Aug. 21, 1917, was admitted to the hospital with a history of onset two days previously and the condition growing worse. The child was acutely ill. He could not move head or arms. There was paralysis of the sternocleidomastoid muscles. The head fell backward when the patient was lifted by the arms. There was flaccid paralysis of both arms, and the patient could move the fingers only slightly. The temperature was 100. The cerebrospinal fluid revealed 33 cells per cubic millimeter. The globulin was + + +. August 21, 10 c.c. of immune serum were injected intraspinal and 25 c.c. of serum intravenously. August 22, the respirations were embarrassed. There was slight cyanosis. Ten c.c. of serum were injected intravenously, 5 c.c. intraspinal, and 10 c.c. intramuscularly. August 23, the child was given 20 c.c. of serum intramuscularly. The patient regained good use of the left arm and hand, but the paralysis of the neck, muscles and right arm remained unchanged.

This case is interesting because the location and extent of the paralysis were against the patient's chances for recovery. The early convalescence was

stormy, and at one time it was thought that the child had developed a respiratory paralysis. He was given a total of 80 c.c. of serum, and recovered, with good use of the left arm. Whether or not the serum prevented a fatal respiratory paralysis cannot be determined; but we do know that this class of untreated cases has been attended by a high mortality.

CASE 28.—In a girl, aged 6 years, the illness began Aug. 18, 1917, with a convulsion followed by pains in the legs and the back of the neck. August 23, there was weakness of the right leg, and the child became stuporous. August 24, she was admitted to the hospital with the tentative diagnosis of epidemic meningitis. The temperature was 101, the pulse, 128, and respirations, 30. The child was stuporous, and there was flaccid paralysis of both legs. The neck muscles were paretic. The spinal fluid was clear and contained 171 cells per cubic millimeter. The globulin test was + + +. August 24, 10 c.c. of serum were injected intraspinal and 20 c.c. intravenously. August 25, the temperature was 99. The stupor was gone. General improvement was noted. Eighteen c.c. of serum were given intravenously. The temperature reached normal twelve hours after the second injection of serum. The patient was discharged from the hospital, September 24, with paralysis of the legs but slightly improved.

Whether the prompt subsidence of the stupor and the critical drop in temperature can be ascribed to the serum treatment cannot be definitely determined. The paralysis did not progress.

CASE 3.—The onset in a girl, aged 2 years, occurred, July 26, 1917, with headache, fever and vomiting. July 28, there was flaccid paralysis of both lower extremities with weakness of the neck muscles and paresis of both arms. July 29, when she was admitted to the hospital, the temperature was 103, the pulse, 150, and respirations, 60. There was flaccid paralysis of both lower and upper extremities. There was beginning respiratory involvement. The spinal fluid revealed 47 cells per cubic millimeter. Ten c.c. of serum were injected

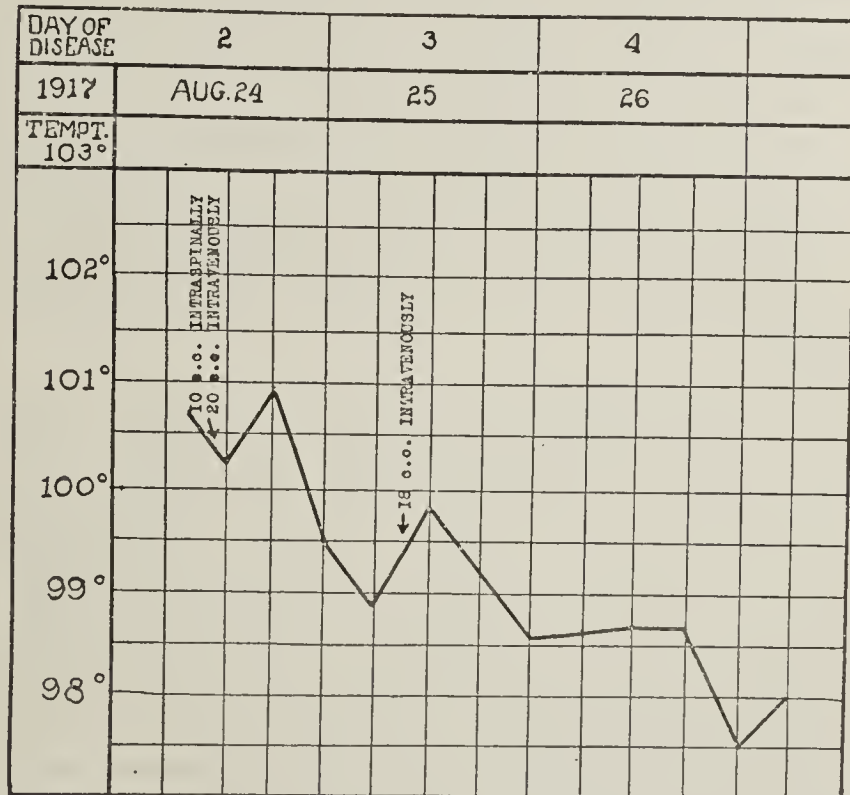


Chart 4 (Case 28).—Temperature curve of a patient admitted to the hospital with flaccid paralysis of both legs. Marked stupor and rigid neck. This patient recovered, with partial use of the legs.

intraspinal after previous withdrawal of 15 c.c. of spinal fluid. July 30, the temperature was 100. The patient had developed a marked respiratory and facial paresis. Spinal puncture was performed and 15 c.c. of fluid withdrawn slowly. Five c.c. of serum were injected intraspinal and 5 c.c. intravenously. July 31, the temperature was 103, the pulse, 174, and respirations, 64. The child died.

This case is of interest for several reasons. It represents the typical form of Landry's paralysis with rapid ascending progression of the paralysis and ultimate involvement of the respiratory center and death. Not a few similar cases have occurred in this epi-

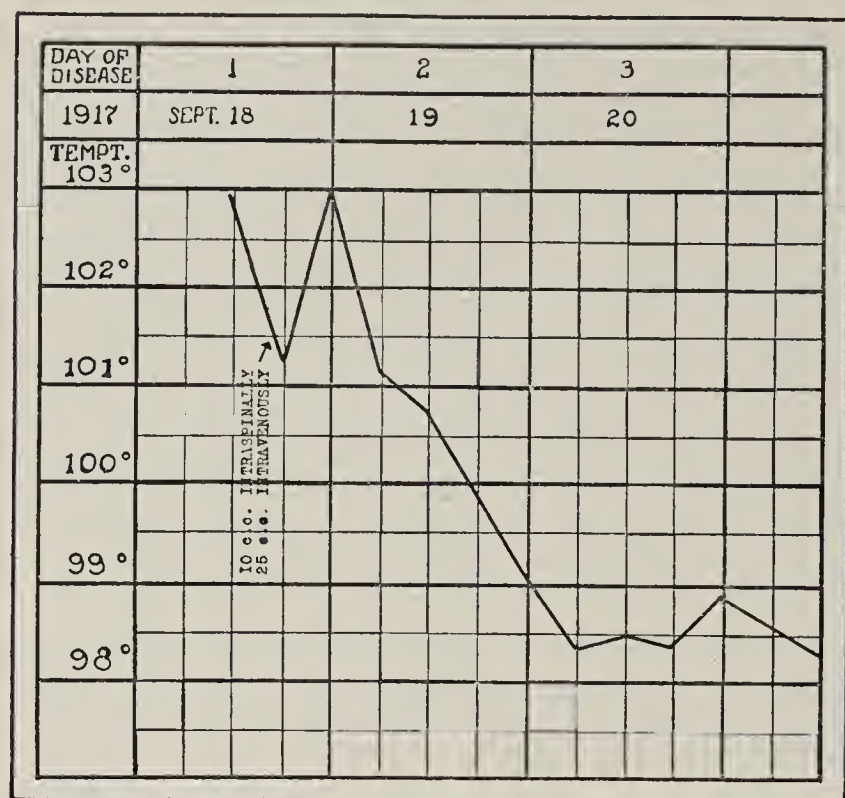


Chart 5.—Temperature curve of a patient with poliomyelitis. Flaccid paralysis of both legs with paresis of the right arm and shoulder. Duration of paralysis, seventy-two hours. The weakness of the arm disappeared rapidly following serum, and the paralysis did not progress. The legs remained flaccid.

demic. The optimal time for serum treatment obviously was between July 26 and July 28. Seventy-two hours after the onset and at a time when all the extremities were paralyzed, the respiratory center involved, and the prognosis certain, 10 c.c. of serum were given intraspinally. The temperature dropped from 103 to 100, and accordingly a second dose of 10 c.c. serum was administered. Death occurred, July 31. This case serves to confirm the impression gained of the futility of any form of treatment after the respiratory center has become involved. Furthermore, we subsequently learned that the best results have been obtained in those patients receiving larger doses of serum.

CASE 74.—Boy, aged 2 years, Sept. 9, 1917, had fever, headache and vomiting. September 10, there was weakness of both legs. September 12, he was admitted to the hospital. The temperature was 100. There was flaccid paralysis of the right leg. Weakness of the left leg was marked. The head fell backward when the child was raised by the shoulders, and the neck muscles were paretic. The cerebrospinal fluid was clear and contained 50 cells per cubic millimeter. The globulin test was + + +. September 12, 6 c.c. of serum were injected intraspinally, and 20 c.c. intravenously, and September 14, 10 c.c. intraspinally and 20 c.c. intravenously. September 15, the temperature was normal and has remained normal to date. The paresis of the neck muscles and right leg rapidly disappeared. The flaccid paralysis of the left leg still remains.

Serum therapy was instituted forty-nine hours after the onset of paralysis in this patient. A total of 50 c.c. of serum was injected, and the temperature dropped to normal within twenty-four hours. The paresis of the right leg never progressed, and the weakness of the neck muscles rapidly disappeared. This coincides with our observations that it is much easier to prevent

paralysis altogether and to lessen the spread and severity than to effect its rapid retrogression.

CLASS 2. PARALYSIS PRESENT

CASE 95.—Boy, aged 5 years, Sept. 13, 1917, had fever, headache and vomiting. September 17, he had pain in the left shoulder and back, and was unable to use the left arm. September 17, he was admitted to the hospital. The temperature was 103. Pain was elicited on manipulation of the left shoulder. There was definite paresis of the left shoulder muscles. The cerebrospinal fluid was clear and under increased pressure; it contained 21 lymphocytes per cubic millimeter. Globulin was increased. September 17, 10 c.c. of serum were injected intraspinally and 25 c.c. intravenously. The temperature dropped to normal within thirty-six hours. There was no extension of the paralysis. On discharge from the hospital the child has regained complete muscular power in the left shoulder girdle and arm.

CASE 4.—Onset in a boy, aged 9 months, occurred, July 27, 1917, with fever and vomiting. July 28, weakness of both legs was noted and inability to stand. July 29, on admission to the hospital, the temperature was 101. There were complete flaccid paralysis of the left lower extremity, and weakness and paresis of the right leg. The cerebrospinal fluid contained 33 cells per cubic millimeter. Globulin tests were positive. July 29, the patient received 10 c.c. of serum intraspinally. July 31, the temperature was 99.2; 5 c.c. of serum were injected intraspinally. August 2, the temperature was normal. No extension of the paralysis had occurred. August 4, 5 c.c. of serum were injected intraspinally and 10 c.c. intravenously. The paresis of the right leg cleared up. The left leg remained flaccid on the patient's discharge from the hospital.

CASE 97.—Onset in a boy, aged 10 years, occurred, Sept. 15, 1917, with headache, fever and vomiting. September 18, there was weakness of both legs, and the patient could not stand up. September 19, on admission to the hospital, the child appeared acutely ill. There was paralysis of both legs, with loss of tendon reflexes. Both arms were paretic, and he could move only the fingers. The spinal fluid was clear

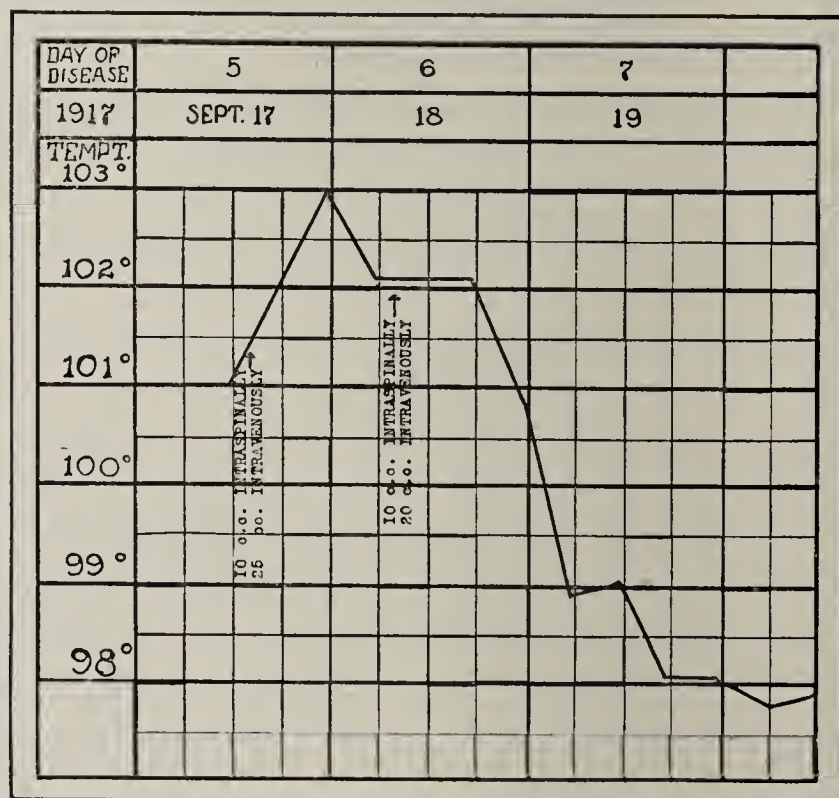


Chart 6.—Temperature curve in a case of poliomyelitis with paresis of the muscle groups of the left shoulder. Patient made a rapid and complete recovery following serum treatment.

and contained 109 cells per cubic millimeter with globulin + + +. September 18, 15 c.c. of serum were injected intraspinally and 20 c.c. intravenously. September 21, the temperature was normal and has remained normal to date. The paresis of the arms has rapidly disappeared, and the patient has good use of the arms and the hands. September 30, the

legs have remained flaccid, and the Achilles and patellar reflexes are still absent.

CASE 6.—Girl, aged 11 months, Aug. 2, 1917, was admitted to the hospital with a history of the onset of paralysis seventy-two hours before. The temperature was 102. There was flaccid paralysis of both legs, with loss of reflexes. There was left sided facial paralysis. The neck was rigid and the spine sign positive. There was spasticity of both arms. August 3, 3 c.c. of serum were injected intraspinally and 10 c.c. intravenously. August 4, the temperature was 101.4. The condition remained unchanged. Three c.c. of serum were injected intraspinally and 10 c.c. intravenously. August 5, the temperature dropped to normal and has remained normal to date. The facial paralysis and rigidity of the neck rapidly disappeared. The legs are still flaccid.

CASE 65.—The onset of disease in a boy, aged 14 months, occurred Sept. 4, 1917, with fever and vomiting. September 9, paralysis of both legs developed. September 11, on admission to the hospital, the temperature was 100. There were flaccid paralysis of the legs and a paresis of the neck muscles. Six c.c. of serum were injected intraspinally and 25 c.c. intravenously. There was a critical drop in temperature to normal within twenty-four hours after the injection. The weakness of the neck muscles rapidly disappeared. The paralysis of the legs has remained unaltered.

CASE 118.—The onset in a girl, aged 1 year, occurred, Sept. 22, 1917, with vomiting and fever. She was admitted to the hospital, September 23, just twenty-four hours after the first symptoms. The temperature was 102. The child appeared acutely ill. There was marked left sided facial paralysis, with inability to close the left eye. The left corner of the mouth drooped completely. No paralysis of the extremities was detected. The spinal fluid contained 21 lymphocytes per cubic millimeter, with positive Noguchi, Nonne and Ross Jones tests. September 23, just twenty-four hours after the onset, 5 c.c. of serum were injected intraspinally and 15 c.c. intravenously. A critical drop of the temperature to normal occurred the following day. Paralysis has never appeared in the extremities. September 30, facial paralysis is disappearing, and the prognosis for complete recovery is excellent.

CASE 107.—Girl, aged 2½ years, Sept. 16, 1917, had fever and headache. September 20, weakness of the left arm appeared. September 21 she was admitted to the ward. The temperature was 101. The child appeared acutely ill. She was stuporous. The neck muscles were paretic. There was weakness of the left shoulder and arm. The deltoid muscle was paretic, with loss of reflexes in the left arm and shoulder. September 21, twenty-six hours after the onset of weakness of the shoulder and neck muscles, 10 c.c. of serum were injected intraspinally and 25 c.c. intravenously. September 22, the condition had improved and the stupor was gone. Ten c.c. of serum were injected intraspinally and 20 c.c. intravenously. September 25, the temperature reached normal, and there had been a rapid general improvement. The paresis never progressed. The child can move the left arm in all directions, and the prognosis appears excellent for complete recovery.

The foregoing case histories are included to illustrate the definite value of serum treatment in preventing the spread of the paralysis. All of these patients were treated at the optimal time, from twenty-four to forty-eight hours after onset. It will be noted that while the paretic muscles and weakness of the extremities rapidly disappeared following serum therapy, flaccid paralyzes remained unaltered.

COMMENT

We have treated a series of 159 cases of poliomyelitis with immune serum prepared in the horse by repeated intravenous injections of the coccus isolated chiefly from human poliomyelitic sources. Prior to its use in man, we have proved that this serum, prepared in the horse in the manner outlined above, possesses both protective and curative properties in experimental polio-

myelitis in monkeys. We proceed now to the estimation of the value of the serum in human poliomyelitis. It is obvious that the value of serum must be based both on the clinical study and impressions gained in the treatment of individual cases, and on statistical evidence acquired after treatment of a large series of cases properly controlled.

Of the group of fourteen cases of undoubted instances of poliomyelitis in which no paralysis could be detected at the time serum treatment was instituted, thirteen patients recovered completely and one died. None of these patients developed paralysis, subsequent to serum treatment. These facts serve to substantiate the impression gained from the treatment of the entire series of cases, that it is much easier to prevent paralysis altogether and definitely to arrest the extension and lessen the severity of the paralysis than to bring about its rapid disappearance. It should be mentioned in this connection, however, that we have repeatedly observed definite weakness or paresis of extremities rapidly disappear following serum therapy. Furthermore, of the entire 159 cases treated in all stages of paralysis, in only three late cases has the paralysis extended to the respiratory center with a fatal result. This is significant when we recall the unusually high mortality of the present epidemic with the relatively large number of fatal respiratory paralyzes among untreated patients.

Regarding the mortality rate, we have thus far treated a total number of 159 patients with nineteen deaths, a mortality of 11.3 per cent. Mention should be made of the fact that of these nineteen fatal cases, seven patients were admitted to the hospital with advanced respiratory paralysis, and all died within periods varying from seven to seventy-two hours after admission. These patients have been included in estimating the total mortality, obviously an unfair test for estimating the therapeutic efficiency of the serum.

From statistics kindly furnished by the Health Department of the city of Chicago, a total of 301 cases were reported with ninety-seven deaths, a mortality of 32 per cent. for the period of July 20 to Oct. 1, 1917. During this same period of time we have treated a series of 152 patients, excluding seven respiratory paralyzes on admission, with twelve deaths, giving a mortality rate of 7.5 per cent.

In by far the majority of patients receiving serum, the fever, at times high, has fallen rapidly to normal within periods varying from twelve to twenty-four hours. Coincident with this critical drop of the temperature there usually occurs a slowing of the pulse rate and other clinical evidence of rapid general improvement.

Finally, we wish to consider briefly the extremely important problem of the dosage and mode of administration of the serum. A careful analysis of the case histories suffices to demonstrate the harmlessness of the serum when slowly injected both intraspinally and intravenously. The serum has always been tested for sterility after passage through a Berkefeld filter, and has been used without a preservative. It must be free from corpuscles and hemoglobin.

As in other acute infectious diseases, recovery from poliomyelitis must depend on the process of self-immunization. Accordingly, the simultaneous intraspinal and intravenous injections of immune serum afford the most rapid way of flooding the central nervous system with specific antibodies to neutralize the virus of the disease. We have attempted to treat

all cases as early as possible with relatively large doses of serum. Obviously the amount of serum that can be safely given to a child intraspinally is small. Accordingly, we have regularly injected small doses of from 5 to 10 c.c. of serum very slowly by the gravity method after the previous withdrawal of an equal or greater amount of spinal fluid. At the same time intravenous doses of from 10 to 30 c.c. of serum are given according to the age of the patient. In many patients we have repeated the intravenous injections at twelve to twenty-four hour intervals, using the temperature as a guide to dosage, with beneficial results. The majority of patients have received total amounts of serum varying from 40 to 75 c.c., depending on the age and severity of the case. In a few critical cases we have injected a total amount of 150 c.c. within seventy-two hours, with beneficial results.

SUMMARY

1. Of 159 patients receiving serum in all stages of the disease, nineteen died, a mortality of 11.9 per cent. Among 100 cases occurring during the same period of time, in which the patients did not receive serum, thirty-eight patients died, a mortality of 38 per cent.

2. We have treated 152 patients in all stages of infantile paralysis, excluding seven cases presenting respiratory paralysis on admission, with eleven deaths—a mortality rate of 7.2 per cent. During this same period of time a total of 301 cases were reported to the Health Department with ninety-seven deaths—a mortality of 32 per cent.

3. This series of treated cases suffices to demonstrate the harmlessness of serum treatment when the serum is free from hemoglobin, sterile to repeated cultures, and the injections are slowly made and all known rules of precaution are observed.

4. The serum appears to possess the power of definitely preventing the onset of paralysis when administered early in the disease. In ten undoubted instances of poliomyelitis in which no paralysis was detected at the time serum was administered, prevention of paralysis and complete recovery resulted in 100 per cent.

5. The action of the serum is more definite in arresting the extension of paralysis and diminishing the severity than in effecting its disappearance.

6. As in other acute infectious diseases, the earlier the serum is administered, the more striking are the results obtained.

7. Serum should be injected intraspinally in small doses and at the same time intravenously in larger amounts. The temperature has been employed as a guide to the dosage.

8. The injection of serum is followed by a critical fall in the patient's temperature. Coincident with this there occurs a slowing of the pulse rate, and usually other definite clinical evidence of general improvement.

9. In doubtful early cases the decision to use serum should rest on the bacteriologic, chemical and microscopic examination of the cerebrospinal fluid.

Negroes Show Lower Suicide Rates than White Persons.—The death rate from suicide among negro males is a little over one half as high as among white males, according to statistics of the Metropolitan Life Insurance Co. In 1916, the rate was 8.2 per hundred thousand insured. Negro females show the very lowest rates of any of the groups studied. The rate was 3.4 per hundred thousand in 1916, the total number of suicides being only twenty-two among over 650,000 insured colored women.

Military Medicine and Surgery

MILITARY SKETCHING AND MAP READING

WILLIAM W. RENO, A.M., M.D.

Lieutenant-Colonel, Medical Corps, U. S. Army; Instructor, Medical Officers' Training Camp

FORT RILEY, KAN.

The ability to read maps is an absolutely essential qualification of a medical officer. Instructions conveyed to him in the field often contain references to maps. If he is unable to understand these references his efficiency is greatly impaired. Then, too, the question of shelter and cover from fire at distant points

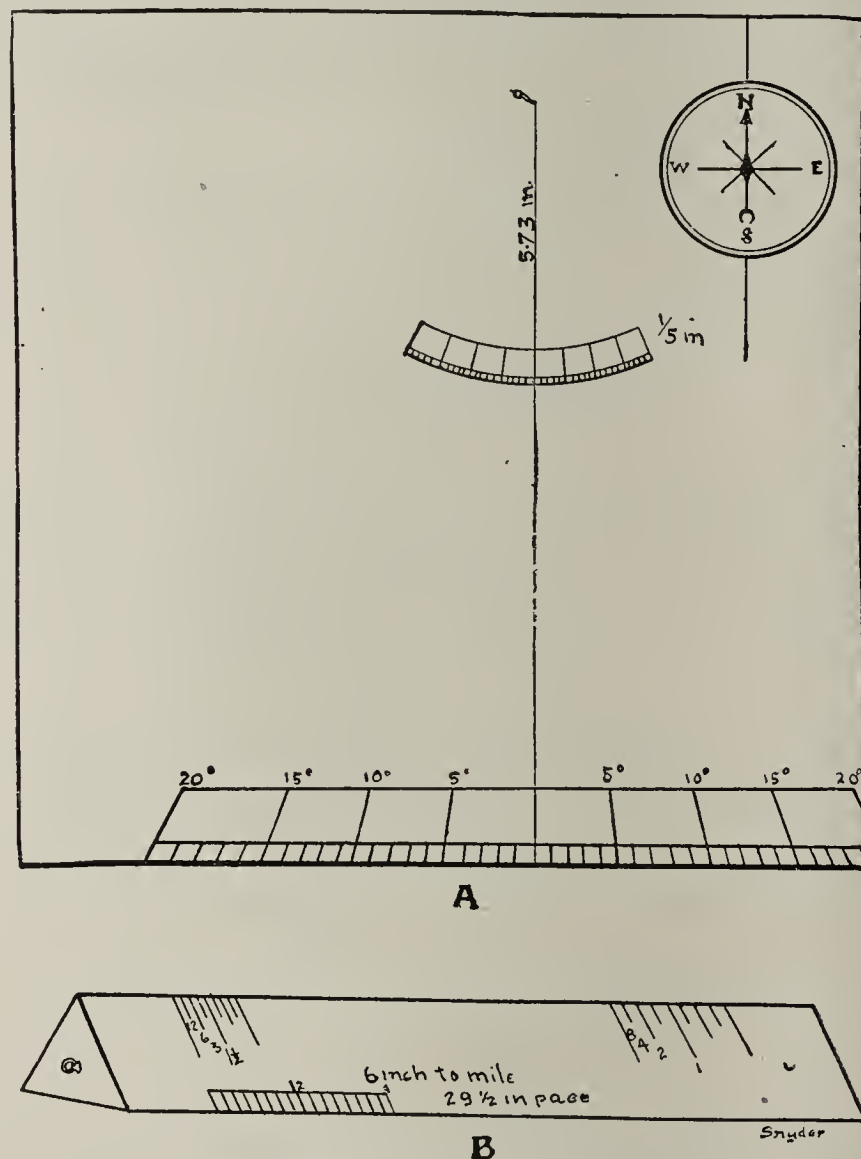


Fig. 1.—(A) This is merely a piece of a 1 by 12 inch board with angles of slope marked on it. With a plumb bob and line attached as shown, and sighting at an object over the top of the board the angle of elevation of the object is registered by the plumb line. Knowing this angle and the distance to the object, the elevation of the object can be readily ascertained from the degree scale on the alidade. (B) The alidade is a triangular ruler used for sighting at objects and drawing lines (rays) on the map. It has on its faces one's pace scale; also a degree scale, an inch scale and a hundred yard scale.

at which it might be desirable to establish sanitary formations can often be determined by reference to maps.

As the shortest road to map reading is through map making, the essentials of map making will be outlined. Ordinarily in two afternoons the general principles of map making can be mastered. In working out the principles of map making the essentials of map reading will be absorbed unconsciously.

ARTICLES NEEDED FOR MAP MAKING

Compass, alidade, slope board, tripod, paper, four thumb tacks, pencil with eraser, a pace tallier (con-

venient but not essential), a list of pace scales for paces from 28 to 36 inches (convenient but not essential) are needed.¹

PROCEDURE

1. *Normal Step or Pace.*—This is determined in the following manner and marked on the alidade: One walks four times over a measured one-half mile course and counts the number of one's steps each time. These are added together and divided by four to get one's average number of steps or paces per one-half mile. There are 31,680 inches in one-half mile. This number is divided by the foregoing average. This gives the length of one's pace in inches. All sketches made should be on the scale of 6 inches equal 1 mile. One's pace on the list of scales furnished is located and a corresponding scale on the blank side of the alidade is marked. This scale of one's paces is necessary in order to step off distances and place them on one's sketch.

2. *Slope Board and Tripod.*—A piece of 1 by 12 inch lumber about 1 foot long is taken for a slope board (Fig. 1). For a tripod three slender strips of wood about 4 feet long are chosen for the legs and are attached to a block of wood for the head piece, the legs being placed into slots and nails driven through them in order to hinge them. Through the center of the head piece, from below, a nail is driven and allowed to project through the upper side about one-half inch. A corresponding hole is made in the center of the bottom of one's map or slope board. This gives a pivot for one's map board on the tripod (Fig. 2).

3. *Degree Scale on Slope Board.*—One edge should be perfectly straight. A line perpendicular to this edge is drawn on the face of the board. On this line is drawn an arc of a circle with a 5.73 inch radius. The arc should extend about 3 inches on each side of the perpendicular, and the center of the circle should be on the perpendicular about one-fourth inch from the straight edge mentioned. Dots should be marked on this arc one-tenth of an inch apart, beginning at the perpendicular and going both ways. A pin is driven into the center of the circle. A thread 15 or 16 inches long should be tied to the pin. The thread is drawn taut, covering the perpendicular. It is then moved either way, still taut, until it covers a one-tenth inch dot. Then a dot is placed where the thread crosses the edge, opposite the straight edge. This should be done for fifteen or twenty dots on each side of the perpendicular. At each dot so made a line is drawn one-

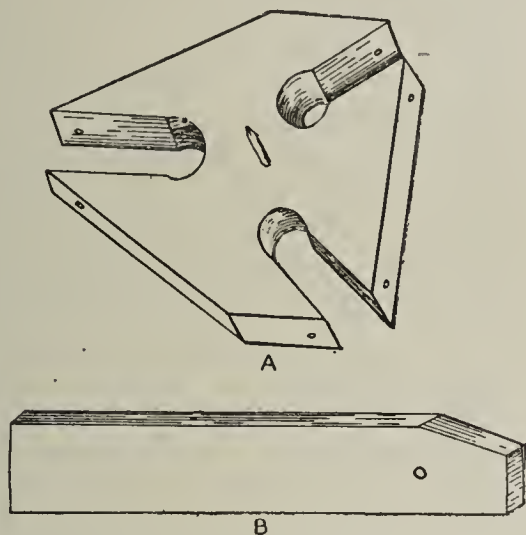


Fig. 2.—The tripod is easily made. A piece of board 2 by 4 inches, or preferably 2 by 6 and 6 inches long, is selected and three slots are made for the legs. Four strips of board about 1 by 1 by 4 inches serve as legs. With nails these are fastened into the slots. A nail is driven through the slotted piece from the bottom and projects through the top one-half inch. A nail hole three-fourths inch deep is made in the bottom center of the map board. A nail is driven through this hole and the tripod and the board are ready for setting up. A, head piece; B, leg.

fourth inch long toward the center of the circle, except that at every fifth dot a line one-half inch long should be made. The long lines should be numbered 5, 10, 15, etc., on each side from the perpendicular as zero. This board is now a slope board for marking the degree of slope of hills, valleys and other objects (Fig. 1 A). When the alidade or a piece of lead is tied to the thread mentioned, acting as a pendulum, and a sight is taken along the straight edge of the board, the thread marks, on the edge opposite, the degree of slope of the hill, or other object sighted. The thread is caught at the proper point by pressing it against the board with the finger. If the elevation on which one stands is known or assumed, and the distance to the top of the hill is known, the elevation of the hill is readily calculated from degree scales on the alidade. The distance to the top of the hill can be readily ascertained by pacing, or by intersection or resection, as will be explained later.

4. *The Compass and Orientation.*—The compass points to the magnetic north, which is in Greenland. The variation from true north is called "declination of the needle." It can be readily ascertained by finding the true north, or from official maps. It is negligible in sketches. In order to make accurate sketches, whenever the map board is on its tripod, the board must be oriented, that is, it must be set in such a manner that directions on the map and the ground coincide. This is easily done by placing a compass on the board and getting its needle in line with a line previously drawn on the board. For convenience it is well to counter-sink a hole, compass-shaped, at one corner of the board and to draw an arrow passing through the needle pivot. The point of the needle must be kept on this line, and its north point must always point toward the arrow point. When this is done, the map and the ground directions always coincide.

5. *Critical Points.*—These are prominent points on the ground selected as points for exact location on the map. These points are located by (a) pacing, (b) intersection, (c) resection.

(a) *By Pacing:* A starting point is assumed and marked with a sharp pencil point on one's map (board oriented) with the map paper, and the country to be mapped, before one. From this point (A) a light line is drawn on the paper (called a ray) directly at the object (B), by sighting across the top of the alidade and pivoting the alidade on the map point by means of a sharp pencil. The alidade should always be kept at the left of the pencil. Before the ray is drawn, the needle should be again examined to be sure that orientation is exact. If it is not exact, it should be made so, and a new sight taken

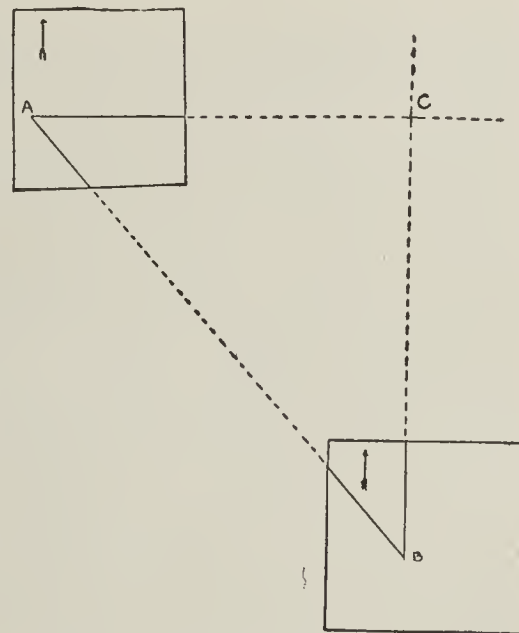


Fig. 3.—Location of a critical point by intersection. It is desired to locate point C on the ground at its proper place on the map. The map board is set up at A. The board is oriented. A ray is shot at B and C. One paces to B. The distance as laid off A to B on one's map. The board is again oriented. A ray is shot at C. The point at which the rays A-C and B-C cross is the proper place for C on the map.

1. Alidade and list of pace scales can be obtained from the book department, Army Service Schools, Fort Leavenworth, Kan., price 20 cents.

across the alidade. A ray should never be drawn on the map without a final look at the orientation in order to insure accuracy. When this ray is drawn (a very light line, so it may be erased if need be) one picks up the board and tripod and paces to the critical point, counting the steps. This distance is laid off on the ray by using the pace scale on the alidade. All superfluous rays are now erased.

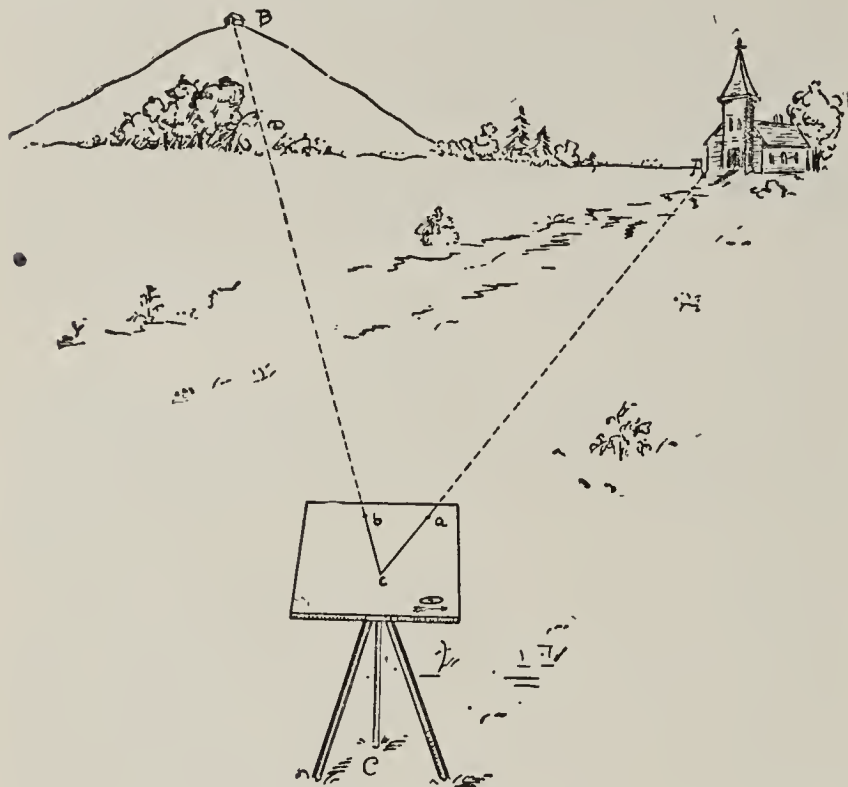


Fig. 4.—Location of a critical point by resection. This method locates on the map the point at which one is standing on the ground. Two critical points visible on the ground must already be located on the map, for example, the house A and the church B. The board is oriented. One pivots the alidade on *a* and sights at A, and standing at the rear of the map board a line is drawn along the alidade from *a* toward the body. This is repeated at *b*. The point at which *a-c* and *b-c* cross locates on the map the point at which one stands, or point C.

(b) By Intersection: We will assume that point C is off to one side of A and B, and that its location is desired. While at A a ray is shot at C (board oriented). Also when at B, a ray is shot at C (board oriented). Point C is the point at which these two rays intersect. A sharp point is made there, and marked C. These two rays (and all "dead" rays, that is, rays no longer needed) are erased, in order not to clutter up the map with useless lines (Fig. 3).

(c) By Resection: Often it is desirable to locate on the map the point at which one is standing on the ground. We will assume that one is on the ground at point C. The board is oriented and the alidade is pivoted on point A on the map by sighting at point A on the ground. A line is drawn from point A on the map, toward one's body, likewise another line is drawn from point B on the map. The point at which the two lines cross is point C. This point and all critical points are marked when found with a sharp pencil point (Fig. 4).

6. *Determination of Elevations.*—If it is unknown, an elevation is assumed for one's starting point. For example, point A may be assumed to have an elevation of 500 feet. It is desired to get the elevation of point H. Point H has already been located on the map by one of the three methods mentioned—pacing, intersection or resection. While at A the angle of elevation of H is obtained. We will assume it is 8 degrees. The 8 degree scale on the alidade is then found. Every time the distance for 8 degrees on the scale goes into the distance between points A and H on the map is a rise of 10 feet on a 6 inch to the mile map. We will

assume the map distance from A to H is ten 8 degree distances. Then point H is 80 feet higher than point A and the elevation of H is 580 feet. Of course, if H is lower than A, it is 80 feet lower, and its elevation is 420 feet.

7. *Contours.*—These are lines cut on the earth's surface by imaginary horizontal planes at equal intervals from each other. They are needed on flat maps in order to show the elevation and shape of hills and valleys. All points on a contour line are of equal elevation. When contours are equally spaced the slope is uniform. Contours close to each other indicate a steep hill; far apart, gentle slope. Contour lines pass obtusely around slopes and acutely up streams or dry water courses. When the elevation of a critical point from another point is to be ascertained, the slope of the land should be noted, and for every intermediate contour indicated a dot should be placed. This should be done regularly. When the location and elevations of all critical points are determined, one should dot between them where contours would pass; all dots of equal elevation should be connected, and one's map is contoured. It should then give an accurate reproduction of the land mapped.

8. *Scales.*—In United States Army field sketches the normal system of scales is used. That means that the distance between contours called V.I. (vertical interval) varies regularly according to the scale of the map. If 1 inch on the map paper equals 1 mile on the ground map, the V.I. is 60 feet. If 3 inches on the map equal 1 mile on the ground the vertical interval is 20 feet; for a 6 inch map the V.I. is 10 feet, etc. Sixty divided by the scale of the map gives the vertical interval. This normal system was adopted in order to use the same degree scale for various sized maps. The distances on the degree scales on the alidade vary inversely with the angle. Those distances are called map distances between contours or M.D.'s. The M.D. for 1 degree is 0.65 inch. All other M.D.'s can be derived from this if no alidade is at hand. A pace scale is necessary in order to have a ready means of measurement of ground distances, readily convertible from the map into distances. Animal scale is the pace

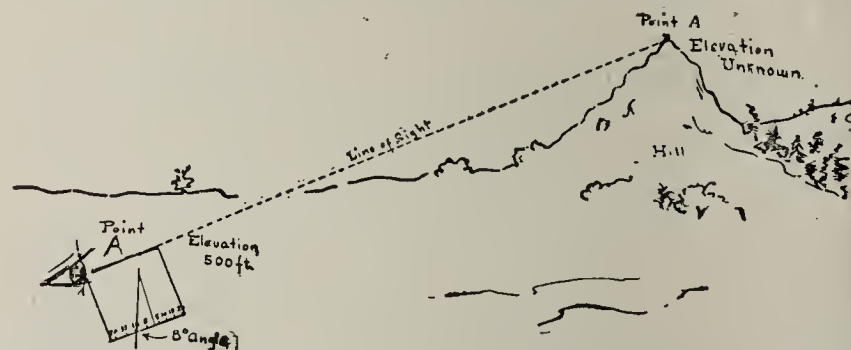


Fig. 5.—Determination of the elevation of any object. If not already known, an elevation for the point A where one stands is assumed. With the map board one sights at H, the point whose elevation is desired. The distance to H has already been determined by pacing, intersection or resection. We will assume the angle of sight is 8 degrees. From the alidade the elevation of H is then easily determined.

scale applied to a riding horse. The time required for the animal to go fixed distances at a walk or trot is, however, used as the standard unit instead of the length of its pace.

9. *Base Line.*—Any paced distance is a base line. A line is absolutely necessary in starting a map, before points can be located by intersection. Two critical points visible at the point to be resected and correctly located on the map are always necessary before a point can be located by resection. In intersection and resection the angle between the rays at the critical

point to be located must never be less than 30 degrees or greater than 100 degrees, as otherwise the rays are so nearly parallel that great error is possible.

10. *Conventional Signs*.—These are certain abbreviations or marks used in mapping to avoid writing out words—a map shorthand, as it were. They are very simple and are usually self explanatory.

11. *Types of Sketches*.—There are four types of sketches—road, position, outpost and place sketches.

(a) The road sketch is a sketch of a road and an area extending about 400 yards on each side of it. As a rule all details needed can be obtained from high places in the road. It may be necessary at times to go to high places near the road. Bridges, fords, ferries, houses, woods, cultivated fields, nature of crops and soil, villages, high hills, valleys, streams, and other points of importance are noted on the sketch. These objects should be noted in all sketches when possible.

(b) The position sketch is an area sketch of such a nature that the sketcher can visit, if desired, any point in the area to be sketched. (c) In the outpost sketch the observer can visit only the land in the rear of his outpost. (d) The place sketch is made from a single point of observation, as a tree or a high hill. In this sketch the observer must estimate distances. Sizes of known objects assist greatly in estimating distances. Distances between telegraph and telephone poles are also of great value.

12. *Comparison of Work*.—We will assume that ten men are mapping the same area, all having a different space but mapping on a 6 inch scale. When the maps are completed all similar distances should measure exactly the same on every map. Contours should look approximately alike.

13. *Sketching without Special Equipment*.—Articles needed: a watch, a piece of paper, a pencil and a flat surface for holding the paper. One's pace is determined and placed on a piece of paper on a 6 inch scale. If one has not this scale at hand, one should be devised. Means are readily at hand everywhere. Each time one starts to work on one's map, the map paper should be oriented by means of a watch (accurately recording sun-time, of course) as follows: The hour hand is pointed at the sun. Midway between the hour hand and 12 o'clock is the north and south line. The position of the sun will tell you which end is north. To get the hour hand pointing directly at the sun a match, or other straight slender object, is held so that its shadow falls across the face of the watch. The hour hand, pointing at the sun should lie directly in this shadow. Now one proceeds to make one's map by pacing, intersection or resection. A slope board is made on one's flat surface and a tripod and alidade are improvised if elevations are desired. Degrees of slope are readily placed on the alidade by remembering that 0.65 inch is the M.D. for a 1 degree slope; half that is the M.D. for a 2 degree slope, etc.

14. *Boundary*.—The boundary of any map sketched is made by connecting outermost critical points by straight lines.

15. *Data*.—When a sketch is completed the following data should be placed on it:

1. Name, rank and organization of sketcher.
2. Date of sketch.
3. Location of sketch.
4. Map scale and arrow pointing to magnetic north.
5. Elevation in figures of critical points if elevations are taken. Also contours.
6. A careful outline of water courses and dry runs.

MAP READING

As the principles of map making can be learned in a few hours it is always advisable to learn map making before map reading. When the anatomy of the map is mastered, map reading is simple. Hill slopes should be thought of in degrees so that by looking at the map one can say: That is an 8 degree hill, a 5 degree hill or whatever its height may be. This is of great value in determining whether the hill, ravine, or whatever topographic feature it may be gives protection from rifle or artillery fire. Slopes of the fall of bullets and shells should be learned in order to complete this valuable information.

VENEREAL DISEASE AND THE
NEW ARMY

WILLIAM LYSTER, M.D.

Lieutenant-Colonel, Medical Corps, U. S. Army

LONDON, ENGLAND

What will be the history of these diseases in the new Army now being raised? This question is of utmost importance to the country at large for these reasons:

1. These diseases constitute the greatest factor producing nonefficiency in armies in training.

2. The increase of damage to the national health through the spread of these diseases.

3. The unprecedented opportunity afforded by the concentration of such a large proportion of the male population for public education on these diseases.

War always means the interruption and dislocation of existing conditions. The greater and larger the war and the larger the proportion of the population involved, the more extensive is the effect on the national life.

The history of these diseases in the armies, and more particularly in our own, will give us a safe indication of what may be reasonably expected under the same conditions. But today we are in possession of knowledge and agencies that were wanting until recently. What these are and what their effect is will be mentioned shortly.

The history of venereal disease in the American Army can be most rapidly grasped by studying the annual admission rates for these diseases as shown in charts or tables. I have drawn a curve as made by these annual rates from 1888 to 1915, inclusive. The rates are those to be found in the annual report of the Surgeon-General to the Secretary of War.

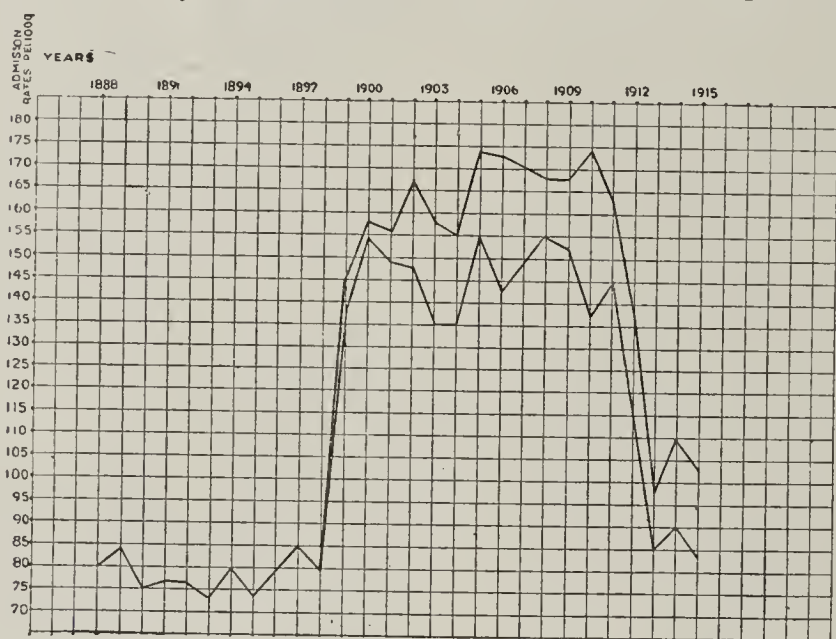
The chart divides itself rather naturally into three parts representing stages radically different in character. The rates for these distinct stages differ markedly.

The first stage, from 1888 to 1898, covers the decade in which the U. S. Army was strictly continental. It was scattered in small commands mostly west of the Mississippi and in the southwestern states. The rank and file were, like the officers, professional soldiers and the age and length of service made these men "old soldiers." For the bulk of the troops the contact with cities and towns was casual and not daily. No regular physical inspection with special reference to venereal disease was frequently made, as is now done fortnightly. Ready and exact means of diagnosing syphilis did not exist. The Wassermann reaction and

the cause of syphilis were not known. Naturally, as in civil practice, many cases of this disease appeared under other names, as it was not recognized, for instance, rheumatism and heart disease of some kind. Any one who reads the oration delivered by Sir William Osler before the London Medical Society, published in the *Lancet*, or having heard it delivered, as I had the privilege of doing, will understand the truth of this statement.

During this decade, there was no systematic centrally controlled propaganda to reduce venereal disease. The very attitude of the profession was different from what it is today. A deprecatory, sub rosa, hush atmosphere surrounded the subject. One looks in vain for a discussion of venereal diseases in the lay press. Mention of them was indirect even in the most bold quack advertisements. The word "syphilis" is not to be found in print outside of medical publications.

With these conditions characteristic of this decade in the Army, namely, isolation, no regular inspection



Curves showing the incidence of venereal diseases in the United States Army from 1888 to 1915. The rapid decrease in venereal diseases for the years from 1910 to 1913, following systematic measures instituted by the government for their control, should be noted.

The lower line shows rates for enlisted force in the United States. The upper line shows rates for all enlisted force both in United States and abroad.

1888-98.—During this decade the Army was stationed throughout the U. S., principally at small points. No compulsory physical inspection; no systematic propaganda to reduce venereal disease. The rates represent practically those patients unable to do duty. Cases not treated or in those doing duty were usually not recorded.

1898.—Spanish War Militia called into service.

1898-99.—Great change in Army. Marked expansion. Old soldiers disappear. Volunteers come in. Young recruits sent to Cuba, Porto Rico, Philippines.

1899-01.—Philippine Insurrection Troops in Cuba, Porto Rico, China.

1901-09.—High rates prevail in U. S. and abroad.

1909-11.—Principles of preventive medicine applied. Prophylaxis urged.

1911.—Syphilis increases. Wassermann test used in diagnosis.

1912.—Systematic measures. Fortnightly physical inspections and prophylaxis enforced by G. O. May 31. Pay stopped G. O. 31.

1914-15.—Concentration on Mexican Border.

for venereal disease, no systematic campaign to reduce the amount of venereal disease, and, in addition, the indefiniteness in diagnosis inseparable from the methods of that time, the average admission rate for the period may be taken as seventy-eight per thousand.

The second stage, from 1898 to 1908, embraces the decade in which there were radical changes in army life introduced by the Spanish War. Conditions of war necessitated a sudden increase in the Army. Naturally new and untrained material was brought in. A dropping out of the "old" soldiers took place. The tropics were penetrated. The isolation of the old

Army in the West was a thing of the past. There was contact with cities, either from camps near them, or by waiting in them for transportation overseas, as at San Francisco and Manila, and finally there was association in the tropics with people on a lower social plane.

The most important factors are the breaking away from the home ties and control of a large number of young men, and their projection into surroundings to which they were unaccustomed.

This stage shows a double line. The outer or higher indicates the rates for the Army both in the United States and in the new tropical dependencies, Porto Rico, Cuba and the Philippine Islands. The inner or lower line shows the rates for the U. S. Army in the United States. This line affords a comparison with the line to the left for 1888-1898. The conditions encountered in the tropics make the difference between the outer and inner lines. Lack of regular physical examinations and systematic propaganda against venereal disease characterize this period the same as the first. But the rates, which had steadily mounted until they were almost double the recorded rates of the first decade, were so preposterous that attention was concentrated on them, owing to the nonefficiency produced by these diseases, which, during several years, was about equal to the five diseases next in order of frequency.

Individual spasmodic effort to remedy conditions began. The post surgeons undertook various measures to restrict these diseases. Their efforts were studied by the Surgeon-General's Office, and gradually a systematic campaign was developed, the good results of which appear in the third stage. This was largely assisted, and made possible, in fact, by the discoveries of science—which were promptly utilized.

From 1909 to 1911, the principle of preventive medicine began to be applied extensively. Metchnikoff's experiments relative to the prophylaxis of syphilis subsequent to Schaudinn's discovery had been published. They bore fruit rapidly in the Army, which was affected with such a high venereal rate, and various experimenters in the Army, prominent among them Colonel Mans and Colonel Howard, obtained notable results in lowering the venereal rate by devising satisfactory prophylactic measures.

In the early part of the third stage, the introduction of the Wassermann test and vaccine in the treatment of gonorrheal arthritis is an outstanding feature. The Wassermann test tended to give an increase in the ratios owing to the more accurate means of diagnosis afforded. This system of recording cases was still more marked in 1912, when fortnightly physical inspection was ordered. When carefully done, this permits the discovery of practically all cases of venereal disease except some cases of syphilis. The latter cases, if the patients ever go to the hospital, are now pretty surely found by the use of the Wassermann test, which is ordinarily employed in all obscure or doubtful cases.

Could these methods, fortnightly examinations and the Wassermann test, have been applied in the first stage, from 1888 to 1898, the rate would have been much higher, possibly as much as 110 or more admissions per thousand; for the rates in that period indicate practically only those men who were unable to perform duty and only for that reason appeared on the sick report. At the present time every case appears in the rates whether the man is performing duty or not.

The results of spasmodic and uncentralized efforts to reduce venereal disease appeared in 1911. The effect of centralized and official efforts were apparent in 1912, when the rate was shown to have fallen for the entire Army nearly forty points in two years. Inspection, prophylaxis, and loss of pay for disease not in line of duty are the prominent features. Men and officers who wilfully become incapacitated through ill health are subjected to loss of pay. The wise congressional action which permitted this step certainly should be retained. Its effect has been most powerful and far-reaching and tends to restrain the soldier from dissipation. As long as he cannot perform his duty, he certainly is not entitled to pay when he has wilfully disregarded orders and failed to take advantage of protective measures that would save him from ill health and the government from the loss of his services.

The line on this chart for the years from 1910 to 1913 is an outward and visible sign of some of the most creditable work ever accomplished by the Medical Department of the Army. It is also an example of the practical value of applied science. That this improvement was naturally assisted by the cessation of campaigns of any size in the tropics is true, just as, conversely, the concentration of the Army in the United States on the southern border and the dispatch of a part of it to Vera Cruz gave a higher rate in 1914. This, however, was probably aided by one of those reactions so frequently seen in all propagandas.

Now as to our new Army and the future: Higher rates will probably prevail for some time, but hope is backed by knowledge that we have the means, if we can apply them, of controlling this great producer of non-efficiency in armies. The education of the new medical officers is the first condition to success, the education of the line officers as to the supreme importance of the antivenereal campaign is the second, and the education of the enlisted men as to the necessity of prophylaxis after exposure is the third.

This is a practical question and no longer a theory that confronts the new Army. Its efficiency, its very numbers, are dependent on its health. The greatest enemy to its health is venereal disease. What will the answer be to the challenge that it is to meet within the next few months?

A continuation of the orders and methods successful in the Army from 1908 to date will make a successful answer to that challenge of disease. But no misleading and unpractical fanatics must be permitted to have a hand in this question of national efficiency any more than they shall be permitted to dictate as to the manner of making our gunpowder.

The gonococci have probably quite as ancient and respectable a lineage in biology as the pneumococci. The same relentless scientific measures that are used in the one case must be applied in the other, and no false sentiment must be allowed to interfere in the efficiency of their application. Prophylaxis has shown its great and proved value. As long as the instinct of procreation is as omnipresent and as powerful in nature as it is, it must enter into our problem.

Let those who regard venereal disease as a divine punishment recall that smallpox and other diseases have been at various times, and are even today by some regarded as acts of God. If fanatics must interfere in this beneficial work of reducing venereal disease, let them concentrate on an effort to remove the sexual appetite rather than insist on spreading venereal

disease, even to the innocent, by abandoning one of the most useful agents in preventing it.

The responsibility devolves on the new medical officers to begin this necessary and beneficial work by thoroughly informing themselves, and then they must carry out the existing orders looking to the prevention of these diseases. All this must begin at home, and must become ingrained in the Army before it can maintain its health in the lands in which it is to justify its existence.

Adastral House, Victoria Embankment, E. C. 4.

THE VENEREAL DISEASES COMPLICATIONS OF GONORRHEA

FOLLICULITIS

(Continued from page 1171)

NOTE.—This is the fifth article of the series on the management of venereal diseases with special reference to military practice. The first article on "The Diagnosis and Treatment of Syphilis" appeared, Sept. 15, 1917, page 907; the second, on "Chancroid," September 22, page 1004; the third, on "Balanitis Gangrenosa," September 29, page 1080; the fourth, "The Treatment of Gonorrhea," October 6, page 1168. The final article, including a program for the control of the venereal diseases and instructions to those having syphilis or gonorrhea, will appear next week. The articles have been prepared under the direction of the Surgeon-General by the Advisory Committee on Venereal Diseases, Dr. William Allen Pusey, Chicago, chairman; Dr. Francis R. Hagner, Washington, D. C.; Dr. Grover W. Wende, Buffalo; Dr. Sigmund Pollitzer, New York, and Dr. Henry H. Morton, Brooklyn, with Lieut.-Col. F. F. Russell in charge of infectious diseases. The series is published with the permission of the Surgeon-General. The articles are now being prepared in the form of a pocket manual, with flexible cloth cover. The book will be available shortly, price 25 cents.—ED.

Suppuration of one of the urethral follicles with abscess formation occasionally occurs in gonorrhea. If it does not open into the urethra by the time fluctuation occurs, it should be incised. It is important to incise from within the urethra through a urethroscope if the abscess is connected with the urethra. Otherwise a urinary fistula may result.

COWPERITIS

This condition should be treated by incision from without.

GLANDULAR URETHRITIS

Many intractable cases of gonorrhea lasting for years in spite of constant treatment are caused by a chronic inflammation of Morgagni's crypts. Such cases show few symptoms. There may be merely a morning drop of moisture at the meatus. But they are characterized by exacerbations of the discharge after slight provocation, with a free discharge of pus containing gonococci, which leads the patient to believe that he has acquired a fresh infection. Urethroscopic examination shows the mouths of a few of the crypts to be open and pouting, with red and slightly elevated edges. In other cases the mouths of the crypts are occluded by a growth of epithelium. When the crypts are affected the gonococci may remain in them for years and the case remains infectious.

These cases should be treated by dilatations with a full sized sound followed by irrigations. When the mouths of the glands are occluded by the growth of epithelium, dilatation of the urethra opens them and

forces out the purulent secretion. The irrigating fluid enters the cavities and acts on the chronic inflammatory processes within the glands. In that form of inflammation in which the mouths of the glands are held open and the entire crypt is stiffened and inelastic from the periglandular infiltration, dilatations cause the absorption of the infiltrate around the glands and promote a return to normal conditions.

When after sufficient treatment by dilatations and irrigations, it is found by urethroscopic examinations that a few glands still remain chronically inflamed and suppurating—conditions which supply foci of infection—these should be destroyed. This can be accomplished by bringing them into view with the urethroscope, and introducing a galvanocaustic needle. The cauterization must be very superficial and rapid; otherwise there will be danger of stricture formation. Three or four crypts may be destroyed at a sitting. It is possible by destroying the glands harboring the gonococci to cure in this way a chronic gonorrhea of years' standing which has resisted all the usual forms of treatment.

CHORDEE

The patient subject to chordee should empty his bladder just before going to bed; should sleep in a cool place, lightly covered; and, to avoid sleeping on his back, should tie a towel around his waist with a knot at the back. Before going to bed the penis should be given a prolonged immersion in hot water. When the patient wakes with chordee, he should get out of bed and immerse penis and testicles in cold or hot water, and before going back to bed should empty the bladder. He should be warned of the danger of "breaking" a chordee. In severe cases sedatives are necessary, potassium bromid, 2.0 gm., or camphor monobromate 0.3, gm., in the afternoon and before going to bed, are useful; in extreme cases a morphin suppository may be necessary.

EPIDIDYMITIS

Immediately on the development of epididymitis all injections or instrumentation of the urethra must be stopped, the patient be confined to bed and put on a light diet. The testicles should be elevated by a bandage going under them and over the thighs, and hot applications should be made. Hot sitz baths for half an hour three times daily are soothing and hasten recovery. If the symptoms are severe, epididymotomy may be performed. This immediately relieves pain and hastens recovery.

In a few days the acute stage passes. The urethral discharge is then likely to recur, but local treatment of the urethra must be resumed only after a considerable period of rest and with the greatest caution. A suspensory bandage should be worn until the patient is entirely well. There is in these cases a chronic inflammatory exudate in the epididymis, which in time often disappears. Massage of it may hasten its absorption.

PROSTATITIS

Acute Prostatitis.—The indications are (1) to lessen the severity of the posterior urethritis; (2) to prevent suppuration of the prostate; (3) if pus forms, to evacuate it promptly by incision.

The patient should be put to bed, sandalwood oil administered, and, if necessary, the pain and tenesmus controlled by opium suppositories. Locally either an ice-bag or hot poultices are applied to the perineum, a safe guide for the choice between hot and cold appli-

cations being the amount of comfort which is given to the patient. Hot sitz-baths of from one-half hour to an hour's duration two or three times daily are always indicated. Irrigation of the rectum with hot normal saline solution for half an hour at a time may be used instead. A rectal prostatic irrigator or in its absence a return flow catheter is introduced into the rectum, and a continuous flow of normal saline solution, as hot as can be borne, is passed through it.

If retention of urine should occur, it may be necessary to introduce a catheter, but this should be done only when absolutely necessary. Before catheterizing, the urethra should be well irrigated to free it from pus. One c.c. of 2 per cent. cocain solution may be injected into the urethra to relieve pain and facilitate catheterization.

Prostatic Abscess.—When a very limited area of suppuration of the prostate is present, involving perhaps two or three of the prostatic tubules, the temperature is only slightly elevated, and the local symptoms are not marked. After two or three days the temperature becomes normal and the tenesmus and frequent urination disappear. In such cases an incision into the prostate is not required, for the minute abscess generally ruptures into the urethra and the sinus fills in by granulation.

If, on the contrary, the symptoms do not improve within the first week, but the fever continues, the local symptoms grow worse, and rectal examination shows an increase in the size of the inflamed prostate, it is evidence that an abscess is forming. This serves as an urgent indication to evacuate the pus; for if the pus is allowed to break through the capsule of the prostate, it will burrow through the tissues and may cause urinary infiltration and pyemia, or, at least, a fistula which will not heal without operation. In these cases immediate surgical measures are indicated.

Chronic Prostatitis.—In almost every case of chronic gonorrheal urethritis the prostate is found to be involved. Aside from its frequency, chronic prostatitis is perhaps the most important complication of gonorrhea; for the reason that the gonococcus, with all its infectious qualities unimpaired, may be retained for years in the diseased tubular glands of the prostate without its presence being suspected. Probably most of the cases in which wives are infected with gonorrhea by their husbands come from uncured prostatitis. Chronic prostatitis is also important on account of the profound disturbance of the nervous system and the impairment of the sexual function, which it occasionally produces.

Chronic prostatitis frequently originates in an attack of acute prostatitis, or it may be the result of a slow insidious extension through the prostatic ducts of an inflammation from the posterior urethra.

It is important in the treatment of chronic prostatitis to secure the confidence of the patient and encourage him by explaining that his condition is one which can be cured; that he is not impotent or likely to become so, and that his nervous disturbances are due to a purely local condition which is not dangerous. At the same time he should be informed that the treatment calls for great patience on the part of both physician and patient, and may extend over several months.

The first indication is to improve the general condition of the patient by a proper regimen. Constipation is generally a prominent symptom, which is best treated with saline cathartics, because they have

some effect in relieving pelvic congestion. All sorts of erotic excitement should be interdicted on account of their effect in inducing congestion of the prostate. Coitus should not be permitted, both because of its ill effect on the diseased prostate and because of the certainty of spreading the infection.

The most useful local measure is the emptying of the prostatic tubules of their retained and thickened contents by rectal massage, practiced two or three times weekly. In this procedure both lobes should be massaged from above downward and the manipulation should not be very vigorous, the object being to force out the prostatic contents by moderate pressure. Massage of the prostate is not well borne by all patients; and, if it produces irritating symptoms, it should not be persisted in. In order to lessen the danger of epididymitis from prostatic massage, it is advisable to irrigate the urethra and fill the bladder before massage. For this purpose, if gonococci are present, a solution of silver albuminate, 1:1,000, should be used; if they are absent, solutions of silver albuminate, 1:4,000, or oxycyanid of mercury, 1:4,000, may be employed.

Treatment by massage may be persisted in until improvement in prostatic symptoms ceases. At this point it is advisable to stop treatment for a month. If after this intermission the remaining evidences of prostatitis have not disappeared, a course of massage may be repeated.

Most cases of prostatitis suffer from chronic posterior urethritis, and it is important not to overlook this condition. If there is a great deal of catarrhal inflammation, with much pus formation, irrigations are advisable. But, if the suppuration is only slight, instillations into the posterior urethra are indicated. In most cases 1 per cent. or 2 per cent. of silver nitrate solution may be used, but in old and obstinate cases stronger solutions are called for and the strength may be gradually increased to 5 per cent. Strong solutions can be better applied through the urethroscope.

In nearly every case of chronic prostatitis the verumontanum is diseased and requires particular attention. The best method of treating it is to apply a strong solution of silver nitrate—20 per cent.—directly on it through the urethroscope. Some reaction follows this application, the discharge increases, and the patient has frequent urinations, often followed by bleeding. After eight or ten days it is safe to make another application. Tincture of iodine may be used if the silver nitrate causes too much pain. After half a dozen strong applications, the verumontanum will probably return to normal; but if chronic posterior urethritis with prostatitis has existed for a long time, a submucous infiltration will have occurred, which also demands treatment by posterior dilatation.

SEMINAL VESICULITIS

Acute Seminal Vesiculitis.—The general treatment of acute vesiculitis is the same as that for acute prostatitis, with which it is usually associated. Injections into the anterior urethra, of course, are contraindicated; but above all things, any attempt at massaging or stripping the vesicles should be avoided.

Chronic Seminal Vesiculitis.—Chronic vesiculitis may originate from an acute attack of vesiculitis which does not undergo resolution; but as a rule it develops insidiously, as the result of the extension of a chronic inflammatory process which begins in the posterior urethra and extends through the ejaculatory

duct. The ejaculatory duct is never occluded by the changes; throughout the whole course of the disease it remains patulous, and sterility does not occur from this cause.

Chronic seminal vesiculitis presents itself in two variations:

1. Atonic vesiculitis, in which there is chiefly an atony of the muscular fibers composing the walls of the vesicle.

2. Inflammatory vesiculitis, in which the walls of the vesicles are thickened and indurated as a result of inflammation, which may be simple, gonorrheal, or tuberculous in origin.

Either form of vesiculitis may exist by itself; but usually there is a combination of atony and inflammation of the vesicular walls.

Treatment.—The treatment consists in stripping or expressing the contents of the vesicles once in five to seven days. Stripping empties the vesicles of their inspissated contents, without forcing the muscular fibers to contract; and, by the relief of distension and the rest thus afforded them, the muscles recover their tone. The inflammatory thickening around the vesicle is absorbed as a result of massage.

Contraindications to stripping are: (a) the existence of acute vesiculitis; (b) blood in the expressed material, or (c) excessive tenderness. With these conditions present, there is always danger of setting up an epididymitis.

In chronic vesiculitis the posterior urethra should not be overlooked, but should receive treatment, with irrigations or instillations or by applications made through the urethroscope as outlined under chronic prostatitis. It is desirable, however, not to apply local treatment to the posterior urethra and massage the vesicles at the same sitting, but rather to allow a couple of days to intervene.

The duration of treatment must be protracted, for it requires from two to twelve months to effect a cure. In obstinate cases characterized by marked sexual neurasthenia or intractable gonorrheal rheumatism, free incision into and drainage of the seminal vesicles may be demanded. This is a procedure requiring expert skill.

GONORRHEAL INFECTIONS OF SYNOVIAL MEMBRANES

The most frequent metastasis of the gonococci is seen in the infection of the synovial membranes (arthritis, tenosynovitis, bursitis), usually developing in the third week of the disease, after involvement of the posterior urethra. Traumatism may be a predisposing cause in this condition.

It is well in this group of cases to call in an orthopedic specialist for the local treatment of the infected joint. But it must not be forgotten that the most important factor in treatment consists in the removal of the foci of infection in the urethra or its adnexa.

The treatment should be carried out along the lines already suggested for the treatment of these lesions. Vaccines are efficacious in some cases, in others operation for drainage of the seminal vesicle or prostate may be indicated; this latter requires special skill in genito-urinary surgery.

GONORRHEAL OPHTHALMIA

EVERY CASE OF ACUTE CONJUNCTIVITIS IN A GONORRHEAL PATIENT IS A CONDITION REQUIRING EXPERT ATTENTION, AND SHOULD BE IMMEDIATELY REFERRED TO AN OPHTHALMOLOGIST.

(To be continued)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

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SATURDAY, OCTOBER 13, 1917

HOME-CANNED FOODS AND BOTULISM

The still widespread belief that food poisoning of the sort attributable to bacterial products taken in with the food is associated almost exclusively with animal products seems to demand correction, particularly at present. A warning of the unsuspected danger of poisoning from canned vegetables at a time when the food conservation propaganda has led to the preservation of foods of all kinds in thousands of homes in anticipation of the winter's needs has been uttered by Dickson¹ in a recent issue of THE JOURNAL. He asserts, on the basis of an investigation conducted at the Stanford University School of Medicine, that the frequency with which food poisoning is caused by the presence of the toxin of the *Bacillus botulinus* is probably very much greater in this country than has been generally believed.

This kind of food poisoning has most inaptly been termed botulism, in recognition of the assumption that it is due as a rule to the ingestion of infected sausage (*botulus*). The insidiousness of the menace is emphasized by the fact that food in which the offending micro-organism, the *Bacillus botulinus*, which produces the harmful toxin, has grown may not give any indication of being altered in a way that necessarily arouses suspicion. It should be clearly understood that botulism is an intoxication, not an infection.² Unlike most bacteria dangerous to man, the *Bacillus botulinus* appears unable to grow in the human body, and its injurious effect is therefore limited to the action of the toxin produced in foods outside the body. Fortunately this toxin, as it is currently stated, is readily destroyed by heat; hence there is a safeguard of the utmost value in serving only after heating all foods in which the danger may lurk.

The investigations of Dickson have now brought to light an unexpected number of known and hitherto unrecorded cases of botulism occurring in the United States. This author has become convinced from his experiences that there have been many more outbreaks

which have passed without recognition, and that if it were possible to follow up all cases of food poisoning in which the patients recovered, and all fatal cases in which the death certificates give the cause of death as ptomain poisoning or bulbar paralysis, a very large group of instances would be collected. Home-canned vegetables and fruits have often been the carriers of the danger. Dickson's work emphasizes what has been demonstrated before, namely, that not only can the micro-organism be grown readily in mediums containing vegetable foods, but also that it is a spore-bearing form which is quite resistant to heat. Taken in connection with the fact that *Bacillus botulinus* is an obligative anaerobe so that the conditions which exist in a sealed jar are suited for its growth along with production of the toxin, this explains why improperly sterilized canned products may develop food poisoning. It is unfortunate that the widely distributed directions for the so-called "cold pack" process of canning and preserving have not given more emphasis to the need of very efficient sterilization in the process. Jordan states that, to judge from the recorded outbreaks, domestically prepared vegetables and meats are more likely to give rise to botulism than those prepared commercially on a large scale. The general use of steam under pressure in the large canning factories affords a high degree of protection against the anaerobic bacteria and their resistant spores. Whatever the method of treatment, all canned or preserved food having an unnatural appearance, taste or odor should be rejected. Reheating of all prepared foods immediately before use is an additional safeguard. Foods, such as salads, composed wholly or in part of uncooked materials should not be allowed to stand overnight before being served.

THE INHERITANCE OF STATURE

Growth is influenced by conditions that may be described as internal and external, respectively. One of the sets of factors thus concerned is constitutional; the other, environmental in character. Stature is determined by growth, and the question of the degree to which this feature of the individual is controlled by conditions of life rather than by hereditary considerations has been somewhat debated. As a recent writer¹ has pointed out, that there are hereditary factors involved in the differences in height of adults follows from the recognition of racial differences, for true racial characters are hereditary. Moreover, this hereditary nature has been popularly long recognized. Nevertheless, there is a strong tendency with certain persons to ascribe idiosyncrasies in stature almost wholly to peculiarities of conditions of development. The assumption of an inferior food supply as a cause of decreased stature in certain groups of population has often permitted its adherents to forget differences in blood in the unlike groups. The superior stature of

1. Dickson, E. C.: Botulism, THE JOURNAL A. M. A., Sept. 22, 1917, p. 966.

2. A good account of botulism is given by E. O. Jordan in Food Poisoning (Chicago, 1917), from which some of the statements above are taken.

1. Davenport, C. B.: Inheritance of Stature, Genetics, 1917, 2, 313.

the residents of the state of Kentucky has been ascribed to lime in the soil. The real reason, Davenport writes, why the people of Lexington, Ky., run tall is that they have a large proportion of Scotch blood, as they readily admit. One can test this conclusion by going to Scotland County, North Carolina. This is on the coastal plain where there is practically no lime. Here, at places like (Mac) Launenburg, (Mac) Queensdale and Maxton (Mac's town) a nearly pure Scotch population is found—descendants of the Cape Fear River immigrants—and they are even taller than the people of Lexington. This experience strongly suggests that internal constitutional factors are more important than the ordinary environmental differences.

The experimental investigations of Osborne and Mendel,² among others, have indicated that growth can be suppressed by inadequacies in either the quantity or the quality of the ingested food. But even after the lapse of long periods of suppression of growth, that is, control of growth by external or nutritive agents, resumption of growth may take place if the dietary conditions are rendered favorable and adequate. This represents an extreme situation in some respects; and, as Davenport remarks, overfeeding, however much it may affect weight, has probably little effect on adult stature, though it may hasten growth and thus enable a man to reach precociously his predestined stature. The comparative lack of dependence of growth on quantity of food is shown by the fact that a bantam chick which is fed heavily never develops into anything but a bantam fowl. Admittedly the activities of various endocrine glands have an influence on the continuance and extent of growth. All manner of complicated hypotheses have been framed to account for abnormal growth and variations from the expected on the basis of unusual performances of some gland like the thyroid, pituitary or pineal structures, or the sex glands. But such variations may themselves well be hereditary or racial in character.

The modern study of genetics has made it possible to approach the problem of inheritance of stature in a thoroughly scientific way. Under the direction of Davenport¹ of the Station for Experimental Evolution at Cold Spring Harbor, N. Y., the Eugenics Record Office has undertaken an analysis of the obvious fact that persons differ in height. From this it appears that there is a clear correlation, though not perfect, between the average time of onset of puberty and the average age of slowing up of growth, and it is probable that the former controls the latter. In the case of woman, for example, an examination of the curve of growth brings out the important point that the growth processes, which are fairly progressive up to about 14 years, begin to be damped off after that period. Were the average rate of growth of the female between the ages of 8 and 14 maintained up to the

age of 25 years, the average woman at that age would be over 210 cm. or 82½ inches or nearly 7 feet tall. The reason we do not reach such a stature is that our growth is damped off; and the principal damping off occurs as the germ glands ripen. Variations in adult stature may conceivably result from an acceleration or a retardation in this damping off process.

According to the acquired records, very tall men tend to marry a greatly disproportionate number of very tall women (and few or no very short ones); also tall men marry a disproportionate number of very tall women; medium men tend to marry women of the various statures about in their proportion in the whole population. Short men tend to marry short women and few very tall ones. Very short men marry an excess of short and very short women, and relatively few very tall and tall ones. In a word, persons of similar stature tend to marry each other; and extremes are more particular in this respect than those of medium stature. The progeny derived from matings of similars are less variable than those derived from matings of dissimilars. Thus the offspring of two tall parents are less variable in stature than those of two short parents. When both parents are "tall" or "very tall," and of tall stock, practically all the children are tall or very tall. When both parents are "very short" or "short," and of short stock, all children are short or very short. Shortness, according to Davenport, is due to certain positive factors that inhibit growth of the various parts. He regards it as probable that in all forms of dwarfing there are multiple dominant inhibiting factors. In the case of giants, when both parents are tall all of the children are tall; this indicates that the factors for tallness are mostly recessive—probably owing to the absence of inhibitions to prolonged growth.

It is an interesting additional feature of this new study in the heredity of stature that the inheritance of proportional length of the segments of stature is as evident as the inheritance of absolute differences. According to Castle,³ to a large extent the factors that determine size are general factors affecting all parts of the skeleton simultaneously. Whatever special factors (if any) there are, which are concerned in limiting the size of particular bones, these can play only a subordinate part in determining size. According to Castle, the chief factors are plainly general factors, and control the growth of the body as a whole. Davenport's study seems to show, however, that general factors control growth only to a degree that may be estimated as less than half. On the other hand, special factors are present that control, independently, the growth of the various elements that go to make up stature. And the graduated nature of the variations of stature must be largely due to the number of these independently varying units.

2. Osborne, T. B., and Mendel, L. B.: The Suppression of Growth and the Capacity to Grow, *Jour. Biol. Chem.*, 1914, **18**, 95.

3. Castle, W. E., and Phillips, J. C.: Piebald Rats and Selection, *Pub. 195, Carnegie Institution of Washington*, p. 51.

RECENT CONTRIBUTIONS OF CLINICAL CALORIMETRY

In the hands of American investigators, clinical calorimetry has yielded notable contributions. The Nutrition Laboratory of the Carnegie Institution, under the direction of F. G. Benedict at Boston, and the Russell Sage Institute of Pathology, under the guidance of Graham Lusk, have served as training stations. These endowed laboratories not only have enriched science with fundamental facts, but also have served as centers from which have gone young workers competent to appreciate what human calorimetry really means and to spread an interest in what it can contribute to medical progress.

The basal metabolism of normal man has been well established by the large number of carefully conducted measurements made in this country. It is not proportional to the body weight of the individual, but rather to the superficial area, as Rubner enunciated long ago. The universality of this conception is shown by the outcome of a large number of determinations showing that the unit of surface area eliminates the same amount of heat in the normal adult within 10 per cent. of a determined average. For adult men approximately 40 calories per square meter of body surface per hour may be accepted as approximating closely the normal basal heat production when the individual is resting and before administration of food in the morning. A thin person may produce 50 per cent. more heat per kilogram of body substance than an obese one; yet when the heat output per square meter of surface is calculated there will be little difference. The nitrogen content of animals has been shown by Moulton¹ to be almost exactly proportional to the surface area of the subject. Lusk² points out that if the nitrogen content is a measure of protoplasmic tissue, these experiments afford a striking confirmation of the doctrine of Voit that the heat production is proportional to the mass of living cells. In any event, thanks to these researches, the validity of the use of properly calculated heat output per unit of surface, that is, of basal metabolism, as a criterion of an altered metabolism in patients has now been established.³

Aub and Du Bois³ have properly pointed out that in order to establish more fully the law that the total body metabolism is proportional to the surface area, it is important to establish the law not only for persons of normal size and shape, but also for those who are deformed. If the body surface is a tone index of the metabolism, Aub and Du Bois add, and if the body surface is accurately measured, then dwarfs or men with their legs cut off would show proportionately the same basal metabolism per square meter of sur-

face as do normally shaped persons. This has been found to be the case in the subjects with apparently normal endocrine systems who have been examined in the Sage calorimeter, so that the law of surface area holds good for men of unusual body shape. However, dwarfs with involvement of the ductless glands and symptoms of cretinism showed a marked reduction in metabolism below the average found in normal cases, as has been reported by other authorities.

Age is not without influence on metabolism. Boys just before puberty have a high chemical exchange, so that their basal requirement may be as much as 25 per cent. above that of the adult. Men have a higher metabolism than women. With advancing age, however, there is no longer the same intensity of oxidation as in the prime of life. Aub and Du Bois⁴ have studied in the calorimeter a group of six men between the ages of 77 and 83. Their average basal heat production was 35.1 calories per square meter per hour, which is 12 per cent. below the average for men between the ages of 20 and 50.

The most recent series of contributions in clinical calorimetry with the Sage calorimeter⁵ present interesting additions to our knowledge of metabolism in disease. Edematous nephritics were found by Aub and Du Bois to manifest a diminution of the body metabolism, according both to body weight and to surface area. In two patients with great edema the heat production was 27 and 40 per cent. below the normal average. Such nephritics kept on low diets show a reduction in food requirement similar to that usually found in prolonged undernutrition. This is in contrast with the experience on patients suffering from other types of nephritis for whom the basal metabolism and the food requirement seems to be normal. Cardiorenal disease associated with dyspnea may manifest a distinct rise in the heat production.⁶ It is interesting to note further that no relationship could be established between the level of metabolism and the degree of acidosis or the eliminative power of the kidney. Aub and Du Bois mention that the normal respiratory quotients found in patients with low carbon dioxid combining capacity of the blood plasma prove that nephritic acidosis is not caused by difficulty in oxidizing carbohydrates.

An illustration of the value of calorimetry in elucidating the action of drugs is afforded by the study of Means, Aub and Du Bois⁷ on the behavior of caffeine. They remark that as one looks over the enormous literature on the various actions of caffeine, one gains the impression that the numerous contradictory statements are not necessarily due entirely to faulty obser-

1. Moulton, C. R.: Jour. Biol. Chem., 1916, **24**, 299.

2. Lusk, Graham: The Elements of the Science of Nutrition, Philadelphia, 1917.

3. Aub, J. C., and Du Bois, E. F.: Clinical Calorimetry, Twenty-First Paper, The Basal Metabolism of Dwarfs and Legless Men with Observations on the Specific Dynamic Action of Protein, Arch. Int. Med., May, 1917, p. 840.

4. Aub, J. C., and Du Bois, E. F.: Clinical Calorimetry, Nineteenth Paper, The Basal Metabolism of Old Men, Arch. Int. Med., May, 1917, p. 823.

5. Series of papers on clinical calorimetry in the Archives of Internal Medicine, May, 1917, Part 2.

6. Peabody, F. W.; Meyer, A. L., and Du Bois, E. F.: Arch. Int. Med., June, 1916, p. 980.

7. Means, J. H.; Aub, J. C., and Du Bois, E. F.: Clinical Calorimetry, Twentieth Paper, The Effect of Caffeine on the Heat Production, Arch. Int. Med., May, 1917, p. 832.

vation, but possibly because the action of caffeine on any given function is extremely variable, often diametrically opposite, in different individuals, and in the same individual with varying doses. However, after taking large doses of the alkaloid (from 8 to 10 grains, or 8.6 mg. per kilogram of body weight), normal individuals exhibited an increase in the basal metabolism of from 7 to 23 per cent. without significant change in pulse rate, body temperature, or the proportions of the various foodstuffs metabolized. This unique effect of large doses of caffeine seems remarkable; but, as Lusk³ has pointed out, it is slight compared with the stimulation of metabolism by muscular exercise. It is great only by comparison with "the immutability of the level of the normal basal metabolism, a state in which the heat production is subservient to the requirement of energy on the part of the cells for the maintenance of life, the requirement being so regulated and adjusted that the heat loss per square meter of surface is approximately 40 calories per hour, while the body temperature is maintained at a constant level."

BEER AS A SOURCE OF PROTEIN

Malted liquors are defined as beverages made by the alcoholic fermentation of an infusion of barley malt and hops, with or without unmalted grains. Beer, which belongs in this category, ordinarily contains from 3.5 to 4 per cent. of alcohol. The idea long held by a large portion of the public that "alcohol increases the power of endurance, and gives greater energy and ability to work longer" has given way to a more accurate appreciation of the real rôle of this substance in the body. Despite the fact that alcohol can be burned in the human organism, the most enthusiastic supporters of its use, if there still be such, do not defend it on the basis of superior nutrient virtues. The pharmacologists almost without exception rank alcohol as a depressant rather than a stimulant in the true sense; and the therapist who cares to advise the employment of alcohol does so from the standpoint of its pharmacodynamic performance rather than because of any superior food value in the product.

Beer, however, has made claim to recognition as a food, in contrast with the distilled liquors that contain essentially only water and alcohol, on the basis of the cereal constituents which are still contained in it. Hence the statement that "beer is liquid bread." In addition to alcohol, beer does, in fact contain sugars and other soluble carbohydrates, along with a small amount of nitrogenous compounds that are frequently expressed as protein. The customary method of arriving at an estimate of this fraction of beer consists in determining the nitrogen content and calculating it as protein, after multiplication with the familiar factor $N \times 6.25$. This procedure is now well recognized

by food analysts to be fallacious so far as it assumes that all compounds containing nitrogen, in food substances, are actually protein in nature. On this basis such substances as amines, ammonium salts, alkaloids, etc., would be counted as protein.

The uncertainty regarding the real food value, if any, of the nitrogenous compounds of beer is emphasized in a recent report of the Committee of the Royal Society on the Food Supply of the United Kingdom, which has assumed, without any conclusive evidence, that something between 50 and 100 per cent. of the nitrogen is in the form of protein or amino-acids which are utilizable in the body. In the Department of Physiology of Glasgow University, Sharpe¹ has recently undertaken to throw further light on the controverted question of the nature of the nitrogenous compounds in beer. He reviews the fate of the proteins of barley during the brewing process wherein, as a result of the malting, part of the protein in the grain is acted on by proteolytic enzymes which break it down into simpler substances. These, along with a little soluble protein, pass into solution during the mashing; but the greater part is left in the brewers' grain. During the processes of boiling, hopping and subsequent cooling of the wort, some of this protein becomes precipitated. The amount of nitrogen thus finally left in solution is termed by the brewer "permanently soluble nitrogen." By the action of the yeast during fermentation, a further quantity of soluble nitrogen is removed by these organisms' using a certain proportion as food. A further amount of protein is removed after the beer is made, and this process is carried out to insure that the beer may remain "bright."

Beers of various types contain solid matter ranging from less than 4 per cent. in the "light" varieties to over 6 per cent. in other kinds. Of this, about one half is carbohydrate, essentially dextrin in nature. This leaves 2 or 3 per cent. of the dissolved substance, some of which is nitrogenous, to be accounted for. That the protein content of the beer or ale will not be appreciable when the beverage reaches the consumer is shown by the failure of most of the protein tests to give a reaction with the product. According to Sharpe's new analyses, the protein nitrogen of the beers analyzed varies from 13.2 to 37.0 per cent. of the total nitrogen, that is, the protein content of beer varies from 0.038 to 0.185 per cent. The nitrogen as amino-acid varies from 25 to 46 per cent. of the total nitrogen, that is, the amino-acid nitrogen of beer varies from 0.014 to 0.040 per cent. There is a varying proportion of nitrogen combined as purin compounds which in some cases exceeds that combined as amino-acid nitrogen. It varies from 25.8 to 52.4 per cent. of the total nitrogen, or from 0.01 to 0.39 per cent. of the beer itself. The undetermined nitrogen of

1. Sharpe, J. S.: The Distribution of Nitrogen in Beer, *Biochem. Jour.*, 1917, **11**, 101.

these beers varies from 2.4 to 6.3 per cent. of the total nitrogen, that is, the percentage of the beer itself varies from 0.001 to 0.005.

Bearing in mind the limited quantities of beer that can be taken per day with any approach to impunity, it will be seen that the few grams of hypothetical protein thus offered have no significance whatever as a defense for the use of the beverage. One might as well exploit the protein in ginger ale or fruit juices. A writer² on dietetics has thus presented the possible use of the malt liquors:

Beer, ale, and stout, by virtue of their taste, aromatic bitters and tonics, give a relish to food, increase appetite, and promote the flow of saliva. To this extent they assist digestion. They are useful to convalescents, those enfeebled by chronic diseases, and the aged. They are of some value to those whose occupation is sedentary, whose stomach has lost tone by overwork, rush, and worry, and to sufferers from neuralgia and insomnia. The limit should be 1 pint a day. They are contraindicated in neurotic conditions, diabetes, gout, rheumatism, obesity, and genito-urinary diseases.

We leave it to our readers to steer a safe course, if there is any, between the indications and the contraindications for beer. In any event, any claim for its protein contribution to the diet no longer needs serious consideration. The dairy cattle are more fortunate in having the protein concentrate of the brewers' grains available for their ration.

Current Comment

THE INCIDENCE OF TUBERCULOSIS AMONG SOLDIERS

When Major Eduard Rist of the Medical Corps of the French Army, assigned by the French government to the Surgeon-General's Office, announced at the meeting of the American Association of Military Surgeons held at Fort Benjamin Harrison this week that the facts concerning tuberculosis in France, and especially in the French army, do not agree with the exaggerated statements published in this country, he settled conclusively a point which has agitated civilian and medical tuberculosis authorities in this country since the beginning of the war. Major Rist stated that out of 1,000 men sent back to a base hospital as suffering with pulmonary tuberculosis, all but 193 were returned to the front with the diagnosis not confirmed. He said also that the chief cause of the too numerous diagnoses of tuberculosis was the fact that civilian physicians called to army life are too much inclined to make the diagnosis of tuberculosis on very slight evidence. In making a differential diagnosis the mistakes were not made through the difficulty of differentiating pulmonary tuberculosis from unusual maladies, such as abscess of the lung, or pulmonary tumor, but far more frequently through the confusion of the diagnosis with minor complaints such as infections in the upper air passages, acute rhinitis, pharyngitis and bronchial inflammation. France, in need of every sol-

dier, found it necessary to comb with a fine comb in order that no man be eliminated from the army through a mistaken diagnosis of this sort. The United States, with a supply of men far above the number that can be successfully trained and transported for military service, need not, perhaps, be so careful in eliminating men from military service because of the suspicion of this disease. In any event, making a diagnosis of tuberculosis and eliminating a man from military service for this cause wrongfully is not doing justice either to him or to the nation.

ISOPATHY

The early stages of homeopathy are associated with certain apparently minor developments of no little interest from the historical point of view. Not wholly satisfied with the doctrine expressed by "*similia similibus*," Hering, Lux and others urged the principle of "*aequalia aequalibus curantur*"—the like cures the like. The form of treatment indicated in this slogan was regarded not as a new departure, but rather as the revival of methods found in folk medicine, and mentioned by early writers and even by church fathers, especially the holy Bishop Ivo of Chartres, whose remarkable statement on the analogy between Christ and the skilled physicians, made in 1092, runs as follows:¹

It is, namely, the habit of people skilled in medicine to cure at one time by opposites, and at another by likes, the illnesses which they undertake to cure. This is what our Lord Jesus Christ did, making us rich by his poverty, exalting us by his humility, healing us by his infirmity, giving us life by his death. In the same way, in medical theory, dry is set against moist, moist against dry, hot against cold: and contraries of lesser strength are overcome by the bringing in of contraries of greater strength. In similar fashion like is apposed to like, when the length or breadth of the poultice is measured by the amount of the wound or swelling. So scorpions' flesh boiled in oil heals the stings of scorpions; so a remedy made from the flesh of a serpent operates against the bite of a serpent, and, taken in a drink, overcomes poisoned drinks. In the same likeness our Physician healed by his own death in the flesh the death of our flesh which came from the serpent. . . . But with this remedy made up of the like was mixed also the remedy made of the opposite. For here obedience healed what disobedience had there corrupted; and what had there been contaminated by the pleasure of appetite is here made right again by the suffering upon the cross.

We are told¹ that the isopathic principle of treatment was carried out by its adherents in the most exact manner possible. For smallpox, matter taken from the pustules—"*variolin*"—was given internally; itch was treated internally with "*psorin*" or scaly material from parts affected with scabies; sweating of the feet with foot-sweat; phthisis with "*phthisin*"; caries of the teeth with "*odontonekrosin*"; diseases of the liver with "*hepatin*"; diseases of the spleen with "*lienin*"; diarrhea with fecal matter; teniasis with tapeworm joints; gonorrhea with gonorrheal pus—a treatment for gonorrhea recently urged again as a new advance by a homeopathic physician in New York. In the end it even was demanded that the remedy must come from the patient's own body—

2. Tibbles, William: Dietetics or Food in Health and Disease, Philadelphia, 1914, p. 257.

1. Quoted by Faye, Nord. med. Ark., 1880, 20.

auto-isopathy.—and autocankrin was given in cancer, auto-odontonekrosin for dental fistula, etc. The reference in the remarkable statement by Bishop Ivo to the use of the flesh of scorpions and serpents in stings and bites by these animals reminds us again that in the early ways of treating the conditions resulting from the bites of poisonous animals we see the first foreshadowings of the present conceptions of immunity and the treatment based thereon. Probably what is usually called crude empiricism has had more to do with the evolution of those conceptions and methods of treatment, preventive and curative, than ordinarily recognized.

"SCIENCE"

"... the only difference between the hypochondriac and the consumptive is, that the one suffers from what the world would term a purely mental disease, imagining himself unwell, whilst the other has, unconsciously, thought himself into a condition of one of the many phases of disease."

So, editorially, speaks the *Christian Science Monitor* of recent date. This also, we opine, is the only difference between the soldier suffering from "shell shock" and the one who has had a leg blown off. For the Christian Scientist, germs do not exist; the tubercle bacillus is but a creature of the medical man's disordered fancy. The unreality of a germ as distinguished from the materiality, let us say, of the two dollar bill which a Christian Science practitioner exacts for an "absent treatment" is based, presumably, on the fact that one can be seen only through a microscope while the other is visible to the naked eye.

MILK PRODUCTION

At a time when much interest centers in the preservation of our dairy cattle from the temptation of disposing of them profitably as sources of beef, it is important to count the cost which the rearing of milch cows to their highest productivity really entails. According to reports of German experience, since the war began about 10 per cent. of the dairy cattle have been slaughtered each year. At best there are probably not more than 20,000,000 productive dairy animals in this country at present. Next in importance to the integrity of the bread ration in the household is the maintenance of the normal milk supply, as already pointed out in *THE JOURNAL*.¹ The number of milch cows is only one measurement of milk production; the productivity of the individual cow is the other. At the present time the average milch cow supplies 4.5 individuals in this country. Pearl and Patterson² have pointed out the fact well known among dairymen and breeders that, other conditions being the same, a cow will produce more in a given length of time during her second lactation period than for the same time during her first period; she will produce more her third lactation period than her second, and so on until she reaches mature form, or the age for maximum production.

She remains in this mature form for a few years; then each succeeding lactation period decreases in the rate of milk flow. Opinions differ somewhat as to the average age at which a cow reaches mature form, and as to the rate of increase with which she approaches that form. The general belief is that mature form is reached by the fifth year. An investigation of the records of American Jersey cattle—a typical milk-producing breed—has verified the fact that milk production changes with age in a definite manner. Maximum production is reached at approximately the age of 8 years and 7 months. The long time, measured in years, required to procure the highest efficiency should serve as an added warning against permitting the unwise slaughter of such slowly developing potentialities. For, after all, beef is not the sole wholesome food available.

DRINKING FOUNTAINS—SANITARY AND INSANITARY

Last year we referred to the unexpected menace to health which the modern type of so-called sanitary drinking fountain may harbor.¹ That this is not merely an academic assumption, but may become a dangerous actuality, was borne out by the occurrence of a streptococcal infection that was traced directly to a drinking fountain.² Although nozzle fountains are being installed in large numbers throughout the country, there is little evidence, if one may judge from the forms everywhere displayed, that the defects of the types now furnished are either corrected or recognized. In the earlier investigations it was pointed out that the vertical jet of water permits micro-organisms derived from the mouth of the drinker to dance in the stream like a ball in the jet of a fountain, so that the bacteria may remain undisplaced for unexpectedly long periods. Dr. Whittaker³ of the Minnesota State Board of Health has since completed an investigation of seventy-seven drinking fountains, representing fifteen commercially obtainable types. About two thirds of these were of the continuous-flow type and one third of the intermittent type operated by the consumer. The nozzles on all discharged vertically, and the height of the water jet above the parts that could be touched by the lips of the drinker was less than one inch in nearly half of the fountains. All were subject to contamination by the consumer, either directly by the lips or by water falling back from the lips on the jet or surrounding parts. Certain of the types have closed cup-shaped receptacles around the point of discharge which were demonstrated to retain added coloring mater—and therefore bacteria also—for long periods of time. The crucial test of danger comes in the bacteriologic examinations conducted on these fountains. Eighty per cent. of those in use at the University of Minnesota were found infected with streptococci; and the water from 11 per cent. con-

1. The Effect of War on Dietary Prejudices, editorial, *THE JOURNAL* A. M. A., June 23, 1917, p. 1912; Another Word About Milk, July 28, 1917, p. 289.

2. Pearl, R., and Patterson, S. W.: The Change of Milk Flow with Age, as Determined from Seven Day Records of Jersey Cows, *Bull.* 262, Maine Agr. Expt. Station, July, 1917.

1. Possible Dangers of the Bubble Fountain, editorial *THE JOURNAL* A. M. A., Nov. 11, 1916, p. 1451.

2. Pettibone, D. F.; Bogart, F. P., and Clark, P. F.: *Jour. Bacteriol.*, 1916, 1, 471.

3. Whittaker, H. A.: Drinking Fountains: Investigation of Fountains at the University of Minnesota, *Pub. Health Rep.*, May 11, 1917, p. 691.

tained organisms of this type when they were not found present in the water supplied to the fountains. As Whittaker says, these results indicate clearly that drinking fountains may be a factor in the transmission of communicable diseases. There is nothing discouraging about this, however; for it has already been demonstrated that the existing conditions can be remedied by the introduction of fountain nozzles that are safe from a sanitary standpoint and are economical to construct and operate. The change of construction merely involves the substitution of an inclined nozzle for the vertical jet, and the protection of the point of discharge from the approach of the consumer.

THE MEDICAL EXAMINATION OF THE NATIONAL ARMY

The announcement has just been made from Provost-Marshall General Crowder's office in Washington that in examining the remainder of the 10,000,000 men subject to draft and service in the National Army, information will be sought first as to the liability of each man for service, and the physical examination will follow only when the man is not exempt for some cause under the law. This is so obviously the correct order of the steps in the selection of men for service that it is surprising that this method was not adopted in the calling of the first 700,000 men.

THE IMPORTANCE OF MOUTH SPRAY INFECTION

Under conditions that involve the close association of large numbers of persons, as in the great military encampments, certain modes of infection acquire a kind of exaggerated importance. The transmission of disease germs in ways that are rare in normal everyday life occurs with greater frequency and has more far-reaching consequences. Exposure to inhalation of mouth spray is one of the most serious dangers. The small droplets discharged from the mouth or nose in sneezing, coughing, laughing and loud talking float about in the air for some time, and may be carried by currents of air to a considerable distance. There is reason to believe from the experiments of Köhlich with tubercle bacilli that the moist droplets which often contain a little mucus are more likely than dry dust to produce infection. Köhlich, for instance, found in animal experiments that fifty tubercle bacilli inhaled as bacterial spray produced over twenty lung nodules, while the inhalation of over 2,000 in the form of dry dust had a very irregular action, and in some cases evoked no pathologic change. It is a somewhat general belief that, in human tuberculosis, infectious droplets are a more frequent source of infection than dried sputum. In numerous other infections that enter by way of the respiratory tract, the inhalation of mouth spray coming from an infected person or healthy carrier seems the typical mode of infection. This is true in diseases like pneumonia, influenza and whooping-cough, and probably in measles. Epidemic meningitis is probably also most commonly spread in this way. The importance of mouth spray in surgical

wound infection is well known. In camp life, infection of this sort is notably difficult to control. The rapidity with which measles and epidemic meningitis are likely to spread among new recruits is typical. Possibly increase of tuberculosis among troops is partly due to the increased opportunity for infection as well as to the influence of predisposing factors. It is doubtful whether hygienic instruction in the use of the handkerchief for smothering mouth spray from the particularly mischievous sneezes and coughs would be immediately effective, although every hygienically trained individual is a help toward the desired end. General camp measures that promote resistance to infection are always of value, probably especially so in meningitis, less of course in measles. If it were possible in cases of "cold" and the like in the incipient stage to make examinations, and when necessary, to isolate the patients, the spread of mouth spray infection might be materially checked. This measure is worthy of consideration in all conditions in which there is any definite and serious respiratory tract epidemic. Known contacts may be kept under special surveillance and the cooperation of officers enlisted to detect early signs of infection. There is no single and universally applicable method for preventing the transference of germs from one soldier's respiratory tract to another's, but all reasonable and persistent attempts to prevent mouth spray infection are worth making. A person with the developed rash of measles or the skin-peeling of scarlet fever is not allowed to roam unchecked, if his condition is known; but little or no restraint is yet put either by health authorities or by public opinion on the wanderings of the much more dangerous person who is sneezing and coughing myriads of germs into the atmosphere.

THE BELGIAN AND FRENCH PHYSICIANS' FUND

We recently attempted to emphasize the appeal for funds for physicians of Belgium and Northern France who need aid in various ways. Dr. Keen acknowledges in this issue of *THE JOURNAL* the contributions to this fund thus far received. There are only sixteen contributors in this first list; there ought to be sixteen hundred, and there would be—and many more than this number—if the actual conditions among our professional brothers on the other side were realized.

War Dietary and Scurvy.—The death of a patient from scurvy in the Poor Laws hospital in Glasgow prompted the investigation of the occurrence of scurvy. This was deemed important in view of the enforced changes in diet of many people on account of war conditions. The investigations disclosed that under normal conditions three or four patients with scurvy are admitted to each of the Poor Laws hospitals each year. Since the middle of February, 1917, however, according to an article in the *Medical Officer* (London), fifty patients with scurvy have been admitted. It is said that all of these cases occurred in males, and appeared to occur only in men who live in model lodging houses or who live alone. This it is said suggests improper selection and preparation of food. The superintendent of one of the hospitals believes that the shortage of potatoes has much to do in the occurrence of scurvy, this being the only fresh vegetable customarily used by this class of patients.

Medical Mobilization and the War

PHYSICIANS RECOMMENDED FOR COMMISSION IN RESERVE CORPS

During the week ending Sept. 29, 1917, 522 physicians were recommended for commission in the Medical Reserve Corps, the proportion being six majors, seventy captains and 446 lieutenants.

During the week ending Oct. 6, 1917, 252 physicians were recommended to the Adjutant-General of the Army for commission in the Medical Reserve Corps, the proportion being one major, twenty-seven captains and 224 lieutenants.

NEWS OF THE CANTONMENTS

[From Our Special Correspondents]

Camp Pike, Ark.

Camp Pike, the location of the Eighty-Seventh Division of the National Army, is situated in the hills about 5 miles north of Little Rock. The camp itself occupies a fairly level spot cleared from a forest of small oak. The surrounding scenery is very beautiful. The camp is largely completed as far as buildings are concerned, but the roads and the walks for foot passengers have yet, to a great extent, to be finished. An area about 2 miles long by 1 mile wide would contain the main portion of the camp.

The great army of drafted men are coming in, a few hundred daily, and the physical examination is being done in thirteen regimental infirmaries. So far about 18,000 men have been examined. The last increment consisted of 1,600 colored men, who were handled entirely by Regimental Infirmaries 1 and 2, depot troops. The commissioned medical personnel doing this examining was largely taken from the training school at Fort Riley, Kan. About thirty-five medical officers of the Reserve Corps have handled this 18,000 and have entered on their duties with energy and dispatch. All men requiring further examination have been sent to a board of specialists especially designated for that service at the base hospital.

THE BASE HOSPITAL

The 1,000 bed base hospital at this point under the command of Major A. P. Upshur, M. C., is a group of one story buildings, the floor space of which covers over 20 acres. It takes an hour of casual inspection to walk through it. The health of the command at present is good, and the hospital had only a little over 100 admissions during the past week. There has been some measles in the command, but nothing of a serious nature. While Camp Pike has had a rather high malarial rate in the past, every effort is being made to prevent the breeding of mosquitoes in this locality, and the work is being pushed by Major Charles E. Freeman, M. C., who is sanitary inspector for this division. Camp Pike is very well drained, and the water supply is excellent.

Under the leadership and direction of Lieut.-Col. Robert M. Thornburgh, the medical work of the division is rapidly assuming the proportions of a well oiled and well operated machine. Major Russel R. Jones, M. R. C., recently ordered here from Fort Oglethorpe, where he has been since June 1 as an instructor in the M. O. T. C., arrived a few days ago and assumed his duties as assistant to the division surgeon.

PROBLEMS OF THE DIVISION SURGEON

The problems confronting the division surgeon in the opening and establishing of his office are multitudinous, multifarious and never ceasing. Men of every station and grade, from the millionaire to the pauper and from the highly intellectual to the moron, come trooping daily down the streets of Camp Pike to meet their fate at the hands of the hard working crew of medical officers, who a few months before were leading the independent life of the civilian physician. To select the true from the false, the mentally weak from the mentally strong, the crippled from the well, the sightless from the seeing, and to do no injustice to any one has certainly taxed the mental and physical energies of the examiners to the utmost. There is a general impression that at least here there were few exemptions. The lame, the halt and the blind have come here to have it decided whether of such material could be made the "little buck private" of the U. S. Army. Men have come into Camp Pike, led by hand, with wooden legs, in the advanced stages of pulmonary

tuberculosis, feeble-minded and insane, and with every imaginable condition and physical deformity of the most pronounced character. Paralytics and epileptics are not uncommon. There are a great many things about these men that arouse one's sympathies. Occasionally one comes in bringing his whole family and part of his wife's relations along.

THE SANITARY TRAIN

The Sanitary Train of the Eighty-Seventh Division has received about half its enlisted quota. Lieut. R. H. Davies of Fort Riley, Kan., and Chicago is in charge of Provisional Field Hospital No. 1, and Lieut. J. B. Steele of Fort Riley, Kan., and Chattanooga, Tenn., is in charge of Provisional Ambulance Company No. 1. Lieutenants Davies and Steele are unofficially directing the field hospital and ambulance work, respectively. Recent additions to the sanitary train are Red Cross Ambulance Company 44 of Topeka, Kan., with five officers and 118 men, in charge of Lieutenant Lerigo, and Red Cross Ambulance Company 39 of Mississippi, with thirty men and no other officers, in charge of Capt. Nolan Stewart. Provisional Field Hospital No. 1 has its full equipment, and there is now complete equipment here for two ambulance companies. The sanitary train is to be completed as regards personnel at an early date.

The regimental infirmaries of the Eighty-Seventh Division are all fully equipped and are handling their work in a thorough and efficient manner.

A recent promotion was that of Capt. Amos Gale Straw of the roentgen-ray department at the base hospital to the grade of Major.

Camp Wheeler

106TH SANITARY TRAIN, 31ST DIVISION

The train now consists of Field Hospitals Nos. 121 (Florida), 124 (Alabama), and 122 and 123 formed from equal division of Georgia Field Hospital No. 1. Numbers 121 and 123 are designated as motor companies and 122 and 124 as animal drawn. Major George L. Keenan, M. C., N. G. (Mass.), commands the section.

Ambulance Company No. 1 of Alabama has been divided into four equal parts, each the nucleus of Ambulance Companies Nos. 121, 122, 123, 124, two motor and two animal drawn; Major Job Patterson, M. C., N. G. (Ga.), commands the section.

Many of the officers' families have arrived and taken permanent quarters in Macon, and are interesting themselves actively in Red Cross affairs.

The members of the orchestra of the Florida Field Hospital (No. 121) are the recipients of much favorable comment on their work. They merit it.

Last week a pleasant social was held, introducing the ladies of the train. Supper was served in one of the large mess halls after which the Florida Hospital orchestra played for dancing until 10:30. It is the intention of the train to make these socials a weekly affair on Wednesday evenings. The guest of the evening was Lieut.-Col. Louis C. Duncan, M. C., U. S. Army, division surgeon.

The camp hospital has now assumed large proportions and its conduct and management under Major Lorne A. Greene, M. C., N. G. (No. 12) is the wonder of visiting officers, Red Cross officials and civilians. The aid of the Red Cross of Macon has been of invaluable assistance, and their donations of pillows, sheets and delicacies have certainly been appreciated by the patients. The hospital cares for about 250 patients.

The urgent need of men to complete the train complement is strongly felt. One hundred men are needed in the field hospital section and 300 in the ambulance section. Yet, withal, our camp is unequalled in the division.

Great interest is evinced by officers and men in the first-aid dugouts to be built in connection with the trench system now being constructed by the division engineer.

The officers of the mounted organization of the sanitary train ride into the country each Wednesday afternoon studying roads, topography, mapping, etc. Problems will be taken up in November.

The Red Cross Association is spending several thousand dollars in clearing up the area about the camp. Surgeon Williams of the P. H. S. directs under the persuasion of Colonel Duncan. The Chamber of Commerce of the city of Macon appropriated \$4,000 to help clean up the city.

The base hospital, Major R. W. Bliss, M. C., U. S. Army, commanding, will soon be ready to open, with 500 beds.

BASE HOSPITAL NOTES

The base hospital at Camp Wheeler is still under construction; no buildings are as yet completed. Our staff is all here and officers and men are having daily instruction.

At present all cases are sent to the field hospital. There are fifteen wards, each having on an average of twenty-five beds. It has been said that this is the largest field hospital in the history of the United States Army. This condition is accounted for by the fact that the base hospital is doing all its work there and at present several members of the base hospital staff are connected with the field hospital.

Lieutenant Horne was operated on for appendicitis by Major Cole about two weeks ago and is now sitting up and doing finely.

Lieutenants Upchurch and Miller, genito-urinary men from the base hospital, are doing the genito-urinary work at field hospital for the entire camp. They say they have not much time to gossip.

The officers quarters at the base hospital are practically completed and will be occupied the early part of this week.

Camp McClellan, Anniston, Ala.

The medical history of Camp McClellan dates from Aug. 18, 1917, when the First Virginia Field Hospital, in command of Major J. C. Bowman, arrived at camp. Being the first troops of the Twenty-Ninth Division to arrive in camp, the camp hospital was established by that organization, and it successfully cared for all the sick of the division until September 28, when the base hospital opened its doors.

PERSONNEL

The following assignments for the division have been made: Lieut.-Col. C. R. Snyder, M. C., U. S. Army, division surgeon; Major Junius F. Lynch, M. C., Va. N. G., former chief surgeon of Virginia National Guard, assistant division surgeon; Major J. H. Ulrich, M. C., Md. N. G., Baltimore, division sanitary inspector; Major James S. Fox, M. C., U. S. Army, commanding officer, base hospital; Major Valentine Ruch, M. C., N. G. N. J., former assistant chief surgeon, New Jersey National Guard, director, ambulance companies; Major L. H. Reichelderfer, M. C., D. C. N. G., former chief surgeon, District of Columbia National Guard, director, field hospitals.

The sanitary train of this division has been designated as the 104th sanitary train.

EXEMPTION OF MEDICAL STUDENTS
AND INTERNS

Advice to Medical Students

Paragraph 1, Section Z of compiled rulings of Provost Marshal-General Number 11, dated Sept. 4, 1917, reads as follows:

Hospital interns who are graduates of well recognized medical schools or medical students in their fourth, third or second year in any well recognized medical school, who have *not* been called by a local board for physical examination may enlist in the Enlisted Reserve Corps provided for by Section 55 of the National Defense Act under regulations to be issued by the Surgeon-General and if they are thereafter called by a local board, they may be discharged on proper claim presented on the ground that they are in the military service of the United States.

MEDICAL STUDENTS AND INTERNS NOT YET DRAFTED

In accordance with the above, the Surgeon-General has provided special regulations applicable to hospital interns and medical students. These may be summarized as follows:

"(a) Medical students and interns who have *not* been drafted may enlist in the Medical Enlisted Reserve Corps and thus be released from subsequent draft.

"(b) Interns who have served one year or more will not be enlisted in the Medical Enlisted Reserve Corps.

"(c) Any intern who is enlisted in the Medical Enlisted Reserve Corps may be called into service if needed at the end of one year of internship.

"(d) A medical student enlisted in the Medical Enlisted Reserve Corps may be called into active service under his enlistment if his services are needed or on failing to pass one class to another or on failing to graduate.

"(e) An internship of more than one year will not be recognized.

"(f) Hospitals, sanitariums and other institutions running for private gain will not be recognized in the consideration of interns.

"(g) The dean of the medical faculty must report twice a year on the status and progress of students in his school enlisted in the Medical Enlisted Reserve Corps."

Medical students and interns who have been accepted for the draft have already been given the opportunity of taking advantage of these special regulations and with these the advice offered at present has nothing to do. The question now under consideration is, What should medical students (who have *not* been called by a local board) and interns (who have not served one year or more) do in regard to enlisting in the Medical Enlisted Reserve Corps? This procedure is opened to them and we strongly advise that every medical student in a well recognized medical school and every intern who is a graduate of a well recognized medical school and who has served less than one year as an intern, should make application to the Surgeon-General for enlistment in the Medical Enlisted Reserve Corps.

ANNOUNCEMENT OF STAFF OFFICERS

National Guard Division

The following is a list of the medical staff officers in the various National Guard divisions:

26th Division.—Lieut.-Col. James L. Bevans, surgeon; Major John G. Towne, assistant surgeon.

27th Division.—Camp Wadsworth, Spartanburg, S. C.: Lieut.-Col. Edward R. Maloney, surgeon; Lieut.-Col. Walter C. Montgomery, sanitary inspector; Major Lefferts Hutton, assistant surgeon.

28th Division.—Camp Hancock, Wheelers, Ga.: Lieut.-Col. William J. Crookston, surgeon; Major C. A. Dillinger, assistant surgeon; Major William E. Kellar, sanitary inspector.

29th Division.—Camp McClellan, Anniston, Ala.: Lieut.-Col. Craig R. Snyder, surgeon; Major Junius F. Lynch, assistant surgeon; Major J. H. Ulrich, sanitary inspector.

30th Division.—Camp Sevier, Greenville, S. C.: Lieut.-Col. Arthur M. Whaley, surgeon; Major Alexander M. Brails, assistant surgeon; Major Naniwell, sanitary inspector.

31st Division.—Camp Wheeler, Macon, Ga.: Lieut.-Col. Louis C. Duncan, surgeon; Major William A. Padgett, assistant surgeon; Major Raymond C. Turck, sanitary inspector.

32d Division.—Camp MacArthur, Waco, Texas: Lieut.-Col. Perry L. Boyer, surgeon; Capt. Randall N. Cooley, assistant surgeon; Major Gilbert E. Seaman, sanitary inspector.

33d Division.—Camp Logan, Houston, Texas: Lieut.-Col. Levy M. Hathaway, surgeon; Major Gustavus M. Blech, assistant surgeon.

34th Division.—Camp Cody, Deming, N. M.: Lieut.-Col. Jacob L. Coffin, surgeon; Capt. L. B. Sturdevant, assistant surgeon; Major James E. Merrill, sanitary inspector.

35th Division.—Camp Doniphan, Fort Sill, Okla.: Lieut.-Col. William Davidson, surgeon.

36th Division.—Camp Bowie, Fort Worth, Texas: Lieut.-Col. Raymond F. Metcalfe, surgeon; Major John J. O'Reilly, assistant surgeon; Major Floyd J. Boland, sanitary inspector.

37th Division.—Camp Sheridan, Montgomery, Ala.: Lieut.-Col. Joseph A. Hall, surgeon; Major John C. Darby, assistant surgeon; Major Charles A. Neal, sanitary inspector.

38th Division.—Camp Shelby, Hattiesburg, Miss.: Lieut.-Col. Robert M. Blanchard, surgeon; Capt. A. C. L. Percefull, assistant surgeon; L. D. Carter, sanitary inspector.

39th Division.—Camp Beauregard, Alexandria, La.: Lieut.-Col. William N. Sinart, surgeon; Major John W. D. Dicks, assistant surgeon; Lieut.-Col. W. S. Schaffler, sanitary inspector.

40th Division.—Camp Kearny, San Diego, Calif.: Lieut.-Col. Alexander Murray, surgeon; Major William A. Jelley, assistant surgeon; Major Charles W. Decker, sanitary inspector.

41st Division.—Camp Fremont, Charlotte, N. C.: Lieut.-Col. Orville G. Brown, surgeon; Major F. M. Carroll, assistant surgeon.

National Army Divisions

The following are staff officers of the National Army divisions:

76th Division.—Camp Devens, Ayer, Mass.: Lieut.-Col. Llewelyn P. Williamson, surgeon; Major Joseph L. Siner, assistant surgeon.

77th Division.—Camp Upton, Yaphank, L. I.: Lieut.-Col. Charles R. Reynolds, surgeon; Major Alvin Schoenleber, assistant surgeon.

78th Division.—Camp Dix, Wrightstown, N. J.: Lieut.-Col. George M. Ekwurzel, surgeon; Lieut.-Col. John W. Hanner, assistant surgeon.

79th Division.—Camp Meade, Admiral, Md.: Lieut.-Col. Philip W. Huntington, surgeon; Major Guy L. Qualls, assistant surgeon.

80th Division.—Camp Lee, Petersburg, Va.: Lieut.-Col. Charles E. Marrow, surgeon; Major Henry P. Carter, assistant surgeon.

81st Division.—Camp Jackson, Columbia, S. C.: Lieut.-Col. Kent Nelson, surgeon; Major Thomas J. Leary, assistant surgeon.

82d Division.—Camp Gordon, Atlanta, Ga.: Lieut.-Col. Conrad E. Koerper, surgeon; Major William T. Cade, assistant surgeon.

83d Division.—Camp Sherman, Chillicothe, Ohio: Lieut.-Col. Wallace DeWitt, surgeon; Lieut.-Col. Samuel J. Morris, assistant surgeon.

84th Division.—Camp Taylor, Dumesnil, Ky.: Lieut.-Col. John H. Allen, surgeon; Major Luther R. Poust, assistant surgeon.

85th Division.—Camp Custer, Battle Creek, Mich.: Lieut.-Col. Cosam J. Bartlett, surgeon; Lieut.-Col. William A. Powell, assistant surgeon.

86th Division.—Camp Grant, Rockford, Ill.: Lieut.-Col. James M. Phalen, surgeon; Lieut.-Col. Howard H. Bailey, assistant surgeon.

87th Division.—Camp Pike, Little Rock, Ark.: Lieut.-Col. Robert M. Thornburgh, surgeon; Major Charles E. Freeman, assistant surgeon.

88th Division.—Camp Dodge, Des Moines, Iowa: Lieut.-Col. Jay R. Shook, surgeon; Major Clarence E. Fronk, assistant surgeon.

89th Division.—Camp Funston, Fort Riley, Kan.: Lieut.-Col. John L. Shepard, surgeon; Lieut.-Col. Frank W. Weed, assistant surgeon.

90th Division.—Camp Travis, San Antonio, Texas: Lieut.-Col. Paul S. Halloran, surgeon; Lieut.-Col. Robert H. Pierson, assistant surgeon.

91st Division.—Camp Lewis, American Lake, Wash.: Lieut.-Col. Peter C. Field, surgeon; Lieut.-Col. Lloyd L. Smith, assistant surgeon.

PROTECTION AGAINST VENEREAL DISEASES

On September 29, Senator Weeks reported a bill from the Committee on Military Affairs for the protection of military and naval forces, the aim being to guard these forces from physical and moral injuries of commercialized prostitution. It was read the first time by its title and the second time at length, as follows:

Be it enacted, etc., That it shall be unlawful to keep or assist in keeping a place of prostitution to which any person known to be a member of the military or naval forces of the United States is admitted or to admit any such member to such place, or to knowingly rent or in any manner allow the use of any place for acts of prostitution with any member of such military or naval forces. No person shall solicit or seek to induce any person known to be a member of such military or naval forces to enter any place of prostitution or to consort or cohabit with any prostitute. Knowledge that a person is a member of the military or naval forces of the United States may be prima facie established by proof showing that the accused had knowledge that at the time or recently before the commission of the offense the person alleged to be a member of such military or naval forces was wearing the uniform of such military or naval forces. Whoever shall violate any of the provisions of this section shall be guilty of a misdemeanor and shall be punished by a fine of not more than \$1,000 or imprisonment not more than one year, or by both such fine and imprisonment.

Sec. 2. That it shall be unlawful for any person who has been convicted of disorderly conduct, delinquency, soliciting for prostitution, or any other sexual offense, without having first obtained permission from the proper military authorities, to loiter in or around a military camp, fort, navy yard, or place of training or mobilization. Any such person present in or around such camp, fort, navy yard, or place of training or mobilization, without authorization or military permission, may be ordered to depart by the civil or military authorities having jurisdiction therein. Any person failing to depart when so requested shall be guilty of disorderly conduct and shall be punished by a fine of not more than \$100 or imprisonment of not more than 60 days, or by both such fine and imprisonment.

The bill was considered as in committee of the whole, reported to the Senate, one amendment ordered to be engrossed for the third reading, read the third time, and passed by the Senate.

INSTRUCTORS OF MEDICAL OFFICERS'

TRAINING CAMP CONFER

On Oct. 8, 1917, instructors in the Medical Officers' Training Camps, including Col. Henry Page, Fort Oglethorpe, Ga.; Lieut.-Col. Percy M. Ashburn, Fort Benjamin Harrison, Ind.; Lieut.-Col. William N. Bispham, Fort Riley, Kan., and Major Ernest G. Bingham, Fort Des Moines, Iowa, met at Fort Benjamin Harrison in connection with the meeting of the American Association of Military Surgeons for a conference relative to the standardization of the course of instruction in the Medical Officers' Training Camps.

TAKING CARE OF SOLDIERS' FAMILIES

The *Survey* for September 29 reviews legislation enacted in various states providing allowances for the dependents of soldiers and sailors during the war. Connecticut, Maine, Massachusetts, Michigan, New Hampshire, Vermont and Wisconsin have enacted such legislation, and Colorado, Iowa, Kansas, Minnesota, New Jersey, New York, North Carolina, Oklahoma, Pennsylvania and Rhode Island have taken some sort of state-wide action for the same purpose. The legislation enacted in the states named is compared with the proposed Alexander-Simmons bill now pending in Congress, and points of incompatibility with the proposed national law are pointed out. In some of these states, the schedule of allowances approaches nearly that of the proposed national law, but in others, it is much less. In some of the states, these local laws will be rendered inoperative after the national law is passed. Other states which have not enacted laws providing for the care of dependents have made provisions for increased appropriations to existing institutions for the care of soldiers and sailors, as in the case of Colorado, which made an additional appropriation in 1917 for the Soldiers' and Sailors' Home. In Oklahoma, the State Department of Charities and Corrections has notified the National Defense Committee that the state will, through its hospitals, care for soldiers who may become mentally unbalanced, and is preparing to establish an institution for the care of veterans of the Civil and Spanish-American wars, as well as for those who serve in the present European war and their widows. It will thus be seen that a proper general interest is being taken by the states in the care of those who might otherwise suffer privation from the war.

NEW MEDICAL SERVICE BUREAU FOR RED CROSS

As announced by the Red Cross War Council, the growth of the work of the Red Cross Commissions in European countries during the past two months has made necessary the establishment of a Bureau of Medical Service of Foreign Commissions, to give prompt and expert attention to requests for medical and surgical supplies. This bureau will aid the commissions now at work in France, Russia, Roumania, Italy and Serbia. Requests for additional physicians and nurses, particularly in France and Roumania, for service with these commissions will also be handled by the new bureau. The physicians on this bureau are Drs. R. M. Pearce, Philadelphia, professor of research medicine, University of Pennsylvania, who will be the director; W. C. Bailey, Boston, associate director; Ralph Pemberton, Philadelphia, assistant, and John Gilbert, Philadelphia, secretary. The bureau is furnishing bacteriologists, chemists, surgeons and others for the Red Cross establishments in Paris. Drugs and medical supplies to the amount of more than \$500,000 have been shipped to Russia, and three detachments of pediatricists have been recruited for service with the new children's bureau of the Red Cross in France.

WOMEN'S HOSPITAL UNIT ACCEPTED

The mobile hospital unit which the New York Infirmary for Women and Children has prepared has been accepted by the French government, through the High French Commissioner Tardieu. The unit is composed of a hospital with 100 beds and small flying auxiliary units. Its purpose primarily is to work among French women and children who have suffered from a lack of medical attendance, but it will also accept calls for the care of wounded soldiers. Dr. Caroline S. Finley is director of the unit, and expects to leave for France early in October to make arrangements for the reception of the unit. Preparations here are in charge of Dr. Anna I. Von Sholly and an executive committee, composed of Drs. Mary Lee Edward and Alice Gregory. The expedition is backed by the National Woman Suffrage Association.

AMERICAN ASSOCIATION OF MILITARY SURGEONS

Meeting at Fort Benjamin Harrison

The 1917 meeting of the Association of Military Surgeons began Sunday afternoon, October 7, at Fort Benjamin Harrison. With the onset of the war, a revival of interest in the association has occurred and it now numbers 4,000 members and has a substantial balance in its treasury. In addition to the men attending the meeting of the association, there were among the audience the 1,200 physicians who are taking the training course at Fort Benjamin Harrison and such enlisted men as were not engaged elsewhere.

A VISIT TO THE POST

On Sunday afternoon, the guests were invited to inspect the fort. There were included Captain Lung, medical director, U. S. Navy; Col. Charles Dirck and Major Edward Rist of the French Medical Corps; Col. T. H. Goodwin and Capt. J. Gilmour, R. A. M. C.; Cols. W. A. J. Shockley, E. L. Munson, W. N. Bispham and Henry Page, M. C., U. S. Army; Surg.-Gen. Rupert Blue and Asst. Surg.-Gen. W. C. Rucker, U. S. P. H. S., and Majors V. C. Vaughan and Joseph C. Bloodgood, M. R. C., U. S. Army. The first point visited was the sewage destruction pits designed by Col. Percy M. Ashburn, commandant, M. O. T. C., Fort Benjamin Harrison. Pits 6 feet deep are dug and the refuse poured in from iron cans, then covered with oil and allowed to digest itself. The inspection of the field ambulances brought forth the interesting comment from the British officers that all of the British ambulances were now heated, utilizing the exhaust from the engine. None of the American ambulances were constructed with this provision.

EVENING SESSION

In the evening, the guests were assembled at the open-air speaking stand, which was surrounded with huge bonfires. Colonel Ashburn introduced Colonel Goodwin and Major Rist, who addressed the audience, felicitating the medical officers on the fact that France, England and America were now united as brothers in a common cause. A vaudeville program was provided by the medical officers in the training camp and the enlisted men, especially noteworthy being the singing of Paul U. Davies, professor of music in the Metropolitan School of Music, now an officer in the Ambulance Corps, and recitations by Capt. Daniel Hoyt, Philadelphia, of Company No. 2.

MONDAY MORNING

The Monday morning session was opened with the address of the president, Surg.-Gen. Rupert Blue, who called attention to the excellent status of the association and the great things promised for the future. Major Edward Rist spoke on "Tuberculosis in the French Army." He said that the figures as to the prevalence of this disease have been greatly exag-

gerated. Out of 1,000 soldiers sent back to base hospitals with the diagnosis of pulmonary tuberculosis, all except 193 were returned to the front because the diagnosis could not be substantiated.

Reports were then received from the various officers of the association, and committees were appointed.

ADDRESS BY MAJOR VAUGHAN

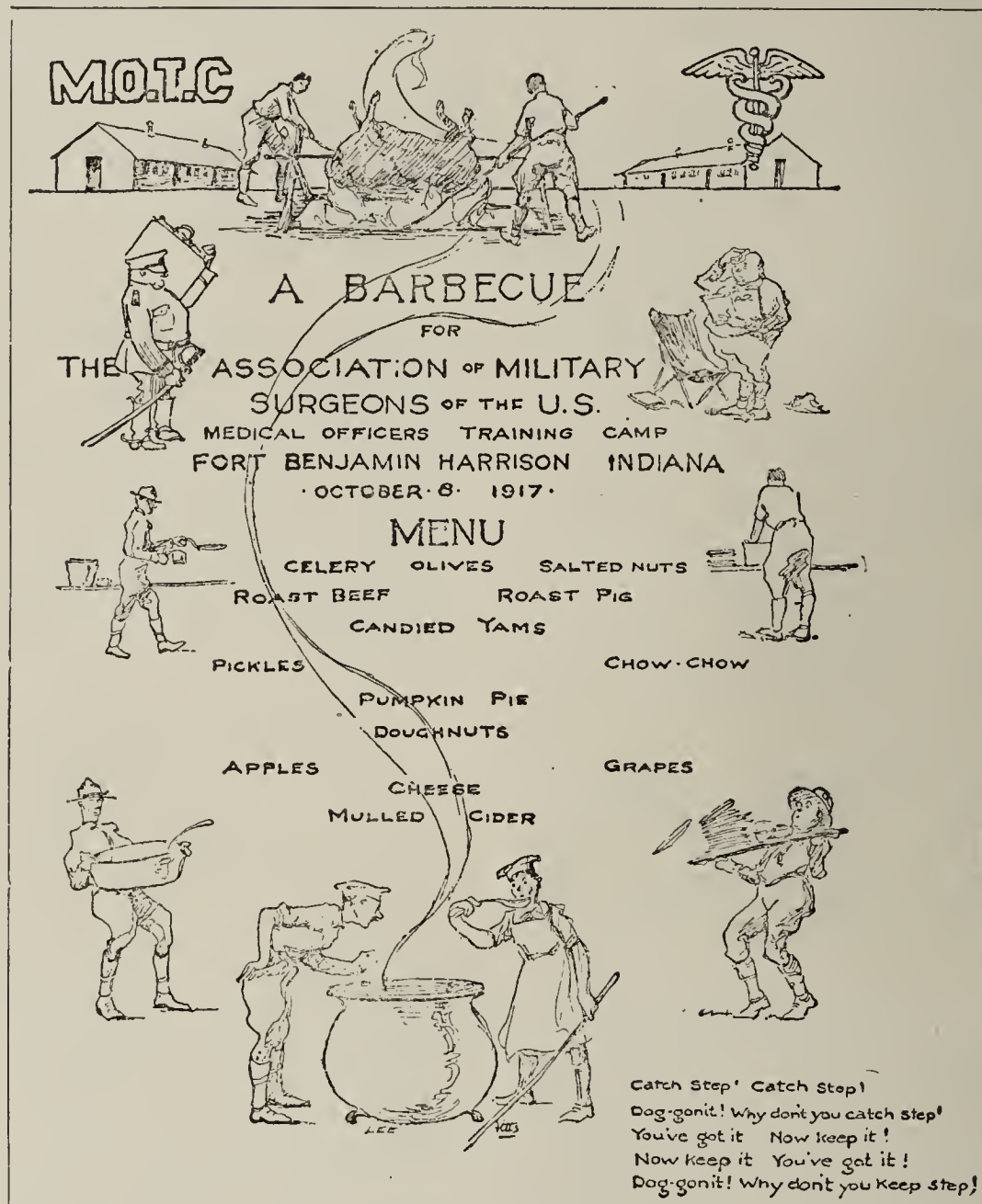
The morning session was closed with a patriotic address by Major Victor C. Vaughan, which was most enthusiastically received. The men cheered until the speaker was forced to rise and bow his acknowledgment. Major Vaughan told of his experiences in the Spanish-American War when he entered as a reserve officer and made himself subject to court martial the first day by a kindly letter of protest to the colonel. He followed with a special address to men of German parentage or German sympathies in which he stated that he was convinced that all Germans were not in sympathy

with the militaristic policy of the government. When in Berlin in 1907, Major Vaughan met Wassermann, the noted serologist. Late in the afternoon, Wassermann and Major Vaughan, leaving the Institute for Infectious Diseases, walked toward the city. They passed a barracks in which 50,000 soldiers were quartered on Berlin and at that time a hope was expressed that some day the flag of a republican Germany would fly over the buildings devoted, not to militarism, but to some scientific or peaceful purpose. Major Vaughan eulogized the student officers for volunteering without a draft and coming forth so nobly to do their duty. He told them that after the war they might not find their practices conserved, but they would more likely find that during their absence their competitors had fattened on their practice. They might be compelled to reestablish themselves in some side street, while their competitors held forth on the avenue, but they would be proud in

their realization that they had served their country, whereas the competitor would find himself much abashed when his son asked him what he had done in the great war.

AFTERNOON SESSION

Most of the visitors took lunch at the mess of the student officers. The afternoon session opened with an address by Surgeon-General Braisted, M. C., U. S. Navy. General Braisted said that the Navy has obtained practically all the medical men needed for its service. Twenty-seven naval base hospitals have been constituted and five are already abroad on active duty. Following the address of Surgeon-General Braisted was a symposium by Col. Louis A. LaGarde, M. C., U. S. Army (retired); P. A. Surg. H. B. Eaton, U. S. Navy, whose paper was read by Fleet Surgeon McCulloch and Assistant Surgeon-General Rucker of the U. S. P. H. S., on "The Way in Which the Medical Military Service of the Government May Best Cooperate in Time of War." P. A. Sur-



Menu of the barbecue.

geon Eaton was disappointed that the draft should have concerned only the Army without realization of the needs of the Navy, and stated that a true democracy would have drafted equally for the Navy as for the Army. Dr. Rucker expressed the hope that some day we might have a U. S. Medical Department in which all of the service could be united in one department working together under a common head. Major Joseph C. Bloodgood addressed the officers on various aspects of the surgery of the war and the questions for the civilian physician called to army life. Colonel Goodwin spoke on practical medical military lessons of the war, bringing up particularly questions of transportation and evacuation of the wounded.

PARADE AND REVIEW

The afternoon was closed with a parade and review of the medical officers' training camp. Some 5,000 men passed in review before the visitors. Just previous to the parade, Surgeon-General Gorgas arrived from Washington in time to see the brilliant strides made by the medical officers and the enlisted men of the medical department in their new duties.

THE BARBECUE

At 5:30 a barbecue supper, which had been prepared under the direction of Capt. Charles Parkes, M. R. C., Chicago,

willing to associate with him although every company has at least two of indefinite ancestry. Later on he succeeded in removing most of the effluvia in an attempt to rout out a recalcitrant woodchuck; the remainder was washed off by a forced bath in Fall Creek. The officers of the Public Health Service were inclined to quarantine him, but relented following the disinfection and cleansing mentioned.

Some 300 civilian visitors took part in the barbecue. This gave opportunity to student officers to call each other major, and a few even became colonels pro tem.

The field ambulance at Fort Benjamin Harrison is equally divided among motor and army mule transportation. The American army mule was a subject of the greatest admiration to the foreign visitors, as were also the cavalry horses available at Fort Benjamin Harrison. Colonel Goodwin expressed sadness, as did many of the other American officers, at the gradual replacing of the "animals" by the less personal motor.

Colonel Dircle bears the scars of ninety-six shrapnel wounds.

At the barbecue supper four whole beeves, eight sheep, four pigs, 500 pumpkin pies, 4,000 doughnuts, ten barrels of sweet potatoes and six barrels of apples were eaten. The trimmings included thirty-five cases of celery and 100 pounds of salted peanuts.



On the platform at Fort Benjamin Harrison. From left to right: W. Colby Rucker, Asst. Surgeon-General, U. S. P. H. S.; Col. Edward L. Munson, M. C., U. S. A.; Surgeon-General Rupert Blue, U. S. P. H. S.; Capt. J. Gilmore, R. A. M. C.; Col. Charles Dircle, French Army Medical Corps; Major Eduard Rist, French Army M. C.; Col. T. C. Goodwin, R. A. M. C.; Capt. George A. Lung, Medical Director, U. S. N., and Col. Henry Page, commandant, M. O. T. C., Fort Oglethorpe, Ga.

mess sergeant of Company No. 1, attracted the immediate attention of visitors, student officers and a host of guests.

THE NIGHT SESSION

The chilly night air and the fact that the motion pictures to accompany the address of Col. Charles Dircle on "Medical Service on the Western Front" were not adapted to the motion picture machine caused the assembly to seek the neighborhood of the numerous bonfires. In the interim until new pictures could be brought, Surgeon-General Gorgas made a brief address and the choruses of the various companies vied in singing songs of the training camp. A parade symbolizing the changes in the medical officer from his first arrival in camp until the completion of his course of instruction was one of the features of the evening.

NOTES

A sensation was created when Major McCormick's dog leaped into the sewage disposal pit, evidently believing it was the River Marne. He came out covered with ignominy and other things, and leaped into the major's car. The occupants of the car gave the dog complete possession, until he departed, and he could hardly find a dog on the grounds

During the parade and review Colonels Page, Bispham, Bingham and other instructors from the rival training camps stood around, watched the review and gnashed their teeth.

Exchange of Medical Officers Between France and Germany

The Germans accepted in 1916 the proposal to exchange the medical prisoners of war, and about three fourths of the French medical officers kept captive in Germany had been returned by October, but then no more were allowed to leave Germany. In April, 1917, the German government took up the matter again, and sent a list of their medical captives which they were willing to exchange. The French government checked up the list and designated the sixteen physicians and 759 other members of the sanitary service who had been designated in the agreement dated July, 1916, and demanded that these should be repatriated first of all. Germany accepted this, and the party recently arrived at Lyons. It has been agreed that the other medical officers and sanitary force are to be repatriated now in turn, and with the least possible delay.

New Units to Camp

Two new units comprising Red Cross Ambulance Companies No. 4, Cleveland, and No. 3, Minneapolis, have reached the United States Ambulance Service Training Camp, Allentown, and a headquarters unit has been established at the camp by Director Col. Elbert E. Persons, under command of Col. Rossner E. Graham, M. R. C., New Orleans.

Court Martial

Asst. Surg. Thomas A. Fortescue, U. S. Army, is said to have been tried by general court martial at the Navy Yard, Norfolk, Va., on a charge of culpable negligence and inefficiency in the performance of duty, and to have been sentenced to lose three numbers. The Secretary of the Navy has approved the proceedings.

Bushnell's Retirement

Col. George E. Bushnell, M. C., U. S. Army, was transferred to the retired list, September 4, on attaining the age

NEWS OF THE TRAINING CAMPS

At Fort Oglethorpe

The week of October 1, at Camp Greenleaf has, from a seasonal point of view, been one of the most delightful since the beginning of camp. Early autumn weather of the choicest sort prevailing, with its accompanying harvest moon, has made the nights poetic dreams. One of the most beautiful nights was taken advantage of by the commandant who gave a lecture out in the open, there being no other illumination than the moon. The lecturer was at his best, the scenic effect beautiful beyond description, and the impression made on the men a lasting one.

MESS AT FORT OGLETHORPE

A distinct departure from the mess as conducted at the other Medical Officers' Training Camps is that initiated by Col. Henry Page at Camp Greenleaf, Fort Oglethorpe, Ga. The medical officers are marched into the mess hall at "attention" and are seated in order. After mess the men are again called to attention, and empty plates are shown. The reduction in wastage approximated 60 per cent. when an average ration was served to each man, and empty plates



First session of the Association of Military Surgeons at the Medical Officers' Training Camp, Fort Benjamin Harrison. Surgeon-General Rupert Blue, U. S. P. H. S., president of the association, delivering the opening address.

of 60. Colonel Bushnell entered the Medical Corps in February, 1881. He has given especial attention to the study of tuberculosis, and for many years he has been in command of the general hospital devoted to the treatment of tuberculosis at Fort Bayard, New Mexico.

Personal

Lieut.-Col. Robert B. Grubbs, M. C., U. S. Army, was retired from active service, September 21, on account of disability incident to the service.—Surg-Gen. Presley M. Rixey, U. S. Navy, retired, has been recalled to active duty, and is now making an inspection tour of the Naval Coasts and Hospitals in the United States.—Capt. John S. Fulton, Baltimore, has been added to the board to prepare material for a medical and surgical history of the war.—Medical Inspector Frank L. Pleadwell, U. S. Navy, has returned after service in England and along the western front since May, 1916. During this time he visited sixty-four hospitals, five ambulance trains, six training and convalescent camps, twenty naval vessels, including eleven hospital ships, and four medical service schools, the High Seas fleet, the British trenches in France and the Italian front on the Isonzo.—Capt. James W. Inches, M. R. C., U. S. Army, health officer of Detroit, who sailed for France, September 5, as a member of a Red Cross Mission to investigate the needs of soldiers at the front, arrived, September 25.

were shown after mess. This might be regarded as a practical demonstration in food conservation.

HIKES

Practice hikes have been in order this week and five or six marches have been made. On Friday the entire student body hiked to Jays Mill, the spot where the battle of Chickamauga started, and witnessed the erection of a complete field hospital. Lieutenant-Colonel Carswell, the director of field hospitals, was in charge and the demonstration he gave was a most interesting one.

NEW MEN

There has been an influx of new men into camp this week and at present there are nearly 1,400 medical officers here. The ages of the men are younger than at the first camp.

NEW INSTRUCTORS

Lieut.-Col. Roger Brooke, the senior instructor, has increased his corps of instructors and now he has courses so arranged that the new men do not have to enter in the midst of the course without knowing what has gone on before. The brunt of the teaching has fallen on the shoulders of Colonel Brooke and his ability as an instructor is unsurpassed. The majority of the men acclaim him as superior to their old "profs." which within itself is somewhat of a miracle for it is a well known fact that medical men seldom acknowledge that any one can compare with the instructors in their old alma mater.

RETREAT

Each evening at 5:15 o'clock retreat is held at Camp Greenleaf and the spectacle of so many physicians, many of whom enjoy national reputations, in formation draws countless throngs from Chattanooga and vicinity to witness it. It is most imposing and the lines, as they pass the reviewing officer, are well nigh perfect. A line officer who was present a few evenings ago paid them the very high compliment of saying "they drill like regulars."

PERSONALS

A negro minstrel show, composed entirely of members of this camp, was given at the amphitheater a few evenings ago and was greatly enjoyed. There were many wives of the officers present in the audience. Lieutenant Lemkowitz brought down the entire house when he said that Chattanooga was not a city but a saluting station for Camp Greenleaf.

MARRIAGE OF MAJOR KIRK

Major Norman C. Kirk, M. C., one of our youngest and most popular instructors, put one over on the entire camp last Friday evening by slipping over to the post chapel and marrying Miss Duryea of New York. The proper way to write up a wedding is to mention how the bride was dressed,

Orders to Officers of the Medical Corps

Lieut.-Col. Robert B. Grubbs, retired, now on duty at the Walter Reed General Hospital, Takoma Park, D. C., is detailed as examiner and witness before the Army Retiring Board, appointed to meet at Washington, D. C., of which Brigadier General Thomas S. Cruse, Quartermaster General, is president; and Major Raymond C. Bull, retired, is relieved.

To San Antonio, Tex., from Fort Logan H. Roots, Ark., and report by letter to the Surgeon General of the Army for the purpose of making special sanitary inspection, Col. William F. Lewis.

To Washington, D. C., from duty at Camp Edge, Sea Girt, N. J., and report in person to the Chief Signal Officer, Aviation Section, Signal Corps, for duty with the Medical Department of the Aviation Section, Signal Corps, Lieut. Col. Nelson Gapon.

To Washington, D. C., from U. S. Army General Hospital No. 1, New York City, for consultation with the Surgeon-General of the Army, Colonel Edward R. Schreiner.

To Watertown, N. Y., Maj. H. W. Jones, to inspect ambulance bodies, and return to Washington.

To Chickamauga Park, Lieut. Col. C. E. Morrow from Madison Barracks, as surgeon of second Regular Army division.

To Surgeon-General's Office, Maj. W. L. Hart, temporarily, then return to Chicago.

To Surgeon-General's Office, Col. D. C. Howard from Canal Zone.

To Camp Sherman, to command Base Hospital, Maj. E. G. Huber, from headquarters Central Department.



The spread for mess at Fort Oglethorpe.

whether or not she carried a Louquet, and say a word or two about the wedding march, and devote the rest of the space to those present, but owing to the modesty of the guilty parties no one knows about these highly important facts except the parson and he will not tell us a "darn" thing. If good wishes have anything to do with it they will have a long, happy and prosperous voyage on the sea of matrimony.

Major A. C. Abbott gave a most instructive lecture on the fly last Thursday evening. It was illustrated by moving pictures which told in story the dangers of the fly.

Major Owen has been joined by Mrs. Owen and family, who are living on Missionary Ridge.

Capt. Newdigate M. Owensby, M. R. C., has returned from a short visit to Baltimore.

THE NATIONAL GAME

Last Sunday a baseball game was played on Dyer Field between student companies number 8 and 3. Three company was the victor and is now thinking of issuing a challenge to the winners of the world's series.

Colonel Page, M. C., the commandant, is on a visit to Fort Benjamin Harrison to attend the meeting of the Association of Military Surgeons.

Orders to Officers of the Medical Reserve Corps

ALABAMA

To Camp Shelby, Hattiesburg, Miss., for duty, Capt. Henry B. Powell, Bessemer.

To Camp Sheridan, Montgomery, Ala., from Fort Oglethorpe, for duty, Lieut. Frederick Wilkerson, Montgomery.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieut. Charles R. Palmer, Tuscumbia.

To Camp Wheeler, Macon, Ga., 31st Division, for duty, Lieut. George G. Oswalt, York.

To Fort Des Moines, Iowa, for instruction, Lieut. Elisha H. Jones, Talladega.

To Fort Oglethorpe, for instruction, Lieuts. Augustus D. Mathews, Ariton; Harry R. Cogburn, Baylow Labatre; Thomas K. Lewis, Birmingham; Thomas W. Taylor, Dozier; Herbert L. Phillips, Yantley.

ARIZONA

To Fort Oglethorpe, for instruction, Capt. Roderick D. Kennedy, Globe.

To Linda Vista, Calif., for duty, Capt. L. Jacobs, Yuma.

ARKANSAS

To Atlanta, Ga., for duty, Lieut. A. G. Kelley, DeWitt.

To Camp Beauregard, Alexandria, La., from Camp Pike, Ark., for duty with the First Arkansas National Guards, Lieut. James E. Phillips, Eureka Springs.

To *Fort Oglethorpe*, for instruction, Lieuts. Forrest P. Baker, Booneville; Floyd Clardy, James W. Ramsey, Jonesboro; Henry P. Ledford, Seppel; George A. Causey, Swifton.

CALIFORNIA

To *Camp Cody*, Deming, N. M., for duty, Capt. J. K. Ransom, Newman; with 34th Div., Lieut. Colin C. Owen, San Bernardino.

To *Camp Kearney*, Linda Vista, Calif., for the purpose of conducting cardiovascular examinations and upon completion to return to his home and to the inactive list of the Medical Reserve Corps, Major Walter V. Brem, Los Angeles; for duty as tuberculosis examiners, Capts. Joseph A. Parks, San Diego; William R. P. Clark, James L. Whitney, San Francisco; for duty, C. W. Kellogg, Bakersville; for duty as members of tuberculosis examining board, Lieuts. Henry A. Holt, Pasadena; E. H. Falconer, San Francisco; for duty, Greg Hoskins, Ferndale; F. B. Tapley, Marysville; for duty with 40th Div., as assistant in the care of cardiovascular cases, K. Berkley, San Francisco.

To *Camp Lewis*, American Lake, Wash., for duty, Lieuts. Richard W. Soper, Berkeley; Charles F. Curtis, Martin P. Hamrick, Los Angeles; R. M. Cox, San Luis Obispo.

To *Fort Douglas*, Utah, for the purpose of examining troops in his specialty, Major James R. Moore, Los Angeles; for duty, Capt. David B. Fields, Weaverville.

To *Fort Oglethorpe* for instruction, Lieuts. Gordon A. Clapp, Lindsay; Pierre N. Charbonnet, Fort McDowell; Ezra R. Bridge, Lavina; William J. Erkenbeck, San Diego.

To *Garden City*, L. I., for duty, Capt. N. L. Deming, Litchfield.
To *Fort Oglethorpe* for instruction, Lieut. George H. Dalton, New Britain.

To *St. Elizabeth Hospital*, Washington, D. C., for a course of study in his specialty, Capt. Arthur B. Coleman, Middletown.
Honorably discharged, Lieut. U. Gardner, New Haven.

DELAWARE

To *Camp Wheeler*, Ga., for duty, Lieut. H. S. Miller, Wilmington.

DISTRICT OF COLUMBIA

To *Camp Dodge*, Des Moines, Ia., for duty, Lieut. W. J. Howard, Jr., Washington.

To *Camp Gordon*, Atlanta, Ga., from Rockefeller Institute, for duty as assistant to the Chief of the Surgical Service, Capt. Edwin M. Hasbrouck, Washington.

To *Camp Meade*, Annapolis Junction, Md., for duty, Lieut. D. L. High, Washington.

To *Fort Des Moines*, Ia., for instruction, Lieuts. Moses Clayborne, William J. Howard, Jr., Washington.

To *Newport News*, Va., for duty with 391st Regiment, Lieut. C. C. Marbury, Washington.

To *his home*, from duty at Rockefeller Institute, New York, N. Y., Lieut. Harry H. Kerr, Washington.

FLORIDA

To *Camp Gordon*, Atlanta, Ga., with the division of otolaryngology, section of surgery of the head, Capt. A. H. Freeman, Starke.



Empty plates up after mess at Fort Oglethorpe.

To *Letterman General Hospital*, San Francisco, Calif., for duty, Lieuts. Harold Zimmerman, Sacramento; Frank B. Reardan, Turlock.

To *Philadelphia*, Pa., Jefferson Hospital for instruction in military roentgenology, Lieut. Robert P. Sturr, San Francisco.

To *his home*, from duty at Fort Oglethorpe, and return to inactive list of the Medical Reserve Corps, Lieut. Joseph M. Thueringer, Mobile.

COLORADO

To *Camp Bowie*, Ft. Worth, Tex., from Ft. Riley, and report to Commanding General 36th Division for duty, Capt. John S. Fox, Silverton; Lieut. Lloyd R. Allon, Colorado Springs.

To *Camp Logan*, Houston, Tex., for duty, Lieut. J. H. Brown, Colorado Springs.

To *Camp Mills*, Garden City, N. Y., with Colorado Field Hospital No. 4, Capt. H. G. Garwood, Denver; Lieut. G. W. Bancroft, Colorado Springs.

To *Camp Sheridan*, Montgomery, Ala., 37th Division, for duty, Lieuts. A. M. Forster, H. W. Hoagland, Colorado Springs.

To *Fort Oglethorpe*, for instruction, Capt. Cyrus L. Persing, Lieuts. Edward W. Collins, William A. Sedwick, Arthur W. Stahl, Denver.

CONNECTICUT

To *Camp Bowie*, Ft. Worth, Tex., from Ft. Riley, and report to Commanding General, 36th Division, for duty, Capt. Arthur B. Landry, Hartford.

To *Camp Devens*, Ayer, Mass., for duty, Lieuts. W. H. Flynn, Hartford; L. J. Loewe, Hegganum.

To *Camp Taylor*, Louisville, Ky., from Ft. Benjamin Harrison, for duty in connection with sanitary train work, Lieut. James E. Hutchison, Hartford.

To *Chickamauga*, Ga., for duty as division sanitary inspector, Major Chauncey L. Chase, Ford Dade; for duty with Field Hospital Section, Sanitary Train, Lieuts. Turner Z. Cason, Jacksonville; for duty with Headquarters Military Police, Lucian B. Dickerson, Clearwater.

To *Fort Oglethorpe* for instruction, Capt. William B. Moon, to Medical Officers Training Camp as instructor in gas defense, Lieut. R. Leffers, Lakeland.

To *Hattiesburg*, Miss., Camp Shelby, 38th Division, as member of a board for special tuberculosis examination, Lieut. J. E. Gammon, Jacksonville.

GEORGIA

To *Camp Doniphan*, Okla., for duty, Lieut. C. J. Woods, Darien.

To *Camp Gordon*, Atlanta, Ga., for duty, Lieuts. L. J. Keeling, J. C. McDougall, Atlanta; Homer G. Lightner, Montezuma.

To *Camp Harris*, Macon, Ga., for duty, Capt. Melton D. Council, Macon; Lieuts. Herschel A. Smith, Americus; Francis Y. Harrington, Atlanta; John P. Holmes, Macon.

To *Camp Sevier*, Greenville, S. C., and report in person to the Commanding General of the camp and the Commanding Officer of the Base Hospital for duty, Lieut. James F. Wallis, Lovejoys Station.

To *Fort Des Moines*, Ia., for instruction, Lieut. Lexius H. Harper, Augusta.

To *Fort Oglethorpe*, for instruction, Capt. Harry Rubin, Savannah; Lieuts. Erle T. Newsom, Camilla; James H. MacDuffie, Columbus; Algeron C. Colson, Lyons.

To *Fort Ontario*, N. Y., with Field Hospitals and Ambulance Cos. Nos. 28 and 30, Lieut. H. H. Lang, Augusta.

To *his home*, from duty at Army Medical School on account of being physically disqualified, Lieut. Jesse H. Campbell, Jefferson.

IDAHO

To *Camp Cody*, Deming, N. M., 54th Division for duty, Lieut. Francis P. Richards, Pocatello.

ILLINOIS

To *Army Medical School*, Washington, D. C., Lieut. W. F. Petersen, Chicago.

To *Camp Bowie*, Ft. Worth, Tex., and report to commanding general 36th Division, for duty, Capt. George W. Clarke, Roseville; for duty, Lieuts. Willard P. Earney, Argyle; Charles W. Monroe, Arthur; Robert S. Berghoff, Harry B. Bernhardt, Jesse F. Boone, Charles W. Colebaugh, William H. Howard, Chicago; August C. Armbruster, Collinsville; Walter W. Boyne, East St. Louis; Lester W. Baker, Herrin, Harlan W. Brink, Hopedale; William E. Chapman, Leland; John L. Aleshire, Plainville; Archie S. Horn, Tampico; Paul R. Allyn, Walter H. Allyn, Waverly.

To *Camp Cody*, Deming, N. M., from Ft. Riley, for duty, Lieuts. Frank O. Kunz, Beardstown, Louis D. Hughes, Carbondale; Earl B. Miller, Chicago; Reuben A. Moffett, Ladd.

To *Camp Dodge*, Des Moines, Ia., for duty as chief of the medical service, Major J. L. Miller, Chicago.

To *Camp Funston*, from Medical Officers' Training Camp, Fort Riley, for duty, Capt. Francis M. Edwards, Centralia; Lieuts. John W. Cornell, John M. Krasa, Albert Martin, Eugene P. Wright, Chicago; Charles M. Fuson, Harrisburg; David A. Morgan, Milwood; Benjamin C. C. Schnell, New Baden; Charles K. Barclay, New Lenox.

To *Camp Grant*, Rockford, Ill., for duty with 86th Division, as tuber-

To *Fort Des Moines*, Ia., for instruction, Lieuts. John R. Finley, Chicago; Alonzo T. Griffin, Mound City, Hosea J. Nichols, Quincy.

To *Fort Oglethorpe* for instruction, Capt. George A. Kelso, William A. N. Dorland, Chicago; Lieuts. Herschel V. Brunner, Casey; Robert H. Henderson, William J. Siegler, James A. Valentine, Hulitt J. Wyckoff, Chicago; Lloyd L. Tate, Parrish; Peter T. Spurck, Peoria; Herman C. Tietze, West Salem; for duty, Davis R. Scott, Macomb; for duty as instructor in gas defense, Franz H. Harms, Chicago.

To *Fort Riley*, in the psychiatric department of the base hospital, Capt. W. D. Napheys, Jr., for duty W. H. Allport, Lieuts. A. G. Bower, C. J. Schoenfeld, Chicago.

To *Fort Sheridan*, Ill., for duty, Lieut. W. A. Clark, Chicago.

To *Fort Worth*, Tex., Signal Corps Aviation School, now being established, Lieut. P. J. Lewis, Chicago.

To *Hattiesburg*, Miss., for duty with 38th Division, as member of board for special tuberculosis examination, Capt. R. E. Adkins, Chicago.

To *Mineola*, N. Y., for duty, Lieut. G. C. Otrich, Belleville.

To *Newport News*, Va., for duty with 301st Regiment, Lieuts. J. P. Kissel, Centralia; P. P. Haslitt, Marshall.

To *Rockefeller Institute*, New York, N. Y., for instruction in laboratory work, Lieut. Joe H. St. John, Chicago.

To *Washington*, D. C., with the division of ophthalmology, section of surgery of the head, Major W. R. Parker, Dixon.

To *Yaphank*, N. Y., for duty, Capt. J. G. Frost, Chicago.

To inactive list of Medical Reserve Corps, from duty at Fort Sheridan, Ill., Lieut. Clyde D. Pence, Chicago.



Review at Fort Oglethorpe: In the foreground at the left is Col. Henry Page, commandant of the Medical Officers' Training Camp, Fort Oglethorpe; in the center, Col. T. C. Goodwin, R. A. M. C.; standing, in the light uniform, Col. Charles Dircle, French Army Medical Corps; and Colonel La Garde, M.C., U. S. Army, ret.

culosis specialist and assistant to the Army Medical Staff, Capt. John H. McClellan, Chicago; for duty, Arthur N. McCord, Streator; Emil Windmueller, Woodstock; Lieuts. Carl V. A. Weichelt, Barrington; George A. McDonald, Goldengate; Richard J. Miller, Kincaid; Orin R. Wakefield, Princeton.

To *Camp Mills*, Garden City, I. S., from Fort Logan, Tex., for duty with the 42d Division, Lieut. Henry S. Babcock, Danville.

To *Camp Pike*, Little Rock, Ark., from Fort Oglethorpe, for duty with 87th Division, as tuberculosis specialist and assistant to the Army Medical Staff, Lieut. Arthur G. Compton, Chicago.

To *Camp Sheridan*, Montgomery, Ala., from Fort Benjamin Harrison, for duty as member of tuberculosis examining board, Lieut. James A. Britton, Chicago.

To *Camp Sherman*, Chillicothe, O., for duty, Lieuts. G. B. Butt, Chicago; for duty in division of ophthalmology, Section of Surgery of the Head, John W. Earle, Quincy.

To *Camp Taylor*, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Capt. Charles Stevens, Lieuts. William R. Larkin, Chicago; Charles F. Childs, New Boston.

To *Camp Wadsworth*, Spartanburg, S. C., for duty, Lieut. John V. Dillman, Louisville.

To *Chicago*, Ill., County Hospital for a course of instruction in military roentgenology, Lieut. Alfred T. Eide, Chicago.

To *Detroit*, Mich., for duty with Base Hospital No. 36, Lieut. F. L. Stone, Chicago.

To *Fort Benjamin Harrison*, for instruction in tuberculosis examination, Lieut. Clarence N. Cheadle, Rockford.

To home, from duty at Camp MacArthur and return to the inactive list of the Medical Reserve Corps, Capt. Charles F. Sanborn, Chicago.

Honorably discharged on account of being physically disqualified for active service, Capt. Homer H. Thomas, Chicago.

INDIANA

To *Camp Beauregard*, Alexandria, La., from Fort Oglethorpe, 39th Division, for duty, Lieut. David B. Davis, Thorntown.

To *Camp Funston*, from Medical Officers Training Camp, Fort Riley, for duty, Capt. George W. Newell, Peru; Lieuts. Frederick S. Deem, Solsberry; T. P. Caplinger, Wallace.

To *Camp Grant*, Rockford, Ill., for duty, Capt. Daniel A. Campbell, Boonville; Lieuts. Walter W. Wright, Edinburg; Hubert P. Butts, Pierceville.

To *Camp Logan*, Tex., for duty, Lieut. W. D. Calvin, Ft. Wayne.

To *Camp Mille*, Garden City, N. Y., with the field laboratory 42d Division, Capt. H. C. Knapp, Huntingburg.

To *Camp Taylor*, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieuts. Samuel R. Laub-scher, Evansville; Edgar N. Mendenhall, Fort Wayne; Claude H. White, Monrovia.

To *Fairfield*, O., for duty, Lieut. E. D. Jewett, St. Paul.

To *Fort Benjamin Harrison* with Base Hospital No. 32, Lieuts. E. Funkhouser, Indianapolis; for duty, L. T. Cox, Napoleon.

To *Fort Oglethorpe* for instruction, Lieuts. Brose S. Horne, Gas City; Harry G. Erwin, Hometown; Bernard J. Larkin, Indianapolis; John E. Kelly, National Military Home; John G. Ross, Portland; Melcherd H. Kutch, Terre Haute.

To Fort Ontario, N. Y., duty with Field Hospital and Ambulance Cos., Nos. 28 and 30, Lieut. A. E. Mozingo, Tipton.

To Fort Riley, for duty, Lieut. Walter F. Hickman, Indianapolis.

To Newark, N. J., for duty, Lieut. G. Williams, Crawfordsville.

IOWA

To Camp Bowie, Fort Worth, Tex., from Fort Riley, and report to commanding general 36th Division, for duty, Capt. George G. Skinner, Cedar Rapids; Lieuts. Clifford L. Bartlett, Clinton; Harry L. Bridgman, Columbia; John R. Christensen, Eagle Grove; William F. Brown, Keokuk; J. Willard Caldwell, Steamboat Rock.

To Camp Cody, Deming, N. M., from Ft. Riley, for duty, Lieut. Paul F. Guernsey, Bloomfield.

To Camp Dodge, Des Moines, Ia., for duty as Chief of the Surgical Service, Major Charles E. Ruth, Des Moines.

To Camp Funston, from Medical Officers' Training Camp, Fort Riley, for duty, Capt. Arthur A. Pace, Toledo; Fordyce H. McCabe, Wellman; for duty, Lieut. Clarence H. Kinneman, Keokuk.

To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Lieut. Aaron C. Conaway, Marshalltown.

To Camp Greenleaf, Fort Oglethorpe, Ga., for duty, Lieut. A. E. Acker, Ft. Dodge.

To Fort Dodge, Des Moines, Ia., 188th Division, for duty as member of board of medical officers for examination for tuberculosis, Capt. John H. Peck, Des Moines.

To Fort Leavenworth, Kan., for duty, Lieut. C. C. Cady, Harris.

To Fort Oglethorpe for instruction, Lieuts. Harry C. Nichols, Carson; Ira J. Gibson, Fontanelli; Thomas R. Gittens, Iowa City.

To Rockefeller Institute, New York, N. Y., for instruction in laboratory work, Capt. Guthrie McConnell, Waterloo.

To St. Elizabeth Hospital, Washington, D. C., from Phipps Clinic, Baltimore, Md., for course of study in his specialty, Capt. Richard G. Eaton, Cherokee.

To Washington, D. C., Aviation Section, Signal Corps, United States Army for duty, Capt. Eugene R. Lewis, Dubuque.

KANSAS

To Camp Beauregard, Alexandria, La., from Camp Lewis, American Lake, Wash., Lieut. Charles W. Cole, Norton.

To Camp Bowie, Fort Worth, Tex., from Ft. Riley and report to commanding general 36th Division for duty, Lieut. Robert E. Eagan, Spring Hill.

To Camp Funston, from Medical Officers' Training Camp, Fort Riley, for duty, Lieuts. Milton O. Nyberg, Ashland; Frederick R. Hickey, Chanute; Tarlton A. Hood, Garnett; John E. Hammer, Hardtner; Walter N. Mundell, Hutchinson; Fred E. Harvey, Minneapolis; Hugh B. Hawthorne, Palmer; Charles S. Adams, St. John; Henry S. Dreher, Waldo; Walton L. Mitchell, George K. Purves, Wichita.

To Camp Greene, Charlotte, N. C., from Fort Oglethorpe, for duty as member of board of medical officers for examination for tuberculosis, Lieut. Jacob H. Haldeman, Paola.

To Camp Lewis, American Lake, Wash., for duty, Lieut. Rinaldo E. Baker, Belle Plain.

To Camp Pike, Little Rock, Ark., for duty with Ambulance Company No. 44, Lieut. A. M. Dawson, Topeka.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison for duty in connection with sanitary train work, Lieut. Clyde M. Zink, Wellington.

To Fort Des Moines, Ia., for instruction, Lieut. Frank O'H. Miller, Wichita.

To Fort Leavenworth, for duty, Lieut. F. D. Kennedy, Norton.

To Fort Logan, Colo., with 1st Colo. Inf. Lieut. E. G. Brown, Topeka.

To Fort Oglethorpe for instruction, Capt. John F. Rudolph, Belle Plaine.

To Fort Riley for duty, Lieut. John D. Riddell, Salina.

KENTUCKY

To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Lieut. George E. Aubrey, Kevil.

To Camp Hancock, Augusta, Ga., for duty, Lieut. S. G. Smith, Greenup.

To Camp Meade, Md., for duty, Lieut. S. Keffer, Ashland.

To Camp Shelby, Miss., for duty, Capt. J. Hancock, Louisville.

To Fort Des Moines, Ia., for instruction, Lieuts. Patterson T. Frazer, Jr., Cadiz; Walter S. Adams, Robert L. Oliver, Louisville; Royal W. Grubbs, Paducah.

To Fort Oglethorpe for instruction, Capt. Horace Luten, Fulton; Lieuts. Mark D. Gundrum, Covington; John R. Shacklette, Jefferson-town; Hubert R. John, Lamar W. Neblett, Harry L. Pelle, Louis C. Rudell, Louisville; Timothy T. Gibson, Middleboro, Millard D. Hoskins, Varilla.

To Fort Ontario, N. Y., duty with Field Hospital and Ambulance Cos., Nos. 28 and 30, Lieut. S. H. Martin, Covington.

To Macon, Ga., 31st Division, National Guard, Capt. E. Rau, Bowling Green.

To Rockefeller Institute, New York, N. Y., for instruction, Major Arthur T. McCormack, Bowling Green.

To his home and return to the inactive list of the Medical Reserve Corps, Lieut. Arthur C. Henthorn, Garrison.

LOUISIANA

To Atlanta, Ga., for duty, Capt. C. P. Brown, New Orleans.

To Camp Beauregard, Alexandria, Ia., for duty as chief of the medical service, Majors J. B. Guthrie, New Orleans, with 39th Division, for duty as a member of tuberculosis examining board, Whyte G. Owen, White Castle.

To Fort Des Moines, Ia., for instruction, Lieut. Jamison C. Mills, Shreveport.

To Fort Oglethorpe for instruction, Capt. James C. Burdett, Pelican.

MAINE

To Boston, Mass., for duty with 26th Division, Lieut. F. L. Gregory, Caribou.

To Camp Devens, Ayer, Mass., for duty as orthopedic surgeon, Major W. C. Peters, Bangor.

To Camp Grant, Rockford, Ill., for duty from Fort Benjamin Harrison, Capt. Philip W. Davis, Portland; Lieut. Ralph W. Wakefield, Bar Harbour.

To Fort Logan, Ark., for duty, Lieut. A. Woodcock, Bangor.

To Fort Monroe, Va., for duty, Lieut. Herbert L. Williams, Auburn.

To Portland, Me., physical examining unit, Av. Sec. S. R. C., Lieut. C. D. Gray, Portland.

To Walter Reed General Hospital, Washington, D. C., from Boston, Mass., for instruction in tuberculosis examinations, Capt. Nelson E. Nichols, Portland.

MARYLAND

To Camp Meade, Annapolis Jct., Md., for duty, Capt. Charles H. Conley, Frederic; Lieut. A. W. Reier, Baltimore.

To Deming, N. M. Camp Cody, as assistant to the care of cardiovascular cases, Capt. H. R. Carter, Baltimore.

To Fort Oglethorpe for instruction, Lieuts. W. W. Anderson, Everett LeC. Cook, Baltimore; George W. Bishop, Govans.

To Fort Riley for duty, Capt. Albert W. Metcalf, Jr., Fort Washington.

To Neurological School, University of Pennsylvania, Philadelphia, for four weeks on intensive training in brain surgery, Major F. Martini, Baltimore.

To New York, N. Y. Rockefeller Institute, Major G. A. Stewart, Baltimore.

To St. Elizabeth Hospital, Washington, D. C., for a course of study in his specialty, Capt. Daniel D. V. Stuart, Jr., Baltimore.

To return to inactive list of Medical Reserve Corps from School of Roentgenology, Johns Hopkins Hospital, Baltimore, Lieut. John Evans, Baltimore.

Honorably discharged, Lieut. Harry H. Johnson, Baltimore.

MASSACHUSETTS

To Camp Devens, Ayer, Mass., for duty as chief of the medical service, Major Joseph H. Pratt, for duty as Adjutant of the Base Hospital, Capt. Arthur H. Crosbie, for duty as assistant to the Chief of the Surgical Service, Lieut. John J. Stack, Boston.

To Camp Grant, Rockford, Ill., for duty from Fort Benjamin Harrison, Capt. William E. Hamlin, Waltham; Lieuts. Clarence E. Burt, New Bedford; Johnston L. Chereskin, Springfield.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieuts. Charles J. Carden, Haverhill; Edward S. Ward, North Attleboro; William E. Denning, Worcester.

To Fort Leavenworth for the purpose of making examinations in his specialty, Lieut. Ralph M. Chambers, Westboro.

To Fort Oglethorpe for instruction, Lieuts. William F. MacKnight, Fall River; Leighton P. Johnson, Norwood.

To Garden City, N. Y., with 42d Division, from Boston 26th Division, Lieut. W. E. Baxter, Topsfield.

To Fort Oglethorpe for instruction, Lieut. Irving W. Frain, Waltham. To Fort Ontario, N. Y., for duty with Field Hospital No. 28, Capt. Dana W. Drury, Boston.

To Neurological School, University of Pennsylvania, Philadelphia, for duty, Lieut. William F. Wood, Boston.

To report in person to Major Elijah H. Siter, M. R. C., 1818 S. Rittenhouse Square, Philadelphia, Pa., for examination to determine his physical qualifications for duty, Lieut. Walter D. Berry, South Weymouth.

Honorably discharged from duty at Camp Devens, Ayer, Mass., Capt. James H. Wright, Boston.

MICHIGAN

To Camp Custer, Mich., for duty, Lieuts. A. F. Jennings, Detroit; R. C. Main, Marquette.

To Camp Dodge, Des Moines, Ia., for duty, with Ambulance Co. No. 31, Lieut. A. V. Murtha, Flint.

To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Capt. Willard H. Hutchings, Detroit; William W. Arscott, Rogers; Lieuts. Clarence A. Berge, Ann Arbor; George W. Peart, Burt; Lannes I. Condit, Detroit; Raymond M. Schulte, Dollar Bay; George R. Goering, Flint; Louis E. Devendorf, Grandville; Robert H. Carmichael, Hamtramck; Henry A. Kling, Montague.

To Camp Greene, N. C., for duty, Lieut. W. A. DeFoe, Saginaw.

To Camp Lee, Va., for duty, Capt. D. E. MacPhail, Wakefield.

To Camp Sheridan, Ala., Capt. R. A. C. Wollenberg, Detroit.

To Camp Sherman, Chillicothe, O., for duty, Lieut. E. R. Scarborough, Ann Arbor.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison for duty in connection with sanitary train work, Lieuts. Edwin C. Hanzhorn, Ann Arbor; Lieut. Burns R. Eastman, Muskegon.

To Camp Wadsworth, Spartanburg, S. C., to duty in Sanitary Division, Lieut. John M. Carter, Detroit.

To Cornell Medical College, New York, N. Y., for instruction in military roentgenology, Lieut. Theodore Kolvoord, Battle Creek.

To Detroit, Mich., Base Hospital No. 36, for duty, Major H. G. Berry, Mt. Clemens; Capt. J. Sill, Onaway; Lieuts. G. P. Raynale, Birmingham; A. E. Harris, R. A. Shankwiler, E. Smith, Jr., Detroit; G. P. Sackrider, Owosso.

To Fort Oglethorpe, for instruction, Lieuts. Earl R. Harris, Detroit; Jesse O. Parker, Owosso.

To Fort Ontario, N. Y., for duty with Field Hospital and Ambulance Cos. Nos. 28 and 30, Lieuts. G. M. Lochner, Adrian; R. E. Dawson, Blanchard; R. H. Bookmyer, Detroit; R. R. McCrumb, Lansing.

To Fort Snelling, Minn., for duty, Lieut. O. M. Randall, Detroit.
To Garden City, N. Y., for duty, Lieut. C. F. Kuhn, Detroit.
To Spartanburg, S. C., 27th Division, N. G., Lieut. J. M. Carter, Detroit.

MINNESOTA

To Camp Bowie, Fort Worth, Tex., from Fort Riley, and report to commanding general 36th Division, for duty, Capt. Chester M. Clark, Duluth; Lieuts. John T. Rose, Lakefield; Harry E. Canfield, Willmar.
To Camp Cody, Deming, N. M., from Fort Riley, for duty, Lieut. Roderick F. McHugh, Coleraine.
To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Lieut. Ward Akester, Marshall.
To Dallas, Tex., for duty, Lieut. J. C. Wilkinson, Red Lake Falls.
To Fort Oglethorpe, for instruction, Lieuts. Solomon F. Rudolf, Albert Lea; Jesse E. Douglass, Thief River Falls; as instructor in gas defense, B. V. Bates, Wheaton.
To Fort Snelling, Minn., for duty, Capt. J. A. Hielscher, Mankato; Lieuts. T. F. Rodwell, White Earth; E. H. Lutz, St. Paul.

MISSISSIPPI

To Camp Shelby, Miss., for duty, Capt. J. R. Tackett, Meridian.
To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieut. Roy C. Elmore, Durant.
To Fort Des Moines, Iowa, for instruction, Lieut. David Rodgers, Laurel.
To Hattiesburg, Miss., Camp Shelby with the division of orolaryngology section of surgery of the head, Lieut. M. I. Brewer, Jackson.
To Jefferson Barracks, Mo., for duty, Lieut. W. G. White, Lewistown.
Par. 116, Special Orders No. 200, War Dept., Aug. 27, 191, as relates to Capt. Ewing F. Howard, are to be modified so as to direct him to proceed to Camp Logan, Houston, Tex.
Honorably discharged, Capt. James V. May, Port Gibson; Lieut. Arthur G. Trotter, Greenwood.

MISSOURI

To Battle Creek, Mich., for duty, Capt. J. T. Cook, St. Louis.
To Camp Bowie, Fort Worth, Tex., from Fort Riley, and report to commanding general 36th Division, for duty, Capt. Isaac W. Powell, Holcomb; Waldemar Ude, St. Louis; Lieuts. William F. Culbertson, Kansas City; Joseph T. Axline, St. Louis.
To Camp Doniphan, Fort Sill, Okla., for instruction in gas defense, Lieut. Ray Mercer, Canton.
To Camp Funston, for duty, from Medical Officers' Training Camp, Fort Riley, Capt. Edward H. Clark, Kansas City; Olive S. McGinnis, Sedalia; Walter F. Fry, St. Louis; Lieuts. Paul R. Williams, Cape Girardeau; William L. Hoagland, John Wilson, Kansas City; Hilen K. Wallace, St. Joseph; Edward E. Heiple, St. Louis; Otto N. Schudde, Sullivan; for duty with base hospital laboratory, from Army Medical School, Lieuts. Edwin H. Schorer, for duty with Red Cross Ambulance Co. No. 24, Elmer J. Billick, Kansas City.
To Camp Mills, Garden City, N. Y., for duty with Colorado Field Hospital No. 4, Capt. A. J. Campbell, Sedalia.
To Fort Benjamin Harrison, for instruction in tuberculosis examinations, Lieut. Robert E. Byrns, Koch.
To Fort Des Moines, Ia., for instruction, Lieuts. George W. Hedgepeth, Kansas City; Charles E. Herriott, St. Louis.
To Fort Oglethorpe, for instruction, Lieuts. James E. James, Robert E. Owen, St. Louis; George D. Wells, Strafford; William S. Culpepper, Willow Springs.
To Fort Snelling, Minn., for duty, Capt. R. Burns, Jr., St. Louis.
To Kansas City, Mo., with 2d Missouri Field Artillery, Capt. C. E. Wilson, Kansas City.
To Rantoul, Ill., Aviation Section, Lieut. J. James, St. Louis.
To Waco, Tex., Camp MacArthur, for duty, Lieut. Stanley S. Burns, St. Louis.
To Home, and the inactive list of the Medical Reserve Corps, Lieut. Clarence Cardwell, Stella

MONTANA

To Camp Lewis, American Lake, Wash., for duty, Major LeR. Southmayd, Great Falls.
To Fort Oglethorpe, for instruction Lieut. Donald K. Woods, Great Falls.
To Fort Snelling, Minn., for duty, Capt. E. Martin Larson, Great Falls.

NEBRASKA

To Camp Bowie, Fort Worth, Tex., from Fort Riley, and report to commanding general 36th Division, for duty, Lieuts. Abel B. George, Beatrice; William H. Crawford, Rushville.
To Camp Funston, from Medical Officers' Training Camp, Fort Riley, for duty, Capt. John Buis, Pender; Lieuts. Edgar Cline, Auburn; William O. Akers, Omaha; Charles P. Brenn, Western.
To Camp Wadsworth, Spartanburg, S. C., from Walter Reed General Hospital, Tacoma Park, D. C., for duty as member of the tuberculosis examining board, Lieut. William N. Anderson, Omaha.
To Fort Benjamin Harrison, for instruction in tuberculosis examination, Lieut. John F. Allen, Omaha.
To Rockefeller Institute, New York, N. Y., for duty, Capt. Judd A. Strong, Kearney; for duty in connection with infectious diseases, at Camp Mills, Lieut. Edward H. McLean, Omaha.

NEW HAMPSHIRE

To Boston, Mass., for instruction in military roentgenology, Lieut. Wallis D. Walker, Portsmouth.
To Fort Benjamin Harrison, as instructor in gas defense, Lieut. J. A. Drew, Rumney.

To Fort Oglethorpe, Ga., for instruction, Lieut. Ralph A. Richardson, Franklin.

To home, and inactive list of the M. R. C., Lieut. Clarence E. Dunbar, Manchester.

NEW JERSEY

To Camp Cody, Deming, N. M., from Fort Riley, for duty, Lieut. Charles S. Brady, Union Hill.
To Camp Dix, Wrightstown, N. J., Lieut. H. E. Dwyer, Passaic.
To Camp Doniphan, 35th Division, for duty, Lieut. H. C. Woolley, Pitman.
To Camp Grant, Rockford, Ill., Lieut. Max H. Stern, Jersey City, N. J.
To Camp Taylor, Louisville, Ky., Lieut. Samuel E. Weiner, Atlantic City, for duty in connection with sanitary train work.
To Camp Wheeler, Ga., for duty, Capt. A. N. Jacob, Sparta.
To Cornell Medical College, New York, for instruction in military roentgenology, Lieut. Irving S. Ingeber, Secaucus, N. J.
To Fort Hamilton, N. Y., for duty, Lieut. Francis K. MacMurrough, Jersey City.
To Fort Oglethorpe, Ga., Lieut. P. Du B. Bunting, Elizabeth, as instructor in gas defense; for instruction, Lieuts. Virgil H. Cornell, Cedar Grove; Percy E. Deckard, Jersey City; Charles H. Conover, Tuckerton, and Frederic H. Thorne, Greystone Park.
To Newark, for duty, Capt. J. MacDonald, Jr., East Orange.
To New York, N. Y., U. S. Army General Hospital No 1, for duty, Lieut. Raymond C. Dodd, Glen Ridge
To Rockford, Ill. Camp Grant, from Salem, N. J., with 86th Division, Capt. C. E. MacDonald, Salem.
To Salem, N. J., for duty, Lieut. J. M. Dix, Cape May.

NEW YORK

To Army Medical School, Lieut. C. B. Reed, New York City; for duty in the bacteriologic laboratory, Lieut. James C. Barker, New York City.
To Atlanta, Ga., and report to commanding officer, department laboratory, for duty, Lieut. Joseph W. Smith, Jr., Brooklyn.
To Camp Cody, N. M., for duty, Capt. L. S. Shoninger, New York City.
To Camp Dix, Wrightstown, N. J., from Camp Mills, Garden City, L. I., for duty as tuberculosis specialist and assistant to the Army Medical Staff, Capt. William J. Hammer, New York City; for duty with Red Cross Ambulance Company No. 34, Lieut. Albert T. Murphy, New York City.
To Camp Gordon, 22d Division National Guard, for duty, Lieut. C. G. Giddings, New York City.
To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Lieuts. Percy H. Finch, Broadalbin; Mortimer H. Linden, Brooklyn; Edward J. Abbott, Fonda; Joseph Leo and Charles A. White, New York City.
To Camp Greene, Charlotte, N. C., 41st Division, to examine for tuberculosis, Lieut. H. Elwyn, New York City.
To Camp Hancock, Augusta, Ga., for duty as chief of the medical service, Major F. J. Barrett, New York City; for duty, Lieut. W. L. Weeden, Clifton Springs.
To Camp McClellan, Ala., for duty, Lieut. E. L. Herget, Brooklyn.
To Camp Meade, Annapolis Junction, Md., 79th Division, for duty, Capt. H. V. DeV. Cornwell, New York City.
To Camp Mills, Garden City, L. I., for the purpose of making examination in his specialty, after completion to return to the inactive list of the Medical Reserve Corps, Capt. John F. W. Meagher, Brooklyn; for duty, Capt. M. J. Karpas and Lieut. Leiser Grimberg, New York City.
To Camp Sevier, Greenville, S. C., and report in person to the commanding general of the camp and to the commanding officer of the base hospital, for duty, Lieut. George F. Gracey, New York City.
To Camp Sherman, Chillicothe, Ohio, with Field Hospital, Major P. Van Ingen, New York City.
To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Capt. Waldo H. Sanford, New York City; Lieuts. Hubert E. Chauvin, Brentwood; Victor A. Tyraskinki, Buffalo; Lowrie W. Blake, Meyer M. Eckert, Joel Grosner, Asa L. Lincoln and Alfred A. Schwartz, New York City; Loyd W. Ballantyne and John J. Corbett, Syracuse; and Harrison Betts, Yonkers.
To Camp Wadsworth, Spartanburg, S. C., for duty, Lieut. A. A. Mendez, Brooklyn; and report to commanding general, 27th Division, Lieut. Edward N. Packard, Saranac Lake.
To Chickamauga, Ga., from duty at Camp Upton, for duty as assistant to the division surgeon, Major Richard Derby, New York City.
To Cornell Medical College, New York City, for a course of instruction in military roentgenology, Capt. Arthur J. Bendick, New York City; for duty as instructor in military roentgenology, Capt. Leopold Jaches, New York City.
To Fairfield, Ohio, for duty, Lieut. G. M. Clowe, Schenectady.
To Fort Ethan Allen, Va., for duty, Capt. J. D. Gulick, Schenectady.
To Fort McPherson, Ga., for duty as chief of the medical service, Lieut. Charles N. B. Camac, New York City.
To Fort Monroe, Va., for duty, Lieut. Edward D. Fraser, Brooklyn.
To Fort Niagara, N. Y., for the purpose of making examinations of the student officers in his specialty, on completion return to present station, Plattsburgh Barracks, N. Y., Major M. S. Gregory, New York City.

To Fort Oglethorpe, for instruction, from United States Army General Hospital No. 1, New York City, Capt. Leo B. Meyer, New York City; from Walter Reed General Hospital, Takoma Park, D. C., Capt. Joseph Muir, New York City; for instruction, Capt. John R. Bradley, Rochester; Lieuts. Ernest L. Wilson, Bolton Landing; Herbert S. DuCret, Carl Kaplan, James F. X. Loomam, Benjamin C. Russum and James E. Weatherford, Brooklyn; Harold W. Culbertson, Buffalo;

Theron B. Bond, Cuba; Cyril Barnert, Ralph L. Cudlipp, Beeckman J. Delatour, Henry R. Kutil, and William A. Somerville, New York City; from Camp Upton, L. I., Lieut. Thomas R. Barry, Ossing; from Syracuse, N. Y., Lieut. Reginald Ducat, New Rochelle.

To Fort Ontario, N. Y., for duty with Field Hospital and Ambulance Companies Nos. 28 and 30, Capt. D. C. Wiggins, Staten Island, and Lieut. T. G. Tousey, Rochester.

To Fort Sheridan, Ill., from Fort Benjamin Harrison Recruit Depot at Columbus Barracks, Ohio, for making a medical survey of the troops in his specialty, and on completion of this duty to return to the inactive list of the M. R. C., Major Joseph Collins, New York City.

To Fort Slocum, N. Y., for duty, Capt. William H. Luckett, New York City; Lieut. J. L. Hemstead, Albany; for duty, from Fort Michie, N. Y., Lieut. Abraham Ginsburg, New York City.

To Garden City, L. I., for duty, Capt. C. S. Cole, New York City; Lieuts. W. G. Berlucchi, Brooklyn; P. J. Barone, Buffalo; A. P. Dellett and W. H. Ordway, New York City.

To Neurological School, University of Pennsylvania, Philadelphia, for four weeks of intensive training in brain surgery, Lieut. F. J. Garlick, Rochester.

To New York, N. Y., U. S. Army General Hospital No. 1, for duty, Capt. James W. Decker, New York City; and report in person to the commanding officer, Lieut. Edwin G. Ramsdell, White Plains.

To Rockefeller Institute, New York City, from Army Medical School, for duty in connection with infectious diseases at Camp Mills, Lieut. Raymond Sanderson, Poughkeepsie.

To U. S. Army General Hospital No. 1, Williams Bridge, N. Y., for duty with Base Hospital No. 3, Lieut. E. Bleier, New York City.

To Vicksburg, Miss., from Fort Oglethorpe, for duty as sanitary inspector of the national military reunion, Major John T. Sprague, St. George.

To Walter Reed General Hospital, Takoma Park, D. C., for instruction in tuberculosis examinations, Lieut. Ephraim Goldman, New York City.

To Washington, D. C., for duty in Surgeon-General's office, Major Raymond P. Sullivan, Brooklyn; for duty with the venereal disease section, division of infectious diseases, from Fort Benjamin Harrison, Major Edward L. Keyes, Forest Hills; in connection with the organization of a mobile surgical unit, Capt. Percy R. Turnure, New York City; as surgeon-in-chief of the special fracture hospital about to be organized, Capt. J. B. Walker, New York City.

To Wrightstown, N. J., for duty, Lieut. T. A. Smith, New York City.

To Yaphank, N. Y., 77th Division, in charge of ophthalmia division, section of surgery of the head, Capt. F. G. Ritchie, New York City.

Honorably discharged, Lieut. Donald E. McKenna, Brooklyn.

Honorably discharged (on account of his inaptitude for the service), Lieut. E. Cochrane, Valatie.

To return to the inactive list of the Medical Reserve Corps, from Fort Riley, Lieut. Daniel J. Hoyt, New York City.

NORTH CAROLINA

To Army Medical School, for duty in the bacteriologic laboratory, Lieut. Hickman Ray, Rocky Mount.

To Camp Greenleaf, Fort Oglethorpe, Ga., for duty, Lieut. N. B. Adams, Murphy.

To Chickamauga Park, Ga., for duty with Field Hospital Section, Sanitary Train, Lieuts. H. Webb, Chapel Hill; for duty with Ambulance Section, Sanitary Corps, Newton G. Wilson, Summerfield.

To Detroit, Mich., for duty with Base Hospital No. 36, Lieut. A. J. Warren, Hillsboro.

To Fort Des Moines, Ia., for instruction, Lieut. Thomas W. Haywood, Raleigh.

To Fort Oglethorpe, for instruction, Major A. G. Brenizer, Jr., Charlotte; Capt. Sylvester D. Craig, Winston-Salem; Lieuts. Frank Lowe Mock, Lexington; Leaman Baggett, Taylor.

Letter of Sept. 11, 1917 (No. 3733), be modified so as to relieve Lieut. Percival R. Bennett, Bryson City, from duty at the Medical Officers' Training Camp, Camp Greenleaf, Fort Oglethorpe, Ga., and to proceed to his home.

NORTH DAKOTA

To Camp Cody, Deming, N. M., 34th Division, for duty, from Fort Riley, Lieut. Wayne P. O'Brien, Egeland.

To Camp Funston, from Medical Officers' Training Camp, Fort Riley, for duty, Lieuts. Judd H. Kirkham, Langdon; William Ginsberg, Omamee.

To Camp Hancock, Augusta, Ga., division of ophthalmology, section of surgery of the head, Lieut. S. G. Larrabee, Mandan.

OHIO

To Belleville, Ill., Signal Corps, Aviation School, Lieut. C. O. Bayless, Dayton.

To Boston, Mass., for a course of instruction in orthopedic work, and on completion of this course to proceed to Post-Graduate Hospital, New York, N. Y., Lieuts. Alvah S. McClain, Lakewood; George B. Booth, Toledo.

To Camp Custer, Mich., for duty, Capt. D. Marine, Cleveland.

To Camp Funston, from Medical Officers' Training Camp, Fort Riley, for duty, Capt. William F. Dager, Lorain.

To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Capt. Frank J. Owry, Cincinnati; Henry M. Osborne, Youngstown; Lieuts. William H. Ambrose, New Petersburg; Kromer C. Ice, Shreve.

To Camp Sevier, S. C., for duty, Lieut. E. R. Shaffer, Columbus.

To Camp Sheridan, Montgomery, Ala., with 10th Regiment, Ohio National Guard, Lieut. W. H. Keenan, Coshocton.

To Camp Sherman, Chillicothe, Ohio, for duty in the division of otolaryngology, section of the head, Lieut. C. H. Weintz, Cincinnati.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Capt. Orr A. Dickson, Jefferson; James B. Dougherty, New Berlin; Lieuts. William O. Phillips, Centerburg; Samuel D. Edelman, Columbus; Charles H. Bailey, East Liverpool; Ralph B. Tate, Harrison; Julius R. Bolles, Holgate; Jacob M. Heyde, Loudonville; Wayne P. Mecklem, Mansfield.

To Camp Travis, Fort Sam Houston, Tex., from Fort Benjamin Harrison, for duty, Lieut. Henry A. Schlink, Cleveland.

To Camp Wadsworth, Spartanburg, S. C., for duty in connection with the division of ophthalmology, section of surgery of the head, Lieut. William M. Hinkle, Degraff.

To Camp Wheeler, Macon, Ga., for duty, Capt. A. M. Painter, Youngstown.

To Fort Benjamin Harrison, for instruction, Lieut. Burt A. Marquard, Dover.

To Fort Meyer, Va., for duty with the 12th Field Artillery, Lieut. Harry R. Carroll, Cincinnati.

To Fort Oglethorpe, for instruction, Lieuts. Sidney C. Venable, Cleveland; Milton J. Longworth, Lima; Ralph H. Zemer, Mt. Vernon; Isaac P. Seiler, Piketon; Vernon W. LeMaster, Sidney; Howard W. Williamson, Toledo; Nolan E. Leake, Van Wert.

To Hattiesburg, Miss., Camp Shelby, 38th Division, as member of a board for special tuberculosis examination, Lieut. C. Mulky, Warrensville.

To St. Elizabeth Hospital, Washington, D. C., for a course of study in their specialty, Capt. William A. Searl, Cuyahoga; Lieut. James A. Belyea, Toledo.

To Walter Reed General Hospital, Washington, D. C., for instruction in tuberculosis examining, Lieut. William H. Horr, Cleveland.

To Washington, D. C., for duty, Capt. R. R. Morrall, Youngstown. Par. 9, Special Orders No. 186, War Dept., Aug. 11, 1917, as relates to Lieut. Benjamin H. Gillespie, Akron, be modified so as to direct him to Fort Oglethorpe for instruction.

To home, from duty at Allentown, Pa., and to the inactive list of the M. R. C., Lieut. Gratian P. Whitwham, Toledo.

OKLAHOMA

To Camp Bowie, Fort Worth, Tex., from Fort Riley, and report to commanding general, 36th Division, for duty, Lieuts. Clarence R. McDonald, Broken Bow; John W. Adams, Chandler.

To Camp Doniphan, Okla., for duty, Lieut. B. T. Bitting, Enid.

To Camp MacArthur, Waco, Tex., for duty, Lieut. William G. Husband, Gould.

To Camp Taylor, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieut. Edgar A. Johnson, Hugo.

To Cornell Medical College, New York, N. Y., for instruction in military roentgenology, Lieuts. John E. Heatley, Carmen; Marion M. Roland, Oklahoma City.

To Fort Des Moines, Ia., for instruction, Lieuts. Robert W. Motley, Muskogee; Jackson Smitherman, Tulsa.

To Fort Oglethorpe, for instruction, Lieuts. George A. Akers, Ada; Thomas M. Boyd, Norman; William O. Baird, Oak Hill; Lee R. Wilhite, Oklahoma; James A. Rutledge, Woodville.

To Fort Sill, Okla., for duty, Lieuts. Charles G. Sims, Heaton; L. A. Milne, Lawton.

Letter, Sept. 18, 1917 (4251), as relates to Major Fred H. Clark, El Reno, is revoked.

OREGON

To Camp Lewis, American Lake, Wash., to report in person to commanding general for duty, Lieuts. Frank R. Mount, Oregon City; for duty as assistant to division surgeon, J. G. Strohm, Portland.

To Fort Oglethorpe, for instruction, Lieuts. Leonard H. Vincent, Merlin; William C. Munly, Portland.

PENNSYLVANIA

To Annapolis Junction, Md., for duty, Lieuts. I. H. Shelly, Ambler, and Jackson S. Lawrence, Philadelphia.

To Anniston, Ala., 29th Division, as member of a board for special examination of troops for tuberculosis, Lieut. H. O. Mateer, Pittsburgh.

To Buffalo, N. Y., and Toronto, Canada, investigation and report on the manufacture of artificial limbs, and on completion of this duty to return to his proper station, Major David Silver, Pittsburgh.

To Camp Cody, Deming, N. M., 34th Division, for duty, Lieut. William J. Bailey, Connellsville.

To Camp Dix, Wrightstown, N. J., 78th Division, for duty as assistant to the division surgeon, Major George M. Piersol, Philadelphia; for duty in the cantonment laboratory, Lieut. Charles W. Luders, Cynwyd; from Fort Slocum, N. Y., for duty, Lieut. John A. Roddy, Jr., Philadelphia.

To Camp Funston, Fort Riley, Kan., from Walter Reed General Hospital, Tacoma Park, D. C., for duty as tuberculosis specialist and assistant to the Army Medical Staff, Lieut. Richard Bew, Gettysburg.

To Camp Grant, Rockford, Ill., for duty, from Fort Benjamin Harrison, Capt. Lewis R. Tryon, Centerport, and Lieut. Edgar H. Fought, Philadelphia.

To Camp Greene, Charlotte, N. C., from Fort Oglethorpe, for duty as member of board of medical officers for examination for tuberculosis, Lieut. James M. McNall, Wilkinsburg.

To Camp Jackson, Columbia, S. C., for duty, Lieuts. E. T. Davies, Old Forge; W. Van Korb, Philadelphia; and P. H. Gerhardt, Reading.

To Camp Pike, Little Rock, Ark., 87th Division, from Fort Oglethorpe, for duty as assistant to the division surgeon, Lieut. Russell R. Jones, Lansford.

To Camp Sevier, Greenville, S. C., and report in person to the commanding general of the camp and the commanding officer of the base hospital for duty, Major G. M. Coates, Philadelphia, Pa.; from Walter Reed General Hospital, Tacoma Park, D. C., for duty as a member of the tuberculosis examining board, Lieut. Norman R. Graham, Shanksburg.

To *Camp Sherman*, Chillicothe, Ohio, 63d Division, as tuberculosis specialist and assistant to the Army Medical Staff, Capt. S. M. Rinehart, Pittsburg; 83d Division, for duty, Lieut. L. F. Wilson, New Kensington.

To *Camp Taylor*, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Capt. Joseph D. Farrar, Philadelphia.

To *Camp Wadsworth*, S. C., in charge of the division of otolaryngology, section of surgery of the head, Lieut. W. P. Barndollar, Pittsburgh.

To *Chickamauga Park*, Ga., for duty with headquarters Military Police, from Fort Oglethorpe, Lieut. Hugh M. Shannon, Philadelphia.

To *Fort Des Moines*, Ia., for instruction, Lieut. Preston M. Edwards, Philadelphia.

To *Fort McPherson*, Ga., from Camp Jackson, S. C., for duty as Chief of the Surgical Service, Capt. William W. Babcock, Philadelphia.

To *Fort Oglethorpe* for instruction, Capt. David Dale, Bellefonte; Lieuts. John E. Struthers, Danville; Marshall G. Rumbaugh, Kingston; Samuel B. Lyons, Pittsburgh; Alfred L. Rhoads, Scranton; Francis E. Donnelly, Wilkes-Barre; as instructor in gas defense, Lieut. G. Smith, York.

To *Fort Thomas*, Ky., for duty, Lieut. E. L. Dickey, Oil City.

To *Greenville*, S. C., for duty as assistant in the care of cardiovascular cases, Lieut. Truman S. Schnabel, Philadelphia.

To *Middletown*, Pa., from Fort Oglethorpe, 113th Aero Supply Squadron, Lieut. William P. McIntosh, Philadelphia.

To *New York*, N. Y., U. S. Army General Hospital No. 1, for duty, Lieut. J. J. Caffrey, Philadelphia; with the additional personnel of Base Hospital No. 2, Lieut. T. W. Cook, Osterburg.

To *Philadelphia*, Pa., for the purpose of compiling a hand book in ophthalmology, and on completion of this duty to proceed to Washington, D. C., for duty in the division of ophthalmology, section of surgery of the head, Major George E. de Schweinitz, Philadelphia.

To *St. Elizabeth's Hospital*, Washington, D. C., for a course in instruction in his specialty, Lieut. Emory L. Dravo, Warren; from Fort Ethan Allen, Vermont, for a course of study in his specialty, Lieut. E. Leslie, Pittsburgh.

To *Syracuse*, N. Y., Reorganization Camp, from Camp Robinson, Sparta, Wis., for the purpose of examining troops in his specialty, Lieut. Ralph L. Hill, Woodville.

To *Washington*, D. C., for duty, Major C. A. E. Codman, Philadelphia.

To *Wrightstown*, N. J., for duty, 78th Div., Lieut. C. A. O'Reilly, Philadelphia.

To *Yaphank*, N. Y., 77th Div., N. G., for duty, Lieut. J. F. Herbert, Philadelphia.

Par. 260, Special Orders No. 203, War Dept., Aug. 31, 1917, be modified to read for duty at the Base Hospital, Fort Oglethorpe, Lieut. Joseph M. Kenworthy, Philadelphia.

To his home from duty at Fort Niagara, N. Y., and return to the inactive list of the Medical Reserve Corps, Lieut. Augustus A. Eshner, Philadelphia.

To his home from Camp Meade, Md., on account of being physically disqualified for active service, Lieut. Clarence W. Judd, Philadelphia.

PORTO RICO

To *Fort Oglethorpe*, for instruction, Lieut. William R. Balbreath, San Juan.

RHODE ISLAND

To *Camp Beauregard*, La., for duty, Capt. R. S. Wilcox, Providence.

To *Camp Kearny*, Calif., for duty, Lieut. C. R. Doten, Providence.

To home, from duty at Fort Benjamin Harrison, on account of being physically disqualified, Lieut. Michael H. Scanlon, Westerly.

SOUTH CAROLINA

To *Camp Greene*, Charlotte, N. C., 41st Div., National Guard, in connection with venereal diseases, Lieut. C. F. Ross, Anderson.

To *Camp Greenleaf*, Fort Oglethorpe, Ga., for duty, Lieut. A. T. Baird, Darlington.

To *Camp Jackson*, Columbia, S. C., for duty, Lieuts. E. W. Barron, Manning; J. H. Pratt, Ninety Six.

SOUTH DAKOTA

To *Camp Bowie*, Fort Worth, Texas, from Fort Riley, and report to Commanding General, 36th Div., for duty, Lieut. Glenn V. Sigler, Highmore.

To *Camp Cody*, Deming, N. M., from Fort Riley, for duty, Lieut. Frederick O. Kaps, Britton.

TENNESSEE

To *Camp Taylor*, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieut. Charles H. Davis, Knoxville.

To *Fort Des Moines*, Iowa, for instruction, Lieut. Benjamin F. Davis, Columbia.

To *Fort Oglethorpe*, for instruction, Capt. James Brew, Jr., Nashville; Lieuts. George E. Wilson, Cardiff; Guy McL. Reeser, Church Hill; John S. Miller, Collierville; Russell B. Wilson, Gates; Claude A. Frazier, Knoxville; James S. Skaggs, Maynardville; Charles C. King, Arthur R. Porter, Jr., Memphis; Emmett E. Brown, Nashville; Joe B. Wright, Pulaski.

To *Fort Thomas*, Ky., for duty, Lieut. T. B. Collins, Trezevant.

To *Fort Worth*, Texas, Signal Corps Aviation School, now being established, Lieut. S. W. Williams, Gassaway.

To *Provisional Base Hospital*, from Fort Oglethorpe, for duty, Capt. William G. Somerville, Memphis.

Par. 147, Special Orders No. 192, War Dept., Aug. 19, 1917, relating to Capt. William G. Somerville, Memphis, revoked.

TEXAS

To *Camp Bowie*, Fort Worth Texas, for duty, Lieut. C. P. Schenck, Waco.

To *Camp Funston*, from Medical Officers' Training Camp, Fort Riley, for duty, Lieut. Robert T. Jones, Bogata.

To *Camp Greenleaf*, Fort Oglethorpe, Ga., for duty, Capt. J. V. Blake, Floresville.

To *Camp MacArthur*, Waco, Texas, for duty, Lieuts. John Norris, Dallas; Harold E. Nicholson, Mobeetie.

To *Camp Sherman*, Chillicothe, Ohio, for duty as commanding officer of the Base Hospital, Major Edward G. Huber, Fort Bliss.

To *Fort Des Moines*, Iowa, for instruction, Lieut. Thomas N. Harris, Pilot Point.

To *Fort Leavenworth*, Kans., for temporary duty in Department Laboratory, Lieut. Sullivan R. Jones, Waco.

To *Fort Oglethorpe*, for instruction, Lieuts. Elmore B. Gilbert, Gorman; William J. Kesterson, Groom; Karl Chambers, Jasper; John M. Venable, San Antonio; Thomas R. Sealy, Santa Anna; William E. Burk, Sweet Water; Ebner H. Inmon, Lewis E. Turrentine, Tahoka; from Southern Department, Capt. Claude W. Cummings, El Paso; Lieut. Cranz Nichols, Maxwell.

To report by wire to the Commanding General, Southern Department, for assignment to duty, Lieut. Edwin T. Morris, Delvalle.

To *San Antonio*, Texas, for duty, Lieut. D. S. Edwards, San Antonio.

UTAH

To *Camp Beauregard*, Alexandria, La., from Fort Douglas, Utah, for duty as assistant in the care of cardiovascular cases, Lieut. Francis C. Tyng, Salt Lake City.

To *Fort Douglas*, Utah, for duty, Lieut. G. W. Clarke, Springville.

To *Fort Logan*, Colo., with 1st Colorado Inf., Lieut. B. W. Black, Grantville, Utah.

To *Fort Oglethorpe*, for instruction, Lieut. George E. McBride, Magna.

VERMONT

To *Camp Taylor*, Louisville, Ky., from Fort Benjamin Harrison, for duty in connection with sanitary train work, Lieut. Charles E. Libbey, Danville.

To *Fort Ethan Allen*, Vt., for duty, Lieut. G. A. Russell, Arlington.

To *Fort Ontario*, N. Y., duty with Field Hospital and Ambulance Companies Nos. 28 and 30, Lieut. V. P. Genge, Newport.

VIRGINIA

To *Camp Jackson*, Columbia, S. C., for duty, Lieut. S. W. Woodhouse, Virginia Beach.

To *Camp Lee*, Petersburg, Va., for duty, Capt. S. B. Moore, Alexandria; E. M. Parker, Emporia; J. W. Hope, Hampton; Lieuts. C. M. Easter, Chincoteague Island; P. C. Riley, Markham; I. H. Goldman, Richmond.

To *Camp Mills*, N. Y., with First Oregon Field Hospital, Lieut. J. N. Elder, Hopewell.

To *Chickamauga Park*, Ga., Ambulance Section, Sanitary Corps, from Fort Oglethorpe for duty, Lieut. James C. Motley, Abingdon.

To *Fort Des Moines*, Iowa, for instruction, Lieut. William A. Harris, Spotsylvania.

To *Fort Oglethorpe*, for duty, Lieuts. Maurice A. Selinger, City Point; for instruction, James B. Anderson, Richmond.

To *Newport News*, Va., for duty with Three Hundred and First Regiment, Lieuts. Hubert L. Wyatt, City Point; with Three Hundred and Second Regiment, W. C. Caudill, Pearisburg; J. T. Shelburne, Petersburg.

To home, from duty at Rockefeller Institute, New York, Capt. Lomax Gwathmey, Norfolk.

Letter, Aug. 6, 1917, No. 1760, War Department, as relates to Lieut. James B. Anderson, Richmond, is revoked.

WASHINGTON

To *Camp Custer*, Battle Creek, Mich., for duty, Lieut. J. M. Henderson, Seattle.

To *Camp Lewis*, American Lake, Wash., for duty, Capt. William G. Cassels, Lieuts. A. H. Peacock, Seattle; Frederick T. Hyde, Port Angeles.

To *Fort Oglethorpe* from Fort Lawton, Wash., for instruction, Lieut. Charles R. Glenn, Kelso.

To *Fort Ontario*, N. Y., duty with Field Hospital and Ambulance Companies Nos. 28 and 30, Lieut. R. C. Hill, Irondale.

To *Lake Charles*, La., Aviation School, now being established, Lieut. R. A. Allen, Tacoma.

To *Los Angeles*, Calif., for duty, Lieuts. Roy C. Baumgarten, Seattle; for course of instruction in military roentgenology, Burton E. Paul, Tacoma.

WEST VIRGINIA

To *Camp Sherman*, Chillicothe, Ohio, for duty, from Camp Lee, Petersburg, Va., Capt. Rawley H. Powell, Elkins.

To *Chickamauga Park*, Ga., for duty with Headquarters Military Police, from Fort Oglethorpe, Capt. John S. Shaffer, Cannelton.

To *Fort Ethan Allen*, Vt., for duty, Lieut. H. D. Law, Conings.

To *Fort Oglethorpe*, from Army Medical School, for instruction, Lieut. William Nelson, Hansford.

To *Fort Ontario*, N. Y., duty with Field Hospital and Ambulance Companies Nos. 28 and 30, Lieut. L. Huth, Follansbee.

To *Newport News*, Va., with Three Hundred and Second Regiment, Lieut. A. C. Lambert, S. Charlestown.

A leave of absence from duty at Charleston, of ten days, commencing Oct. 18, 1917, granted to Major John E. Cannaday, Charleston.

WISCONSIN

To *Camp Bowie*, Fort Worth, Texas, from Fort Riley, and report to Commanding General Thirty-sixth Division for duty, Lieuts. Sylvester J. Driesel, Barton; Henry B. Beeson, Cornell; Frank O. Bruckhorst, Kewaunee; Edgar B. Elvis, Medford; John C. Johnson, Ogdensburg; Herbert T. Barnes, Pewaukee; Edgar W. Bedford, Sheboygan; George L. Converse, Webster.

To *Camp Doty*, Deming, N. M., from Fort Riley, for duty, Lieuts. Marlin C. Crane, Osseo; Harry A. Keenan, Stoughton; Neal S. Simons, Taylor.

To *Camp Funston*, from Medical Officers' Training Camp, Fort Riley, for duty, Capt. Clarendon J. Combs, Oshkosh; Frederick C. Huff, Sturgeon Bay; Lieuts. Albert A. Axley, Butternut; Frank J. Hager, Denmark; Royal C. Rodecker, Holcombe; Harry J. Burne, Hudson.

To *Camp Jackson*, Columbia, S. C., for duty, Major N. M. Black, Milwaukee.

To *Camp Sheridan*, Montgomery, Ala., from Fort Benjamin Harrison, for duty as member of tuberculosis examining board, Lieuts. Harry C. Mix, Green Bay; Michael R. Wilkinson, Oconomowoc.

To *Camp Travis*, Fort Sam Houston, Texas, from Fort Benjamin Harrison, Ninetieth Division, for duty as tuberculosis specialist and assistant to the Army Medical Staff, Lieut. Herman H. Bassler, Oshkosh.

To *Fort Benjamin Harrison*, for instruction in tuberculosis examination, Lieut. Adelard E. Gendron, River Falls.

To *Fort Oglethorpe*, for instruction, Lieuts. Cornelius J. Corcoran, Harry B. Podlasky, Milwaukee; Charles A. Dawson, River Falls; Orlando P. Schoofs, Wauwatosa.

WYOMING

To *Fort Ontario*, N. Y., duty with Field Hospital and Ambulance Companies Nos. 28 and 30, Lieut. W. S. Bennett, Cody.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Sherman T. White, Redding, county physician of Shasta County, sustained a fracture of the patella when his automobile collided with another machine, September 17.—Drs. Clayton G. Stadfield and Byron Stuckey, assistant surgeons at the Receiving Hospital, Los Angeles, have resigned to enter military service, and have been succeeded by Drs. Elmer L. Biggs and John W. Crossan.—Dr. Karl L. Dieterle has been appointed surgeon at the Receiving Hospital, Los Angeles.

Medical Research Society Organized.—A clinical society to further medical and surgical research was organized in the San Francisco Hospital, September 26, and the following officers were elected: president, Dr. Robert A. Jones; vice president, Dr. H. J. Pruett; secretary, Dr. Maurice Heppner, and treasurer, Dr. Robert A. Powers.

Tuberculosis Society Moves.—The Los Angeles Society for the Study and Prevention of Tuberculosis has moved its office from Normal Hill Center to 538 Chamber of Commerce Building.

Faculty Members in Active Service.—Among the members of the faculty of the University of California Medical School who have been called into active service in the Medical Officers Reserve Corps are Dr. Herbert C. Moffitt, San Francisco, professor of medicine and dean of the medical school, who has been commissioned major, and stationed at the Army Hospital at San Antonio, Texas; Dr. Eugene S. Kilgore, who has been commissioned major, and is stationed at the Presidio in San Francisco; Dr. Alanson Weeks, instructor in surgery, commissioned major; Dr. Howard E. Ruggles, assistant clinical professor of roentgenology, and Dr. Jule B. Frankenhimer, instructor in medicine, commissioned captains; and Drs. Elbridge J. Best, Frank P. Brendel, Arthur C. Gibson, Charles L. Tranter and Daniel W. Sooy, commissioned first lieutenants.

COLORADO

Personal.—Dr. John L. Schwer, Pueblo, is ill with typhoid fever in St. Mary's Hospital.—Dr. William E. Stemen, Denver, has been appointed chief surgeon of the National Guard, Colorado Springs, succeeding Major William A. Jolly, Boulder, who has been appointed assistant to the chief surgeon, Camp Kearny, Linda Vista, Calif.

State Society Meeting.—The forty-seventh annual meeting of the Colorado State Medical Society was held in Colorado Springs, September 25 to 27, under the presidency of Dr. Alexander C. Magruder, Colorado Springs, and the following officers were elected: president, Dr. Edward Jackson, Denver; vice presidents, Drs. Peter O. Hanford, Colorado Springs;

John H. Bush, Sterling; Byron B. Blotz, Rocky Ford, and Charles Trueblood, Monte Vista; secretary, Dr. Crum Epler, Pueblo (reelected for the third term); treasurer, Dr. William A. Sedwick, Denver; delegate to the American Medical Association, Dr. Lewis H. McKinnie, Colorado Springs, and alternate, Dr. Melville Black, Denver. Estes Park was decided on as the place of the next annual meeting. A resolution was adopted to give financial support, when needed, to the families of all members of the association in war service. One hundred and forty members of the society are at present in the Medical Corps or Medical Reserve Corps of the Army.

DISTRICT OF COLUMBIA

Building Commandeered for Medical Department.—The Premier apartment house, 1718 Eighteenth Street N.W., Washington, is reported to have been commandeered by the United States government for the use of the Medical Department of the Army.

Hospital to Move.—The Washington Eye, Ear, Nose and Throat Hospital will move into its new building at 2517 Pennsylvania Avenue, October 17. The new building is four stories in height, fireproof, and occupies a frontage of 56 feet. The completion of the hospital is largely due to the efforts and contribution of Dr. Oscar Wilkinson.

Medical Society Centennial.—The Medical Society of the District of Columbia will celebrate its one hundredth anniversary, October 17. Exercises will be held in the hall of the National Museum, and a banquet will be given at the Raleigh in the evening. The society, which was organized in 1817, with an initial membership of sixteen, has now more than 600 members.

ILLINOIS

Conference of Charities and Corrections.—The State Conference of Charities and Corrections will be held in Joliet, October 26 to 28.—The Charity Organization Confederation and the State Probation Officers' Association will meet on October 25, and the State Association of County Home superintendents, October 25 and 26, in the same city.

Personal.—Dr. Fred M. F. Meixner has been appointed medical director of the new Peoria Municipal Tuberculosis Sanatorium, and assumed his duties, October 1. The building under construction will be finished about March 1, and in the meantime patients will be cared for in the pavilions now open on the grounds.—Dr. Marguerite G. Squires, Carrollton, has been appointed county physician of Grundy County.—Dr. Hiram J. Smith, assistant superintendent of the Ann State Hospital, has been appointed superintendent of the Illinois Charitable Eye and Ear Infirmary, Chicago, succeeding Dr. James L. O'Connor.

Chicago

Glanders Case Found.—A case of glanders is said to be under treatment and in strict quarantine in St. Luke's Hospital. The disease is presumed to have had its source in the barns of an express company where five horses suffered from the disease.

Provident Hospital in Need.—An urgent appeal to raise \$15,000 has been made by the trustees of the Provident Hospital, which was founded in 1896 for the care of colored sick and injured in Chicago. On account of shortage of funds the free dispensary of the institution has been forced to close its doors.

IOWA

Open-Air School in Sioux City.—The board of supervisors of Woodbury County have approved the establishment of an open-air school on the roof of the new court house, for the accommodation of tuberculous and anemic children.

Personal.—Dr. David W. Reed, Clearfield, suffered a fracture of a rib, September 20, as a result of the overturning of his automobile.—Major David S. Fairchild, Jr., M. C., Iowa N. G., Clinton, has been transferred to the military service of the United States, and has been assigned to duty with the Forty-Second Division.

County Clinics on Tuberculosis.—A. E. Kepford, state lecturer on tuberculosis and director of Red Cross work in Iowa, has planned tuberculosis clinics in every county of the state, to be held by the county medical society. The first clinic was held at Clarion, September 21. With these clinics it is expected to accomplish the stamping out of tuberculosis by early diagnosis, the arousing of the people to the perils of the disease, and the stirring up of interest among the medical profession.

Hospital Items.—The Cottage Hospital, Albia, has been discontinued on account of the difficulty in obtaining help.—Dr. Carl E. Conn, Sioux City, has purchased the Denison Hospital and Sanatorium at a price stated to have been \$7,600.—The John MacDonald Hospital, Monticello, was formally opened to the public, September 6. The hospital is three stories in height, of brick and stone construction, and has the most complete and up-to-date equipment.—The new State Hospital for Epileptics, at Woodward, is completed and in active operation.

KANSAS

Typhoid.—Between fifty and sixty cases of typhoid fever were reported in and around El Dorado during the first two weeks of September. The county health officer urges the boiling of water, the abolition of flies, the covering of food, and the like.

Personal.—Dr. Samuel A. Matthews, professor of physiology and experimental pharmacology in the University of Kansas, Topeka and Lawrence, has accepted the similar chair in the University of Alabama, Mobile.—Dr. Stewart McKee has been appointed city physician of Leavenworth, succeeding Capt. Charles McKee, who is at Fort Riley in the military service.—Dr. Thomas A. O'Connor, Topeka, has been appointed county physician of Shawnee County, to fill the unexpired term of Dr. C. C. Lowe, called to the colors.—Dr. Matthew R. Mitchell, North Topeka, has given up his office and moved to Florida.

MARYLAND

Epidemic of Scarlet Fever.—An epidemic of scarlet fever is prevalent in Federalsburg. Several families are quarantined as a result of the outbreak, and the county health officers are using every precaution to stamp out the disease.

Child Welfare Unit for France.—The child welfare unit to be sent abroad by the American Red Cross, in charge of Dr. J. H. Mason Knox, will leave for France about October 13. Dr. James L. Gamble, assistant in pediatrics at the Harriet Lane Hospital for Children, a part of the Johns Hopkins Hospital, will accompany Dr. Knox.

Typhoid Fever Outbreak.—Typhoid fever has broken out at the Maryland School for Boys, an industrial institution at Loch Raven. At present there are thirteen cases under treatment. The state board of health is conducting an investigation to ascertain the cause of the outbreak and has provided antitoxin to inoculate all the school. The outbreak is thought to be due to a typhoid carrier.

Medical Men Assigned to Regiment.—The men who will form the Medical Corps attached to the 115th (Maryland's Own) Regiment, now stationed at Anniston, Ala., have been selected from the three old regiments and are under the command of Major Frederick H. Vinup. His staff is composed of Capt. William J. Coleman, former superintendent of the University Hospital, Baltimore; Lieuts. Dwight H. Mohr, Roscoe Hannigan, Daniel Woodruff, J. K. Richards and Daniel Hutton. Under their command will be an enlisted personnel of forty-eight men, thirty-three of whom will be selected from the Fifth Regiment and the rest from the First.

Health Department Report.—According to a report made by the health department for September, 147 babies under 2 years of age died in Baltimore from intestinal troubles. Ninety-three babies died in September last year. The increase is said to be due to atmospheric conditions rather than to outbreaks of diseases usually fatal to infants in summer and early autumn. Deaths in the city last month from all causes totaled 869, compared with 750 in 1916; 704 in 1915, and 771 in 1914. Diseases were fatal in the following number of cases: typhoid fever, 15; measles, 4; grip, 2; cancer, 54; tuberculosis, 104; apoplexy, 52; heart disease, 79; bronchitis, 7; pneumonia, 57; Bright's disease, 63; meningitis, 1. There were 1,242 births reported.

MISSOURI

Sanatorium To Be Closed.—Dr. William H. Coon, health director of Kansas City, proposes to close the Leeds Tuberculosis Hospital, concentrating the antituberculosis work in the General Hospital, with a downtown clinic to be established for this work.

Personal.—Major Charles E. Wilson, Kansas City, surgeon of the Second Missouri Field Artillery, and formerly fire department surgeon, was presented with a handsome wrist watch and a pair of field glasses, September 8. The gift came from 375 city firemen.—The Civil Service Board of Kansas

City, August 29, waived the ruling requiring a civil service examination and residence in the city for three years, in the case of Dr. Elliott Washburn, the new manager for the hospital division of the board of health.—The Board of Health of St. Joseph, at its meeting, August 30, released Dr. John L. Cox as surgeon, and appointed Dr. V. R. Wilson his successor.

Honor to Fitzsimmons.—The first meeting of the Jackson County Medical Society after the summer vacation was held in Kansas City, September 18. A military program was given, at which Col. William N. Bispham, M. C., U. S. Army, Fort Riley, Texas; Lindsay S. Milne, director of the ambulance company at the same post, and Capt. W. M. McBride of Camp Funston spoke. Resolutions were adopted on the death of Lieut. William T. Fitzsimmons, Kansas City, the first American officer to be killed in France.—In the United States House of Representatives, Representative Borland of Missouri introduced a resolution ordering the War Department to promote the late Lieutenant Fitzsimmons to a captaincy.

NEW JERSEY

Antituberculosis Clinic Grows.—The clinic of the Middlesex County Anti-Tuberculosis League which is held weekly at the Perth Amboy Hospital and at the rooms of the board of health, New Brunswick, is gradually increasing. The freeholders have recently purchased 208 acres of land near Metuchen on which to erect a county tuberculosis sanatorium.

Personal.—Dr. Louis Shalet has resigned as superintendent of the Montefiore Home and County Sanatorium, Bedford Hills, and will practice in West New York.—Lieut.-Col. William G. Schauffler, Lakewood, chief surgeon of the New Jersey National Guard, has been appointed assistant surgeon at Camp Beauregard, Louisiana.—Dr. William S. Jones, Camden, has been appointed a member of the board of managers of the Glen Gardner Tuberculosis Sanatorium, succeeding Dr. William H. Kinsinger, Camden.

NEBRASKA

Hospital Changes Hands.—The Wesleyan Hospital at University Place, Lincoln, has been purchased by Dr. Elbert J. Latta and other physicians, who assumed charge of the institution, September 1.

Smallpox.—September 21, twenty-four persons in eight Omaha families were reported to be ill with smallpox.—An epidemic of smallpox in Rokeby has caused quarantine of the postoffice in that place.

University of Nebraska Hospital Opened.—The University of Nebraska Hospital, located on the Medical College Campus, Lincoln, was opened for the reception of patients, September 1. The building is four stories in height, and has accommodation for 120 patients.

Furnas County Physicians Meet.—At the meeting of the Furnas County Medical Society, held in Arapahoe, August 5, Dr. Lee W. Rork, Oxford, was elected president, succeeding Dr. Fordyce H. McCabe, and Dr. John K. Muldoon, Arapahoe, was elected secretary, succeeding Dr. James M. Willis, Arapahoe. Both these officers have entered the service of the country.

Personal.—Dr. Roy A. Dodge, Omaha, has been appointed division surgeon for the Missouri Pacific Railroad system.—Dr. Ernest O. Weber, Waco, has been commissioned, by the governor as major, Medical Corps, Neb. N. G., and has been assigned to duty as medical inspector of the new National Reserve Regiment, succeeding Dr. Frank S. Nicholson, St. Paul, retired.

NEW YORK

Assistant Resident Physician Wanted.—A civil service examination for first assistant resident physician in the Iola Sanatorium for the Treatment of Tuberculosis, Monroe County, will be held in the near future; salary \$1,200 a year and maintenance; applicants must be citizens of the United States, licensed physicians of New York state, graduates of an incorporated medical college, at least 21 years of age, and must have been for at least three years' residents of the state. It is desired to secure an appointee who has had experience in the institutional treatment of tuberculosis. Requests for application form should be made to the State Civil Service Commission, Albany, and applications must be filed prior to October 24.

New York City

New York Academy of Medicine.—The Wesley M. Carpenter lecture is to be delivered at the next meeting of

the New York Academy of Medicine, October 18, by Dr. William H. Mayo of Rochester, Minn. His subject will be "The Rôle of the Spleen in the Production of a Number of Obscure Clinical Phenomena."

Flower Hospital to Become Base Hospital Unit.—At a meeting of the Flower Hospital War Relief and its affiliated societies, held on October 5, Dr. Royal S. Copeland, dean of the hospital, announced that application had been made to turn the Flower Hospital into a base hospital unit and that this application would soon be granted. It was voted to increase the appropriation for medical supplies from \$10,000 to \$25,000 and to double the personnel of the hospital.

Red Cross Rally.—The first great Red Cross parade ever held in this country and the largest body of war nurses ever gathered together paraded Fifth Avenue on October 4. The fifty Red Cross chapters represented succeeded in giving one of the most impressive demonstrations of the scope of America's war preparations that New York has witnessed. Among those leading the parade were Major-Gen. William C. Gorgas, Rear Admiral William C. Braisted and Henry P. Davison.

The Poets' Ambulances.—The American Poets' Committee which announced some time ago that it would send 50 ambulances for General Cadorna's army now announces that it proposes to send 100 ambulances. It has already purchased 28 ambulances by cable to be put into the field immediately and has funds for the purchase of 12 more. A unit of \$2,000 purchases one ambulance and a number of individuals have contributed this sum. Ambulances purchased in this way bear the name of the donor, not as a matter of pride but as a reinforcement of Italian valor.

Urge Government Control of Narcotic Drugs.—As a result of the disclosure of the extent of criminal traffic in narcotic drugs in this city the Federal Grand Jury has passed unanimous resolutions asking United States Attorney Caffey to take the matter up with the federal government. These resolutions contain recommendations urging that chemists and internal revenue inspectors be assigned to every plant where the drugs are manufactured; that the product be shipped to government warehouses in zones to be established; that the government should control the price, the quantities shipped to wholesale druggists, jobbers, dealers, retailers and pharmacies, all of whom, and manufacturers as well, should be bonded and licensed, and that the government should control exports and imports. The resolutions request that an adequate bill be prepared for presentation to Congress that will prevent the continuance of conditions such as have been brought to light by the investigations of the internal revenue inspectors in this city.

Free Clinic for Speech Defects.—In view of the fact that many American soldiers are likely to return from the front with their powers of speech impaired either as the result of wounds or of shell shock, the various branches of medicine bearing on the treatment and correction of speech defects have been coordinated in a new institution which has been incorporated under the name of the New York Clinic for Speech Defects. This clinic will be opened at 143 East Thirty-Seventh Street sometime during the month of October, with Dr. Herbert L. Wheeler as president. Among those interested in the project are Dr. Abraham Jacobi, Thomas A. Edison, Drs. John E. MacKenty, Philip D. Kerrison, George M. Parker and James Sounett Greene, who will have charge of the clinic. In addition to treating the speech defects that result from war injuries, defects inherited or acquired will be treated and those having a foreign accent which they wish to overcome will be treated as though the accent were a speech defect. The institution will be supported by private philanthropy.

High Cost of Milk Problem.—Owing to the intimate relation between the cost of milk and child welfare the health department believes that this is a matter in which it should directly concern itself. Inquiries already made and still under way among the families of the poor show that the use of milk has been decidedly restricted because of the increased price. In some places the sales of milk for family use have decreased as much as 20 per cent. The health department attributes a notable increase in the number of deaths from diarrheal disease in children under 1 year of age to this practice. As a result of the facts brought out, Commissioner Emerson has written a letter to Mayor Mitchell suggesting that the city schools, baby health stations, settlement houses, hospitals, dispensaries and police stations be used as central points for the distribution and sale of milk, bread and perhaps other staple articles of food whose cost is excessively high

because of the wastefulness of present methods of distribution. At the request of the health commissioner, the mayor has appointed a committee to elicit all the facts in relation to this matter and to make constructive suggestions.

OREGON

Sanatorium Opened.—The new sanatorium of Dr. Edward A. Pierce, Portland, known as Cedar Crest Farm, is now completed and opened for patients. The building is located near the city limits of Portland, overlooking the Willamette Valley, and is two stories in height, with extensive verandas on both floors.

Personal.—Dr. J. Hunter Wells has returned to Portland and assumed practice after twenty-two years spent in the missions and mines of Corea.—Dr. John H. McVay, Hood River, who sustained serious injuries to his spine a year ago, is reported to be seriously ill in the Hood River Hospital.—Dr. Frank M. Brooks, Portland, has been appointed a member of the state board of health, succeeding Dr. Marius B. Marcellus, who has been called to the colors.—Dr. William H. Dale, Harrisburg, has been appointed a member of the State Medical Board, to succeed Dr. Harry E. Clay, Salem, who has entered the military service.—Dr. Alvin F. Sether, Roseburg, is ill with typhoid fever.

PENNSYLVANIA

Philadelphia

Reception of Dr. Prince.—The Medical Club of Philadelphia will give a reception in honor of Dr. Morton Prince of Boston, October 19, at the Bellevue-Stratford Hotel.

Social Diseases.—At the stated meeting of the College of Physicians and Surgeons, Col. Thomas H. Goodwin made a brief address; Col. Frederick F. Russell, M. C., U. S. Army, presented a paper on "Social Diseases in the Army"; Major William F. Snow, M. C., U. S. Army, a paper on "Social Diseases in the Army as Effected by the Soldier's Environment"; Mr. George W. Braden, a paper on "The Present Site of Social Diseases." Dr. William W. Keen presented to the college the retractor used in the operation on President Grover Cleveland in 1893.

Personals.—Major George E. deSchweinitz, Medical Reserve Corps, has been assigned to active duty at Philadelphia for the purpose of compiling a handbook on ophthalmology for the use of the Surgeon-General of the Army.—Dr. Santos Fernandez, president of the Cuban Academy of Science, and one of the most distinguished eye surgeons of Cuba, was the guest of honor at a luncheon given October 2 by Dr. William Campbell Posey of the Wills Eye Hospital.—Dr. J. Torrance Rugh has been commissioned captain, M. R. C., U. S. Army, and appointed by the Surgeon-General as an instructor in orthopedics at the southern camps.

SOUTH DAKOTA

New Officers.—The annual meeting of the Lake Preston Medical Society was held at Lake Preston, October 3, the president, Dr. E. H. Grove, Arlington, in the chair. Dr. Burtis T. Green, Brookings, was elected president; Dr. Lorenzo N. Grosvenor, Huron, vice president, and Dr. John C. Baker, Ramona, secretary-treasurer.

Work on Sanatorium Commenced.—The state board of charities and corrections, having failed to secure bids for the construction of the addition to Custer Tuberculosis Sanatorium, has undertaken the carrying on of the work itself, and expects to have the most important pavilion ready for use before winter sets in.

WYOMING

Medical Society Meeting.—The Northwest Medical Society held its quarterly meeting in Worland, recently, and elected the following officers: president, Dr. Will V. Gage, Worland; vice president, Dr. Chester E. Harris, Basin, and secretary-treasurer, Dr. W. B. Mauis Powell. The next meeting will be held in Lovell, December 2.

CANADA

Personals.—Prof. John C. McLennan, Ph.D., head of the department of physics, University of Toronto, and member of the Canadian Commission on Chemical Research, is among the first group to receive the honor of the new Order of the British Empire.—The name of Col. Herbert A. Bruce, Toronto, is prominently mentioned in connection with the nomination of federal candidates for parliamentary honors in

the coming Dominion election. Dr. Bruce, who is still in France, may possibly contest the constituency of North Toronto in the Liberal-Conservative interest.

Winnipeg's Vital Statistics.—According to the report of the city assessor of Winnipeg for 1917, as set forth in the *Bulletin* of the health department, there has been a reduction in the population of over 17,000 as compared with 1916. The figures for 1917 are 182,848, and for 1916, 200,000. This decrease has been going on since 1914, and the enlistments for the war and the removal of the floating population are assigned as reasons. This had had an interesting effect on the vital statistics of the city. The births for 1917 were 2,842, as compared with 3,046 for 1916. Though this is a reduction in the actual number of births, there has been an increase in the number of births per thousand, which is accounted for by the fact that the number of mothers in the city has increased. Many families from which the soldier has gone to war have moved into the city from the surrounding country. The marriages in 1917 were 1,158, as compared with 1,482 in 1916. It is said that the marriage rate has undoubtedly decreased among those of marriageable age, but exact figures on this point are not available. It should be based on the number of single men and women of marriageable age. The substitution of families of young children in the place of adults would be expected to have had an unfavorable influence on the mortality rates, but it is noted that for the six months of 1917 the rate was 10.41, as against 11.13 for 1916. The number of deaths from disease of the respiratory system, diarrheal diseases in children under 2 years of age, tuberculosis of all forms and deaths from external causes all decreased. The mortality rate for the acute communicable diseases also shows a slight decrease. Deaths from cancer in persons over 40 show increases.

Hospital News.—An institution for the education and training of blind soldiers is to be established at Halifax, N. S. The organization work will be under the supervision of Sir Frederick Fraser, Halifax, who has been so successful in building up the Halifax School for the Blind.—The summer hotel at Qualicum, Vancouver Island, B. C., has been converted into a convalescent home for returned soldiers. The institution now holds 100 patients.—A few months ago a municipal hospital act was passed in the province of Alberta which provides that the province shall be divided into districts and that hospital boards shall be appointed to provide for the location and purchase of suitable hospital sites; the purchase, acquisition, or erection of suitable buildings, furnishings and equipment. Although the act does not compel a municipality to establish a hospital, every facility and inducement is offered for the establishment of such hospitals. The provisional government will see that money collected for this purpose shall be expended to the best advantage.—Approximately 1,500 patients admitted to the Toronto Military Base Hospital every year are afflicted with venereal diseases; and during the first three months of 1917, 12 per cent. of all patients in the public wards of the Toronto General Hospital gave a positive Wassermann reaction. Twenty-five per cent. of the male admissions to the Toronto Hospital for the Insane are cases of general paresis.—About 1,200 tuberculosis cases among returned soldiers have thus far passed through the hands of the Canadian Hospitals Commission, while over 800 are undergoing treatment.—An advisory committee on tuberculosis has been appointed to assist the Canadian Hospitals Commission. The members of that committee are Capt. John R. Byers, Ste. Agathe, Que.; Dr. Charles D. Parfitt, Gravenhurst, and Dr. Jabez H. Elliott, Toronto.

GENERAL

Prevention of Infant Mortality.—The eighth annual meeting of the American Association for the Study and Prevention of Infant Mortality will be held in Richmond, Va., October 15 to 17, under the presidency of Dr. William C. Woodward, Washington, D. C. The subjects to be discussed by the association will be, "Pediatrics; Obstetrics, Propaganda; Vital and Social Statistics; Rural Communities; Nursing and Social Work; Eugenics, and Public School Education for the Prevention of Infant Mortality.

Social Hygienists to Meet.—The annual meeting of the American Social Hygiene Association will be held at the Belvedere Hotel, Baltimore, October 19, for the election of officers and directors, and to consider further mergers with social hygiene societies and other agencies. A program of public meetings and conferences has been arranged jointly

with the American Health Association for October 18, and on the morning of October 19, and in Baltimore with the Baltimore Medical Society and the Maryland Social Hygiene Society on the afternoon and evening of that day.

District Society Meeting.—The regular fall meeting of the Iowa and Illinois Central District Medical Association was held at the Rock Island Club, Rock Island, Ill., October 11. The scientific program included illustrated lectures on "The Diagnosis of Renal Tuberculosis," by Nathaniel G. Alcock, Iowa City, Iowa, and "Recent Studies in the Etiology and Treatment of Experimental and Human Poliomyelitis," by Dr. John W. Nuzum, Chicago, and a discussion of "Some Medico-Economic Questions," by Dr. David S. Fairchild, Clinton.

National Board in Session.—The third examination of the National Board of Medical Examiners is now being conducted in the Cook County Hospital. The session this year will cover an entire week, beginning Wednesday, October 10. About sixty-five candidates are being examined. The certificates of this board are now recognized by the licensing boards of Colorado, Delaware, Idaho, Iowa, Kentucky, Maryland, New Hampshire, North Carolina, North Dakota, Pennsylvania, Rhode Island and Vermont. Several other states are contemplating similar action.

Bequests and Donations.—The following bequests and donations have recently been announced:

Methodist Episcopal Hospital, Indianapolis, \$75,000, by the will of Mrs. Emma Messick, Shelbyville.

College of Physicians and Surgeons in the City of New York, a donation of \$50,000 for the necessary enlargement of the medical school equipment to care for women students, by George W. Brackenridge, San Antonio, Tex.

The Martinez Anti-Tuberculosis Fund, Dallas, Tex., for the treatment and assistance of indigent persons affected with tuberculosis, a gift of \$1,000 or more annually, by Mr. B. P. Martinez.

Cincinnati General Hospital, a monthly payment of \$10 from the pay of O. W. Cuhn, a sailor in the United States Navy, in gratitude for treatment received at the hospital.

That Confounded Comma.—A thousand and one stories have been published regarding the havoc caused by the misplaced comma. Sometimes this havoc is amusing; sometimes it is serious; and sometimes it is between the two. The havoc caused by a misplaced comma in our columns two weeks ago comes under the last designation. Commenting on Dr. Keen's article on the operation on President Cleveland, we wrote:

"While the article is not of particular scientific or surgical importance, historically it is of decided interest."

The intelligent compositor, however, thus gave it to our readers:

"While the article is not of particular scientific or surgical importance historically, it is of decided interest."

Lane Medical Lectures.—The sixteenth course of Lane Medical Lectures at Stanford University, San Francisco, will be delivered by Dr. Simon Flexner, director of laboratories of the Rockefeller Institute for Medical Research, New York, on the evenings of October 8 to 12 inclusive in Lane Hall. The chief subject will be "Physical Basis and Present Status of Specific Serum and Drug Therapy." The titles of the separate lectures are as follows:

October 8: Epidemic Meningitis; Lobar Pneumonia; Bacillary Dysentery and Specificity in Bactericidal Sera.

October 9: Gaseous Gangrene; Shiga Bacillary Dysentery, and The Principles of Homoserum Therapy.

October 10: Poliomyelitis and the Principles of Homoserum Therapy.

October 11: Local Specific Therapy as Illustrated by the Serum Treatment of Epidemic Meningitis, Poliomyelitis and Tetanus.

October 12: Chemotherapy of the Spirochetal Infections.

Clinical Congress of Surgeons.—The meeting of the Clinical Congress of Surgeon of North America will be held in Chicago, beginning Monday, October 22, and continuing to and including Friday, October 26. The opening meeting will be held in Orchestra Hall at 8:15 p. m., October 22, at which will be delivered the addresses of the retiring president, Dr. F. B. Lund, Boston, of the incoming president, Dr. John G. Clark, of Dr. Franklin Martin, of the Advisory Committee of the Council of National Defense, and of Dr. A. J. Ochsner, chairman of the committee of arrangements. The meeting will be given a military tone by the presence of the Surgeons-General of the Army, Navy and Public Health Service, Gorgas, Braisted and Blue, Col. T. H. Goodwin, and Sir B. G. A. Moynihan of the British medical services, Col. C. Dircle, France, and Dr. George W. Crile, recently in France. The

scientific meetings of Tuesday, Wednesday, Thursday and Friday will be held in the Gold Room of the Congress Hotel. The presidential address will be given Thursday night, October 25, at 8 p. m., by President John G. Clark, his subject being, "Radium in the Treatment of Cancer of the Uterus." The articles to be read and the discussions are expected to have a distinct military bearing. The day work of the Congress will be made up of clinics at the various hospitals.

Health in the Canal Zone.—The report of the Health Department of the Panama Canal for July, 1917, shows that the health of the population in the Zone terminal cities was good. Whooping cough was prevalent in Balboa and Gatun districts. One case of infantile paralysis occurred in the Pedro Miguel district in a child aged 3 years, without history of contact with any previous case. Two cases occurred in December, 1916, in the Balboa district, also without history of outside contact. This case of infantile paralysis was the only one of disease of quarantinable nature occurring during the month. Among the 32,587 employees of the Panama Canal and the Panama Railroad Company, there were 908 admissions to hospitals and quarters. Deaths from all causes numbered twenty-five, of which twenty-four were from disease. Diseases causing the highest admission rate to hospitals were, in the order of their numerical importance, venereal diseases, malaria, tuberculosis, organic diseases of the heart, and pneumonia. These five diseases, it is said, caused 35 per cent. of all admissions. Venereal diseases caused 14 per cent., and malaria 13 per cent. of admissions. In the civilian population of the Zone, numbering 24,038, there were thirty-five deaths, thirty of which were from disease. Of the deaths from disease, 47 per cent. occurred among children under 4 years of age. Sixty births were reported for the month. There were nine deaths among children under 1 year of age, all colored. The death rate from disease among the employees of the Zone was 8.84 per thousand, and among the civilian population 14.90 per thousand.

FOREIGN

Deaths in the Profession Abroad.—**F. A. Arango**, a prominent surgeon and obstetrician of Colombia, aged 62.—**A. da Graça Couto**, professor of ophthalmology at the University of Rio de Janeiro and director-general of the public health service, aged 53.

Marriages

LIEUT. HARRY CLARK HACKMAN, M. R. C., U. S. Army, Flint, Mich., to Miss **Edna J. Wheeler** of Bellevue, Pa., September 15.

RAYMOND RUDOLPH BARBANELL, M.D., San Francisco, to Miss **Henrietta Hurwitz** of Covina, Calif., in Los Angeles, September 13.

LIEUT. FLETCHER BARR TAYLOR, M. R. C., U. S. Army, to Miss **Virginia Barnes** of Leavenworth, Kan., September 8.

MAJOR KERWIN WEIDMAN KINARD, M. C., U. S. Army, to Miss **Ada Lee Porter** of Kansas City, Mo., October 10.

JACOB RICHTER BUCHBINDER, M.D., Chicago, to Miss **Hazel H. S. Felman** of Joliet, Ill., in Chicago, September 27.

JOHN FRANCIS AHERN, M.D., Springfield, Mass., to Miss **Anna G. Byrnes** of Worcester, Mass., September 17.

HOMER AUGUSTUS ALEXANDER, M.D., Topeka, Kan., to Miss **Mary Helen Poage** of Marshall, Mo., September 19.

JOHN RAY JOHNSON, M.D., Lima, Ohio, to Miss **Hallie Hawk** of St. Marys, Ohio, at Monroe, Mich., August 2.

LIEUT. JACOB A. GOODMAN, M. R. C., U. S. Army, to Miss **Ida E. Ginsburg**, both of Chicago, September 26.

FELIX E. BAKER, M.D., Stamps, Ark., to Miss **Margaret Burleson** of Wortham, Texas, September 9.

FRANCIS BONNEAU JOHNSON, M.D., to Miss **Ritchie McGrann**, both of Washington, D. C., September 11.

CHESTER HENRY KEOGH, M.D., Chicago, to Miss **Katharine Knapp** of Portland, Ore., August 9.

JOSEPH FLORIAN KONAPA, M.D., to Miss **Marie Kasperek**, both of Chicago, in August.

GEORGE D. BOWDOIN, M.D., Wilmington, N. C., to Miss **Christine Johnson**, recently.

Deaths

Americus R. Allen, M.D., Carlisle, Pa.; University of Pennsylvania Philadelphia, 1887; aged 55; a Fellow of the American Medical Association; chief surgeon for the Cumberland Valley Railroad, and the Cumberland Valley Traction Company; a member of the staff of the Carlisle Hospital, and surgeon to Todd Hospital; died at his home, September 15, from septicemia due to an operation wound.

Arthur H. Bernstein, M.D., Scranton, Pa.; Jefferson Medical College, 1891; aged 54; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; for several years a member of the surgical staff of the Scranton State Hospital; died at his home, September 20, from cerebral hemorrhage.

Otto Saly Binswanger, M.D., Portland, Ore.; University of Maryland, Baltimore, 1882; aged 63; a Fellow of the American Medical Association; professor of organic chemistry in the University of Oregon, Portland; a member of the medical staff of St. Vincent's Hospital; a veteran of the Franco-Prussian War; died at his home, September 25.

Robert McAllister Richardson, M.D., Chattanooga, Tenn.; Chattanooga (Tenn.) Medical College, 1908; aged 33; formerly a Fellow of the American Medical Association; a member of the Tennessee State Medical Association; a specialist on diseases of the eye, ear, nose and throat; died at his home, September 18, from tuberculosis.

Lieut. George Plummer Howe, M. R. C., U. S. Army, Boston; Harvard Medical School, 1904; aged 39; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; is reported to have been killed in action, September 28, while on duty with the British forces in France.

William M. Baker, M.D., Shreveport, La.; Tulane University, New Orleans, 1874; aged 65; for many years a practitioner of Arcadia, La.; formerly a member of the Louisiana State Medical Association; for several years grand lecturer of the Grand Lodge, F. and A. M. of Louisiana; died at his home, September 24.

James Henry Elliott, M.D., West Plains, Mo.; Louisville and Hospital Medical College, Louisville, Ky., 1908; University of Louisville, Ky., 1909; aged 40; a Fellow of the American Medical Association, and president of the Howell County Medical Society; physician of Howell County; died at his home, September 24.

Peter Hughes, M.D., Brooklyn; New York University, New York City, 1879; aged 60; chief surgeon to St. Catherine's Hospital, Williamsburg, consulting surgeon to St. John's, St. Mary's and Jamaica hospitals; surgeon to the Brooklyn Ferry Company; died at his summer home, in Milford, Pa., September 30.

William Andrew Bindewald, M.D., Louisville, Ky.; University of Louisville, Ky., 1871; aged 76; formerly a Fellow of the American Medical Association; for thirty years physician to St. Joseph's Orphan Home; died in St. Joseph's Infirmary, Louisville, September 19, from disease of the stomach.

Jerome Samuel Bissell, M.D., Torrington, Conn.; Yale University, New Haven, Conn., 1894; aged 48; formerly a Fellow of the American Medical Association; a member of the Connecticut State Medical Society; died in a sanatorium in Waterbury, Conn., September 13, from nervous prostration.

Jesse Ralph Johnson, M.D., Amite, La.; Memphis Hospital Medical College, Memphis, Tenn., 1894; aged 52; formerly a Fellow of the American Medical Association; a member of the Louisiana State Medical Association; formerly coroner of Plaquemines Parish; died at his home, September 24.

Charles W. Nutting, M.D., Etna Mills, Calif.; Atlanta (Ga.) Medical College, 1876; aged 65; a Fellow of the American Medical Association, and past grand master of the F. and A. M. of California; for two years demonstrator of anatomy in his alma mater; died at his home, September 20.

Peter D. Fahrney, Hagerstown, Md. (license, Maryland); aged 74; a practitioner since 1867; formerly a clergyman of the Church of the Brethren; for more than thirty years a resident of Frederick, Md.; died at his home, September 22, from cerebral hemorrhage.

August George Horstman, M.D., Brooklyn; Cornell University, New York City, 1906; aged 39; a Fellow of the American Medical Association; formerly a member of the

staff of the German and Jewish hospitals, Brooklyn; died at his home, September 26.

William James Francis Blaney, M.D., Baltimore; University of Maryland, Baltimore, 1896; aged 44; formerly a member of the Medical and Chirurgical Faculty of Maryland; died in St. Joseph's Hospital, Baltimore, September 25, from heart disease.

Bradbury Moulton Richardson, M.D., Brooklyn; New York Homeopathic Medical College, New York City, 1865; aged 75; from 1872 to 1880 surgeon of the Forty-Seventh Infantry, N. G. S., N. Y.; died at his home, September 23, from arteriosclerosis.

Andrew John Bilhoefer, M.D., New York City; New York University, New York City, 1885; aged 55; a Fellow of the American Medical Association; medical director of the Odd Fellows' Home; died at his home, August 28, from myocarditis.

Armistead Brooks Flippin, M.D., Nashville, Tenn.; University of Nashville, Tenn., 1857; aged 77; surgeon of the Eighth Arkansas Infantry, C. S. A., throughout the Civil War; died at his home, September 21, from cerebral hemorrhage.

Fred C. Dickson, M.D., Danville, Ill.; Indiana Medical College, Indianapolis, 1906; aged 36; formerly a Fellow of the American Medical Association; died in the Glen Rest Sanitarium, near Columbus, Ohio, September 20.

Benjamin F. Fortner, M.D., Vinita, Okla.; University of Nashville, Tenn., 1872; aged 70; a Fellow of the American Medical Association; for many years local surgeon for the Frisco system; died at his home, September 24.

Edward William Buhrmaster, M.D., La Harpe, Ill.; St. Louis College of Physicians and Surgeons, 1905; aged 37; who went to Colorado on account of his health; died in Colorado Springs, September 17.

Edwin Sharp, M.D., Argenta, Ark.; Vanderbilt University, Nashville, Tenn., 1881; aged 65; formerly a member of the Arkansas Medical Society; died in a sanatorium at Hot Springs, Ark., September 25.

George M. Wells, M.D., Wayne, Pa.; University of Pennsylvania, Philadelphia, 1895; for twenty-six years a practitioner of Wayne; died at the home of his son, near Annapolis, Md., September 24.

James M. Ferguson, M.D., Colorado Springs, Colo.; Medical College of the State of Carolina, Charleston, 1859; aged 89; a pioneer of the Pikes Peak region; died in Colorado Springs, September 25.

George H. Albright, Columbiana, Ohio (license, Ohio, 1896); aged 65; a member of the Ohio State Medical Association; died in the Salem (Ohio) City Hospital, September 21, from pneumonia.

Jeseph Ferdinand Lindsey, Jr., M.D., Boston; Harvard Medical School, 1877; aged 67; who retired from practice about thirty years ago; died at his home in Roxbury, September 8, from angina pectoris.

James N. Riley, M.D., Stamping Ground, Ky.; Atlanta (Ga.) Medical College, 1857; aged 90; surgeon in the Confederate service throughout the Civil War; died at his home, September 18, from uremia.

Downing Howard Young, M.D., Wakeman, Ohio; University of Wooster, Cleveland, 1871; aged 71; a veteran of the Civil War; died at his home, September 10.

Robert Irvin McQuiddy, M.D., Lawrenceburg, Ky.; Jefferson Medical College, 1854; aged 86; died at his home, June 1, from senile debility.

Wellington C. Jeffers, M.D., Lindsay, Ont.; University of Victoria College, Coburg, Ont., 1867; aged 53; died at his home, July 17.

John Swope Mathias, M.D., Kansas City, Mo.; University of Maryland, Baltimore, 1879; aged 62; died at his home, September 17.

Floyd John Hodge, M.D., Florence, Mass.; Baltimore Medical College, 1908; aged 33; died in Plainfield, Mass., August 22.

John Allen Bernard, M.D., Minneapolis; University of Minnesota, Minneapolis, 1889; aged 71; died at his home, September 16.

Logan Cox, M.D., Hallidayboro, Ill.; University of Tennessee, Nashville, 1882; aged 55; died in East St. Louis, Ill., August 9.

Hugo Kinner, M.D., St. Louis; University of Berlin, Germany, 1863; aged 77; died at his home, September 11.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

GONOSAN

Report of the Council on Pharmacy and Chemistry

The Council has adopted the following report on Gonosan and authorized its publication.

W. A. PUCKNER, Secretary.

Gonosan (Riedel and Company, Inc., New York City) comes in the form of capsules, each said to contain 5 minims of a mixture composed of oil of sandalwood 80 per cent., and 20 per cent. of alpha- and beta-resin of kava, isolated by a patent process. The mixture, as the name implies, is intended for the treatment of gonorrhea.

This proprietary preparation was under consideration by the Council at various times from 1905 to 1910. During this time, the Council agreed to accept the preparation if the suggestive name was changed, the therapeutic exaggerations abandoned, and the drug kava admitted to New and Non-official Remedies. The name was not changed, the other questions were left open, and the preparation was not accepted.

Recent and more objectionable advertising of Gonosan makes it advisable for the Council to take action and to publish a report. The tone of this advertising is reflected by the following quotation from a recent advertising circular:

"The old-established balsamic treatment of gonorrhea, for some years neglected in favor of the local injection of organic silver and other germicidal salts, has, with the increasing knowledge and attention paid to the composition and purity of the balsams, regained to a large extent the confidence formerly reposed in them.

"It may now be said that the combined treatment with local injections and internal administration of natural balsamic products completely dominates modern gonorrheal therapy."

Any one conversant with current medical literature and practice would stamp these statements as misleading exaggerations. The balsams, oleoresins and volatile oils may have some value as minor adjuvants in the treatment of gonorrhea, but that is all. The position in this respect has not changed materially in recent years. These agents do not have a value equal to that of local treatment, as the quoted statement implies.

The claims made for Gonosan might with equal force be made for oil of sandal alone. Kava kava, the other constituent, belongs to the pepper family; it had a temporary vogue some two or three decades ago but has failed to maintain a place. It has never been recognized officially. There is no scientific evidence that it has any value either alone or as an adjuvant to sandal oil. The "clinical reports" quoted in the advertising circulars, rather curiously, nearly all date back ten years or more, viz., to a period when the attitude of the profession toward proprietary remedies was less critical than it is now. It would be interesting to know whether these authors still adhere to their opinion, or whether any of them have subsequently had experiences similar to that of a correspondent who wrote:

"Gonosan, at my hands, did not prove to be of more essential value in the treatment of gonorrhea than any other sandalwood oil preparation. The various claims made for Gonosan, that it possesses sedative and anesthetic properties, that by its continuous use the urethral discharge disappears more rapidly and that, if combined with appropriate diet and rest, it is liable to prevent complications, are, according to my experience, not corroborated by actual results."

The only experimental work quoted in support of Gonosan, that of Pohl, is not convincing. The doses that Pohl found necessary to influence experimental purulent pleurisy makes it impossible to transfer his work to the clinic. (He found a

dosage of oil of santal corresponding to an ounce per day, for man, inefficient; positive results were obtained only with 2 ounces per day.)

In order to learn the estimate placed on the therapeutic value of the "balsams," an inquiry was sent to the authors of the papers presented to the section of Genito-Urinary Diseases at the recent meeting of the American Medical Association in New York. The inquiry read:

"*Dear Doctor:*—An advertising circular for Gonosan 'Riedel' which is now being distributed begins thus:

"The old-established balsamic treatment of gonorrhea, for some years neglected in favor of the local injection of organic silver and other germicidal salts, has, with the increasing knowledge and attention paid to the composition and purity of the balsams, regained to a large extent the confidence formerly reposed in them."

"It may now be said that the combined treatment with local injections and internal administration of natural balsamic products completely dominates modern gonorrheal therapy."

"Is the statement correct that the combined treatment with local injections and internal administration of natural balsamic products completely dominates modern gonorrheal therapy? Your reply to the above will be appreciated by the Council."

Seventeen replies were received. They bear out the position that has been outlined. Only one writer considered the statement even approximately justified, and this in the sense that "the majority of cases receive no other treatment" than a combination of local applications and systemic medication. Another stated that, "in a general way their statement is true though a trifle too sweeping," and then added that the field of the balsams is rather restricted. With the exception of these qualified endorsements the remaining (fifteen) replies characterized the statement as incorrect and misleading. The replies are a valuable contribution to the status of the "balsam" treatment of gonorrhea, and extracts of them are appended to this report.

It is recommended that the Council declare Gonosan inadmissible to New and Nonofficial Remedies, because the therapeutic claims are exaggerated (Rule 6); because there is no evidence that the combination of kava resin with oil of santal is superior to oil of santal alone (Rule 10); and because the therapeutically suggestive name is conducive of indiscriminate and unwarranted use of the preparation both by the profession and the public (Rules 4 and 8).

Appendix

The extracts from replies received to the inquiry above referred to, follow:

Dr. B., Penn., wrote:

"In my practice I have found that local injections are very valuable in the treatment of gonorrhea, but I have never found that the internal administration of natural balsamics dominated modern gonorrheal therapy; while it is an aid, I consider the quoted statement to be very erroneous."

Dr. F., D. C., wrote:

"While it is doubtless true that acute urethritis, gonorrheal, is now generally treated by local injections of solutions of organic silver salts, and that santal oil is often used, it is not true, as one would infer from the quotation, that the balsams are now considered more efficacious than they were formerly. So far as I know they have not lost or regained anything during the past dozen years in the way of confidence reposed in them. The indications for their use is very definite and very limited."

Dr. B., Ga., wrote:

"... in recent years I have almost abandoned the use of balsams, etc., in the treatment of gonorrhea. Patients, who are properly treated otherwise, seem to get along as well without such drugs as with them, in fact apparently better for they have no gastric disturbance. It is important for patients to drink freely of water and when so doing the balsams are so diluted that I cannot conceive of their doing much good. Formerly my patients often lost weight during the treatment of gonorrhea; now, without balsams and with plenty of water, they usually gain in weight."

Dr. S., Mich., wrote:

"... we believe that in a general way their statement is true though a trifle too sweeping. We do not ordinarily use the balsams in uncomplicated anterior urethritis. We do however, find indication for their administration in from sixty to seventy five per cent. of all cases of acute gonorrhea at some time during the course of the disease."

Dr. L., Mo., wrote:

"I would say that the statement that, 'The combined treatment with local injections and internal administration of natural balsamic products completely dominates modern gonorrheal therapy,' is far from representing the facts. While the balsamics may occasionally have an indirect soothing effect on the mucous membranes involved, the dominant factor is local treatment, aiming at disinfection and restoration to normal of the inflamed tissues."

Dr. R., Mich., wrote:

"Regarding your request although I am willing to reply it is difficult to do so because if I should do so in the affirmative that could apply only to certain acute cases without complication of any kind and such cases are rare. In such, however, the advertiser is not far from right—since vaccine therapy has proven absolutely worthless we must fall back on antiseptics in acute urethritis when there are no objections to such treatment . . ."

Dr. K., Ill., wrote:

"I am under the impression that the internal administration of balsamics is used only when complications arise, such as acute posterior urethritis. Personally I use the balsamics very, very rarely. From my observation, however, I am led to believe that many men still use internal drugs in the treatment of gonorrhea, and during the past few years, I should say the use of hexamethylenamin has been on the increase, and the use of the balsamics on the decrease. I do not believe that hexamethylenamin is of any value in the treatment of gonorrhea, and am simply citing this as my observation of the widespread use of this drug in the treatment of gonorrhea."

Dr. T., Penn., wrote:

"... I believe that more men use salol or hexamethylenamin, or no urinary antiseptic whatsoever, than use the balsamics."

Dr. B., Ind., wrote:

"... The only systemic treatment that is considered necessary today is rest, plenty of water and neutralize the acidity of the urine with bicarbonate of soda or some sodium salt."

Dr. Y., Mass., wrote:

"Sandal wood oil during the acute stage of gonorrhea certainly tends to make the patient more comfortable and undoubtedly does lend some (tho I believe slight) gonococidal action. That it plays any considerable part in actual cure I think is doubtful. The statement as quoted is true in so far as it states that local treatment plus internal medication with a balsam comprises most of the modern treatment of gonorrhea but it is grossly misleading in that it lets one draw the inference that the balsam plays a large if not the principal part."

Dr. H., New York, wrote:

"For a period of at least three years in my hospital, dispensary and private practice, I conscientiously tried out most of the balsamics on the market (including Gonosan, which I favored for some time) both alone, and combined with local injections. As a result of this study, I have come to the conclusion that the balsamics have little, if any value in the treatment of gonorrhea. During the past few years I have relied almost entirely on local therapy, and seldom prescribed any of the balsams in my private practice, certainly in not more than five per cent. of the cases. My results I find are just as satisfactory, and my patients appreciate the fact that they are not loaded up with disagreeable medication. Instead of the balsamics, I am using sodium bicarbonate more and more, and feel convinced that the proper use of this drug is of more value than all of them combined."

Dr. K., Cal., wrote:

"The statement that the combined treatment with local injections and internal administration of natural balsamic products completely dominates modern gonorrheal therapy, would at present not be justifiable even with reference to the initial or acute stage of gonorrhea, while in the subacute and chronic forms of the disease local injections and balsams play an almost insignificant rôle as compared with various other recognized therapeutic measures."

Meningitis.—The first clearly recognized epidemic of cerebrospinal meningitis occurred in Geneva, Switzerland, in the spring of 1805, followed during the years of 1806 to 1814 by a number of scattered outbreaks in widely separated localities of France and Germany. Coincident with this first series of epidemics in Europe occurred a similar series in America, beginning with an outbreak at Medfield, Mass., in 1806, and continuing until 1819, visiting during this period many localities in the United States and reaching Canada. Since that time periods of epidemic or pandemic prevalence have alternated with periods of comparative rarity. From 1836 to 1850 epidemics appeared in Europe, in France, Germany, Austria, Italy, Spain, Ireland and Denmark and in Algeria. In America there was a succession of outbreaks from 1842 to 1850. In its third period of prevalence, from 1850 to 1860, the disease visited chiefly the Scandinavian peninsula, hitherto spared, causing over 4,000 deaths from 1854 to 1861.—W. H. Frost.

Correspondence

"MEDICAL SCIENCE ON THE SIDE
OF ALCOHOL"?

To the Editor:—Recently I received a pamphlet marked as a reprint from a daily paper published in a state where a prohibition campaign is shortly to be waged. The article purports to have been written by one of the oldest and most highly honored members of our profession. The virtues of alcohol are lauded and the action of the House of Delegates at the last annual session of the American Medical Association on the question of the use of alcohol is criticized as is also the position of other scientific and philanthropic organizations. Congress is censured and even the President criticized. It is evident that the pamphlet has been sent broadcast among physicians for the purpose of overcoming the effect of the action of the House of Delegates. The statements made in this article are not supported by up-to-date knowledge of the physiologic and therapeutic action of alcohol, and the arguments advanced are fallacious. The paper seems to be the expression of a personal opinion based on preconceived ideas which are contradictory to the opinions held by advanced thinkers and workers in the medical profession.

On the first page of the pamphlet appears the likeness of the venerable physician who is credited with being the author. Possibly, if they see only this likeness and read no more than the caption, the impression which those who circulate the booklet desire to produce may be made on the minds of certain time-pressed medical men. But any of those who stop to consider the article will not be misled into thinking that there still remains a word in favor of old King Alcohol. The circulation of the article seems to indicate that manufacturers and investors whose business is at stake are making a desperate effort to stem the tide of popular indignation against the use of alcohol. With the realization that millions of bushels of food-producing creals have been diverted from their use as a food for the manufacture of a worse than useless luxury, the public has been aroused to an appreciation of the situation and is clamoring for this grain to be used to feed the starving people of Europe and to relieve the growing food shortage here.

The medical profession, after careful scientific study, has come to appreciate the facts concerning alcohol and knows it to be a determining factor in estimating the increase in insanity, moral degradation, disease and crime. Social workers and religious teachers have shown the impossibility of accomplishing reform while the rum demon is abroad. It must be eliminated. EVAN O'NEILL KANE, M.D., Kane, Pa.

To the Editor:—I am enclosing a pamphlet, recently received by me, and similar copies may have been sent to all the physicians in the United States, including yourself, "Compliments of" whom, not divulged.

I cannot refrain from protesting against both the motive for sending such an article, and also the attempt to create the impression that the leading physicians of the United States sanction such assertions as it contains. I have prac-

ticed long enough to learn the evil effects of so-called continued moderate use of alcohol, on the recuperative powers in sickness and accidents, both in young and aged persons. I am aware of the reasons why alcohol is forbidden to athletes in training; why members of big corporations believe better work and fewer accidents are obtained by selecting workmen who do not use it; why a large percentage of crimes is laid to the influence of alcohol intake, thus filling our jails and asylums, for which the people are being taxed; why the laboring class would better itself and families by leaving alcohol alone; why better work has been done by the big armies by excluding or restricting its use; why its influence is always degrading.

It is not a question of treating a few sick persons; it is a broader, unselfish economic question, involving millions of people. Consequently, I believe I am only one of a large number of physicians who stand ready to sacrifice alcohol for other stimulants and drugs, for the uplift of humanity.

CHARLES E. HAWKES, M.D., Providence, R. I.

ORIGIN OF THE FLYING HOSPITAL

To the Editor:—In view of your editorial, "Larrey the Originator of Rapid Evacuation of the Wounded" (THE

JOURNAL, Sept. 29, 1917, p. 1084), the enclosed copy of the scheme written by William Shippen and John Cochran, both of whom were at a later date Surgeons-General in the Army of the Revolution, and in the handwriting of William Shippen, may be of interest to you. This appears in No. 22, folio 9, papers of the Continental Congress, and was transmitted to Congress by Washington, Feb. 14, 1777, and was reported on by the committee, Feb. 24, 1777. It is of decided interest, showing as it does where the "flying hospital" originated. I can find no record that this scheme was actually enacted into

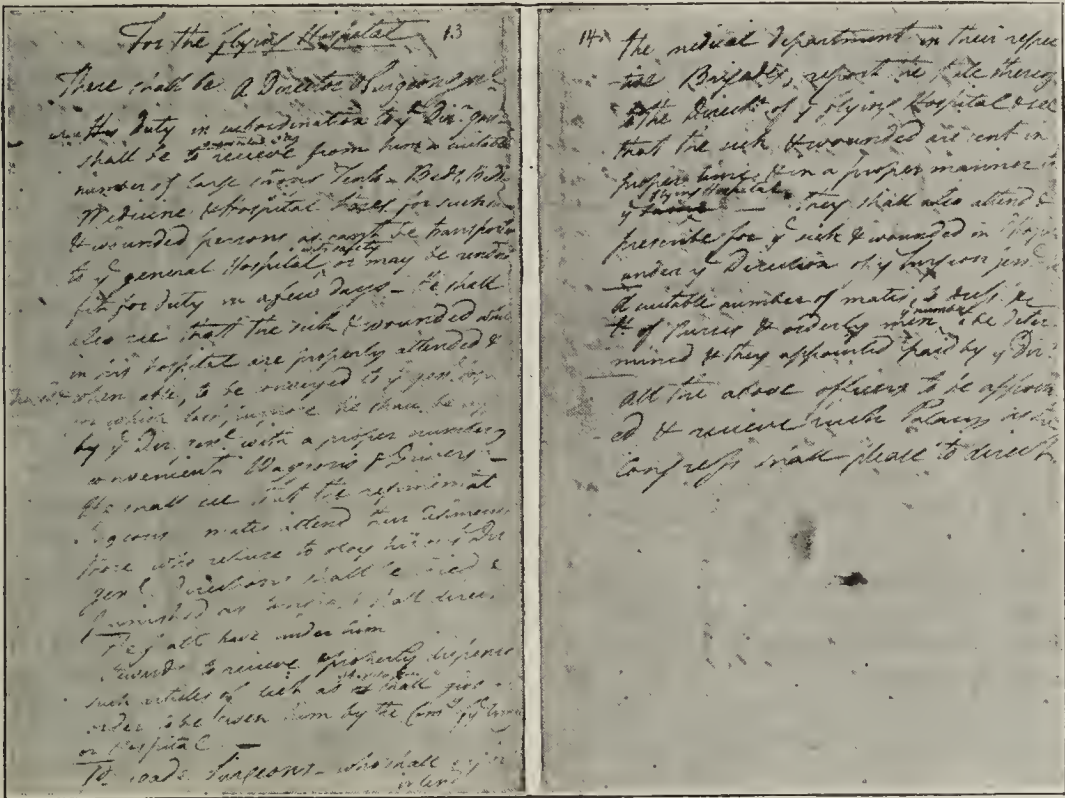
a law or of its having been in use in the Continental Army, but it was suggested by William Shippen in 1777 and was a matter of record before the Continental Congress in the handwriting of William Shippen of that date.

W. O. OWEN, M.D., Washington, D. C.

FOR THE FLYING HOSPITAL

There shall be a Director & Surgeongenl whose duty in subordination to y-e Dir.-r genl shall be to superintend & reg. receive from him a suitable number of large strong Tents—Beds, Bedding, Medicine & Hospital Stores for such sick and wounded persons as cant be transported to y-e general Hospital with safety or may be rendered fit for duty in a few days.—He shall also see that the sick & wounded while in his hospital are properly attended & dressed & when able, to be conveyed to y-e gen-l Hospital for which last purpose he shall be supplied by y-e Dir. gen.-l with a proper number of convenient Waggon & Drivers.—He shall see that the regimental Surgeons and mates attend their regiments; those who refuse to obey his or y-e Dir. gen.-l's directions shall be tried & punished as Congress shall direct.

He shall have under him Stewards to receive & properly dispense such articles of diet as ye Director General shall



Plan for flying hospital as written by William Shippen in 1777.

give or order to be given him by the Com-y of y-e Army or Hospital.—

Brigade Surgeons who shall superintend the medical department in their respective Brigades, report the State thereof to the Direct-r of y-e flying Hospital & see that the sick & wounded are sent in proper time & in a proper manner to y-e flying hospital. They shall also attend & prescribe for y-e sick & wounded in y-e Hospital under y-e Direction of y-e Surgeon Gen-l of a suitable number of mates to dress. &c & of Nurses and orderly men y-e number to be determined & they appointed & paid by y-e Dir-r., all the above officers to be appointed & receive such Salarys as the Congress shall please to direct.

BELGIAN AND FRENCH PHYSICIANS' FUND

To the Editor:—I append the list of subscriptions which I have received (all of them in cash, up to the present time) for transmission to our Belgian and French colleagues to help in reestablishing themselves in their homes and offices. I hope that this sum may be increased above \$1,000 and shall hold it for a short time in the hopes that it may reach a considerably larger sum.

When one remembers the number of physicians in these devastated districts and their utter destitution of everything for home and office or practice, \$1,000 will go but a very little way in helping a very few.

SUBSCRIPTIONS IN CASH

| | |
|---|----------|
| Dr. Frederick C. Shattuck, Boston..... | \$ 50.00 |
| Dr. Richard Dewey, Wauwatosa, Wis..... | 10.00 |
| Dr. Richard Lewisohn, New York | 50.00 |
| Dr. W. W. Keen, Philadelphia | 100.00 |
| Dr. Joseph Walsh, Philadelphia | 10.00 |
| Dr. J. T. Foley, Lewiston, Mont..... | 25.00 |
| Dr. Helen C. Putnam, Providence, R. I..... | 100.00 |
| Dr. J. J. Winn, Norwood, Ohio..... | 10.00 |
| Dr. L. H. Finch, Amsterdam, N. Y..... | 10.00 |
| Dr. Maud J. Frye, Buffalo | 5.00 |
| Dr. Glennis E. Humphrey, Cambridge Springs, Pa..... | 5.00 |
| Dr. R. O. Raymond, Flagstaff, Ariz. | 15.00 |
| "A Friend," Keystone, W. Va..... | 10.00 |
| Dr. H. Gifford, Omaha | 500.00 |
| "A Friend," New York..... | 10.00 |
| Dr. George H. Simmons, Chicago | 10.00 |
| | <hr/> |
| | \$920.00 |

Besides these gifts of money I have received from several of those in the list gifts of instruments, some of them of very considerable value. I have also received from a friend in New York an eight plate static electric machine, and from two friends, a man and a woman, both of Plymouth, Mass., a considerable number of valuable instruments.

To any friends who wish to send instruments and other appliances I must suggest that if the apparatus or instruments require repairs, it would be necessary to have these done in this country as the means for repairs, I am told on good authority, are almost universally lacking. The polishing and sharpening I would suggest should not be done in this country, for it can be done much more cheaply abroad and also will give occupation to some of the disabled soldiers themselves.

I have also to acknowledge the great kindness of Charles Lentz & Sons of this city for listing and packing many of these instruments.

W. W. KEEN, M.D.,
1729 Chestnut Street, Philadelphia.

THE MORAL OBLIGATION OF THE MEDICAL INTERN TO THE HOSPITAL

To the Editor:—For some years it has seemed desirable that hospitals throughout the country establish among themselves a rule of ordinary decorum relating to applications for appointment to hospital internships. It is notoriously the fact that with few exceptions the recent graduate in medicine has little regard for the contract he makes with the hospital authorities. Very commonly capital is made of the prestige acquired by a hospital appointment in the securing of one elsewhere. An energetic canvasser during his two weeks' summer holiday may "come up" with several good things, as he describes them, and secure options for his friends. He

may decide not to come back at all after his vacation and lend himself as a decoy to secure a bevy of interns for his new employer. He will write back to the fellows at his "dear old Alma Mater" and assure them he can fix them. Any curtailment of privileges involved in ordinary hospital staff discipline will furnish cause for a one sided abrogation of his contract and lead to his taking advantage of the offer from another hospital which is at that moment in his pocket.

Among respectable people, it is not customary to dicker with a neighbor's employees, to entice them with promises of better wages, better food, better housing, better opportunities or improved social surroundings. There is no such delicacy on the part of the average hospital management. The restless intern of another hospital will be gathered in without a question. He is not required to have a "character" but is taken on his looks, and without any solicitude as to a proper release from his previous contract.

It is suggested that hospital officials would improve their own morale and that of successive groups of young professional men by establishing among themselves a simple code by which to discourage the unfortunate laxity of professional obligation and duty which in that particular they now condone.

WILLIAM F. LOCKWOOD, M.D., Baltimore.

THE VENEREAL DISEASES

To the Editor:—In THE JOURNAL that has come to me this morning, as well as those of the past weeks, I have read the article under the caption "The Venereal Diseases." Kindly accept my congratulations for your continued discussion of a subject which is of vital interest to every physician and, we must admit, altogether too little understood.

I feel compelled to take exception to a most egregious error which has been published in the serial article of October 6. On page 1171 there occurs the statement that "when other methods fail to relieve tenesmus and pain [in acute posterior gonorrhea], remarkable relief is occasionally obtained by the instillation of a few drops—about ten—of a 1:500 to 1:100 solution of silver nitrate through a soft catheter or deep urethral syringe," etc.

It is admitted later on in the article that such a procedure is "contrary to the principles" of the treatment of acute posterior gonorrhea, and it is cautioned that such should be employed only as "a last resort." The introduction of any instrument into a urethra acutely infected with the gonococcus should be absolutely and emphatically forbidden without exception. Such a procedure is always attended with a high probability of the production of an epididymitis or some other equally serious complication, and should never be attempted.

Further than that, 1 per cent. of silver nitrate injected into even a normal posterior urethra is always followed by more or less annoying tenesmus—the very condition that one attempts to relieve by such an instillation.

JAMES C. SARGENT, M.D., Milwaukee.

AN APPEAL FOR WOMEN ON HOSPITAL STAFFS

To the Editor:—In the midst of the urgent appeals on the one hand for more physicians for the Army, and on the other hand the equally urgent appeals not to weaken our medical forces at home, I am moved to ask why the women physicians are not being utilized to fill in the broken ranks and to prevent in a large measure the crippling of our hospitals.

The need for physicians that exists in the warring countries makes its appeal to every man of red blood: and to every woman too. But the men can respond by going; the women cannot.

The war office in Washington refuses the women passports, refuses the offers of well-equipped units, refuses at every turn to avail the government of their services in any way, so that the fact that our medical women are not allowed to take part in the defense of their country cannot in any way reflect on themselves.

In this war, however, in which only the fullest use of all our resources will work toward the ultimate success of our arms, we cannot afford longer to ignore that body of trained women which stands ready to do its part. With the same training and the same license to practice as our medical men, they can be depended on to safeguard the health of the community and by so doing loose the bonds that prevent every man of proper age from springing to his country's call.

Even in conservative England many of the largest London hospitals have women on their staffs, and Sir Alfred Keogh, Surgeon-General of the British Army, in a recent communication to this country says, "Do not underestimate the value of the women physicians; their assistance has been invaluable."

EOLINE C. DUBOIS, M.D., Springfield, Mass.

REST FROM VOCALIZATION IN THE TREATMENT OF LARYNGEAL TUBERCULOSIS

To the Editor:—From time to time articles appear in the journals on the treatment of laryngeal tuberculosis, and it seems strange that so little importance is attached to total nonuse of the voice. In fact, authors generally seem to take it for granted that partial or complete rest will be required; but even so eminent an authority as Ballenger does not even mention it in his textbook. In my experience, absolute rest from phonation has produced far better results than any local applications. In an article on "Rest in the Treatment of Laryngeal Tuberculosis" read before the American Laryngological Association in 1905 (*Tr. Am. Laryngol. Assn.*, p. 149; *Am. Jour. Med. Sc.*, 1905, **131**, 300), stress was laid on the necessity for absolute rest in the successful treatment of this intractable malady. Since then cases have been reported in which the larynx was rested from three to eighteen months with most gratifying results. It has been my custom to demand from every patient consent for absolute rest before undertaking the care of tuberculous cases. Tuberculomas, ulceration, etc., usually form only in the later stages of the disease, and the systemic infection is usually so great by that time that but little hope of success may be expected from any form of treatment. Even then, however, absolute rest with anodyne applications will give more relief than curettage, epiglottectomy or the application of the galvanocautery. It seems, therefore, that absolute rest from phonation should be required in all cases and at all stages irrespective of any other measures that may be instituted.

W. PEYRE PORCHER, M.D., Charleston, S. C.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SALKOWSKI-KOJO TEST FOR COLLOIDAL NITROGEN IN THE URINE

To the Editor:—In THE JOURNAL, Sept. 15, 1917, p. 941, you refer to the Salomon-Saxl test, with which I am familiar; also to the Salkowski-Kojo test with which I am not familiar. What is the latter, or where can I find it?

C. H. WALKER, M.D., New York.

ANSWER.—In the article summarized on page 941, Kahn states that Salkowski and Kojo have recently (1910) suggested several methods for determination of the colloidal nitrogen in the urine, and in 1911 Kojo published (*Zeitschrift für physiologische Chemie*, 1911, **73**, 416) the results of a comparative study of the various procedures suggested in this connection. Kahn tabulates the findings in 128 cases, including twenty-two healthy persons and fifty-nine with cancer, tested by the Salomon-Saxl method and for the colloidal nitrogen. The technic used for the latter he describes as follows: "The urine was first tested for coagulable protein which, if found, was removed by means of heat coagulation, with addition to the boiling liquid of a few drops of dilute acetic acid. To 100 c.c. of a mixed, filtered, twenty-four hour specimen of urine, zinc sulphate was added in sufficient quantity to effect saturation. The saturated liquid was allowed to stand for

twenty-four hours, then filtered through ashless paper, and the precipitate washed several times on the paper with saturated zinc sulphate solution to remove nitrogenous substances adherent to the precipitate. The paper and precipitate were then placed in a Kjeldahl flask and the nitrogen content determined by the Kjeldahl method. The total nitrogen in 5 c.c. of urine was also determined by the Kjeldahl method. The ratio of the nitrogen in the zinc sulphate precipitate to the total urinary nitrogen was computed." In the healthy the nitrogen value for the zinc sulphate precipitate, as compared with those for total nitrogen, varied from 1.25 to 2.15, with an average of 1.67 per cent. In the fifty-nine cancer cases the range was up to 5.75 per cent. of the total nitrogen, the minimum being 3.4 per cent. Fifty-eight of the fifty-nine cases of cancer gave a positive Salomon-Saxl reaction.

SURGICAL AND MEDICAL INCIDENTS IN THE BIBLE

To the Editor:—I am asked to give a talk on the surgical and medical incidents found in the Bible from a modern standpoint. Kindly refer me to some literature that will help me in preparation.

EUGENE A. HENSEL, M.D., San Diego, Calif.

ANSWER.—We may refer you to the following articles:

- Allen, D. B.: Diseases Mentioned in the Bible, *Dietet. and Hyg. Gaz.*, 1908.
- Blakely, S. B.: Medicine of the Old Testament, *Sc. Am. Supp.*, July 31, 1915; Aug. 7, 1915.
- Blakely, S. B.: The Medicine of the Old Testament, *Med. Rec.*, New York, 1915, **87**, 934.
- Mendelsohn, S.: The Arterial Function and the Circulation in Ancient Rabbinic Literature, *Charlotte Med. Jour.*, 1915, **71**, 269.
- Lamb, D. S.: The Old Hebrews, a Medieval and Sanitary View, *Med. Pickwick*, 1915, **1**, 372.
- The Medical Language of the Third Gospel, *Lancet*, London, 1911, **1**, 44, 331.
- Spivak, C. D.: An Anatomic Prayer, *THE JOURNAL*, Sept. 30, 1916, p. 1037.
- One Minute Biographs, *THE JOURNAL*, Jan. 9, 1915, p. 151.
- Field, D.: Medical Facts Gleaned from the Holy Scriptures, *Therap. Rec.*, 1909, **4**, 30, 62, 84.
- Peters: Die Pathologie der Bibel, *Med. Woche*, 1907, **8**, 552, 562, 574.
- Murphy, H. B.: Biblical Medicine and Hygiene, *Montreal Med. Jour.*, 1908, **37**, 83.

MAKING WATER SAFE FOR DRINKING PURPOSES

To the Editor:—In an irrigated district where drinking water can be had only from cisterns filled from irrigating ditches, what is the best method of rendering the water safe for drinking purposes? Assuming that chemicals are to be used, what is the highest harmless concentration, the lowest effective? What is the most effective way to remove or precipitate fine silt?

Please omit my name.

O. B. L.

ANSWER.—Chlorinated lime is most generally used for sterilization of drinking water, 1 part of available chlorine per million being sufficient (*THE JOURNAL*, Jan. 27, 1912, p. 279). Recently halazone tablets have been proposed for water disinfection (*THE JOURNAL*, Oct. 6, 1917, p. 1166). Very full description of water purification methods are given in "Water Purification Plants and Their Operation," by Milton F. Stein, John Wiley and Sons, New York, 1915. The book contains excellent diagrams and accurate data as to amount of coagulant to be used, cost of operation, etc. Good general information on water supplies may be found in "Clean Water and How to Get It," by Allen Hazen, John Wiley and Sons, 1914.

OCHSNER'S SOLUTION

To the Editor:—Kindly give the ingredients and their proportions in Ochsner's solution.

A. P. H.

ANSWER.—Ochsner's solution consists of phenol (carbolic acid), 0.5 per cent.; aqueous saturated solution of boric acid, 66 per cent., and alcohol, 33 per cent.

Familial Polyadenomatosis in the Rectum.—A. Oidtman has encountered eight cases of this kind, and six of the patients belonged to two families, three sisters in one family, and mother, son and daughter in the other. One of the three sisters succumbed to hemorrhages; the others were cured by resection of the protruding bunches. The *Nederlandsch Tijdschrift voor Geneeskunde* publishes his report in Society Proceedings, 1917, **1**, 2184, with illustrations, and references of nine other families showing from two to six cases of polyadenomatosis. A cancerous tendency was evident in eight of the total twenty-seven cases in this group, and in all but three of Oidtman's own eight cases.

Medical Education and State Boards of
Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 13-14. Sec., Dr. T. J. Stout, Brinkley.
ARKANSAS: Eclectic: Little Rock, Nov. 13. Sec., Dr. C. E. Laws, 803½ Garrison Ave., Fort Smith.
CONNECTICUT: New Haven, Nov. 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.
CONNECTICUT: Homeopathic: New Haven, Nov. 13. Sec., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.
CONNECTICUT: Eclectic: New Haven, Nov. 13. Pres., Dr. J. W. Fyfe, Saugatuck.
MAINE: Portland, Nov. 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.
NATIONAL BOARD OF MEDICAL EXAMINERS: Chicago, Oct. 10-18. Sec., Dr. J. S. Rodman, 2106 Walnut St., Philadelphia.
NEVADA: Carson City, Nov. 5. Sec., Dr. S. L. Lec, Carson City.
NEW JERSEY: Trenton, Oct. 16-17. Sec., Dr. Alexander MacAlister, 438 E. State St., Trenton.
SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.
TEXAS: Dallas, Nov. 20-22. Sec., Dr. M. F. Bettencourt, Mart.
WEST VIRGINIA: Clarksburg, Nov. 21-23. Chairman, Dr. S. L. Jepson, Capitol Bldg., Charleston.

Medical Colleges of the United States Recognized in Canada

A report received from the Medical Council of the College of Physicians and Surgeons of Ontario states that in June, 1917, the following medical schools of the United States were given recognition:

Leland Stanford Junior School of Medicine, San Francisco.
University of California Medical School, San Francisco.
Yale University School of Medicine, New Haven.
Northwestern University Medical School, Chicago.
Rush Medical College, Chicago.
Indiana University School of Medicine, Indianapolis.
Johns Hopkins University Medical Department, Baltimore.
Harvard University Medical School, Boston.
University of Michigan Medical School, Ann Arbor.
University of Minnesota Medical School, Minneapolis.
Washington University Medical School, St. Louis.
University of Nebraska College of Medicine, Omaha.
Columbia University College of Physicians and Surgeons, New York City.
Cornell University Medical College, New York City.
Syracuse University College of Medicine, Syracuse.
Ohio State University College of Medicine, Columbus.
Western Reserve University School of Medicine, Cleveland.
Jefferson Medical College of Philadelphia.
University of Pennsylvania School of Medicine, Philadelphia.
University of Pittsburgh School of Medicine, Pittsburgh.

The report states that graduates of the above schools, under certain limitations, will be permitted to take the examination for the license to practice medicine in Ontario. An extract from the regulations is as follows:

"Students graduating subsequent to July 1, 1916, from 'recognized' medical colleges in any of the United States shall submit a certificate from that state board of licensure that the candidate is fully qualified for admission to the examination of that state board. Certificates will be accepted from state boards (1) which accept similar certificates from this Council and (2) whose standards are equivalent to those of this Council."

Washington January Examination

Dr. C. N. Suttner, secretary of the State Board of Medical Examiners of Washington, reports the written examination held at Spokane, Jan. 2-4, 1917. The examination covered 11 subjects and included 110 questions. The percentage required to pass was 75. Thirty-four candidates were examined, of whom 27 passed, including 5 osteopaths, and 7 failed, including 2 osteopaths. The following colleges were represented:

| College | PASSED | Year Grad. | Total No. Licensed |
|--|----------------------|------------|--------------------|
| George Washington University | (1916) | | 1 |
| American Medical Missionary College | (1900) | | 1 |
| Northwestern University | (1912) (1914) | | 2 |
| Rush Medical College | (1915) | | 1 |
| University of Illinois | (1914) (1915) (1916) | | 3 |
| Drake University | (1913) | | 1 |
| Hospital College of Medicine, Louisville | (1904) | | 1 |
| University of Michigan Med. School | (1916) | | 1 |
| University of Minnesota | (1916) | | 1 |

| | | |
|--|----------------------|---|
| National University of Arts and Sciences | (1916) | 1 |
| John A. Creighton Medical College | (1912) | 1 |
| Jefferson Medical College | (1911) (1913) (1915) | 3 |
| Woman's Medical Coll. of Pennsylvania | (1909) | 1 |
| Nagasaki Special Medical School | (1903) | 1 |
| Nippon Special Medical School | (1912) | 1 |
| Okayama Special Medical School | (1901) | 1 |
| Sai Sei Medical College, Tokyo | (1904) | 1 |

FAILED

| | | |
|--------------------------------------|--------|---|
| University of Louisville | (1912) | 1 |
| Saginaw Valley Medical College | (1902) | 1 |
| Barnes Medical College | (1905) | 1 |
| Kyushu Imperial University | (1913) | 1 |
| Nippon Special Medical School | (1912) | 1 |

Medicolegal

Illegal Prescribing of Intoxicating Liquor

(City of Seattle vs. Hewetson (Wash.), 164 Pac. R. 234)

The Supreme Court of Washington affirms a conviction of the defendant, a licensed physician, who was charged with having issued a prescription for whisky, without having any good reason to believe that the person to whom it was issued was actually sick, or that the liquor was required as medicine. The court says that the evidence showed that the defendant had an office in the back part of a room occupied by a drug store. That the office could be entered by a door from the portion of the building used for the drug store. That on the evening of Feb. 19, 1916, the complaining witness went to the defendant for the purpose of getting a prescription for liquor. That he entered through the drug store, found seven or eight persons standing in line, waiting for similar prescriptions, and, when his turn came, said to the defendant that he had a cold, or a bad cold. That thereupon the defendant inquired of him if he would like a little stimulant, to which he replied, "Yes." That before receiving the prescription he was required to sign a statement as follows: "I, the undersigned, do declare that the prescription written for me by Dr. J. W. Hewetson for intoxicating liquor, on this date is for medical purposes; that I am sick and in need of medicine, and will take the same according to directions. Dated this 19th day of February, 1916. M. W. Palmer, 135 N. 75th St." That there was no examination of the complaining witness as to his physical condition. The evidence further showed that the record book and the prescription file at the drug store disclosed that, February 19, 164 prescriptions for liquor had been filled; February 18, 103; February 17, 105, and February 16, 83—and that most of these prescriptions had been written by the defendant. It was admitted, on the trial, that any one "could get a prescription for intoxicating liquor unless he refused to sign one of these statements," and that the defendant had "for the past two years written prescriptions free of charge." There was also some evidence as to the number of persons standing in line, waiting to have prescriptions written, on other occasions than the one above referred to. Under this evidence, and other details that appeared in the testimony, the question whether the defendant had ground to believe that the person to whom he issued the prescription was actually sick, or that liquor was required as medicine, was for the determination of the jury. It could not be held, as a matter of law, on such evidence, that the plaintiff had failed to prove that the defendant, when he issued the prescription for which he was being tried, did not have good reason to believe that the person to whom it was issued was actually sick, and that the liquor was required as medicine. The real issue in such a case is whether the prescription was given in good faith, and, as bearing on this question, the number of prescriptions given by the accused, within a specified time, for intoxicating liquor, to various persons, as found on the file of the druggist, in whose store the defendant kept his office, was competent. The sections of the city ordinance which the defendant was charged with violating were regulative in their nature, and, in passing such an ordinance, the city acted within its power.

Society Proceedings

COMING MEETINGS

Amer. Acad. of Ophthal. and Oto-Laryng., Pittsburgh, Oct. 29-30.
Am. Assn. for Study and Prev. of Inf. Mort., Richmond, Va., Oct. 15-17.
American Association of Railway Surgeons, Chicago, Oct. 17-19.
Amer. Public Health Association, Washington, D. C., Dec. 4-7.
Clinical Congress of Surgeons, Chicago, Oct. 22-26.
Kentucky State Medical Association, Louisville, Nov. 6-9.
Medical Association of the Southwest, Kansas City, Oct. 15-17.
Nevada State Medical Association, Reno, Oct. 18-19.
Southern Medical Association, Memphis, November 12-15.
Virginia State Medical Society, Roanoke, Oct. 23-26.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

Thirtieth Annual Meeting, held at Newark, N. J., Sept. 17-19, 1917

The President, Dr. JOHN W. KEEFE, Providence, R. I.,
in the Chair

Fundal Hysterectomy to Reduce the Menstruating Surface

DR. GORDON K. DICKINSON, Jersey City, N. J.: Fundal hysterectomy, done through the vagina, is a simple, safe and effective procedure. After a purse-string has been placed around the anus, a clip is applied to each labium, which is retracted open. Into the vagina is poured an ounce or more of 3.5 per cent. tincture of iodine, which is allowed to remain while the patient is being draped. When everything is ready, a volcellum is put on the cervix and it is brought down. A transverse incision is made anterior to the cervix, the bladder is separated from the uterus, the peritoneal cavity is opened, and the fundus is brought into the vagina. Clips are applied alongside the uterus to compress the circulation slightly and to act as retractors. A V-shaped incision is then made through the substance of the uterus for various depths, depending on the extent of the disease as estimated by the hemorrhage. This is not made too close to the fornix because the object is not so much the reduction in size of the uterus as the reduction of the menstrual surface. After this wedge-shaped piece is removed, both fornices should be cauterized thoroughly. If not, they will respond at the menstrual period, and, producing tension, give rise to pain. The cervical portion should also be touched for aseptic reasons. The part removed is carefully inspected for any appearance of malignancy. With a small, sturdy, curved needle the two flaps are approximated, stanching hemorrhage. The peritoneal surface is further brought together by running catgut, the clips are removed, the uterus is pushed back into place, and the anterior colpotomy wound sutured.

DISCUSSION

DR. ALBERT GOLDSPOHN, Chicago: Some obstetricians may object to opening the abdomen and cutting the uterus in order to find out what is wrong in it. More efficient work can be done medically to help some of these cases that are not extremely bad. Tincture of iodine applied effectively to the endometrium, say about twice a month, will make it unnecessary to operate in many of these cases. Zinc chlorid will be needed once in a while, and although it is destructive, it will do the work. If zinc chlorid is to be applied well to the endometrium, it is necessary to dilate the cervical canal. The woman will need to have morphin, or the cervical canal must be anesthetized with phenol (carbolic acid) or cocain. Ample dilation is made under a clean technic. The application is made with some kind of syringe applicator, the cervical canal being cauterized extensively, but not the fundus. Then the zinc chlorid is introduced without any difficulty. Treatment of this kind does much more good than any mechanical curettement.

DR. HUGO O. PANTZER, Indianapolis: To ablate the entire endometrium would inflict unnecessary violence on the sexual function and on the chemism of the whole body, and we should hesitate to use the cautery for the destruction of the endometrium. It is better to remove only a part of the endometrium, as suggested by the essayist. I wonder whether we ought to regard these cases as toxemias due to a focal infection.

Physical Conditions in Women Warranting Sterilization

DR. E. W. HEDGES, Plainfield, N. J.: There are conditions when sterilization will save lives that otherwise would be sacrificed. The operation is indicated when a woman has had eclampsia in two successive labors or when real diabetes exists. Chronic nephritics should never marry or conceive. The same rule applies in cases of pulmonary tuberculosis. Both diseases are aggravated by pregnancy, and a fatal termination is hastened. Patients with bad cases of heart decompensation should not conceive. The vast majority of the children in such cases die in abortion, premature labor or stillbirth, and a third of the mothers needlessly lose their lives. In all the classes of cases mentioned, the children, even if born alive, enter life with a physical handicap, and the risk for the mother is so great that it should be prevented by sterilization. If seen first when pregnancy has commenced, an abdominal hysterotomy and sterilization should be done at the same time. If the child is near viability, an attempt may be made to tide the patient over a short time and then bring on labor. As to pyosalpinx, if the woman is well to do, she should be let alone with a nurse and a fountain syringe and an easy chair; but if she has to earn her living, her tubes should be taken out and her health restored. Persons with certain forms of insanity, the feeble-minded and idiots, as well as epileptics, should be cared for in institutions; but if the patient lives at home, the question of sterilization should be considered.

DISCUSSION

DR. EDWARD J. ILL, Newark, N. J.: Dr. Hedges has touched on a question that is going to be abused just as much as was the removal of the uterus or the ovaries. The sterilization of women is a legitimate and proper procedure, but we must be careful in the selection of cases. I think we all agree that the state has a perfect right to sterilize epileptics and criminals, the insane and the idiotic, whether male or female. We can also say that patients who have undergone repeated cesarean section should be sterilized. When it comes to cases of chronic nephritis, I am not quite sure that we have a right to sterilize such women. In these days of commercial crazy surgery, it is well worth while to set a limit to what we are going to do in this particular field.

DR. HERMAN E. HAYD, Buffalo: Dr. Hedges suggests an omniscience on the part of the surgeon that does not exist. For him to assume that such and such a case of diabetes, and such and such a case of chronic nephritis is going to terminate fatally is unscientific. It is too sweeping, and, moreover, that we should possess surgical qualifications which will enable us to carry these people through this surgical undertaking without a mortality is equally absurd and extravagant. I believe that sterilization would be justifiable in these cases of chronic nephritis and of diabetes, provided these women may die of some unrelieved condition, such as a perforating ulcer of the stomach, a duodenal ulcer, an acute gangrene of the gallbladder, or an acute appendicitis.

DR. GORDON K. DICKINSON, Jersey City, N. J.: I have never had the courage to sterilize women, except for narrow pelvis, and when the children cannot be born except by repeated cesarean sections. If we feel the necessity of saving a woman from pregnancy; if, after carefully studying the woman as well as the condition, we think it is wise to sterilize her, we should do so, but not until we try other measures which are well known and which are not surgical.

DR. CHARLES L. BONIFIELD, Cincinnati: Certain conditions have been mentioned which justify sterilization; but the essayist's enthusiasm has carried him beyond the sphere of a private physician. If the state makes laws to prohibit marriage, or to necessitate the sterilization of certain women, we shall, in obeying these laws, be considered good citizens. But my conscience will not permit making a law for myself as broad as the doctor has laid down. I do not believe it is within the province of the physician, in some of these conditions, to place a woman so that she cannot become pregnant. If she should not become pregnant, it is the physician's duty to tell her and her husband so, and then they must decide what shall be done.

DR. ROBERT T. MORRIS, New York: Dr. Hedges' paper is all right, but it requires elaboration. I would not think of sterilizing a woman for diabetes until I had ascertained the cause of her diabetes. We must remember that diabetes is not a disease but a symptom. As to tuberculosis, more than 50 per cent. of the people in all the civilized world have had evidences of this disease of one sort or another during some stage of their lives. In tuberculosis of the lungs, advancing and uncontrolled, I would say, sterilize the woman.

DR. WILLIAM E. DARNALL, Atlantic City, N. J.: I do not believe that Dr. Hedges meant to say that sterilization should be performed in every one of the cases he enumerated, but I do believe there are patients in each one of these classes that should be sterilized. After a thorough study of the case of the woman and her tendencies, there may be found in each class some women who need to be sterilized.

DR. E. W. HEDGES, Plainfield, N. J.: If a woman presented anasarca, rapid heart, dyspnea and extreme symptoms of poisoning from chronic nephritis, I would not hesitate to sterilize her. When the textbooks tell us that 30 per cent. or more of mothers that become pregnant under conditions of chronic nephritis die, we are warranted in advocating sterilization of such women to save life.

Operation for the Cure of Complete Perineal Laceration

DR. EDWARD J. ILL, Newark, N. J.: I make an H-shaped incision which extends from just inside Bartholin's duct down to the outer side of and behind the ends of the sphincter. The horizontal bar of the H starts above the end of the sphincter and continues across the vaginorectal junction. The anterior and posterior flaps are elevated, particular care being exercised to denude the ends of the sphincter. Submucous suture of the rectum by a double line of fine plain catgut is done. The catgut never touches the rectal mucous membrane. Deep silver wire perineal sutures are used, and the vagina is sutured with plain catgut.

Prolapse of the Uterus

DR. CHARLES L. BONIFIELD, Cincinnati: Recognizing how and why prolapse has occurred, the rational treatment is to decrease the weight of the uterus, replace it in its normal location and attitude and relieve it of all its abnormal burdens. The weight of the uterus may be decreased by rest in bed, curettage and amputation of the cervix, which is always hypertrophied in these cases. The uterus may be held in its normal place and attitude by a Gilliam operation, or, if the patient has passed the child-bearing period, by a ventral suspension, which is a little more easily and quickly done. The uterus may be relieved of other burdens by the proper operations on the posterior vaginal wall and perineum and the anterior vaginal wall. Some surgeons do not like to take the time necessary to perform the surgical steps that result in an anatomic and physiologic cure of these cases. If the operator is determined to be very deliberate about his work, there is no reason why the operation should not be divided into two steps. It is better to restore a woman to her normal condition by an operation that requires time and care for its execution, than to mutilate her with one that seems more brilliant and can be done in less time.

Operative Treatment of Procidentia

DR. ARTHUR T. JONES, Providence, R. I.: In the selection of an operation we must take into consideration the age of the patient, whether the woman is still in the child-bearing period and capable of becoming pregnant. No operation which does not permit of pregnancy and the patient carrying her child to term should be performed on a woman still within the child-bearing age. If it is necessary to remove the uterus, the vagina and cervical stump may be suspended so as to prevent further prolapse of the vagina and cervix. No operation for procidentia is satisfactory which does not include the proper vaginal and perineal work, as support is needed below in conjunction with any suspension or interposition operation. In women still within the child-bearing period, without complications or disease of the appendages, the Alexander operation, in connection with proper vaginal

work, has proved very satisfactory in my hands. In women past the menopause, the interposition operation of Watkins-Wertheim has given greater satisfaction than any other method.

Preeclamptic Cesarean Section

DR. JOHN WILSON POUCHER, Poughkeepsie, N. Y.: When a patient at or approaching term, in spite of all means of elimination, shows by nervousness, sleeplessness, severe headaches, high blood pressure, edema and excessive albuminuria that convulsions are imminent, she should be delivered at once by the method that will cause the least delay, produce the least shock, and give both mother and child the best chance for recovery. Since 1914 I have done seven preeclamptic cesarean sections. All seven mothers and eight children survived. Two were operated on after labor had begun, five before the beginning of labor. Two suffered postpartum convulsions, two having two convulsions, the other one convulsion, which were easily controlled.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

September, XXII, No. 2

- 1 Behavior of Cross Striated Muscle in Tissue Cultures. W. H. Lewis and M. R. Lewis.—p. 169.
- 2 Studies on Mammary Gland. Fetal Development of Mammary Gland in Female Albino Rat. J. A. Myers, Minneapolis.—p. 195.
- 3 Existence of Typical Oestrous Cycle in Guinea-Pig; Study of Its Histologic and Physiologic Changes. C. R. Stockard and G. N. Papanicolaou, New York.—p. 225.
- 4 Study of Intercalated Disks of Heart of Beef. H. E. Jordan and J. B. Banks.—p. 285.

American Journal of Physiology, Baltimore

September, XLIV, No. 2

- 5 Study of Clotting of Plasma of Frog's Blood and Transformation of Clot into Fibrous Tissue. G. A. Baitzell, New Haven, Conn.—p. 109.
- 6 Volume of Blood During Hibernation and Other Periods of Year in Woodchuck (*Marmota Monax*). A. T. Rasmussen and G. B. Rasmussen, Minneapolis.—p. 132.
- 7 *Relation of Rate of Spontaneous Liberation of Epinephrin to Rate of Blood Flow Through the Suprarenals. G. N. Stewart and J. M. Rogoff, Cleveland.—p. 149.
- 8 *Effect of Varying Calcium and Potassium Content of Perfusion Fluids on Vagus Inhibition. B. M. Brine, New York.—p. 171.
- 9 *Action of Epinephrin on Blood. M. L. Menten, Chicago.—p. 176.
- 10 *Effect of Accumulation of Carbon Dioxid on Tidal Air and on H-Ion Concentration of Arterial Blood in Decerebrate Cat. R. W. Scott, Cleveland.—p. 196.
- 11 Skin of Catfish (*Amiurus Nebulosus*) as Receptive Organ for Light. A. P. Van Heusen.—p. 212.
- 12 *Effects of Epinephrin on Distribution of Blood. Venous Discharge from Thyroid Glands. R. E. L. Gunning, Chicago.—p. 215.
- 13 *Physiology of Stomach; Hunger and Appetite in Fever. J. Meyer and A. J. Carlson, Chicago.—p. 222.
- 14 *Id. Influence of Experimental Ulcers of Stomach and Duodenum on Hunger Contractions of Empty Stomach. J. R. Dundon, Chicago.—p. 234.
- 15 Genesis and Inhibition of Extensor Rigidity. S. Cobb, A. A. Bailey and P. R. Holtz, Baltimore.—p. 239.

7. Effect of Blood Flow on Liberation of Epinephrin.—It is shown by Stewart and Rogoff that within the limits of error of the method used for the assay (rabbit intestine and uterus segments) the concentration of epinephrin in the suprarenal vein blood collected from a cava pocket varies in different samples from the same animal inversely as the rate of blood flow through the glands during the period of collection, the rate of output of epinephrin per minute being constant under the experimental conditions for a considerable range of blood flow. The rule fails, of course, when the rate of blood flow is diminished below the value at which the concentration of epinephrin has reached the possible maximum. For this reason determinations of the rate of spontaneous liberation of epinephrin by assays on drawn supra-

renal vein blood should be made on samples obtained with a rate of flow well above this limiting value.

8. **Effect of Calcium on Vagus Inhibition.**—Brine found that calcium-free solutions or solutions with a very small percentage of calcium do not interfere with vagus activity, contrary to results previously reported.

9. **Action of Epinephrin on Blood.**—Blood from the suprarenal vein of a dog, diluted to 10 per cent., 6.6 per cent. and 5 per cent. with normal saline, Tyrode's solution or dog's serum in which the dissolved oxygen is kept at a minimum, shows spectroscopically intensification of the oxyhemoglobin bands. Spectra obtained when epinephrin (base) is added to diluted venous blood are identical with those given by suprarenal vein blood similarly diluted. Venous blood to which epinephrin is added or suprarenal vein blood forming an increase of oxyhemoglobin when diluted show in from one to five hours, if the oxygen dissolved in the dilution medium be minimal, a transformation of the oxyhemoglobin into urobilin. Addition of epinephrin to diluted human venous blood causes an increase in the intensity of the oxyhemoglobin absorption bands. The possible physiologic significance of these reactions for the heart and lungs in the living organism is discussed by Menten.

10. **Carbon Dioxid Acidosis.**—The definition that acidosis is a condition in which there is an actual increase in the H-ion concentration of the blood, Scott says, is the only one that is sufficiently comprehensive.

12. **Effect of Epinephrin on Blood Flow in Thyroid.**—Experiments made by Gunning showed that epinephrin in all dosages produces vasoconstriction in the thyroid gland. There is a slight tendency to overrecovery in the outflow, due supposedly to vascular fatigue. The threshold is lower than in any other organ so far studied. In no case was primary dilatation observed. The literature seems to support the apparent paradox that an increased secretory activity of the thyroid is accompanied by vasoconstriction.

13. **Hunger and Appetite in Fever.**—There is an absence of hunger contractions and a lowering of the stomach tonus during fever in dogs when the temperature reaches 103 F. and above; this being especially true in the temporary fevers. The temperature elevation itself is a factor in the depression of the stomach tonus and an inhibition of hunger contractions. The splanchnic nerves do not appear to be involved in the inhibition. The fever or the toxins appear to induce a lowering of vagus tone, and this leads to a cessation of the hunger contractions. But the authors do not believe that this will account for absence of hunger during a fever lasting ten to twenty days. Bacterial toxins, namely, B. paratyphoid toxin, B. prodigiosis, tetanus and diphtheria toxin, sodium nucleate, have no direct action on the contractions of stomach musculature, particularly of pyloric strips. Starvation does not induce fever in new-born pups.

14. **Experimental Ulcers and Gastric Hunger Contractions.**—In three out of four dogs with ulcers in the duodenum or the pyloric end of the stomach the motility of the empty stomach was greater than normal. But this augmentation of the gastric hunger contractions was not sufficiently marked to account for the excessively painful character of these contractions in ulcer patients. It is therefore probable, says Dundon, that the hunger pains in gastric and duodenal ulcers in man are not due to excessive hunger contractions, but to hyperexcitability of the sensory nerves in the stomach wall, as suggested by Carlson. The effects of gastro-enterostomy on the gastric hunger contractions are variable, with a tendency to depression. The hypomotility, when present, may be due to valve-like action of the intestine opposite the stoma causing retention of the food in the duodenum and hence a reflex inhibition of the stomach from the duodenum as well as regurgitation through the stoma.

American Journal of Roentgenology, New York

September, IV, No. 9

- 16 Congenital Absence or Defects of Bones of Extremities. P. Lewin, Chicago.—p. 431.
- 17 Roentgenotherapy of Peripheral Tuberculous Adenopathy. E. Albert-Weil, Paris.—p. 449.
- 18 Localization of Foreign Bodies. L. G. Cole, New York.—p. 455.

- 19 Roentgen Diagnosis of Pulmonary Tuberculosis. H. K. Pancoast, Philadelphia.—p. 462.
- 20 Roentgen Diagnosis of Polypi of Maxillary Sinuses. C. A. Waters and H. P. Doub, Baltimore.—p. 470.
- 21 Standard Tintometer for Sabouraud's Pastilles. D. Corbett, London.—p. 472.
- 22 Case of Cardiospasm Resembling Malignant Stricture of Esophagus. J. S. Derr, Atlanta, Ga.—p. 477.

American Review of Tuberculosis, Baltimore

September, I, No. 7

- 23 Experimental Tuberculosis of Rabbit's Liver: A Study of Immunity. W. B. Soper, Saranac Lake, N. Y.—p. 385.
- 24 Reaction of Local Tubercle. Method for Determining Value of Indirect Therapeutic Agents in Tuberculosis. H. J. Corper, Chicago.—p. 407.
- 25 *Gold Therapy of Tuberculosis. L. M. DeWitt, Chicago.—p. 424.

25. **Gold Therapy of Tuberculosis.**—DeWitt's work on the gold therapy of tuberculosis has extended over two years and was carried on practically exclusively on tuberculous guinea-pigs. She began her experiments with the ordinary gold cyanids, $\text{AuK}(\text{CN})_2$, $\text{Au}(\text{CN})_3$ and AuCN . Her results show that life was not prolonged and the disease was not checked as compared with the control animals. The average duration of the disease in the untreated controls was considerably longer than in the treated animals. The extent of the disease in the two set of animals was also about the same. The gold was administered by intracardiac, intramuscular and subcutaneous injections at intervals, with feeding of the gold salt on all days when there was no injection. The subcutaneous injections caused considerable necrosis and the intracardiac were by no means without danger; and the treatment apparently had no beneficial effect on the progress of the disease.

Archives of Pediatrics, New York

August, XXXIV, No. 8

- 26 *Seven Years of Clinical and Laboratory Experience with Meningitis in New York City. P. L. Du Bois and J. B. Neal, New York.—p. 561.
- 27 Poliomylitis; Analysis of Sixty-Three Cases. W. L. Carr, New York.—p. 591.
- 28 Macroscopic and Microscopic Findings in Poliomylitis. J. H. Larkin, New York.—p. 601.
- 29 Care and Feeding of Premature Infant: Analysis of Cases. A. Brown, and R. George, Toronto.—p. 609.

26. **Experience with Meningitis.**—This article contains too much meat to be abstracted in its entirety, but the section on treatment may be summarized as follows: Various methods of treating the acute stage of poliomyelitis were tried during the summer of 1916, without very decisive results. The intraspinal injection of epinephrin was endorsed by only a few after it had been used for a short time. The injection of human immune serum was quite extensively tried. Injecting a foreign substance into the slightly inflamed meninges sets up in most instance an acute aseptic meningitis, as is shown both by changes in the spinal fluid, and clinically by an increased temperature, headache, vomiting and rigidity of the neck. It seems possible that this increased inflammatory reaction may tend to accentuate the inflammatory process already existing in the subjacent substance of the brain and cord. That this reaction may be harmful was further borne out by the results of animal inoculation, the treated animals showing a higher mortality and a more rapid death than the controls, in the majority of cases. While great improvement seemed to follow the administration of serum in certain cases, equally great improvement occurred with no serum in at least an equal number of cases. In view of these considerations the physicians of the meningitis division of the New York Department of Health feel that the best treatment of early cases is complete rest, with lumbar puncture for the relief of pressure symptoms, in addition, of course, to general symptomatic and hygienic treatment.

Arkansas Medical Society Journal, Little Rock

September, XIV, No. 4

- 30 Some of the Most Important Medical Plants Indigenous to State of Arkansas. J. T. Clegg, Siloam Springs.—p. 73.
- 31 Vaccination. G. A. Warren, Black Rock.—p. 76.
- 32 Case of Foreign Body in Larynx. R. B. Moore, Little Rock.—p. 77.
- 33 Amputation of Arm with Razor and Hand Saw. M. S. Alexander, Wirt, Okla.—p. 78.

Boston Medical and Surgical Journal*September 20, CLXXVII, No. 12*

- 34 Hemorrhage During Pregnancy; Accidental, Inevitable, Postpartum. R. L. De Normandie, Boston.—p. 391.
- 35 *Chronic Valvular Heart Disease in Pregnancy and Labor. F. S. Kellogg, Boston.—p. 398.
- 36 Technic of Abdominal Cesarean Section; Report of Sixty Cases. R. C. Cochrane, Boston.—p. 410.
- 37 Bleeding in Pregnancy. R. S. Titus, Boston.—p. 413.
- 38 Management of Labor. G. P. Twitchell, Greenfield.—p. 419.

35. **Chronic Valvular Heart Disease in Pregnancy.**—The following conclusions are drawn by Kellogg from a study of cases of chronic valvular heart disease in pregnancy and labor. Of pregnant women, 1 to 2 per cent. have chronic endocarditis. Under prenatal care, 15 to 20 per cent. have shown some decompensation, half of these 1 degree decompensation, half 2 degrees decompensation. Cases with stenosis of the mitral valve, with or without insufficiency, are far likelier to decompensate in pregnancy than cases with simple insufficiency. The maternal mortality of chronic valvular disease in pregnancy is 2 per cent. The maternal mortality of cases showing 2 degrees decompensation, requiring induction and 2 degrees decompensation in labor, is 45 per cent. Mitral stenosis is almost always present in fatal cases. Fetal mortality runs from 10 per cent., in a series including all cases, to 40 per cent. in cases with 2 degrees decompensation. Chronic valvular heart disease complicating pregnancy is, in view of these figures, potentiation of their lives so that they do not again decompensate, and so that they will stand any appropriate method of delivery at term. Many chronic valvular heart cases compensated and with only slight degrees of decompensation and some with 2 degrees decompensation will safely deliver themselves if allowed to. Though this fact is undeniably true, theoretically, and with what data we have at hand, it should not be allowed. Normal delivery and accouchement forcé have no place in the treatment of chronic valvular heart cases in pregnancy or labor. It is not justifiable to attempt to carry a woman who is decompensated to term for the sake of her baby unless she reacts favorably to treatment almost immediately, especially as the fetal mortality in these cases is so high that one overrisks the mother for the sake of a problematic child.

Canadian Medical Association Journal, Toronto*September, VII, No. 9*

- 39 Anesthesia from Commercial Ether Administration and What It Is Due To. J. H. Cotton, Toronto.—p. 769.
- 40 *Shrapnel Balls. Their Roentgenographic Characteristics, Compared with Bullets and Other Foreign Bodies. A. H. Pirie.—p. 778.
- 41 *Radical Cure of Inguinal Hernia. F. N. G. Starr.—p. 782.
- 42 Subconjunctival Epidermal Cyst. J. W. Stirling, Montreal.—p. 785.
- 43 Complications of Mastoiditis. D. H. Ballon, Montreal.—p. 788.
- 44 Medical Education in Japan. F. W. Schofield, Seoul, Korea.—p. 796.
- 45 *Helping to Solve a Prairie Problem. How People of Western Provinces Are Endeavoring to Provide Hospital Accommodation for Rural Sick. D. G. Tuckwell, Lloydminster, Saskatchewan.—p. 800.
- 46 Ozena Among Various Races of Earth. J. N. Roy, Montreal.—p. 804.
- 47 Bacteriuria in Some Chronic Diseases with Special Reference to Intestinal Stasis. W. A. Bigelow, H. S. Sharpe and L. J. Carter, Brandon, Man.—p. 810.
- 48 Report on Spring-Balance Muscle Tests as Devised by Lovett. L. M. Lindsay, Montreal.—p. 815.
- 49 Case of Erythema (Vaquez' Disease). R. J. Erickson, Montreal.—p. 817.
- 50 Fracture in Utero; Pregnancy in Bicornuate Uterus; Typhoid. H. H. McNally, Fredericton, N. B.—p. 820.

40. **Roentgenographic Characteristics of Shrapnel Balls Compared with Bullets and Other Foreign Bodies.**—In about a year at a hospital in France where Pirie was in charge of the roentgen-ray department, 241 plates of shrapnel balls and 242 plates of bullets were made. He says that shrapnel balls may be found entire without any deformity, and every stage of deformity may be met with till an appearance is obtained as if the ball had exploded into small particles. There is one entrance wound only, if the ball is entire, and the wound is rather characteristic. If the ball has struck an external object before striking the patient, it may break into two or more pieces, and the wounds of entrance will then be multiple. When the ball passes into the body it remains there.

A shrapnel ball rarely passes through the body and comes out at the other side the way a bullet does. When a shrapnel ball ineets a bone it becomes deformed according to the resistance offered by the bone, and some of the lead is left behind, on or near the bone. There were two bones only which Pirie found a shrapnel ball cannot penetrate, namely, the femur in its shaft and the vault of the skull.

The contrast between the damage done by a bullet and that done by a shrapnel ball is very marked when a direct hit is made on the femur or on the skull. A bullet hitting the femur splinters the bone, as it does a glass bottle. At the same time, the bullet breaks into pieces, and its fragments and those of the femur are scattered through the limb, or blown out through the skin as if an explosion had taken place. When a bullet goes through cancellous bone like the head of the femur it may punch a clean hole and cause very little fracturing, but one of the worst fractures is caused when it hits the dense bone of the shaft near its junction with the cancellous bone. In this case the splinters of dense bone are driven into and split up the cancellous bone.

41. **Radical Cure of Inguinal Hernia.**—Starr calls attention to a method of attack on a hernia from within the abdomen when one is operating for other conditions and it is desired to repair a hernia at the one sitting. A pair of curved forceps may be introduced through the internal ring into the sac and the wall of the sac grasped and gradually pulled up into the abdomen until the fundus of the sac becomes completely invaginated. Then the suture with which it is intended to close the abdomen is passed through the neck of the sac and tied to the parietal peritoneum. The suture is then continued along the sac, suturing it to the parietal peritoneum, so that by the time the sac is fully dealt with the suture has reached the cut edges of the abdominal incision and is then carried along, closing the peritoneum. This makes a perfectly satisfactory cure of the hernia, is easily and quickly done, besides saving a second incision. Starr has records of seven cases that have stood the test for two years and more.

45. **Western Provinces are Trying to Provide Hospital Accommodation for Their Rural Sick.**—The question of hospital accommodation and nursing attention for the prairie sick has been the subject of legislation in the twin provinces of Saskatchewan and Alberta. Provision has been made whereby groups of rural and urban municipalities may cooperate in the erection and maintenance of hospitals to serve their people. Each municipality concerned has the power to levy a rate, not exceeding two mills on the dollar, on all assessable property within its borders, for hospital purposes. The managing board is composed of representatives appointed by the councils of the cooperating municipalities, but not necessarily members thereof, and is a body corporate, with powers governing such bodies. The feature which has commended itself more especially to the prairie people in connection with the establishment of these rural hospitals is the immense benefit which they are calculated to confer in maternity cases and emergency sickness.

Broadly speaking, four rural municipalities require a hospital providing accommodation for twenty-five beds, besides quarters for the working staff. The cost of such an institution for building and equipment is estimated at from \$1,200 to \$1,500 per bed capacity, or between \$35,000 and \$40,000. Raised by debentures spread over a term of thirty years, and borne by the municipalities in proportion to their assessable value, this capital expenditure represents a very modest increase to the homesteader's taxes. Regarding maintenance, careful investigation suggests that from fifty-five to seventy patients might be expected from each rural municipality, with an average stay in the hospital of fourteen days, at an estimated cost of \$2 a day per patient. This would mean that for capital cost, on thirty year debentures, bearing interest at 6 per cent., each rural municipality would have to provide less than \$1,000 per annum, while for maintenance, should the maximum estimate be realized and seventy patients receive treatment for fourteen days per patient, \$1,960 would be required, or a total cost to each municipality of something like \$2,960. As the Saskatchewan government, however, makes a grant of 50 cents per day for every patient receiving

treatment in the hospital, \$490 would be received from this source, leaving the rural municipality to provide less than \$2,500 to meet its debentures, establish a depreciation fund, and pay the hospital fees of any of its ratepayers or their dependents in the province of Saskatchewan. A 1 mill rate will yield at least \$2,750, or \$250 in excess of the total amount required as the proportion from any one municipality to finance the whole undertaking of building, equipping and providing free hospital accommodation, and the best of skilled nursing attention for every ratepayer and his dependents who may require it, and that without involving any sense of obligation, as the system is one of cooperative municipal insurance.

Cleveland Medical Journal

September XVI, No. 9

- 51 What Should Practitioner Know About Wassermann Reaction? A. A. Eisenberg, Cleveland.—p. 587.
- 52 Prophylaxis of Venereal Disease in Army. H. N. Cole, Cleveland.—p. 601.
- 53 Indications and Method for Removal of Tonsils. H. G. Sherman, Cleveland.—p. 612.
- 54 Methodless Technic for Cataract Operation. H. G. Sherman, Cleveland.—p. 616.
- 55 Gradual Reduction Treatment for Morphin Addictions. M. Loewenthal, Cleveland.—p. 618.

Colorado Medicine, Denver

September, XIV, No. 9

- 56 Phase of Ovarian Secretion. C. S. Elder, Denver.—p. 234.
- 57 Effect of Intestinal Stasis on Eye, Especially in Iritis. H. M. Thompson, Pueblo.—p. 236.
- 58 Acute Poliomyelitis. M. E. Miles, Boulder.—p. 240.
- 59 Historical Sketch of Clinical Pharmacology of Digitalis. R. E. Morris, Minneapolis.—p. 243.
- 60 Open-Air Schools. S. A. Russell, Denver.—p. 247.

Florida Medical Association Journal, Jacksonville

September, IV, No. 3

- 61 Medical Preparedness in Great Drive for Democracy. J. C. Bloodgood, Baltimore.—p. 63.

Indiana State Medical Association Journal, Fort Wayne

September, X, No. 9

- 62 Report on Venarsen in Treatment of Syphilis. F. A. Brayton, Indianapolis.—p. 339.
- 63 Nerve Blocking for Relief of Genital and Anal Pruritus. O. Smiley, Indianapolis.—p. 341.
- 64 Bacteriology of Mastoiditis. H. K. Langdon, Indianapolis.—p. 342.

Iowa State Medical Society Journal, Des Moines

September, VII, No. 9

- 65 Some of the More Important Advances in Diagnosis and Treatment of Tuberculosis. F. M. Pottenger, Monrovia, Calif.—p. 329.
- 66 Intestinal Obstruction; Review of Experimental Observation with Practical Suggestions. J. N. Jackson, Kansas City, Mo.—p. 336.
- 67 Plea for More Rational Therapy in Chronic Endocarditis, Particularly with Decompensation. E. D. McClean and K. L. Johnston, Oskaloosa.—p. 339.
- 68 Carcinoma; Treatment—Past, Present, Prospective. L. H. Branson, Iowa City.—p. 343.
- 69 Treatment of Acute Gonorrhea by General Practitioner. C. D. Enfield, Jefferson.—p. 346.

Journal of Cutaneous Diseases, Chicago

September, XXXV, No. 7

- 70 Case of Multiple Benign Tumor-Like New Growths of Schweninger and Buzzì. W. A. Pusey, Chicago.—p. 582.
- 71 Electric Caution in Cutaneous Surgery. H. H. Hazen, Washington, D. C.—p. 590.
- 72 Mode of Absorption of Mercury in Inunction Treatment of Syphilis. U. J. Wile and J. A. Elliott, Ann Arbor, Mich.—p. 594.
- 73 Coolidge Tube in Treatment of Nonmalignant Diseases of Skin. H. Fox, New York.—p. 599.

Journal of Immunology, Baltimore

August, II, No. 5

- 74 *Intracutaneous Reaction in Infectious Diarrhea. H. M. Baker, Boston.—p. 453.
- 75 Plea for Standardization of Reports of Agglutination Tests. P. Hadley, Rhode Island, N. J.—p. 463.
- 76 Studies in Anaphylaxis. Reciprocal Relations of Antigen and Antibody within Cell. R. Weil, New York.—p. 469.
- 77 *Studies in Protein Intoxication. Vascular Lesions in Chronic Protein Intoxication. T. H. Boughton, Chicago.—p. 501.

- 78 *Fate of Foreign Protein in Acute Anaphylactic Reaction. W. H. Manwaring, Y. Kusama and H. E. Crowe, San Francisco.—p. 511.

- 79 *Rôle of Hepatic Tissues in Acute Anaphylactic Reaction. W. H. Manwaring and H. E. Crowe, San Francisco.—p. 517.

74. **Intracutaneous Reaction in Diarrhea.**—In a series of thirty-three cases the organism of the infectious diarrhea group was isolated in 55 per cent. of the cases. Agglutinins for the dysentery group were found in 12 per cent. of the cases which were found to be negative from the bacteriologic examination and a characteristic smear, as stained by Gram's method, with a typical history in 25 per cent. of the other cases. The intracutaneous reaction, on the other hand, showed 100 per cent. negative results in the control cases. In cases with history of infectious diarrhea positive reactions were obtained in 85 per cent. of the cases.

77. **Vascular Lesions in Protein Intoxication.**—This paper is a continuation of the work previously reported, with especial reference to the occurrence of vascular lesions in various organs. The materials used and methods employed were the same as those previously described, the object desired being to give each animal as many anaphylactic shocks as possible during the course of the experiment, using egg-white and beef serum. Boughton found that repeated injections of foreign proteins in sensitized guinea-pigs produce lesions of the smaller arteries of liver, kidney, spleen and heart, characterized by degeneration and regeneration of endothelium, edema and fissuring of intima and media, and sometimes splitting of the internal elastic lamina. These lesions are interpreted as being subacute rather than chronic. These lesions are rarely found in the larger arteries, and not at all in the aorta. They are practically absent from veins and capillaries. These lesions occur in 100 per cent. of the livers, 100 per cent. of the spleens, 66 per cent. of the kidneys, and 66 per cent. of the hearts, and were most severe in the livers and least severe in the hearts. The lesions were most severe in animals dying or killed soon after the last injection, and were less frequent and severe in animals killed several weeks after the last injection. Perivascular infiltration was observed in 60 per cent. of the animals, though never severe, but was not found in animals killed more than five weeks after the last injection.

78. **Foreign Protein in Anaphylactic Reaction.**—The validity or nonvalidity of the principal theories concerning the nature of the acute anaphylactic reaction was tested by the authors. Perfusion of isolated organs and tissues with dilute foreign proteins furnished no evidence of a measurable destruction of the foreign protein by the blood serum, nor of an appreciable destruction or binding of the foreign protein by the fixed tissues during the acute anaphylactic reaction.

79. **Hepatic Tissues in Anaphylactic Reaction.**—It was found by Manwaring and Crowe that the detoxicating action of the anaphylactic liver is not due solely to the presence of anaphylactic humoral elements. There is evidently an acquired detoxicating function of the fixed liver cells. The detoxicating action is not due to a removal or destruction of the foreign protein in the perfusion fluid. The liver of a normal guinea-pig, repeatedly perfused with a mixture of foreign protein and defibrinated normal or anaphylactic blood, produced little or no change in the toxicity of the perfusion mixture on subsequent tests with isolated anaphylactic lungs. The liver of an anaphylactic guinea-pig, similarly perfused, usually rendered the perfusion fluid almost completely non-toxic for these lungs. Evidence points to the explosive formation or liberation of vasodilator and bronchodilator substances by the sensitized liver cells.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

September, X, No. 3

- 80 *Effect of Caffein on Reaction to Carbon Dioxid of Normal Human Respiratory Mechanism. G. P. Grabfield and J. H. Means, Boston.—p. 159.
- 81 *Certain Antagonists of Pilocarpin. F. Ransom, London.—p. 169.
- 82 *Pharmacologic Studies of Ipecac Alkaloids and Some Synthetic Derivatives of Cephaelin. Studies on Emetic Effect and Irritant Action. A. L. Walters, C. R. Eckler and E. W. Koch, Indianapolis.—p. 185.

83-*Method for Standardization of Thyroid Preparations. J. M. Rogoff, Cleveland.—p. 199.

84 *Influence of Oxygen on Inflammatory Reactions. S. Amberg, A. S. Loevenhart and W. B. McClure, Madison, Wis.—p. 209.

80. **Effect of Caffein on Respiration.**—No significant change was found by Grabfield and Means in the rate of reaction to carbon dioxide as a result of taking various doses (small and large) of caffein alkaloid, by mouth, in two normal human subjects.

81. **Certain Antagonists of Pilocarpin.**—The net result of Ransom's experiments is to make it clear that the chronotrope and inotrope actions of pilocarpin are fundamentally distinct. They are both vagal effects but different groups of vagal fibers are concerned in their production and hence one action can be antagonized while the other remains intact. Atropin paralyzes vagal endings and hence entirely antagonizes the heart actions of pilocarpin. Strontium, digitalis, agaricin and saponin, which, without affecting the vagus, have a positive inotrope action on the frog's heart, antagonize the negative inotrope action of pilocarpin but leave the negative chronotrope effect unimpaired. Epinephrin and caffein antagonize both the actions of pilocarpin, not because they affect either of the two sets of vagal fibers, but because they produce effects the reverse of those which stimulation of the two vagal groups brings about.

82. **Pharmacology of Ipecac Alkaloids.**—The experiments reported by the authors demonstrated that in cats the emetic dose of emetin hydrochlorid is approximately twice that of cephaelin hydrochlorid, and that the higher homologues of this series decrease in emetic power very much in the same ratio as they do in toxicity, as reported in a previous paper. Furthermore, it has been shown that the hydrochlorid, hydrobromid and hydro-iodid of emetin vary only slightly in their emetic power, but that the hydro-iodid of cephaelin iso-amyl ether, due to its relative insolubility, is about one half as emetic as the hydrobromid or hydrochlorid of cephaelin iso-amyl ether and only one sixth as emetic as emetin hydrochlorid. When tested on the conjunctiva of rabbits, emetin and cephaelin are the most irritant of this series and cephaelin iso-amyl ether is least irritating. When injected intramuscularly in rabbits cephaelin iso-amyl ether is the most irritant while the difference between the other less irritant members of the series is not marked. Cephaelin propyl ether phosphate gives no more than a slight local reaction when injected hypodermatically into persons, while cephaelin iso-amyl ether salts cause severe pain, soreness and local inflammation.

83. **Standardization of Thyroid Preparations.**—A method is described by Rogoff in which the specific action of thyroid on tadpoles is used to assay the physiologic value of commercial thyroid preparations. Of seven products purchased in retail drug stores, two indicated about 20 per cent. more activity than a standard preparation, two were equal in value to the standard, one somewhat more than 50 per cent. of the standard, one less than 50 per cent., and one was a practically worthless preparation—being only about 10 to 20 per cent. of the value of the standard.

84. **Influence of Oxygen on Inflammatory Reactions.**—Amberg and his associates found that the intravenous injection of the sodium salts of o-iodoso-benzoic acid and o-iodoxy-benzoic acid inhibits the mustard oil reaction of the rabbit conjunctiva as well as that of the skin. No other visible changes in the organism accompany this inhibiting action. Other substances containing chemically active oxygen, such as the sodium salts of diphthalic peroxid, iodic and periodic-acids have an inhibiting action on the mustard oil inflammation. It seems reasonable to ascribe the inhibiting action of these substances to the chemically active oxygen. Exposure of rabbits to atmospheres with reduced partial pressure of oxygen did not have any marked effect on the intensity of the intracutaneous mustard oil reaction. Intravenous injections of sodium cyanogen seem capable of intensifying the conjunctival mustard oil reaction under proper conditions. Within certain limits an influence on tissue oxidations seems to determine an inhibition or intensification of the response to inflammatory stimuli. It seems possible to alter the character of the conjunctival mustard oil reaction

by intravenous injections of substances, such as sodium hypochlorite. Irritation produced elsewhere in the organism, as by intraperitoneal injections of kaolin, animal charcoal, mustard oil, may exercise an inhibiting influence on the conjunctival mustard oil reaction of the rabbit.

Journal-Lancet, Minneapolis

September 15, XXXVII, No. 18

- 85 Diagnosis of Gallbladder Disease. W. H. Bodenshtab, Bismarck, N. D.—p. 591.
- 86 Acute Empyema of Gallbladder. W. A. Dennis, St. Paul.—p. 595.
- 87 Medical Preparedness. F. A. Spafford, Flandreau, S. D.—p. 599.
- 88 Tuberculous Peritonitis. M. P. Graham, Carrington, N. D.—p. 605.
- 89 Prescribing Lenses After Use of Cycloplegics. D. L. Tilderquist, Duluth.—p. 610.
- 90 Case of Diverticulum of Urinary Bladder with Postmortem Observations. E. H. McIntyre, Virginia.—p. 614.

Medical Record, New York

September 22, XCII, No. 12

- 91 Diabetes Insipidus in Children. R. D. Moffett and M. Greenberger, New York.—p. 487.
- 92 Progress in Surgical Therapeutics. A. Vander Veer, Albany.—p. 495.
- 93 Examination of Patients Suspected of Being Insane. W. R. Dunton, Jr., Towson, Md.—p. 497.
- 94 Technic of Transduodenal Lavage in Office Practice with or without Oxygen Insufflation. M. E. Jutte, New York.—p. 499.
- 95 New Method for Determination of Glucose Content in Urine. J. J. Gurtov, New York.—p. 502.
- 96 Some Ancient Health Laws of Jews. J. H. Marcus, Atlantic City, N. J.—p. 503.
- 97 War and Venereal Diseases. E. K. Tullidge.—p. 505.

Medicine and Surgery, St. Louis

September, I, No. 7

- 98 Mental Pitfalls in Industry—and How to Avoid Them. J. Taft, New York.—p. 679.
- 99 Opportunities Which Industrial Hygiene Offers to General Practitioner and to Public Health Officer. L. I. Harris, New York.—p. 686.
- 100 Hygienic Survey of Cigar Manufacturing in Philadelphia. H. F. Smyth, P. H. Miller and T. G. Miller, Philadelphia.—p. 698.
- 101 Relation of Physician to Some Problems of Modern Industry. F. D. Patterson, Harrisburg, Pa.—p. 719.
- 102 Psychopathic Employee: Problem of Industry. M. C. Jarrett, Boston.—p. 727.
- 103 Industrial Eczema. G. L. Apfelbach, Chicago.—p. 742.
- 104 Relation of Occupation to Disease. E. Miltimore, New York.—p. 750.
- 105 Trinitrotoluene Poisoning. A. Hamilton, Chicago.—p. 761.
- 106 American Chemist and Occupational Diseases. C. Baskerville, New York.—p. 767.
- 107 Some Phases of Medical Supervision of Employees. W. E. Post, Chicago.—p. 772.
- 108 Tuberculosis: Industrial Accident. J. B. Hawes, 2d, Boston.—p. 777.
- 109 Minute Foreign Bodies in Wounds. D. H. Stewart, New York.—p. 780.

New York Medical Journal

September 22, CVI, No. 12

- 110 Blood Pressure. R. F. Ives, New York.—p. 533.
- 111 Physical Measures for Treatment of Abnormal Blood Pressure. W. T. Johnson, Philadelphia.—p. 539.
- 112 Seasickness and Internal Ear Stimulation. L. Fisher, Philadelphia.—p. 542.
- 113 Rheumatism. H. K. Craig, Washington, D. C.—p. 546.
- 114 Goiter; Analysis of One Hundred and Twenty-Five Cases. L. F. Watson, Chicago.—p. 549.
- 115 Sinusitis in Children. K. A. Phelps, New York.—p. 550.
- 116 Bilateral Choked Disk Following Thyroidectomy. F. Krauss, Philadelphia.—p. 552.
- 117 Hygiene of Rural Schools. J. A. Nydegger, Baltimore.—p. 554.
- 118 Medical Department of United States Army. W. W. Reno, Fort Riley, Kan.—p. 537.
- 119 Disposition of Excreta in Trenches. T. H. Goodwin.—p. 558.

Northwest Medicine, Seattle

September, XVI, No. 9

- 120 Glycosuria and Pregnancy. T. Torland, Seattle.—p. 257.
- 121 *Syncytioma Malignum. Review of Literature; Report of Case. R. R. Anderson, Salt Lake City.—p. 259.
- 122 Radicalism or Conservatism in Treatment of Puerperal Infection. T. W. Buschmann, Seattle.—p. 263.
- 123 *Case of Smallpox in Utero. W. A. Rothwell, Kendrick, Ida.—p. 265.
- 124 Role of Gynecology in Care of Insane. A. M. Smith, Tacoma.—p. 265.
- 125 Some Wassermann Test Observations. O. J. West, Seattle.—p. 268.

- 126 Value of Routine Wassermann in One Thousand Consecutive Cases as They Come to Urologist. W. R. Jones, Seattle.—p. 272.
127 Focal Infection from Surgical Point of View. P. Rockey, Portland, Ore.—p. 274.
128 Focal Infections Complicating Eye. O. M. Babbitt, Portland, Ore.—p. 276.
129 Allen Treatment of Diabetes. R. W. Stearns, Medford, Ore.—p. 279.
130 *Case of Atypical Thyroid Disease, Formes Frustes. M. G. Sturgis, Seattle.—p. 281.

121. **Syncytioma Malignum.**—Anderson reports a case from which it would not appear that it is always necessary to do a complete hysterectomy in cases of malignant syncytioma. He believes that most authorities are too radical and that each case must be handled according to the conditions that exist at the time of operation. From the fact that metastasis takes place through the blood, it would seem that, if metastasis had occurred at all, a complete hysterectomy would give little more chance of permanent cure than a resection of the macroscopic growth.

123. **Smallpox in Utero.**—A woman, pregnant about three months, was sleeping in the same bed with her husband who was found to have smallpox. She was immediately removed to another room and she and her two children and a man and woman who were taking care of the family were successfully vaccinated. The woman had a typical reaction to the vaccine virus. The quarantine was raised in six weeks. One month afterward Rothwell was called to see her. On examination he could find no signs of life in the fetus and the os uteri was dilated about the size of a quarter. The vagina was aseptically packed with gauze and at 6 o'clock next morning a six or six and a half months mummified fetus was expelled. Life must have been extinct for some time, as the abdomen was discolored and distended, and the abdominal muscles and integument were very thin and fragile. What was most noticeable, however, was the presence of round, yellow, slightly pitted scars about the size of the end of a lead pencil, distributed over the whole surface of the body, where the scabs had become detached in utero. Also the vesicles and pustules that invariably accompany a severe case of variola vera were present. The mother had never a sign of a papule, vesicle or pustule but she has a normal vaccination scar.

130. **Atypical Thyroid Disease.**—Sturgis' case presents the unusual spectacle of the symptoms of a preexisting hyperthyroidism overlapping and overshadowing a well developed hypothyroidism, and completely dominating the clinical picture. Compared with them, those arising from hyposecretion seemed almost inconsequential, and yet the first examination disclosed the fact that the gland was almost entirely atrophied and had ceased to functionate. That the symptoms of hyperthyroidism had not only persisted but had even increased seemed to warrant the conclusion that the thyroid was only partly at fault. The blood pressure was amazing. For 125 mm. the sounds fairly snapped and they were audible for 200 mm.

Pennsylvania Medical Journal, Athens

September, XX, No. 12

- 131 Portal of Entry and Route of Infection in Tuberculosis in Children. O. Klotz, Pittsburgh.—p. 811.
132 Tubercular Conditions of Ear, Nose and Throat. N. P. Stauffer, Philadelphia.—p. 817.
133 *Metabolism and Successful Treatment of Rheumatoid Arthritis. R. Pemberton, Philadelphia.—p. 820.
134 *Blood Pressure from Standpoint of Clinician. F. J. Dever, Philadelphia.—p. 825.
135 Physician and Referee. P. W. Houck, Harrisburg.—p. 828.
136 Relation of Physician to Some of Problems of Modern Industry. F. D. Patterson, Harrisburg.—p. 832.
137 Maternity Insurance. L. Lehrfeld, Philadelphia.—p. 836.
138 Case of Snake Bite, Treatment. A. S. Daggette, Pittsburgh.—p. 838.

133. **Treatment of Rheumatoid Arthritis.**—The facts emphasized by Pemberton are, first, that in rheumatoid arthritis it is necessary to reduce the carbohydrates by an important amount, varying with each case; second, that it is necessary to reduce the proteins considerably, but relatively not so much; and third, that, although the fats cannot be handled with impunity, they may be used with caution to increase the caloric value of the ingested food and meet in some degree the loss of

weight. Experiments have shown that some patients were carried through to convalescence with an actual gain of weight by using fat in quantities sufficient to equal or exceed the caloric deficit.

134. **Blood Pressure from Standpoint of Clinician.**—Dever urges that a knowledge of blood pressure is an aid in diagnosis, especially in the cardiovascular-renal diseases. An excellent idea of the functional capacity of the myocardium may be obtained and in acute and chronic disease evidence of weakening of the heart thus may be obtained before other signs of circulatory weakness is evident. The blood pressure is a guide in the treatment of certain diseases, notably chronic renal insufficiency as found in chronic interstitial nephritis. The diastolic pressure should be recorded as well as the systolic pressure, as the latter alone is insufficient to reveal all that is to be ascertained by a study of the blood pressure.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

September, XXV, No. 9

- 139 Rôle of Newer Chemistry of Blood in Diagnosis and Treatment. R. B. H. Gradwohl, St. Louis.—p. 209.
140 Some Rare Surgical Conditions. J. J. Link, St. Louis.—p. 217.
141 Fractures of Spine. R. H. Hull, Oklahoma City.—p. 223.
142 Examination of Larynx and Bronchi by Means of Laryngoscope. W. E. Dixon, Oklahoma City.—p. 229.

Tennessee State Medical Association Journal, Nashville

September, X, No. 5

- 143 Angioneurotic Edema—Visceral Crisis; Report of Case. J. L. McGehee, Memphis.—p. 179.
144 Mental and Physical Survey of Retarded Schoolchildren. R. H. Perry, Nashville.—p. 182.
145 Etiology of Diseases of Accessory Sinuses. J. M. Hogshead, Chattanooga.—p. 186.
146 Roentgen Ray Treatment of Skin Diseases. S. S. Marchbanks, Chattanooga.—p. 188.
147 Intussusception; Report of Cases. W. F. Clary, Memphis.—p. 190.
148 Left-Sided Appendicitis. J. L. Crook, Jackson.—p. 193.
149 Some Clinical Features of Early Tuberculosis. G. F. Aycock, Nashville.—p. 195.
150 Nitrous Oxid-Oxygen Analgesia in Labor. R. Patterson, Knoxville.—p. 212.
151 Surgery of Prostate. T. G. Pollard, Nashville.—p. 214.

Texas State Journal of Medicine, Fort Worth

September, XIII, No. 5

- 152 Anatomic Routes for Operations on Long Bones of Upper Extremity. J. E. Thompson, Galveston.—p. 170.
153 Patent Medicine Evil. F. J. Mayer, Opelousas, La.—p. 174.
154 Diagnostic Value of Leukocytosis. W. W. Waite, El Paso.—p. 178.
155 Normal Differential Leukocytic Count as Determined by Study of One Hundred and Fourteen Adults. M. D. Levy, Galveston.—p. 179.
156 Frontal Sinusitis; Report of Cases. W. D. Jones, Dallas.—p. 182.
157 Conservative Treatment of Sinus Infections. L. K. Beck, San Antonio.—p. 184.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

August, XI, No. 2

- 1 *Periodicity of *Microfilaria Nocturna*; Report of Case of Filariasis. W. Yorke and B. Blacklock.—p. 127.
2 *Treatment of Malaria. Intravenous Injections of Quinin Bihydrochlorid. J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie and C. F. Cooper.—p. 149.
3 *Id. Intramuscular Injections of Amylopsin and Trypsin in Simple Tertian Malaria. J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie and C. F. Cooper.—p. 165.
4 *Id. Intramuscular Injections of Quinin Alkaloid in Simple Tertian Malaria. J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie, C. F. Cooper and H. F. Carter.—p. 173.
5 *Occurrence of Intestinal Protozoa in Nondysenteric Cases. A. M. Smith and J. R. Matthews.—p. 183.
6 Value of Concentrating Cysts of Protozoal Parasites in Examining Stools of Dysenteric Patients for Pathogenic Entamebac. H. F. Carter and J. R. Matthews.—p. 195.
7 *Some Results Obtained by Heiser's Treatment of Leprosy in Nigeria. H. S. Coghill.—p. 205.

1. **Periodicity of *Microfilaria Nocturna*.**—In the case cited by Yorke and Blacklock blood films made during the daytime were either negative or contained only an odd microfilaria,

whereas in those prepared at night microfilariae were found in considerable numbers. Thick dehemoglobinized films were stained with hematin, and the morphology of the parasite examined. The larvae were identified as those of *Filaria bancrofti*. A series of observations was made with the object of studying the periodicity of the microfilariae in the cutaneous blood. The number of larvae per cubic centimeter of cutaneous blood was estimated every two hours for a period of twenty-four hours, on two occasions. Furthermore, the number of larvae per cubic centimeter of venous blood (median basilic vein) was determined. It was found that obstruction to the passage of *Microfilaria bancrofti* through the cutaneous vessels occurs at all times of the day and night, but is at a minimum at the end of the period of bodily activity. Although this obstruction aids in the piling up of the larvae in the cutaneous vessels, it is in no way responsible for the nocturnal periodicity.

The nocturnal periodicity is primarily dependent on periodic variations in the arterial supply of larvae to the cutaneous vessels. By reversing the hours of sleep and activity, cutaneous immigration becomes diurnal instead of nocturnal. The change, however, takes place gradually; after the periods of sleep and activity had been reversed for four days the time of maximum concentration of the larvae in the cutaneous vessels had only been set back six hours (from midnight to 6 a. m.); when reversal of the hours of sleep and activity had lasted for eleven days the time of maximum cutaneous concentration had been changed from midnight to midday. The number of microfilariae, as judged from the maximum concentration in the cutaneous blood, remained at practically a constant level during the period of observation. The number of microfilariae present in 100 c.c. of urine varied greatly at different times during a twenty-four-hour period. These variations, which were irregular and gave no indication of either a nocturnal or diurnal periodicity, are explained on the assumption that the majority of the microfilariae escaped into the urine with the blood. Graphs depicting the number of larvae per cubic centimeter of urinary blood reveal the existence of a regular periodicity corresponding to that of the larvae in the cutaneous blood, with the difference that the time of maximum concentration was several hours later. The number of microfilariae in the renal and vesical vessels exhibits a nocturnal periodicity analogous to that in the cutaneous vessels.

2. Quinin Bihydrochlorid in Treatment of Malaria.—Single injections of quinin bihydrochlorid were given in eight cases of simple tertian malaria. In seven of these the amount of quinin injected was 15 grains, in the other, 10 grains. The results were similar in all cases. The temperature fell to normal in one to three days, and parasites disappeared from the cutaneous blood in two to five days. Six of the eight patients relapsed. Parasites reappeared in eight to fourteen days. Febrile paroxysms recurred on an average in fifteen days (minimum 10, maximum 20). Of the remaining two patients, one was given quinin orally on the fourth day, and the other died of cerebral hemorrhage of undetermined nature on the tenth day.

Multiple injections were given in thirteen cases, five in one case and six in twelve. The injections were given on Mondays, Wednesdays and Fridays. As a rule, 10 grains were given at each injection, but on a few occasions 15 grains. In one patient the treatment did not cause the disappearance of parasites from the blood, but the febrile paroxysms were controlled. In another case the temperature fell to normal after the first injection, parasites disappeared from the blood after the second injection, and there was no relapse for an observation period of two and a half months. In the remaining eleven cases the temperature fell to normal after one to three injections; the parasites disappeared from the blood after one to four injections. All of the eleven patients relapsed. Parasites reappeared in eight to eighteen days. Febrile paroxysms recurred on an average of eleven days.

Single injections were given in two cases of malignant tertian malaria: 15 grains in one case, 10 grains in the other. In neither did the treatment cause the parasites (trophozoites or gametes) to disappear from the blood. Multiple injections

were given in five cases; four in one case, and six in four. The injections were given on Mondays, Wednesdays and Fridays; 10 grains on every occasion. In each case the treatment was administered during an apyrexial period. Speaking generally, the treatment did not cause the parasites (trophozoites or gametes) to disappear from the cutaneous blood. In a series of 127 injections, thrombosis occurred in four patients. There was no other symptom worthy of note.

3. Amylopsin and Trypsin in Treatment of Tertian Malaria.—Intramuscular injections of amylopsin and trypsin proved to be of no value in the treatment of ten cases of acute simple tertian malaria. Some swelling and tenderness occurred at the site of injection. On this account, and because the paroxysms were not checked, the majority of the patients refused to have more than one or two injections.

4. Quinin Alkaloid in Treatment of Tertian Malaria.—The solution used by the authors for this purpose was made in the following way: 1 gm. of quinin alkaloid was dissolved in 1 c.c. of 90 per cent. alcohol, and the volume made up to 3 c.c. with sesame oil. By this means a clear viscid solution capable of being easily injected was obtained, 1 c.c. containing approximately 5 grains of the alkaloid. The injection brought about: (1) A cessation of febrile paroxysms. The temperature usually fell to normal within four days of the first injection. (2) Disappearance of parasites (trophozoites and gametes) from the cutaneous blood usually in one to two days. Thirty-one of the thirty-eight patients treated relapsed. Parasites reappeared on an average in eighteen days. Febrile paroxysms recurred on an average in twenty days. The remaining seven patients had not relapsed within an observation period of two months.

A comparison of these results with those recorded with the use of a very soluble salt of quinin, the bihydrochlorid, shows that the therapeutic action of the insoluble alkaloid is in no way inferior to that of the soluble salt. Subcutaneous injections of this solution resulted in sloughing. Intramuscular injections of 3 to 4 c.c. resulted in slight pain at the time of injection; in larger doses, 6 c.c., the immediate pain was more severe and pain recurred some twenty-four to forty-eight hours later. There was no abscess formation or other ill effect. For several days after injection a slight diffuse swelling was appreciable at the site of injection; this, however, disappeared entirely in the course of a few days.

5. Occurrence of Intestinal Protozoa in Nondysenteric Cases.—Of 200 nondysenteric patients in the hospital for various diseases 34.5 per cent. were found to be infected with various protozoa. *E. histolytica* was discovered in fifteen cases (7.5 per cent.). One hundred cases were malaria and among these six infections with *E. histolytica* were detected. There were forty-two cases with a history of dysentery and 158 cases with no history of dysentery. Of the former 7.1 per cent. were found positive to *E. histolytica*, and of the latter 7.6 per cent. Of 142 patients who had been to tropical or subtropical regions, 11, or 7.7 per cent., were found infected with *E. histolytica*. The remaining fifty-eight patients had been to France only, and four, or 6.9 per cent., were discovered to be infected with this parasite. The great majority of the cases (123) had only two examinations each.

7. Heiser's Treatment of Leprosy.—The method of treatment of leprosy described by Heiser has been tried by Coghill with some of the inmates of the Yaba Leper Asylum. The treatment was begun in May, 1916, so that it is as yet too soon to make a complete report, more particularly as all the patients are old standing cases. The oil mixture used was that recommended by Heiser: chaulmoogra oil, 60 c.c.; camphorated oil, 60 c.c., and resorcin, 4 grains. The mixture was sterilized by boiling, and 2 c.c. injected intramuscularly into the buttock, were given as an initial dose. After the lapse of one week, 3 c.c. were given, and this dose was increased by 1 c.c. per week until 8 c.c. were being administered. Beyond this amount some discomfort was complained of, so that the procedure finally adopted was to inject 6 c.c. twice a week. This dose was well tolerated and every case responded to treatment. The most rapid and obvious effect was the healing of ulcers, many of them large and deep, and

of many years' duration. Softening, then absorption of the nodules, fading of the maculae and the return of sensation were also observable, even to the patients themselves.

British Medical Journal, London

September 8, II, No. 2958

8 Educational Number, Sessions 1917-1918.—p. 309.

Edinburgh Medical Journal

September, XIX, No. 3

- 9 Treatment of Toxemia of Common Infections in Children by Intravenous Injection of Eusol. J. L. Smith, J. Ritchie and T. Rettie.—p. 143.
- 10 *Sphere of Arthroplasty in Treatment of Ankylosis. A. Thomson.—p. 176.
- 11 Carcinoma of Pelvic Colon; Resection. Three Years Later, Recurrence in Rectum: Colostomy. One Year Later, Carcinomatous Stricture, Small Intestine: Resection. Carcinoma at Colostomy Opening: Death Six Years After First Operation. J. W. Dowden.—p. 181.

10. **Sphere of Arthroplasty in Treatment of Ankylosis.**—While arthroplasty may be brilliantly successful in joints ankylosed by purely traumatic lesions, Thomson says, it is liable to fail in points ankylosed as a result of bacterial infection. The two great causes of failure are found to be (1) either a recrudescence of the original infection, that is, tuberculosis and dormant infections of gunshot injuries, interfering with the formation of the false joint, or (2) an increased activity of the bone forming tissues leading to a return of the ankylosis.

Journal of Tropical Medicine and Hygiene, London

September 1, XX, No. 17

- 12 Scarlet Fever-Like Eruptions in Tropics. A. J. Chalmers and A. Innes.—p. 193.
- 13 Tropical Diseases Met with in Balcanic and Adriatic Zones. A. Castellani.—p. 198.

Medical Journal of Australia, Sydney

August 4, II, No. 5

- 14 *Chronic Ulcer of Stomach and Duodenum; Surgical Treatment and End Results. H. B. Devine.—p. 89.
- August 11, No. 6
- 15 Localization in Roentgenography. C. W. Joy.—p. 113.
- 16 *Pathology and Treatment of Barcoo Rot (Veld Sore). C. J. Martin.—p. 118.
- 17 Strangulation of Pylorus. C. Friend.—p. 120.

14. **Surgical Treatment of Ulcer of Stomach and Duodenum.**—The following deductions are drawn by Devine from his experience with thirty-eight cases. Gastro-enterostomy only for a lesser curvature ulcer may result in a failure or cure. Wide resections of an ulcer almost to greater curvature unassociated with pyloric stenosis resulted in all cases in a permanent cure. Postoperative distress was noticeably absent, and no gastro-enterostomy was necessary. Cases of postpyloric or prepyloric ulcers with marked stenosis did well with simple gastro-enterostomy. The autoplasmic rectus sheath graft with gastro-enterostomy can be used with success in some cases of prepyloric and postpyloric ulcer in cases in which there is no stenosis, and especially in which there is a tendency to bleed. Stomach operations lend themselves to stage operations, and often this is the surest way for a successful termination of the surgical treatment. The surgical treatment should fit exactly the set of surgical pathologic conditions present, and the surgeon cannot have all this knowledge without a careful and thoughtful preoperative roentgen ray and clinical examination.

16. **Treatment of Barcoo Rot (Veld Sore).**—This disease is characterized by spreading superficial ulcers on the backs of the hands, extensor surface of the forearms and, to a less extent, on the dorsa of the feet and on the shins. The ulceration resembles that met with among bushmen in the backblocks of Australia (during the dry season), and is known locally as "Barcoo rot." The first sign is usually a bleb or blister containing thin, watery pus and surrounded by an area of slightly inflamed skin. The blister may be the size of a sixpence, or even larger, but before it reaches this size it is generally broken. The denuded surface shows little tendency to heal, but slowly extends at its margins, at the same time deepening until there are no more epithelial

structures left. The ulcer, however, remains shallow, and it is unusual for the fibrous layer of the skin to be destroyed, unless it becomes infected with virulent staphylococci. The glands are not inflamed unless secondary infection occurs, and there are no constitutional symptoms. When healing has occurred, areas of glossy skin, more or less denuded of hairs and sweat glands, are left. Cicatrization does not occur unless the true skin is destroyed. Infection of fresh areas of skin in the neighborhood is usual, so that the patient has several ulcers of different ages. The disease in its minor forms is extremely annoying, and when the ulcers have become large, incapacitating. In hospital the ulcers generally heal up slowly under any sort of wet antiseptic dressing, but are very difficult to deal with in the field. Acting on the idea that infection of the hair follicles is largely responsible for the continuance of the ulcerative process, Martin removed the hair or hairs traversing the early blebs from the secondary infection, and found that these healed straight away. Next, working on the principle employed to restrict a bush fire, by burning an area in front of it, he attacked the larger ulcers, removing the hairs from their base, and around their margins and was pleased to find that the ulcerative process was stayed, and healing commenced at once.

Annales de Gynécologie et d'Obstétrique, Paris

July-August, LXXII, No. 7-8, pp. 577-640

- 18 *The Depopulation Problem. C. Richet.—p. 577.
- 19 *Welfare Work for Children at Havre during the War. A. Loir and H. Legangneux.—p. 609.
- 20 *Technic for Walling Off the Pelvis after Operations. H. Chaput.—p. 620.
- 21 Case of Cyst of the Urachus. G. Chavannaz.—p. 630.

18. **The Declining Birth Rate.**—This is one of the reports made by a committee appointed by the Académie de médecine to suggest measures to arrest the depopulation of France. Stress is laid on the principle of financial aid to the child up to the appearance of the twentieth tooth. Richet declares that France is dying unless heroic measures are taken. It is sound finance, he reiterates, to pay out possibly \$400 for a little human being, who in the course of a few years will be earning an income of at least that every year. The state, society and the nation will all be the gainers financially.

19. **Child Welfare Work at Havre During the War.**—This report from the Havre board of health emphasizes that the birth rate has declined and the infant death rate risen during the war, principally from the mothers being obliged to leave their infants to work in the factories. Factory work is fatiguing for women, especially for nursing mothers. The help as now given has too much the aspect of charity. The mothers with dirty houses are looked after better than the self-respecting who are too proud to appeal for aid. The suggested remedy is that the financial aid should be given to all the nursing mothers alike, irrespective of their pecuniary condition. This would insure it to all who need it and would stop breeding professional beggars.

20. **Walling Off the Pelvis.**—Chaput describes the various methods with which he walls off the pelvis from the abdominal cavity after operations, or walls off one part from another, in both women and men. This allows the pus accumulating in the pelvis to be drained into the vagina, or rectum in man, after pushing up the small intestine and omentum out of the way and interposing a solid barrier against their sliding down again. The barrier can be total, transverse or vertical. He fastens the sigmoid colon to the superior strait and to the suprapubic peritoneum. This transforms the pelvis into a single cavity with smooth walls, with no crevices to retain pus, easy to drain and to disinfect. The thickness and the high position of the colon roof practically guarantees against propagation of infection upward to the abdomen.

Bulletin de l'Académie de Médecine, Paris

August 21, LXXVIII, No. 32, pp. 119-150

- 22 *The Depopulation Problem. Committee Report. A. Pinard.—p. 121.
- 23 *Comparative Resistance of Paratyphoid B Bacillus and Colon Bacillus in Drinking Water. G. Daumézon.—p. 146.
- 24 *Syphilis and Masculinity. Girault and Tissier.—p. 148.

22. **The Declining Birth Rate.**—Pinard presents the report of the committee which has been studying means to remedy the depopulation of France. It fills twenty-six pages, but no vote was taken. Among the principles advocated is that families which have no or few children must be made to aid those that have many. Also that the state should feel that it owes a debt to the woman who bears a child. Also that birth control measures are injurious for the woman as well as for the nation, and that the state should forbid and repress the birth control propaganda as a growing danger.

23. **Survival of Paratyphoid B Bacilli in Drinking Water.**—Daumézou reports that both the colon bacillus and the paratyphoid B long resist the antagonism of other germs in water when sheltered from the light by turbidity of the water. The paratyphoid B seems less resistant than the colon bacillus, but still it seems able to pass still viable through the filtering and other media that do not arrest the colon bacillus.

24. **Syphilis and Masculinity.**—Girauld states that in his service during a recent period 201 syphilitic women were delivered of 119 boys and eighty-two girls. Of the sixty-four living and apparently healthy children, forty-three were boys and only twenty-one girls.

Bulletins de la Soc. Méd. des Hôpitaux, Paris

June 28, XLI, No. 21-22, pp. 773-806

- 25 *Hemoglobinuria in Malaria Contracted in Macedonia. P. A. Delille and others.—p. 773.
- 26 *Emetin in Treatment of Liver Abscess. P. A. Delille and others.—p. 777.
- 27 *Characteristics of Relapsing Fever Contracted in Macedonia. P. A. Delille and others.—p. 778; Portocalis.—p. 780.
- 28 *Cancer and Traumatism. L. Moreau.—p. 783.
- 29 Mumps Orchitis Complicated with Colon Bacillus Abscess. M. Troude.—p. 785.
- 30 *Paratyphoid B of Alimentary Origin. F. Lévy.—p. 787.
- 31 *Pneumococci and Meningococci in Meningitic Fluid. A. Netter and M. Salanier.—p. 789.
- 32 Nongonorrheal Urethritis with Epididymitis, Caused by Pseudodiphtheria Bacilli. L. Ramond, and others.—p. 797.
- 33 *Meningeal Hemorrhage in Soldiers on Active Service. P. Nobécourt.—p. 802.

25. **Hemoglobinuria in Macedonian Malaria.**—Delille and his co-workers state that the tropical character of the malaria contracted by the French troops in Macedonia is evidenced particularly by the relative frequency of hemoglobinuria. The mortality was high, nearly 30 per cent. The malaria was usually of long standing, six months or more, and cold weather seemed to be a factor in its appearance. The findings indicate massive destruction of blood corpuscles, probably in the blood stream, as the first phase. It may be accompanied by hemorrhages from the mucosa. The hemoglobin thus liberated is transformed into bile pigments, the excess passing off through the kidneys. The hemoglobin may be in such quantities that it clogs the kidneys and the patient may succumb to anuria. In the more fortunate cases, the urine washes out the hemoglobin plugs. There was no death from anemia, and the corpuscles regenerated extremely rapidly.

26. **Emetin for Suppuration in the Liver.**—The emetin reduces the pain and fever in less than forty-eight hours whether the hepatitis is in an incipient phase or an abscess has formed. There may be no history of dysentery in the antecedents or the patient has forgotten it, but the intestines never forget it. Necropsy in fatal cases of liver abscess may reveal lesions suggesting chronic amebic dysentery though they failed to induce appreciable symptoms.

27. **Relapsing Fever in Macedonia.**—There was only one death among the fifty cases under observation. The onset was stormy, the liver always involved, with more or less jaundice in 90 per cent. of the cases. Lively headache and a suggestion of the Kernig sign and lymphocytosis were common. A second relapse occurred only in 10 per cent. and it was brief. The disease is essentially mild; only two deaths were known, both occurring with symptoms of acute suprarenal insufficiency, and a retrospective diagnosis of Addison's disease was manifest.

28. **Cancer and Trauma.**—Moreau describes an epithelioma developing in the parotid gland in a colonial of 42. He

had been struck in this region in 1914 by a fragment of a shell but there was no superficial wound or fracture. There had never been any previous glandular trouble in the neck, but the man had a history of malaria, typhoid and a liver abscess. The cancer recurred after extirpation and radiotherapy.

30. **Paratyphoid B from Meat Poisoning.**—The small epidemic was traced to insufficiently cooked ham. The bacilli were found in the ham but they were also found on the hands of one of the cooks who proved to be a carrier.

31. **Mixed Infection in Meningitis.**—Netter and Salanier now have a record of twenty-two cases of meningococcus meningitis in which pneumococci were found also in the spinal fluid. This sustains their previous plea for combined antiserum treatment against both these germs.

33. **Meningeal Hemorrhages in Soldiers.**—Nobécourt remarks that meningeal hemorrhage is rather common in soldiers, as he has encountered it in three cases out of a total series of 2,660 patients in the contagious disease hospital in his charge not far from the front. Meningitis formed 8.3 per cent. of the total series. No cause for the hemorrhage was found in the two cases. In one of these, after a few days of headache, convulsions developed with aphasia and strabismus, and progressive flaccid paralysis followed. The onset was more insidious in the other case, with symptoms revealing tuberculous meningitis, fatal in a few days. In the third case the onset was sudden coma, the neck and legs stiff, with death in sixteen hours. Lumbar puncture disclosed meningeal hemorrhage in each case. The hemorrhage was profuse in the meninges and ventricle, as also in lungs and spleen, with intense congestion of kidneys and suprarenals, but no cause for this could be discovered, no inflammatory lesions, and the extravasated reds were of normal shape.

Lyon Médical

August, CXXVI, No. 8, pp. 349-396

- 34 *Mercurial Stomatitis; Pathogenesis, Prophylaxis and Treatment. M. Favre.—p. 349.
- 35 *Castor Oil as Lubricant for Wounds and Dressings. (L'huile de ricin.) L. Revillet.—p. 355.
- 36 *War Enteritis. A. Mollière.—p. 357.

34. **Mercurial Stomatitis, Treatment and Prophylaxis.**—Favre's extensive experience has demonstrated, he says, that the stomatitis which develops under mercurial treatment is identical in every respect with Vincent's ulceromembranous stomatitis, and treatment and prophylaxis should be the same for both. Vincent's spirillum is inevitably present, and if this spirillum is exterminated, the affection rapidly subsides, even with mixed infection. The mercury being taken merely induces local congestion and irritates the vessels, activating the spirilla already in the mouth, just as decayed teeth, deposits of tartar or the eruption of a wisdom tooth are liable to bring on Vincent's angina. It may exist in an unnoticed latent form until it flares up under the mercury. Any drugs which kill the spirilla cure the mercurial stomatitis, even when the mercury is continued. Arsenic and silver nitrate are the most effectual. The arsenic can be given internally or intravenously or by local application; associated with the mercury it cures the disturbance set up by the latter. This "conjugated method," as he calls it, giving neosalvarsan with the mercury, allows the full therapeutic effect of the mercury while warding off trouble in the mouth. For local treatment, silver nitrate is more effectual than arsenic, being the specific, he affirms, for external spirilla infections. The treatment which he has found promptly successful in hundreds of cases begins with mechanical cleansing of the mucosa of the patches and membranes. This is done with cotton-wound toothpicks dipped in 1 per cent. silver nitrate. The ulcerating mucosa is rubbed vigorously and cleansed of all the purulent masses and pseudomembranes, working between the teeth, and thus transforming the inflamed mucosa into a red, freely bleeding surface. The mucosa thus prepared is swabbed with a 1:15 or 1:20 solution of silver nitrate, working it into all crevices, and the procedure concludes with copious application of 1 per cent. methylene blue. The first treatment is always the longest and

the hardest to bear. By the next day the aspect of the lesions is much modified and the functional symptoms have improved. The swabbing is done once a day at first and then at longer intervals. It soon is possible to have the tartar removed and the teeth otherwise put in order, and with hygiene of the mouth, gargling with hydrogen dioxid and brushing the teeth, there is no return of the buccal infection, even although the mercurial treatment is continued unmodified. [Compare with the article by Campbell and Dyas in *THE JOURNAL*, June 2, 1917, p. 1596.]

35. Castor Oil for Dressing Wounds.—Revillet comments on the fact that castor oil never dries out, so that gauze, etc., impregnated with it never sticks to the wound, no matter how long it is in contact with it. Another advantage of castor over other oils is its characteristic slipperiness which facilitates the working in of wicks, etc., and renders their extraction easy and harmless. But its chief advantage is that it dissolves alcohol, tinctures, essences, etc., and holds them without allowing sedimentation. Perfume manufacturers use castor oil as an excipient for essences as it holds them without growing turbid or precipitating them. After considerable trials he found that 0.4 c.c. each of oil of thyme, oil of lavender and oil of eucalyptus in a liter of castor oil produced an agreeable aromatic lubricant and dressing which deodorizes at once and never irritates, while it has some antiseptic power. The dressings impregnated with this oil mixture are sterilized in a jar placed in boiling water for an hour and a half. Steam sterilization would drive off the volatile oils and might break the jars.

36. War Diarrhea.—Mollière declares that infectious sore throat, dental caries and gastro-enteritis might be warded off in many cases if chronic rhinopharyngitis were promptly cured. He examines the throat the first thing, when a man complains of enteritis, and swabs the throat with iodized glycerin several times a day. When there has been diarrhea for several days, typhoid or infection of the biliary passages should be suspected, even when there is no fever. A slow infection with exposure to wet and cold is liable to send the temperature below normal rather than above in some cases. With an infectious process in the biliary passages the pain appears and grows worse after walking a few miles, but it may not be severe. It is always on the right side and may be at the bladder point or McBurney point, but is diffuse on pressure except when it can be localized with the sign of Glénard's girdle. It is not accompanied by muscular rigidity of the abdominal wall, and it may be relieved by wearing a tight belt. The diet does not seem to modify it except that meat and alcohol aggravate it. Another sign is that saline purgatives do not act until after an interval twice or three times as long as usual, and, after their effect has passed off, the stools retain their diarrheic nature instead of the constipation which ordinarily follows a purge. The third sign is a tendency to jaundice in the conjunctiva after much fatigue or a heavy meal or a small dose of alcohol. A liqueur glass of brandy is rapidly followed by this subicterus.

Paris Médical

August 18, VII, No. 33, pp. 145-160

- 37 *Light and Heat as Aid to Massage. L. Alquier.—p. 145.
38 *Tests of Functional Capacity of Left Ventricle. L. A. Amblard.—p. 149.
39 Technic for Removing Sequesters. (Esquillectomie en chirurgie de guerre.) H. Costantini.—p. 154.
40 *Recent Surgery and Medicine in Germany. A. Leroy.—p. 158.

37. Treatment with Electric Light and Heat plus Massage.—Alquier lauds the excellent results obtained with what he calls a thermophotophore which focuses the light and heat from an incandescent bulb on the region over persisting edema and relics of inflammation; its action is reenforced with massage. This combination ensures the reabsorption of everything that is resorbable by the blood or lymph passages as long as fibrous tissue is not definitely constituted. He has succeeded by this means in restoring the functional use to limbs apparently permanently crippled by cheloid cicatricial tissue, or diffuse or localized induration or hard edema. He reports also the rapid improvement of lymphatic engorge-

ment in muscular rheumatism, and in periarthrititis and synovitis, even the tuberculous. He has also cured by this means cases of pseudoneuralgia and visceral trouble including palpitations of the heart with arrhythmia, dyspnea from inability to expand the chest, and certain laryngeal and gastrointestinal troubles originating in engorgement with lymph.

38. Test of Heart Functional Capacity.—Amblard gives a number of charts registering the maximum and minimum blood pressure and the pulse, at rest, after moderate exercise, and after violent exercise. Some of the charts are made up from the average of large numbers of healthy persons, and others from persons with various heart affections. Whatever the pressure may be to start with, if the maximal pressure drops and the minimal rises only a very little after exertion, while the pulse becomes much accelerated, this indicates absolute insufficiency on the part of the heart unless the significance is modified by long training in physical exercise. He calls attention to this increased frequency of the ventricular wave as an aid in sifting out men whose hearts are not equal to the strain of exhausting exertion, although he admits that dyspnea on effort is the true warning signal of functional insufficiency of the ventricle.

40. Surgery in Germany.—Leroy reviews some recent articles on war surgery that have been published in the German medical weeklies, remarking: "The German medical majors make necropsies, and that is a superiority over other countries. They write that the war has taught a number of things, among them that when a man with a brain wound succumbs after resection of brain tissue, the ventricles are always found infected. It is this infection which is responsible for the hernia of the brain and decides the man's fate. Consequently, do not resect, but let the cerebrospinal fluid flow." He quotes in regard to wounds of the lung that they advise puncture always when there is effusion with fever even although not more than 100 c.c. of fluid can be withdrawn. In case of infection, they resect the eighth rib with drainage both front and rear. Necropsies have shown that extravasated blood above the liver passes into the pleura, and that with any lesion of the diaphragm the viscera hernia upward. The German surgeons confirm the extreme gravity of injuries of the large intestine and the mildness of uncomplicated perforations of the bladder. They advise to leave open to the air the profusely suppurating wounds, dressing them at night with an absorbent dressing of animal charcoal or pulverized sugar. As a substitute for hydrogen dioxid they use a mixture of equal parts of calcium perborate and talcum. They report six cases of gas gangrene cured under treatment with an elastic band drawn tight enough to make the limb red and hot but not enough to induce anesthesia or pain. For erysipelas they commend ultraviolet radiation, commencing with ten minutes a day and increasing daily by from one to five minutes, the distance from the quartz lamp from 70 to 100 cm. Treatment of injury from asphyxiating gases includes, during the period of agitation, injection of atropin, from 0.5 to 1 mg.; during the phase of collapse, caffein, avoiding strong doses.

Presse Médicale, Paris

August 9, XXV, No. 45, pp. 465-472

- 41 *Frequency and Significance of Left and Right Diastolic Aortic Murmurs with Aortic Insufficiency. F. Trémolières, L. Caussade and J. Toupet.—p. 465.
42 *Minor Electric Signs of Sciatica. V. Neri (Bologna).—p. 466.
43 *Pseudo-Tuberculous Fat Granulations on an Ovary. F. Jayle and Y. Bertrand.—p. 468.
44 Treatment of Ileus. V. Pauchet.—p. 468.
August 23, No. 47, pp. 481-496
45 *Vaccine Therapy for Typhoid Osteoperiostitis. P. E. Weil and Chevrier.—p. 481.
46 *Connection between Alopecia Areata and Defectively Developed Teeth. R. Sabouraud.—p. 484.
47 *Skin Plastic Operation after Opening Up Fistulous Lesion in Long Bone. (Ostectomie suivie de stomatoplastie.) F. Jayle.—p. 486.
48 *Rapid Evolution of General Paralysis in Men on Active Service. R. Mignot.—p. 487.
49 American Methods of Anesthesia. J. Luzoir.—p. 488.

41. The Murmurs with Aortic Incompetency.—Trémolières asserts that in young adults the murmur of aortic insufficiency is generally to be heard to the left of the sternum, in

the third interspace, instead of at the classic site as taught in the textbooks. Roentgenoscopy, always a valuable guide in cardiac pathology, will confirm the diagnosis of the aortic insufficiency in these cases. Only when the valvular trouble has reached an advanced stage and been aggravated by the dilatation of the right cavities, only then is the murmur heard at the classic site to the right of the sternum. This was the case only in ten of sixty-six cases studied; in twenty-six the murmur was heard to the left of the sternum; in twenty at the sternum itself; in nine at the xiphoid appendix, and in one case at the tip. When the murmur was heard at the left of the sternum it was usually at the inner angle of the third or second interspace; exceptionally at the fourth or still more rarely at the fifth. He explains the mechanism for this, and describes the roentgenoscopic findings. With a recent aortic lesion the left ventricle is simply hypertrophied and the aorta is vertical, and the murmur is heard to the left of the sternum. With an old aortic lesion the right cavities are dilated also and the aorta slants, and the murmur is heard to the right.

42. **Electric Reactions with Sciatica.**—Neri's article was summarized recently when it appeared elsewhere. (Abstract 70 in *THE JOURNAL*, p. 246.)

43. **Fat Granulations on the Ovary.**—Jayle and Bertrand give the macroscopic and microscopic findings in a case of ovarian abscess with small yellowish granulations scattered over the surface, closely resembling tuberculous processes. They proved, however, to be merely fat granulations.

45. **Vaccine Therapy of Typhoid Osteoperiostitis.**—Weil has now a record of twelve cases of osteitis consecutive to typhoid fever. Nine of the men had never been given preventive vaccination against typhoid but two had been thoroughly vaccinated, ten and three months before. Agglutination was pronounced in all although the interval since the typhoid had been one or two years or more. The ages ranged from 27 to 44, only two being under 30. In differentiating, exclusion of tuberculosis is practically the only difficulty. In some other cases typhoid fever had caused the flaring up of clinically cured tuberculosis, and the osteitis was the work of the latter. Differentiation in one case was facilitated by a concomitant anal fistula. A dental origin was discovered in other cases. In two cases the osteitis was in a rib and had caused much bulging and pain, but there was no suppuration. The bone process was of one and two years' standing but it subsided smoothly in each case under the typhoid vaccine therapy alone, and the cure has been complete during the six months to date. Vaccine therapy alone seldom cures in the suppurating cases, as the lesions are too deep and extensive for this unaided to be effectual. But complete success was attained by commencing the vaccine therapy and, after four injections, clearing out the bone lesion and then resuming the vaccine to a total of sixteen injections in all. He outlines the extensive operative measures necessary to clear out the focus, and expatiates on the highly satisfactory results obtained by this mixed treatment. The bone lesion once cleared out, healing proceeded remarkably fast and by the end of two or three months the cure seemed to be complete. The vaccine prevents reinfection of the bone, which is the rule after ordinary surgical treatment without the vaccine, and is frequent after vaccine therapy alone. By combining the two, the trouble is actually conquered. Better than this, however, he declares, is the prevention of the trouble, or at least its early and complete cure while still in the incipient stages. By detecting the bone affection early and attacking it at once with vaccine therapy, we can avoid the necessity for surgical measures.

46. **Connection between Falling of the Hair and Imperfect Teeth.**—Sabouraud gives some illustrations of the teeth of persons with alopecia areata. They indicate, he says, that some initial teratologic disturbance is responsible for the tendency for the hair to fall out, and for the defective teeth and defective growth of teeth and nails. Inherited syphilis is sometimes but not always responsible.

47. **"Cutinization" in Treatment of Fistula into Bone.**—Jayle gives an illustrated description of his method of treat-

ing fistulas into long bones rebellious to the ordinary methods. He transforms the bottle-shaped lesion into a broad open wound, and lines the walls of the cavity thus created with skin, after loosening up the skin for some distance all around the hole. To get skin enough to cover the entire circle of the opening he makes a scythe-shaped incision at each end of the opening, the straight line, representing the handle of the scythe, running parallel with the lengthwise axis of the opening. The flap thus mobilized is easily twisted around to cover the rest of the opening at each end after the skin has been sutured along each side. The curving needle is passed through the skin some distance back of the edge of the hole and is drawn out just below the periosteum where it is threaded with one end of the suture material which has been passed through the extreme edge of the skin to form a U. The two ends are thus drawn back through the skin separately and tied. Six of these threads are sufficient, each tied separately. The skin defect left by twisting the flaps around is easily corrected by drawing up the skin and suturing it. The finished operation shows an open crater directly in the bone, like a basin, with nothing but skin showing, lining all the sides down to the bone at the bottom. Jayle has done 536 operations for bone fistulas during the war.

48. **Galloping General Paralysis in the Army.**—Mignot has been impressed with the rapid development of general paralysis when it once makes its appearance in the men on active service. It runs its course in months instead of years as usual. Before the war, out of 100 cases in his service, only eight ran their course in less than a year, while among the 145 soldiers since 1914, fifty of the patients have died. The privates are sent elsewhere but the officers are kept to the end in his service. Of eleven officers with general paralysis coming on during their active service at the front, four died within six months of the onset, and three in less than twelve months. Out of seventeen officers with general paralysis there has been nothing approaching the usual remissions of the disease except in one instance.

Progrès Médical, Paris

August 18, XXXII, No. 33, pp. 273-278

- 50 Colloidal Sulphur in Rheumatic Affections of the Eyes. A. Bichon.—p. 273.
- 51 The Luetin Test for Syphilis. A. Tzanck and A. Bernard.—p. 274.
- 52 The Standards for Physical Effort. B. du Coteau.—p. 276.

Revue Médicale de la Suisse Romande, Geneva

July, XXXVII, No. 7, pp. 382-472

- 53 Comparative Study of Preparations of Digitalis. F. Heim.—p. 385.
- 54 Impressions on a Visit to the Neurologic Center at Lyons. R. Guillermin.—p. 429.
- 55 *The Mineral Metabolism with Exophthalmic Goiter. R. H. Kummer.—p. 439.
- 56 Congenital Atrophy of One Half of the Diaphragm. N. Betchov.—p. 455.
- 57 *Captivitis. C. Julliard.—p. 464.

55. **The Metabolism of Minerals with Exophthalmic Goiter.**—Kummer devotes several pages to the metabolic findings in a man of 42 with exophthalmic goiter for two years, incapacitating him notwithstanding energetic treatment and with repose. Thyroid treatment aggravated all the symptoms, but resection of part of the thyroid cured him and restored full earning capacity. The metabolism of minerals showed the same tendency as the other vital processes, namely exaggeration and instability. In the course of the research, subcutaneous injection of calcium iodid on one occasion caused effects that impelled Kocher to add a note to Kummer's report calling attention to the action of calcium iodid in this case. He suggested a trial of it on account of its efficacy in acute tetany. "If Kummer's results are confirmed by others," Kocher wrote, "they suggest an explanation for certain correlations between the parathyroids, the exophthalmic goiter and the functions of the thyroid. Removal of the thyroid seems to attenuate the symptoms of tetany. This was particularly striking in a case of semithyroidectomy for exophthalmic goiter complicated with chronic tetany. Thyroidectomy with exophthalmic goiter acts to increase the retention of nitrogen, of carbohydrates and of fats, as our operation and experiences have established. The thyroidectomy

consequently would reduce the disassimilation of nucleins, and also would reduce the exaggerated excretion of phosphorus and calcium which Kummer's research has established. This explains the curative action of thyroidectomy in tetany, a disease which, according to McCallum, is due mainly to loss of calcium. If further experiences confirm Kummer's results, and injection of calcium iodid actually does induce in exophthalmic goiter retention of phosphorus and calcium up to positive balance, we can then understand the favorable action of calcium iodid on the symptoms of tetany." [This must have been one of the last communications from Kocher's pen. It is dated April 4, and his death followed in August.]

57. **Captivitis.**—Julliard has coined this term to express the condition of prisoners of war suffering from symptoms resembling those of a traumatic neurosis. Their obsession to be allowed to return home from their captivity maintains the morbid condition. This obsession is to the mind what a foreign body is to the tissues. The only cure, he thinks, is to make the man realize, once for all, that he has no chance for being sent home, but must live the life of the other captives and not be pampered in the hospitals as a sick man.

Correspondenz-Blatt für Schweizer Aerzte, Basel

August 25, XLVII, No. 34, pp. 1089-1120

- 58 Technic for Transfusion of Blood. R. Klinger and E. Stierlin.—p. 1089.
59 *The Neurosis Problem in the Light of War Neurology. K. Imboden.—p. 1098.

59. **The Neurosis Problem by the Light of War Neurology.**—Imboden reviews the extensive literature on functional neuroses of the last three years, emphasizing that there is no essential psychologic difference between the neuroses among the soldiers and the neuroses of peace times. Human life is a struggle for existence even without the thunder of artillery and starvation blockades, and many get wounded and live on, crippled, or sink by the wayside. He remarks that the fact that so few men develop neuroses among the millions engaged in this awful warfare shows that civilization does not develop weaklings to the extent that had been feared. He regards it as significant that the professor of psychiatry at the University of Jena has recently published a manual on psychoanalysis, saying that psychotherapeutic demands are now made on every physician during these years of war, and the psychoanalysis movement should have general attention. Imboden declares that the one fact emerging from the war neurology data to date is the increasing appreciation of the psychic factor in the genesis of the clinical pictures of the nervous state. Nonne even advocates hypnosis in treatment, and the array of disguised persuasion methods proposed is legion: Goldstein advocates a sham injection under a few whiffs of ethyl chlorid; Weichardt the continuous bath until all the symptoms subside; Podmanizky lumbar puncture to cure abasia. The "extremely logical and extremely brutal" method introduced by Kaufmann, consisting in strong electric shocks with loud, staccato military commands to do certain exercises, has realized some surprising cures, but time has shown that relapses are liable to follow on the slightest provocation.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 2, XXXVIII, No. 61, pp. 849-856

- 60 Five-Day Fever. (Febbre quintana o volinica.) G. A. Pari.—p. 849.

August 5, No. 62, pp. 857-872

- 61 Two Cases of Mesoarthritis with Aortic Insufficiency of Syphilitic Origin. G. Binetti.—p. 859.
62 Physicians and Pharmacists in Wartime. E. Villa.—p. 871.

August 9, No. 63, pp. 873-880

- 63 Sternopagus Double Monster. C. Fino.—p. 875.

Riforma Medica, Naples

August 25, XXXIII, No. 34, pp. 829-848

- 64 Economy in Food. L. Ferrannini.—p. 829.
65 Retrograde Gangrene of the Intestine. B. Quarella.—p. 830.
66 Enlargement of Ear Suggesting Elephantiasis. C. Vignolo-Lutati.—p. 838.
67 Remarkable Progress Shown in Mobilization of the Profession in America. Editorial.—p. 846.

Brazil Medico, Rio de Janeiro

August 4, XXXI, No. 31, pp. 261-268

- 68 The Tuberculosis Problem at Rio de Janeiro. P. Barbosa.—p. 261. Continuation.
69 *Pituitary Extract in Treatment of Abnormal Intestine Functioning. (Ação enterocinetica da pituitrina.) A. P. Pimentel.—p. 263.

69. **Pituitary Extract to Regulate the Intestines.**—Pimentel reports ten cases which seem to demonstrate that it is possible to regulate bowel functioning with pituitary extract even in cases of habitual constipation or exaggerated peristalsis, as with dysenteriform enteritis in infants. He states that pituitary extract is harmless while its action on the bowel is prompt and pronounced. His patients were adults from 25 to 72 years old and, with one exception, none displayed any by-effects. The exception was a man of 42 who did not have constipation but took the extract as an experiment. Six minutes after the injection the bowels moved, for the second time that day, and peripheral vasoconstriction was noted, while the pulse dropped from 84 to 70. The dose was 1 c.c. of a pituitary extract administered by the usual technic. Some required three injections at a week's interval before bowel function was restored to normal. The treatment failed in one case, a woman of 72 whose bowels for fifty-four years had moved only after rectal injections. No effect was apparent from three subcutaneous injections of the extract on successive days.

Revista de la Medicina y Cirugia de la Habana

August 25, XXII, No. 16, pp. 423-448

- 70 *The Venereal Diseases Question. V. P. Castello and L. F. Hirzel.—p. 423.
71 Return of Menstruation for Five Months to Date in Negro Woman of Ninety-Two. L. F. de Jongh.—p. 429.

70. **Venereal Diseases in Cuba.**—Castello and Hirzel comment on what has been published recently in THE JOURNAL on the measures taken in different countries to repress the spread of venereal diseases. They state that Cuba and Havana in particular are far behind in this respect. They sent one of their charity patients in turn to all the dispensaries and laboratories in town without her being able to get a Wassermann test made anywhere. Many times they have seen indigent syphilitics who had secured a dose of salvarsan but could not find any one who would inject it for them. They add that not sufficient provision for instruction in the care of venereal diseases is made in the curriculum there. They do not approve of the idea of compulsory notification, but plead for improved facilities for teaching the diagnosis and treatment of venereal diseases, prohibition of quacks' advertisements in periodicals and the founding of dispensaries for diagnosing and treating these diseases. They state further, "The advertising of patent medicines in Cuba has become a question of fashion; 50 per cent. of all the advertisements in the periodicals are of medicines and drugs, and these exploiters of medicine have taken possession of the field of venereal diseases as their own special property. They carry their impudence so far as to advertise that this or that preparation is better and superior in its effects to salvarsan, or that this or that injection will radically cure gonorrhea. Our sanitary authorities that are entrusted with the task of watching over the public health, and the Colegio Medico, entrusted with the task of watching over the prestige of the profession, should put an end to this iniquitous exploitation. . . ." "The number of syphilitics in Cuba is enormous and is increasing every day." In one dispensary for skin diseases maintained without financial aid by one of the writers, in connection with the Hospital Mercedes, 150 of the 563 applicants since last February, or 26.64 per cent., were syphilitics.

Siglo Medico, Madrid

August 11, LXIV, No. 3322, pp. 585-604

- 72 Acute Malarial Ataxia. E. F. Sanz.—p. 586.
73 *Dosage for Children. C. S. de los Terreros.—p. 588.
74 Enucleation of Erythroblasts. F. Mas y Magro.—p. 592. Commenced in No. 3321, p. 566.

73. **Dosage for Children.**—De los Terreros declares that the doses for children should be based on practical experience and not on theory. The pediatricists of the longest experience are often the ones who pay least attention to the dosage

given in the textbooks, and he urges a revision of this branch of therapeutics. He is convinced that children can stand much larger amounts than those theoretically computed for them with certain drugs, and the lack of benefit from our medication is often due to the inadequacy of the dosage. He discusses in particular opium preparations, calomel, digitalis and arsenic. With arsenic in particular, small repeated doses actually confer a kind of immunity as the tissues become accustomed to the drug. He gives it usually in the form of sodium cacodylate, in the minimal dose of 0.10 gm. per day, to begin with, after a small test injection,

Hospitalstidende, Copenhagen

August 8, LX, No. 32, pp. 765-788

75 *Light Dermatitis. H. Haxthausen.—p. 765.

76 Magnesium Sulphate in Treatment of a Case of Puerperal Eclampsia. J. Kaas.—p. 776.

75. **Light Dermatitis.**—Haxthausen has been conducting research on the importance of certain substances, occurring normally in the body, for the biologic reactions to light. The work was done at the Finsen Light Institute at Copenhagen. It was found that the disintegration of the red corpuscles under the influence of chemically active light rays seems to be a process closely akin to the action of light on the skin. Certain substances in the body promote and others check this process. Albuminous substances and other colloids inhibit it, while oxygen, urea and certain elements of the bile and also hematoporphyrin promote it. The balance between these substances determines the degree of reaction to the light. There may be a preponderance of the inhibiting or of the accelerating substances normally in the body, and there may be additional factors in the form of foreign elements, or all the above factors may be combined.

Hygiea, Stockholm

July 16, LXXIX, No. 13, pp. 625-688

77 *Immediate and Remote Results of Laparotomy for Myoma. L. Lindquist.—p. 625.

77. **Laparotomies for Uterine Myomas.**—Lindquist reports one death from pulmonary embolism among sixty-five women after removal of the myomatous uterus, and one after supravaginal removal of the uterus in 121 cases. There was no fatality in his thirty-five conservative operations for uterine myomas. Forty-one pages are devoted to tabulation under twelve headings of the total 221 cases, with the immediate and ultimate outcome, the series covering eighteen years. Nearly all of the cases were encountered in private practice. Besides these 221 laparotomy cases, he had forty-two vaginal and 152 medical cases, fifteen given roentgen treatment and twenty treated with cureting. In five cases the laparotomy was done on a pregnant woman and in most of them the pregnancy continued undisturbed. The mother and two sisters of one patient in this group had required operative treatment for myomas at some time. Climacteric disturbances from the artificially induced menopause followed in 45 per cent. of the cases, but only in 41.6 per cent. of the ninety-one cases in which one ovary was left; where both ovaries had been removed, in 51.6 per cent. Classifying the cases further by the previous condition of the ovaries and tubes, climacteric disturbances were noted in 59 per cent. of the twenty-two with previously pathologic ovaries and only in 36 per cent. of those with sound ovaries. Omitting those with merely slight climacteric disturbances, the ultimate outcome was excellent in 94.2 per cent. of the hysterectomy cases and in 81.1 per cent. of the supravaginal amputations. Evidences of malignant degeneration were found in fourteen cases; seven of the sarcoma patients are still living. The interval in one case since has been over seven years and in two over three; one died from heart trouble after four years.

Norsk Magazin for Lægevidenskaben, Christiania

August, LXXVIII, No. 8, pp. 889-1016

78 *Pulmonary Tuberculosis in Norwegian Province. (Om lunge-tæringen i Finmarken.) A. Holst.—p. 889.

79 *Disease of Optic Nerve Originating in the Nose. A. Galtung.—p. 921.

80 Factors in Epidemicity. (Hvorledes man finder Genius epidemicus.) A. Magelssen.—p. 939.

81 Classification of Mental Diseases Now and in the Past. H. A. T. Dedichen.—p. 948.

82 *Sarcoma Inducing Ascending Paralysis. L. Sommerfelt.—p. 968.

78. **History of Pulmonary Tuberculosis in Norwegian Province.**—Holst analyzes and comments on the mortality from pulmonary tuberculosis in Finmarken. It has jumped from 0.56 per thousand living in 1875-1879 to 2.44 in 1910-1913. The corresponding rate for the whole country was 1.22 and 1.73. The type of the disease in Finmarken seems to be of a more rapid course than elsewhere. He is inclined to ascribe this and the prevalence of the disease to the improved traffic facilities and the fact that it is a comparatively virgin soil for tuberculosis. Holst remarks in conclusion that although the tuberculosis mortality throughout the country is comparatively low, yet the number of cases of pleurisy, which is almost inevitably of tuberculous origin, seems to be on the increase. He queries whether other remote provinces, virgin soil for tuberculosis, may not be facing a similar rise in the tuberculosis mortality as means of intercommunication are extended and traffic facilities improve.

79. **Optic Nerve Trouble Originating in the Nose.**—Galtung relates that it is exactly 100 years since Beer in 1817 first called attention to the close connection between disease in the nose and in the eyes. Galtung discusses this field and the literature on it, especially affections originating in the nasal accessory cavities and involving the optic nerve but without causing an abscess in the orbit. Even when there is manifest disease in an accessory sinus, it is necessary to exclude alcohol and tobacco poisoning, multiple sclerosis and syphilis, before incriminating the sinusitis in the etiology of the optic trouble. In a recent case a man of 30 had multiple sclerosis and ethmoiditis and also retrobulbar neuritis. As the latter persisted after the cure of the ethmoid disease, he ascribes it to the multiple sclerosis. Another patient, a man of 45, had disease in both the ethmoidal and sphenoidal sinuses, and this was evidently responsible for the optic nerve trouble. It was in an advanced stage, vision being considerably reduced. There was also peripapillary and paracentral scotoma. The van der Hoeve symptom was positive, and the operation on the cavities showed that the posterior recesses had been invaded. As soon as the accessory cavities were cleared out on one side, the scotoma on that side subsided, but on the other side it persisted unmodified until this side had been operated on also. The scotoma then subsided entirely and vision improved.

82. **Sarcoma in Spinal Ganglion.**—Sommerfelt has not been able to find in the accessible literature a case like the one of which he gives an illustrated description. The patient was a man of 28 and the symptoms indicated ascending paralysis. Necropsy revealed a sarcoma at the twenty-fourth left spinal ganglion, about 35 mm. long by 20 wide. It had a fibrous capsule and was connected with nerve roots, but it lay entirely outside of the spinal canal. There are twenty-one cases on record of tumors in the gasserian ganglion, including three sarcomas and four endotheliomas. Anatomically they resemble this case, but clinically differ completely from it as the symptoms are only those of a brain tumor plus symptoms on the part of the trigeminal nerve.

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83 *Lipemia in Rabbits during Anemia from Hemorrhage. V. Eller-mann and E. Meulengracht.—p. 1287.

84 Abbott's Method of Treating Scoliosis. E. Nyrop.—p. 1297.

83. **Lipemia in Rabbits.**—Ellermann and Meulengracht report considerable research on lipemia induced in rabbits during anemia from losses of blood. Their tables and other data confirm Milne's assertion (1913) that extremely pronounced lipemia develops in rabbits after severe hemorrhages but not under the influence of toxins. The cholesterol content of the blood increases along with the fat content. The fat seems to be derived from fat deposits in the body. For its passage into the blood, the loss of the blood serum—with loss of its fat-splitting ferments—is probably responsible.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 16

CHICAGO, ILLINOIS

OCTOBER 20, 1917

GRADUATE EDUCATION IN THE CLINICAL BRANCHES, AND THE MINNESOTA EXPERIMENT *

E. P. LYON, PH.D., M.D.

Dean, University of Minnesota Medical School

MINNEAPOLIS

On the 24th of May just past, in the faculty room of the Medical School of the University of Minnesota, Rood Taylor was examined for the degree of Doctor of Science in Pediatrics. About ten persons were present. These included the associate professor of pediatrics, presiding in the absence of the chief of the department; two professors of anatomy, one of whom has specialized in the anatomy of the infant; one professor of physiology; two of medicine, and an associate professor of chemistry.

For more than two hours a lively game went on across the invisible net separating faculty and student. One after another the professors served swift questions; and the answers came back, usually, fair in the court—sometimes (be it whispered), lobbed quite over the heads of the faculty players! Occasionally, however, the young player's racquet seemed full of holes, and the questions went past him into indefinite vacancy.

First he was asked about his thesis, which happened to be on "Hunger in Infants," an extension of the work done here at Rush by Carlson and Ginsberg. Then followed inquiries of more general scope, on the diseases of children, on anatomy, on physiology, on medicine. Finally the professor of chemistry, field of the candidate's minor, contributed interrogatories concerning hydrogen-ion concentration.

At last the game was declared a "love set"; the candidate, who had really done very creditably, was voted "passed"; and all went home without thinking that they had taken part in an occasion that may come to be considered one of the historic marks in the advance of medical education; for the examination of Dr. Taylor was the first ever given for an earned doctor's degree in a clinical subject.

To some phases of the experiment leading up to the granting of this degree I invite your attention.

As I see it, the fundamental elements of the situation are expressed in six almost self-evident propositions:

PROPOSITION 1.—The important facts of medical science have become too many for one man to know, and the necessary technical processes have become too complex and numerous for one man to master. Division of labor or specialism is advantageous and unavoidable. This is true alike for better practice and for surer progress.

PROPOSITION 2.—Systematic graduate training in the clinical specialties, including advanced work in the underlying sciences, is a necessity. This means cooperative and coordinated educational processes.

It is true that the first specialists had to make both themselves and their specialty. It is true that many excellent men in every profession have been self trained. Nevertheless, both economy of effort and the legitimate interest of the public demand that the education of specialists be systematized and standardized.

PROPOSITION 3.—The safeguarding of the public demands some method of certification for specialists. This is, perhaps, quite as important as the primary certification or licensure. How is the average citizen at the present time to proceed in order intelligently to select a competent surgeon? The answer is, "It can't be done." Perhaps as good a way as any is that of the Minneapolis lady who went into a big office building, stood in front of the directory of physicians, closed her eyes, said a little prayer, put out her hand, and had her appendix removed by the physician whose name her fingers thus blindly hit on. If she found a competent man, it was a miracle, or else a lucky chance; for in that directory the names of the experienced and the inexperienced, the highly trained and the self-announced, stand forth in type of equal size.

PROPOSITION 4.—The progress of medical science is of the utmost importance alike to individual human need, to civilization as a progressive ideal, and to the profession of medicine as a satisfying life work for men of the best intelligence.

PROPOSITION 5.—The leaders of medicine as exemplified by the class of specialists should be more than practitioners. They should be scientists.

Real success in practice demands scientific method and the scientific spirit. Leadership in the profession should rest on productive scholarship. The education of specialists should be planned with that end in view.

PROPOSITION 6.—The progress of medical science demands more and more rigid scientific preparation on the part of all physicians, but particularly on the part of investigators. Some one has said that the future great discoveries of physics will be made in the sixth decimal place. In a similar way, it seems to me, refinements of quantitative methods and a more comprehensive, intelligent and exact use of statistics are likely to add most of the great new truths of medical science. Nothing is fully known until it can be expressed mathematically. All this implies more rigid training for the medical investigator of the future.

Every one of my six propositions involves a task appropriate to a university. The practical questions arise as to the extent to which a given university may undertake these tasks for the medical specialties, and how to go about what is undertaken. At the Univer-

* Read at the Commencement Exercises of Rush Medical College, June 13, 1917.

sity of Minnesota we are feeling our way in both these particulars, and some account of our experience will be more valuable than further theoretical disquisition.

First, however, let me say that for years every good medical school in the country has been doing graduate work in the clinical branches and is doing it now. It is unsystematized and for the most part unrecognized; but nevertheless in the clinics and laboratories there are always young graduates, as voluntary assistants, whose chief purpose is to learn. Many of the best men on the faculty of Rush Medical College were undoubtedly thus trained. They were not formally instructed; there were no requirements of entrance, attendance or examination. No degrees marked the completion of their postgraduate education. Nevertheless the men worked in a university atmosphere. The equipment and libraries were at their disposal. The critical guidance of the master was unconsciously exerted. These are not self-trained men in the sense that I have previously used that term. They are university products. What we have attempted to do at Minnesota is to systematize what was already going on in our university (as in others), and give it consciousness and individuality.

As soon as one attempts to systematize, one discovers lack of symmetry. As soon as one attains consciousness, new phases of endeavor open to view. Both these experiences have been ours at the University of Minnesota. From a vague feeling of the need of systematic education in the medical specialties, we have come to realize the need of training for medical research, for medical teachers and for the higher walks of practice. At the present time one may perhaps regard our effort as an officers' training school preparatory to the larger work that must attend the drilling of the entire army of specialism, a task gradually to be accomplished, I hope, through the united effort of the universities and clinics of the country.

THE ADVANCED DOCTOR'S DEGREE IN MEDICINE

As far back as 1910, our faculty, impressed with the need of graduate training for surgeons and of standardizing surgery as a special branch of medical science, decided to organize a two year course and offer a special degree. A course in ophthalmology was also proposed; but, owing to various causes, the matter was postponed. In the spring of 1914, however, the question was revived, and with it the perplexing question of assistance in our teaching clinics. It was argued that if the same hired assistants were used year after year, the graduate educational opportunities of our clinics would be largely lost; that it was better to have a change from time to time—better in the sense that more medical graduates would obtain added training while assisting. We decided, therefore, to combine a fruitful idea adopted from the University of Michigan, namely, the full-time small salaried clinical assistantship on limited time appointment, with our original plan of an advanced course leading to a graduate degree. We started with six teaching fellowships on a three year basis on progressive annual stipends of \$500, \$750, and \$1,000, and arranged that the successful completion of requirements to be formulated should lead to the degree of Doctor of Science in the specialty concerned; for example, D.Sc. in Surgery or D.Sc. in Ophthalmology.

These requirements have gradually been worked out in practice under the Graduate School Medical Committee, and are as follows:

1. Requirements for acceptance as a medical graduate student: (a) a bachelor's degree or equivalent (which may have been obtained in a combined B.S. and M.D. course); (b) an M.D. degree from a good school, and (c) a year's internship in an approved hospital.

2. Requirements for the advanced doctor's degree: (a) at least three years of graduate study distributed chiefly between a major subject and one or two supporting or minor subjects; (b) a reading knowledge of German and French tested by special examination; (c) an acceptable thesis, which must contain the results of original investigation, and (d) final written and oral examinations before committees of the graduate faculty.

It will be noted that the requirements for entrance to graduate work in the clinical branches of medicine are higher than those for graduate work in any other department in the whole university. This is due to the peculiar position of the clinical subjects with respect to dependence on a number of sciences and because a reasonable experience in practice, for example, an internship, is desirable before graduate study begins. Apart from this difference as to entrance, the requirements are substantially those required in the good universities for the degree of Doctor of Philosophy, or for that of Doctor of Science when the latter (as at Minnesota) is given as an earned degree.¹

As to the division of the candidate's time, it appears that approximately one third to one half will be devoted to the major (exclusive of thesis), and will include the clinical and technical experience necessary to insure fair skill in the specialty chosen; from one fourth to one third will be spent in the fundamental laboratories, and from one fourth to one third on the thesis. This again is not unlike the distribution of time usually worked out by a Ph.D. candidate in any of the sciences.

As to the individual program, it was apparent from the start that no two men could be trained exactly alike. Graduate education can be done only to a limited extent in classes, and in the clinical branches apparently hardly at all. It consists essentially in placing the competent student in contact with the materials, apparatus and other facilities of learning and allowing him, under suggestive and critical guidance, to educate himself. Consequently, each student has an adviser; and with him and the dean of the graduate school, the student works out his general program for the three years' course and his specific work from semester to semester, which program must finally be approved by the graduate school medical committee.²

1. I cannot entirely agree with Dr. L. B. Wilson (Science, 1917, n. s., 46, 127) that an advanced degree in medicine stands for more than an advanced degree in a fundamental science. It is true that the medical man has much knowledge that the other lacks. So also a Ph.D. in Chemistry has much knowledge a Ph.D. in History lacks. It is true that more time beyond the bachelor's degree will be required for the doctorate in a clinical branch than for a doctorate in pure science. But the Ph.D. or D.Sc. represents not time essentially, but rather attainment in science, and particularly in research. In this respect, the advanced degree in medicine will mean the same as that in any other branch of learning.

2. Following is the three year program of Dr. McWhorter, fellow in surgery: For the year 1913-1914 (including summer) and first semester, 1914-1915; mornings in the university hospital as assistant and in charge of clinic clerks (undergraduates); did minor operations. Afternoons divided between anatomy, pathology and experimental surgery. Second semester, 1914-1915, summer and first semester 1915-1916; forenoons, largely independent work at the hospital; did 150 major operations (under supervision when necessary). Afternoons, two thirds on experimental work (completing thesis); one third teaching surgery on cadaver and on animals. Second semester, 1916-1917, at Rochester, working in the Mayo Clinic in cystoscopy and roentgenoscopy. Dr. McWhorter published, besides his thesis, an original paper in anatomy and one in experimental surgery.

In the fall of 1914, then, under general ideas, since that time worked out in detail as described, and with the nucleus of teaching fellows, to which a few other students were added, graduate work in the clinical branches began at the University of Minnesota.

INSTRUCTION AT THE MAYO CLINIC

While all this discussion and preparation through several years had been going on in the university, the Mayo Clinic at Rochester, unhampered by tradition, and on the other hand, in a measure, unguided by scholastic ideals, had gradually developed into an informal graduate school and research institute. The young physicians hired as assistants could not help but learn many things in handling the large and varied material of this clinic. This was the absorption process to which I have already referred as a form of graduate work always going on in medical school clinics.

The absorptive process acts best on the prepared pabulum of well established routine. It contributes well to the learning of technic and to the acquisition of practical experience, but not so well to the gaining of solid foundations in science or to the stirring up of research aspirations.

Gradually at the Mayo Clinic a more conscious effort was made to give instruction. Men were employed to carry on research, and their assistants were guided in investigation. The library was strengthened and the laboratories were thoroughly equipped. By 1914, as I have indicated, it would have been entirely appropriate to speak of the Mayo graduate medical school, although there was no formal organization of that name. No degrees were granted, nor was there any course of study or legal authority. The assistants were called fellows, but no condition of appointment except the possession of an M.D. degree was imposed. The fellows stayed in the clinic varying lengths of time, but usually three years. Many of the earlier ones were taken into the organization.

Meanwhile also the Mayo brothers had been accumulating a fund with which to endow the work of their institution. By the fall of 1914 this fund had reached a million and a half. Moreover, it had become clear to the Mayos that the endowment would best fulfil their fundamental purpose if the income were perpetually devoted to medical education and research.

At this stage and proceeding on the initiative of the state university, the proposal was made that the clinic affiliate itself with the medical school for the cooperative conduct of graduate medical education according to the plans which the medical school had formulated. For the carrying out of this proposal the educational and research work going on at Rochester was separated from the clinic and incorporated under the name of the Mayo Foundation for Medical Education and Research. All exclusively scientific workers became employees of the foundation. Others were exclusively clinic employees or were employed part time in each institution, according to the distribution of their work between research and the money-making medical practice of the clinic.

This arrangement was made and the foundation was created, in order that association between the university and a private business might be avoided. Those in charge of the negotiations on both sides believed, at the time, that such a connection would be "wrong in principle," since one of the parties to the proposed arrangement was a state university. The

plan, therefore, was to affiliate the foundation and not the clinic with the university. We believed that this was legally and educationally feasible. The preliminary documents were drawn up from this point of view.

However, as many know, the proposed affiliation did not escape criticism. On the contrary, an organized effort was set on foot to defeat it. In two successive legislatures strong efforts have been made first to prevent and latterly to annul the affiliation. The university has won both struggles, and public opinion is certainly in favor of a continuance of the cooperative experiment entered into by the University of Minnesota and the Mayo Foundation, for the trial period of six years agreed on in 1915.

I mention this controversy, not simply as an item of historical interest, but because out of it has come a change of ideas, in my own mind, at least, concerning the fundamental relations involved. I have frankly come to believe that our municipal and state educational systems do wrong to stand aloof from practical business. The purpose of our schools is to prepare men broadly for life. Surely practical training, say of a physician, is part of such preparation or education. To confine such practical training to practice on paupers in public institutions limits opportunities, is undemocratic, and savors of phariseism. The ideals of education must not be considered something holy and apart; something enshrined and cloistered; something robed in white and to be kept unsullied from the world. No, the ideals of education are to be taken into every-day life and used to lift it up.

I think the Cincinnati plan of engineering education should be carried down into the high schools and should embrace all sorts of trades and professions. It would tend to democratize secondary education and to give it seriousness and purpose. It would prevent the abrupt cutoff between those who go into the trades and those who go into the colleges and learned professions. I believe, to be more specific on the question of medical education, that eventually every ethical private clinic in the country—every clinic large enough to afford advanced training for even one young medical graduate—should be affiliated with some university which should have the power to supervise that man's graduate training and in the end should attest, after proper examinations, his technical proficiency.

Just exactly as the engineering student at Cincinnati gets his practical work in shops or building construction in actual operation under private management and his theoretical training in university classes, the whole being finally attested by a university degree, so also the proposed medical specialist should get further practical training in actual practice under other specialists, and further scientific training in university laboratories, the whole contributing to the diploma or certificate which should confer his moral, if not his legal, right to work independently. I estimate that this is the only way by which the universities can contribute in any large measure to the practical training of specialists and can assume the responsibility for their certification before the public.

This is a large task—one to be undertaken conservatively and gradually, but nevertheless without delay or temerity. Careful supervision, careful selection must be exercised. The leading specialists must be urged and taught to make their clinics more than places of business. The cooperation of the College of

Surgeons and of the special societies must be sought. But the universities must take the initiative and assume lasting responsibility. The undoubted reflex effect of a university connection should appeal to competent specialists and make the task of securing their cooperation easy. As the state-wide campus has become the watchword of agricultural colleges and state universities, so the nation-wide clinic should be the ideal in the training of medical specialists.

Coming back to the University of Minnesota and its problems, I believe that the university should maintain close relations with the Mayo Clinic, a private business, just as long as that private business is properly conducted and furnishes facilities for education. I believe that the university should see that the business is kept honest and proper. If in this sense the affiliation should prove a perpetuating agency, as charged, I should be glad. Surely at the present time the prestige of the university can add nothing to the Mayo Clinic; but that the ideals of education and research should become a stabilizer and ruling motive of all private business is a consummation devoutly, yea reverently, to be wished. If this confession of heresies rejoiceth the soul of our opponents in the "late unpleasantness," I shall also rejoice.

Moreover, our controversies over the affiliation have led, I think, to an earlier clarifying of the eventual legal relations of the foundation to the university than might otherwise have occurred. It is now plain that the Mayo Foundation will be a definite part of the University of Minnesota, being indeed the name of an endowment fund for graduate medical education and research wholly controlled by the board of regents. As a separate corporation, the foundation will cease to exist when the trial period is over. Moreover, in case the clinical facilities at Rochester should degenerate, it will probably be possible for the university to remove all of the work to other places, which some people think may some time be desirable.³

RESULTS OF AFFILIATION

So much by way of digression. I now return to my main theme. By the opening of the session of 1915-1916, the temporary affiliation (not with the medical school, as originally contemplated, but with the graduate school), was in effect. Members of the foundation staff at Rochester had been made members of the university graduate faculty, and those fellows at Rochester who could qualify were enrolled in the graduate school. We have had, therefore, to date three years' experience at Minneapolis and two with the Mayo Foundation. What have been the results?

In the first place, to some extent at Minneapolis and distinctly at Rochester, the effect of the graduate school standards on the quality of men appointed as fellows and admitted as students has been marked. It is doubtless clear to all that our experiment is one in intensive education and that we are not at all concerned in this discussion with short courses for ordinary practitioners who desire to "brush up," although the desirability of such courses, in case they can approach the antebellum standard of Vienna, is freely admitted. For such short courses admission standards would defeat their avowed purpose; but for real graduate work the sorting of candidates is important. The graduate school has the machinery and long estab-

lished standards for this purpose. This is one reason why graduate work in medicine should be in the graduate school and not in the medical school.

Counting the fellows at both places, and a few others, we have had, during the past year, fifty-eight graduate students in clinical subjects at Rochester and seventeen at Minneapolis, or a total of seventy-five. These are distributed as to major interest as follows: medicine (including neurology), 15; surgery (including orthopedics), 46; obstetrics and gynecology, 2; ophthalmology and otolaryngology, 7; pediatrics, 5. These seventy-five students did their undergraduate work in twenty-six different medical schools, so that we have in our graduate school in the medical group quite as cosmopolitan a body of students as in any other division of the university. We believe this is desirable.

Seventy-five students do not seem a large number,⁴ yet it is apparent that our facilities, including those at Rochester, will accommodate only a few more. Probably few universities having undergraduate teaching obligations could give good training to more graduates than Minnesota. Moreover, the number eligible for degrees theoretically might annually be one fourth or at most one third of the student number; say, fifteen to twenty a year from Minnesota. It is such calculations that have caused me to state that if the universities are really to be an effective factor in the training of specialists, they must affiliate with themselves a large number of private clinics.

The University of Minnesota has taken a step in this direction in its recent approval of the clinics of Dr. Todd in Minneapolis and Dr. Burch in St. Paul, for practical training in ophthalmology. Each of these men agrees to support one fellow who shall divide his time between the private clinic and the university. This fellow is to be allowed one half of the first year's graduate credit for strictly technical and diagnostic work in the clinic, but not more, unless clinical work of a higher type than ordinary routine office procedure shall be provided and "evidence of satisfactory productivity in investigation connected with this work be furnished." These provisions indicate the type of university control that we deem to be necessary in affiliating private clinics.

Many other phases of interest from our experience might be noted, but I prefer to confine myself to those which have come to the front in connection with the presentation of the first group of candidates for the advanced doctor's degree. We shall grant four such degrees at our commencement tomorrow; and they will be, as I have indicated, the first ever conferred in clinical science. I shall note at random some interesting happenings of the past few weeks.

First as regards degrees: As I stated, we offer the degree of doctor of science, this having been always an earned degree at Minnesota. One of our candidates, however, asked for the degree of doctor of philosophy in surgery. This was Dr. McWhorter, a Rush graduate known doubtless to many of those present. His request was granted.

Now the question presents itself, should not the Ph.D. degree indicate the highest earned distinction in surgery or medicine as well as in physiology or chemistry? I think it should, and that Dr. McWhorter

3. Since the delivery of this address, a proposition to the above-mentioned effect has been made by the Drs. Mayo and accepted by the regents of the University of Minnesota. The foundation is now an integral part of the university.

4. In addition to these, twenty-eight were enrolled in the fundamental departments, anatomy, physiology and physiologic chemistry, pathology and bacteriology. Of these, ten worked at Rochester, and eighteen at Minneapolis.

in making his request showed a fine appreciation of the desirability of continuity and uniformity in academic degrees. New degrees always have indefinite significance.⁵ The Minnesota experience shows that graduate work in clinical science can be conducted under the same standards and rules as graduate work in laboratory science, or in social science, or in agricultural science, or in languages. No new degrees should be introduced until the old ones distinctly fail to meet the need. I doubt not that those who will guide your new graduate work in medicine here at Chicago will take this view, and I trust that the Ph.D. degree, the honorable mark of so many Chicago men who are leaders in all the fields of natural and social science, will be the mark also of those who go out from here as leaders in clinical science.

Medical men are, I believe, unfortunately disposed to look lightly at the word "philosophy." It seems to them to connote unpractical theorizing. I should like, as a long resident but never quite a naturalized citizen of medical land, gently to chide my clinical brethren, for I think that quite as much unpractical and unscientific theorizing is raised per acre in the clinical field as anywhere else in the broad world of learning—and think how many acres there are in that field! One of the most striking features, by the way, brought out by the recent examination of candidates at Minnesota was the lack of philosophical and historical background for their knowledge. Medicine is top-heavy and ever spreading. How to keep the foundations solid and commensurate with the superstructure will always be a big problem in graduate medical education. The philosophy and history of science and of medicine should find a place in every scheme of graduate study.

Each of our students works, as I have said, under an advisor. It is but natural, therefore, that considerable diversity should exist in the courses which have been pursued by our candidates for degrees at this commencement. Some advisors lean more to the practical side than others and neglect the fundamental sciences. Some advisors have kept their students in contact with cases to the practical exclusion of opportunity for research and reading. An apparent result of this policy is seen in the fact that the theses of two candidates were rejected as inadequate for the doctor's degree, from the standpoint of original investigation. These candidates were accepted for a master's degree. Their examinations revealed a grasp of diagnosis and practical surgery quite equal to that of any of the others. They lack only the evidences of original research.

All this shows that we shall fight again, and every graduate school of clinical specialties will fight again, the old battle in education between the theoretical and the practical, between pure science and applied science, between principle and method. A recent setting of the question as applied to army officers is beautifully put by Donald Hankey in his book, "A Student in Arms." He finds, as all must find, that both the university and the practical school (in his case the military school)

have something necessary to contribute. I recommend his essay to all interested. Beyond a few dogmatic statements I shall not go into this question.

I believe in a solid scientific foundation for the undergraduate medical course and a few feet more of well-seasoned concrete for the big guns of specialism. I point to the fact that the physician will see sick people all his life; chemical and anatomic laboratories, probably, for a limited period only. I hold strongly to the doctoral thesis, first, as evidence to the faculty that the student has caught the scientific idea; secondly, as evidence to the scientific world of the type of work the university is doing. I believe, finally, that that thing you call judgment—surgical judgment, let us say—which is so much more than manual dexterity or delicate sensory discrimination or intelligent understanding of isolated phenomena, is better developed from a hundred cases studied exhaustively, considered in all aspects, read up in the literature, worked over in the laboratory, than from a thousand cases passing, with blending after-images, in the rapid cinematograph of hospital routine.

All this makes me believe that at the Mayo Clinic, and in all places where clinical graduate work is undertaken, the student must be held back from clinical plethora, from engorgement with routine observation, diagnosis and care of the sick. He must be given time for laboratory and library work; for meditation and expansion; for the development of originality and the evidence thereof—his doctoral thesis. If we don't do this, the research aspects of our work will dwindle away. Our product will be trained and safe, but sterile. Our graduate medical schools, of which so much is just now expected, will be amplified, but not glorified, polyclinics.

And for all these reasons I believe that graduate work in medicine should be closely allied and alined with and, indeed, a part of the regular work of the graduate school. The restraining hand of the dean controlling the graduate work of all the arts and sciences may save the youngest child, medicine, from many a disastrous fall.

But over against the necessity for substantial science as part of clinical graduate work, I see the need for the technical proficiency that comes from repetition and for the diagnostic skill that is not so much born as derived from repeated observation. We shall always have to compromise between the theoretical and the practical. The question is where to draw the line. I say, keep it safely on the side of science.

In this connection I wish to present the case of one of our candidates which illustrates an unexpected turn of our educational machine. This man for three years held a fellowship in internal medicine. He was most ingenious in attacking all kinds of problems dependent on refined physical apparatus. His interest and thought were all in this direction. He was full of problems and of enthusiasm for research. But his examination developed that his knowledge of internal medicine was hardly better than that of a senior student, and he frankly confessed that he had no interest in practice. Our whole plan had been to produce a combination of scientist and practitioner; but here the amalgamation failed from the practice side, just as with others, in a measure, it had failed from the science side. It was plain that the degree of Doctor of Science in Internal Medicine as a mark of a trained specialist was a misnomer for this candidate.

5. Some years ago a student applied for admission to the St. Louis University Medical School, presenting a certificate indicating that he had an "M.A." degree. The college issuing the certificate was an unknown Kentucky institution; but I judged that its master's degree must be at least equal to a high school diploma (at that time our standard entrance requirement), and therefore admitted the candidate. It soon became apparent that he could not carry the work of the medical course, and inquiries developed the fact that the degree he possessed was "Master of Accounts!"

He was given the degree of Doctor of Science without designation as to department.

Of the various requirements for the advanced degree the reading knowledge of French and German has been, in our experience, the hardest for medical graduate students to meet. Although all of our candidates had at least the two years of college work that is now the accepted minimum standard of entrance to the better medical schools, their linguistic training was evidently very weak. Moreover, during their period of fellowship, particularly at Rochester, they do not appear to have been impressed with the necessity of acquiring the languages and using them as tools. I feel that this is evidence that the advisers of these students did not point out the library as the great repository of knowledge and did not insist on systematic reading.

A knowledge of the principal languages of science is a universal requirement for the Ph.D. degree. The degree in medicine cannot be placed on a lower level than that in history or psychology or chemistry. Moreover, the enormous medical literature in German and French renders it imperative that every investigator and every progressive practitioner should know these languages. Otherwise, he can never keep abreast of the times and must always get a large part of his knowledge through belated and abbreviated abstracts. When the war is over, the commerce of science will be reestablished and its essential medium of exchange is found in the three great languages, English, French and German. They are, moreover, a mark of culture and a guide to that tolerance and sympathy which are characteristic of a true scientist. For all these reasons the graduate school at Minnesota adheres to the language requirement for advanced degrees in medicine.

There are other questions raised by our experiment to which, if time permitted, I should like to direct attention. For example, to what extent should graduate work in clinical science be subsidized, as, for example, by our system of fellowships? Of course, these are really assistantships. The recipient of a stipend earns it. The question may be raised whether young doctors without financial aid, after the long and expensive M.D. course, can afford the time and money for such a term of graduate study as I have described. Would our plan, if made universal and not subsidized, tend to shut out the poor man from the higher walks of medicine or unduly delay entrance into specialism? I leave this for you to consider. The question as bearing on undergraduate medical education has been touched on editorially several times in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.

Likewise, it would be a delight to consider the proposed new degree for specialists who are so lacking in energy that they cannot produce a thesis, namely, the degree of "Doctor of the Practice of Medicine." In imagination I can see this striking trademark stenciled on the smug and satisfied sacks ground out by every so-called "practical" educational mill in the country. But I hope that neither "now" nor "eventually" will the "Doctor of the Practice of Medicine" be added to the grist of medical degrees produced near the Falls of St. Anthony.

CONCLUSION

Passing by these interesting topics I feel that I should attempt to point out to you, the members of this graduating class, how the new movement in medical education may relate itself to, and possibly change,

the practice of medicine into which you are about to enter. The next thirty years will be your generation—yours of all the thousands of generations of men; yours to grasp, to shape, to live. In it you will make your mark deep or shallow, enduring or without a visible trace. But it will also make its mark on you. What are the changes to which you may have to adjust yourselves?

What, first, of private practice? There are those who will tell you that private practice is going out; that the old family doctor is already dead. They say that in these days of organization and cooperation, of hospitals and automobiles, of specialism and efficiency, there is no room for the family doctor.

There are those who argue for the family health officer to keep everybody well and turn over to the appropriate specialist any who by unreasonable chance become ill. Others see the whole medical business socialized, and medicine, like education, supported by the state as a free gift to the people. The group system has its advocates and has made notable progress.

I am in sympathy with all these movements. They should have your careful consideration, and to such extent as may be, they should work themselves into the life complex of your generation. Moreover, the evils of the present competitive system of medical practice, with its dollar baiting, its unjust distribution of emoluments, its inability to render equal and the best service to all classes of mankind, are apparent and must be improved wherever possible.

Nevertheless, I perceive that the practice of medicine is deeply rooted in that thing we call human nature; that it gets back and down to the fundamental instinct of survival, and rests firmly on the eternal rigidity of protoplasm. Changes will undoubtedly take place in the practice of medicine. Perhaps we can foresee the trend of such changes. We may admit that this is an age of unusually rapid social evolution. But still we must see that it is evolution. New species do not spring unheralded from the inorganic world. I predict that general practice will endure, will adjust itself to specialism and to group medicine and to public medicine. In the ecologic relations that shall be developed I predict that the ancient plant of private practice, rooted so deeply in human nature, will still be the center around which the newer varieties will flourish.

Certainly it is not hard to prophesy for the next thirty years and to declare that most of you for several years and many of you for life will be family doctors; better age for age and stage for stage, than your fathers, but following, nevertheless, essentially in their footsteps and entering into the same intimate personal and family relations with your patients. I think you should look on that as a good life, and that something more than the current and "exaggerated" rumor as to the demise of the family doctor should be needed to drive you from the ancient and honorable and useful career of private practitioner.

At the same time all of you should study and take part in the new movements in medical practice. Some of you, under favorable circumstances and in favorable localities, will, I trust, take part in those cooperative ventures that are coming to be known as group medicine. Some of you will be in public health work as school physicians and the like. I trust you may hit on a happier day than this and be able to treat as well as diagnose. At present, the school physician says, "Yes, you have diphtheria. Run along and see a doctor." It is as if, when a man is attacked on the street,

the policeman should say, "Yes, you are being robbed. Hustle quick and hire a private watchman to defend you."

Others of you, finally, will prepare for the higher but narrower work of specialism. You will bear in mind that every narrowing of interest tends to narrowing of sympathy. You will do your best to counteract this tendency. As the field of view becomes smaller, as in the microscope, you will cultivate that imagination which can see the whole. You will recognize the need of further training and will not be content with a specialism that is self-announced and without foundation.

You will not be content to repeat in indefinite sequence the procedures and practices of others. You will not be satisfied to be resonators. You will sound a note of your own. You will find out something new. You will go forward to your special work, if not with an advanced degree, such as I have described, at least with a training and with ideals approximately such as are here laid down. You will be scientific specialists—scientific surgeons, scientific pediatricians, etc.—and to your work will come a pleasure and a compensation not to be found in routine, and not to be derived from much doing and much getting and much hoarding away.

THE MENACE OF MOUTH INFECTIONS *

OLIVER T. OSBORNE, M.D.

Professor of Therapeutics, Yale University School of Medicine

NEW HAVEN, CONN.

There is no more impressive sequence than the presence in a patient of a disease or abnormal condition, such as infected teeth or gums, and the later surgical eradication of the focus of infection; or, to make the sequence terse and logical, let us put it thus: patient; ailment; crowned, bridged or decayed teeth, inflamed gums, or pyorrhea, or all of these things; roentgenograms of these suspected areas demonstrating pus and degenerated bone; operative demonstration of pus sinuses and cheesy, broken-down bone; and lastly, but unfortunately not always, the cure of the patient.

In this age, in which the laity has acquired from periodicals a smattering of medical science, and therefore thinks it has a perfect right to criticize medical men and to ridicule what they term "medical fads," let me urge that the nearest relative of the patient be present at the dental operation, and be placed in close proximity to the foul tooth, foul crown, or foul pus that is extracted from the mouth of the loved one. I know of no more impressive demonstration to the ordinary layman, and he often becomes a hysterical enthusiast for the removal of infected teeth, or even of those that may possibly be infected.

MENACE OF CROWNED TEETH

Cruelly awakening to the physician is the demonstration of a bacterium in the blood or in a distant lesion, and a late demonstration of the same germ in an extracted tooth or in the secretions of a pocket in the gum. I do not believe that there is a greater menace to health today than crowned and bridged teeth, to say nothing of imperfectly filled and dead teeth, and of pyorrhea alveolaris. Furthermore, infection of the tonsils and the sinuses adjacent to the nose must never be overlooked. If such infection has not caused

symptoms, it will do so, and its eradication is the only safety.

From infected areas in the mouth many pathogenic organisms have been isolated, probably the most dangerous being the pneumococcus and the *Streptococcus viridans*. We do not know how many pneumonias, following or accompanying influenzal affections, occur, because pneumococci are being carried in the mouth. We do not know how many times irregularity, weakness and actual disease of the heart are due to germs harbored in the mouth. Neither do we know how frequently the *Streptococcus viridans* is the cause of heart disease or adds its fatal potency to an already established chronic disease.

We do not know much about the *Endamoeba buccalis*, but we do know that it is probably always accompanied by other germs, and especially by the pyogenic germs. Pyorrhea alveolaris is unquestionably due to infection, but this kind of infection and inflammation does not often occur unless there is degeneration of the gum tissues, and such degeneration most frequently occurs after 40 years of age. It may be here noted, parenthetically, that chronic colitis, or at least decomposition in the colon, also occurs most frequently after the age of 40, and both of these conditions are very frequent in people in middle life. Is the intestinal disturbance a sequence of the mouth infection?

Connellan and King¹ have isolated a nonpus-forming diplococcus which they believe produces dangerous toxins. They find these germs in the crypts of tonsils, and patients suffering from arthritis, asthma, endocarditis, myocarditis or nephritis have been found to harbor these germs in their mouths. They advise producing an autogenous vaccine and using this for some time before such diseased tonsils are eradicated.

It is not my purpose either to offer or to discuss roentgenograms of damaged teeth and gums; but let me assert that no dentist should devitalize, or attempt to fill the roots of a devitalized tooth, which is to be preserved, without the aid of roentgenograms; that every case of pyorrhea alveolaris, every suspicious root, and occasionally all crowned and bridged teeth should be subjected to the scrutiny offered by the roentgen ray. It is useless to agree on the removal of one infected tooth and possibly leave other infected teeth in the mouth of the patient, and yet such carelessness is repeatedly agreed to by both physician and dentist. Also, it is difficult to compel a dentist to operate immediately on all infected areas. He does one thing at a time, and then takes up something else. What surgeon would remove one point of infection and leave half a dozen others, or even one other infected area?

There must be hearty medical cooperation between the physician and the dentist in order to decide, in any individual patient, what teeth shall be preserved, what teeth must be removed, and how best to treat infected gums; also what part a diseased condition of the patient plays in the mouth condition.

M. I. Schamberg,² a noted New York dental surgeon, says:

Crown and bridge work, as well as all work upon pulpless teeth, should be conducted by men who would specialize in that work, and who would, through the medium of x-ray, satisfy themselves that they are not putting a beautiful super-

1. King, J. J.: Further Observations on the Connellan-King Diplococcus Throat Infections, THE JOURNAL A. M. A., Jan. 13, 1917, p. 91.

2. Schamberg, M. I.: Journal of the Allied Dental Societies, December, 1915.

structure on a weak foundation. Roentgenograms should be taken from time to time after the insertion of such pieces, to determine the state of health or disease of the hidden parts. Patients' mouths should be kept free from infection at all costs, even though it should mean the removal of every tooth in the head. If it can be done without sacrifice of the teeth, so much the better, but a toothless mouth is to be preferred to one containing a single focus that menaces the health of the patient.

It should also be urged that however well a patient is, these germs of infection, wherever they may be, are ready to do him some injury whenever an acute infection attacks him, or when his own systemic strength is in any way reduced. They are all waiting an opportunity, and how can we excuse a physician for omitting to study his patient's mouth? How can we excuse the dentist who waits until tomorrow, or next month, or six months hence before he removes a source of infection which he has recognized? Or how can we excuse a dentist for carelessly constructing bridges or crowns in the mouth of a young patient, knowing the danger from infection in the years to come? In other words, have we the right to crown to the gums, even if they are wonderfully well fitted? Have we the right to construct permanent bridges, when an aseptic bridge or a removable plate is more sanitary?

IODIN INJURIOUS

I do not propose to discuss the treatment of pyorrhea alveolaris, but let me emphasize the fact that dentists use iodine too freely on the gums. A little pain here, or a little infection there, and the gum is injured by repeated applications of iodine. We know the value of iodine as a counterirritant or as a germ destroyer. We also know that it destroys the vitality of tissues, and many a gum has been burned and blistered, and inexcusably made a region for more infection. We should remember that there are always germs in the mouth, many of them harmless, but also many ready to attack a broken mucous membrane or ready to be absorbed into the system through such a lesion. Therefore, care should be exercised not to injure the mucous membrane of the mouth or gums, especially when an infection is being treated.

I find that infected teeth and tonsils are frequent causes of thyroid disturbance, causing both hypersecretion and hyposecretion, and no medicinal treatment will effect a cure until the foci of infection have been removed. The absorbed toxins produced by the germs of infection and by the local suppuration often act peculiarly on the thyroid gland. The thyroid may be considerably enlarged, yet may give absolutely no symptoms of increased secretion and need not be cystic. Something irritates the gland, and then something else inhibits the result of its increased activity. This is shown by the surgical removal of the source of the mouth infection, and sometimes marked symptoms of hypersecretion immediately occur. I have seen three such instances. In one case the gland became greatly enlarged after the operation, exophthalmos occurred, and a tachycardia of from 140 to 160 developed. Before the operation, absolutely no thyroid symptoms were present, except a slightly enlarged gland.

Not only the thyroid, but many other internal secreting glands of the body, are disturbed by the absorption of germs or toxins from the mouth. The suprarenals are, probably, especially acted on, as we have great changes in blood pressure in these patients. Many a patient with a very high blood pressure shows no

arterial and no kidney excuse, no intestinal toxemic excuse, and this high pressure persists, even when the diet is made rigidly vegetarian. Consequently, it is self-evident that there is internal secretion disturbance. Whether the suprarenals hypersecrete, or the thyroid, and one or two other glands perhaps undersecrete, it is difficult to determine, but that these glands are disturbed there is no question. Also there are many instances of very low blood pressure in these patients, and again we may not know whether the toxins depress the nervous system, or the vasomotor center; or whether they stimulate the thyroid to increased secretion of vasodilator substance, or inhibit the suprarenals as to their vasopressor substance.

Not infrequently patients with glycosuria have mouth infection. These cases are likely to be without typical diabetic symptoms, namely, without polyuria, and without thirst. In these cases there may be pituitary disturbance, or suprarenal disturbance, or pancreatic disturbance, or the glycosuria may be caused by the absorption of something that interferes with the liver or with muscle metabolism.

We must recognize that germs may be present in and around gums, allowing dangerous absorption of their toxins, without any local manifestations of pus. This is true of some germs that cause arthritis.

Again, there can be no question that the constant absorption of irritants or poisons from the mouth can cause irritation of the kidneys and subsequent chronic nephritis, even if focal infection of the kidneys is not thus caused, and many a case of autogenous infection or purulent infection of the kidney occurs without any apparent tangible excuse. Probably these obscure cases occur mostly from concealed infections of the mouth, tonsils or one of the sinuses adjacent to the nose.

We do not know that this continued absorption of concealed irritants in the mouth for months and years may not cause arteriosclerosis. All sorts of gastrointestinal disturbances, such as hyperacidity and ulcer of the stomach, can be caused by such mouth infections. And let us remember that cancer of the stomach seems to be on the increase. Recently I saw in consultation a patient who made a profound impression on me. He was a man but little over 40, who had, before it was discovered, far advanced, inoperable cancer of the stomach, and besides several bridges, there was hardly a tooth in his mouth that was not crowned. He had been fussing with his teeth and visiting dentists for fifteen years or more.

Statistics prove that cardiovascular-renal disease is increasing enormously, and we know that, in the last twenty-five years, crowns, bridges and pivoted teeth have also increased in a most extraordinary fashion. One has only to look into the mouth of every patient who enters one's office, of every patient who enters the hospital or the dispensary, to see how hard the dentists are working.

One of the saddest things that can happen to a person is infection of the blood with the *Streptococcus viridans*. This germ probably always gains an entrance through the mouth, and if we should cultivate the pus and secretions from the patients who have diseased mouths, we should probably be astonished to find the number of times the *Streptococcus viridans* was present. In the vast majority of cases the only hope for the patient with *Streptococcus viridans* is to eradicate it from the mouth before it infects his blood and causes malignant endocarditis.

The relation of mouth germs to arthritis deformans seems proved, hence eradication of the source of infection before the joints are affected should be the preventive treatment of today. To allow infection in the mouth to persist until this painful and crippling disease develops is inexcusable.

For nearly two years now, at a public tuberculosis institution of which I am chairman of the medical board, we have examined the mouths, corrected the teeth and removed sources of infection of every patient who entered the institution, and owing to this preventive treatment we have had less tonsillitis, fewer sore throats, less indigestion, and less influenza and colds than we had before we began these mouth investigations.

I think that both dentists and physicians have been very slow in discovering the harm done to patients by crowns and bridges, by leaving infected teeth in place, and by improperly filled teeth. Physicians do not pay proper attention to, and many times do not even look into, the mouths of their patients. I look back with chagrin and shame as I think of the probable cause of the chronic invalidism of some of my patients of years ago. But with this admission of neglect in the past, I deplore the present necessity of being compelled to fight with both the patient and his or her dentist for the removal of infected foci in the mouth. The dentist frequently will not cooperate. He naturally dislikes to remove his own fine handiwork. Hence, I repeat, when a bad tooth comes out, or a dirty crown comes off, let the patient, or, if he is anesthetized, his nearest relative, smell of it. This is an educational propaganda.

CONCLUSIONS

1. Most unexpected tolerance to pyorrhea alveolaris and to tooth infection is found.
2. Chronic invalidism may be caused by mouth infections.
3. The blood pressure may be raised or lowered by mouth infections.
4. The thyroid gland is frequently enlarged, and may hypersecrete or hyposecrete, in these infections.
5. Serious disturbances of the blood, heart, kidneys, stomach, intestines and joints are frequent from mouth infections.
6. Glycosuria can be, and perhaps true diabetes mellitus may be, caused by mouth infections.
7. Serious distant focal infections may occur from mouth infection.
8. Serious brain and nerve disturbances, as well as neuritis, may occur from mouth infection.
9. Ulcer of the stomach, pyelitis, appendicitis and chronic colitis may be caused by pyorrhea alveolaris and mouth infection.
10. Pneumonia, especially that which follows influenza, may frequently be caused by pneumococci long carried in the patient's mouth.
11. No treatment of these conditions will be of any avail until the mouth is made clean.
12. Stock or autogenous vaccines are not very promising as to their therapeutic value, but in obstinate cases they should be tried. Therefore, it is generally well to grow a culture from the infection in the mouths of these patients, that autogenous vaccines may be made and used, if desired.
13. One should be very careful not to promise a cure of a distant condition, although that condition

was caused by the mouth infection. However, many brilliant cures are caused by surgical eradication of infected areas. The patient should always be told that the surgical removal of the infected area in the mouth does not remove the germ localized in distant parts of the body, nor does it immediately cure an inflammation caused by these germs in a distant part, nor will it restore degenerated tissue, but it will remove the primary source of infection.

14. It should be urged that any fresh lesion of the mucous membranes of the mouth is a source of danger, much as is a lesion of the skin. The efficiency of the integument in warding off disease germs has long been recognized. It should be recognized that fresh cuts, abrasions, and blistering of the mucous membrane of the mouth with iodine, or other strong escharotics, offer the opportunity for the absorption of germs that may be freshly received into the mouth, and more especially of germs already in the mouth.

MIGRAINE AND CHRONIC INTESTINAL STASIS

THEIR RELATIONSHIP AND TREATMENT

MAX EINHORN, M.D.

NEW YORK

By migraine is meant a condition characterized by severe attacks of headache that occur at varying intervals, with periods of freedom between the attacks. The headache is usually followed by vomiting, either of plain gastric fluids or contents, or of bile, "bilious vomiting." After vomiting, the patient usually feels better, the attack gradually subsides, and there is an interval of freedom from the trouble for a month or two, or it may be for only a week.

The term "intestinal stasis" was first applied by Lane to a condition in which there is a delay in the onward movement of the intestinal contents, accompanied by symptoms of a neurotic type. Formerly, instead of intestinal stasis we spoke of habitual constipation. In constipation we find occasionally a great number of nervous symptoms — dizziness, lack of concentration of the mind, insomnia, etc. This combination of nervous symptoms and delay in the onward movement of the intestinal contents and action of the liver is considered by Lane as "intestinal stasis"; by others, the same picture is designated as "constipation with nervous phenomena."

SYMPTOMS

In migraine it is characteristic that the headache comes on suddenly, in the midst of perfect health, although there may be a premonitory stage of short duration. Sometimes the headache is followed by a defect of vision; some persons have a glimmering light in one eye, or they cannot see well with one eye; the headache is usually in one part of the head. That is why it is called migraine, from the Greek hemicrania (on one side of the head). The headache is usually quite severe, so that the patient cannot work and may have to go to bed, and with it there are disturbances in the upper part of the abdomen, followed by nausea and vomiting, and if there is nothing in the stomach then ultimately bile comes up. After vomiting and purging, the patient feels relieved, and there may be a period of freedom for quite a while.

Patients with migraine may be in good condition and apparently perfectly well; or they may belong to a group which suffers from enteroptosis and weakness, and are thin, anemic individuals. They do not feel well between the attacks, they cannot work much, their appetite is not good, and they are constipated; but these complaints are of minor degree and do not incapacitate them. Among the abnormal conditions may be some disturbances of the vision, or disturbances of the abdomen or of the genito-urinary organs.

In chronic intestinal stasis or simple constipation with nervous phenomena, the bowels do not move well without resort to some aid. Besides the constipation, the patients also complain of a variety of symptoms, sleeplessness, headache, etc. The headaches are not severe like those of migraine, but are mild and come on almost daily, particularly in the morning. Then there may be slight dizziness, and the patient cannot concentrate his mind and cannot do the same amount of work as formerly. His appetite is poor; sometimes there is nausea, and sometimes there is a fear of going out alone or of going to church. These nervous phenomena may be exaggerated; sometimes the constipation is associated with melancholia. That is not an infrequent combination. Constipation exists also in a high degree in the insane.

In regard to the connection of these conditions, some physicians say that constipation is at the root of these troubles, causing even insanity. I myself do not believe this, but rather think that commonly the reverse is true, namely, that persons who are nervously upset and are insane have their constipation increased by their nervous condition. I once saw an insane patient with an immense very hard tumor in his abdomen that could not be differentiated from a large neoplasm. When it was learned that the bowels had not moved for a week or two, it was easy to make the diagnosis that it was a fecal mass. He was given a strong cathartic, the bowel was washed out for a number of days, and the tumor disappeared; but the patient's insanity was not cured. Although the constipation was relieved, the insanity persisted for a whole year, when the mental symptoms cleared up.

ETIOLOGY AND TREATMENT

French writers have given us the theory of auto-intoxication. Bouchard was the first to advance the theory that poisons form in the body which give rise to these disturbances. Any organ which is at work creates waste products which are, so to say, deleterious to the system, provided they stay there. Usually the system eliminates them. If one does manual work, the muscles use up some of their material and produce also waste products. Naturally, these waste products are removed, being eliminated during the period of rest, so that no disturbances originate. It is the same way with all the organs of the body. In the brain, for instance, reading or writing creates waste products, just as in any machinery; there is a by-product that has to be eliminated. Our organs are so arranged that the body normally is easily rid of these waste products, and no symptoms arise.

If we go a step farther we can see that if the required period of rest is not given, if the work is kept up too long, the waste products accumulate in a greater degree, and they are not eliminated in a complete manner. For instance, if a person can work six or eight hours every day and his organism is so arranged that he can rest in nine or ten hours, and he

then works for twelve hours a day and does not get the required rest period, the system does not get the needed rest, and disturbances arise.

These disturbances may be considered as the defensive mechanism of the organism. To apply this theory to migraine: If there is a mental strain going on in some way, the patient doing too much work, reading or dancing, or taking part in too many social happenings and not sleeping or resting enough, the brain does not get sufficient rest and does not have time to regain its normal condition. Some waste products accumulate, and every day there is an increase in their amount, so that ultimately there is a catastrophe. The body tries to create something that will compel the organism to rearrange matters, and there is a spasm of the blood vessels on one side of the brain which makes itself felt as a hemicrania. The patient has a headache due to that spasm and has to lie down and rest more; during this time the restoration of function of the brain is completed in a normal way, and elimination takes place. The headache is then relieved; a relaxation of the blood vessels takes place and reestablishment of equilibrium ensues.

Elimination can be helped by emptying the bowel. The eliminative organs are the kidneys, skin, lungs, liver and digestive tract. The waste products are first taken up in the blood. How does the brain, for instance, get rid of the accumulated waste that must first be taken up by the blood? The veins do their share first. Part of that blood goes to the liver through the arteria hepatica. I do not speak here of the portal vein. The latter lies there as the barrier to prevent anything from passing through into the blood which comes directly from the digestive tract. But outside of that the other blood — only a part — goes to the liver. That brings something for the liver to work on; but the digestive tract has also the power to eliminate. Now, if the patient takes a cathartic or vomits, a part of the accumulated waste products is eliminated. The gastric juice is not only a secretion but also an excretion; it is excreted through the stomach. Sometimes urea can be excreted through the stomach, and still more through the liver. The bile brings down the excretory substances of the liver and empties them into the intestinal tract. If a patient has a migraine and we give him calomel, he has a greater flow of bile and the elimination is increased, and vomiting and purging clear out the system.

In the autointoxication theory in intestinal stasis, it is quite different. Fecal matter contains decomposed material and innumerable bacteria. The idea that poisonous substances reach the organism from this source is at first thought plausible. But normally the digestive tract (including the colon) does not take up any poisonous material. The mechanism of the system is so arranged that its work shall be kept up, and the colon is so constructed that the fecal matter can be discharged without much difficulty. Many physicians are imbued with the idea that if the intestinal contents remain too long in the system they will give out to the system poisonous substances which create all the symptoms before mentioned, and that we have to deal with an intestinal autointoxication.

If this theory can be worked out without awakening too much fear in the mind of the patient, it will not do any harm; but if it is exaggerated, great harm may be done. This point must be emphasized, for it is of importance. Lane said that if there is some delay in the motion of the contents of the bowel — and this

is especially true in cases of enteroptosis when there is a prolapse of the colon and an irregularity in the position of the colon, which creates an autointoxication — this is the cause of the troubles associated with constipation, as sleeplessness and headaches, and also of many other ailments, such as chronic rheumatism and gout.

This theory has been overestimated, and has taken such root in the minds of some physicians that if they see a patient who is constipated they think he must be told of it. "Why, you cannot live that way, with poisoning going on in your system all the time; if that keeps up, all will come to an end." The patient goes home and worries, and doesn't know what to do. He tries to do exactly what the physician tells him. He eats no proteins, but does not feel much better. He comes back to the physician, who says: "Your trouble is in the colon; the colon is not exactly right. It is too long. Instead of going in a more or less circular way, it forms angulations and drops down, and that is wrong. There is a delay there, and that is where the trouble lies." If the patient does not get better within two or three weeks of treatment, operation is suggested for the purpose of shortening the colon, cutting out part, or perhaps the whole of it, performing an ileosigmoidostomy or a colectomy.

Were this theory really correct and could we prove it, we might at least try such a procedure; but in reality such patients feel much worse after operation. A great many are made worse, and some have died as a result of it. In order to demonstrate that we really have to do with an autointoxication, we ought to be able to produce the poison by experiment and then to inject it into animals and show that that poison causes these symptoms, not in one or two instances, but in every instance. If that could be proved, we might speak of it; but it has not been proved, and much harm has been done by teaching it, in making people afraid of themselves, making them afraid to eat and afraid of their digestive tracts, especially of the large bowel which, according to their minds, is a place of poisoning.

It is just the reverse. The colon is our best friend. Instead of being a place of poisoning it is a place in which things can be kept without harm and later on eliminated. It serves a very useful purpose. It can take good care of the excrement and can work it up better. If we lose the colon, we are much worse off than with it. I speak from experience, for such persons come to me almost every day worrying about their large bowel.

This is all wrong. Unless there is some organic disease in the bowel which gives rise to ulceration, for instance, in such a way that it is exposed to the absorption of fecal matter — and such instances are very rare — the mere presence of fecal matter will do no harm, for so long as the mucous membranes are intact, no matter what the shape or position of the colon — big or little, up or down — no surgical intervention will be required. The latter will be reserved for organic diseases (strictures, or partial stenosis by bands, etc.).

In regard to the connection between the nervous phenomena and constipation: In a great many cases, the nervous phenomena do not originate from the constipation. This has been proved by Dunin of Russian Poland. Two important points can be brought out to demonstrate this. Constipation can be established for a number of days by giving a patient opium, and yet

he will be perfectly well, showing that the fecal matter does him no harm. If a patient with these nervous phenomena — sleeplessness, distress, etc. — is given a nerve remedy, say 15 grains of bromid, a movement of the bowels will at times take place without a cathartic. This will not be true in all instances, but will in a great many, showing that the primary factor in the condition is the nervous state of which the constipation is the consequence.

It is important to know that fear and constant anxiety about having a movement is bad for the patient; it makes him worse. The more he is frightened and made anxious about having the movement, the worse is the constipation; the fear and anxiety exert an inhibitory influence on the peristalsis.

TREATMENT

In cases of migraine, we first have to look into the condition of the system and find out any existing faults, such as astigmatism, which should be corrected by proper glasses; enteroptosis, by giving the patient a bandage; chlorosis, anemia, by building up the system and getting the patient into a normal state. For, if the organism is below par, anomalies will develop much more quickly, and the migraine will come on more readily than if the body is in good condition. The first thing to be done is to try to adjust any existing anomalies of the body.

During the attack, the desired rest must be secured for the patient; if possible, in bed. No nourishment should be taken, or only very little liquid food; and a mild aperient or a saline enema should be given. If these measures are not sufficient, citrated caffeine, 2 grains, in conjunction with pyramidon, 5 grains, may be administered twice daily. In rare instances, codein or morphin may be required. All of these remedies act well and should be given as needed. Calomel is good and can be administered when indicated, and injections may be given to wash out the bowel. In a day or two the migraine is over and the patient returns to normal, and then we decide about other measures to adopt to prevent, if possible, the return of the migraine. If we succeed in eliminating all the causative factors, the migraine will not reappear; but if we cannot do that we can at least cause the attacks to be milder and less frequent.

In habitual constipation, or intestinal stasis with these nervous phenomena, it is of first importance to reassure the patient by telling him that in case he is constipated no harm has been done to the system. We must take away the fear of poisoning. The patient should be told to eat, but not to overwork, and his bowels will move all right; also to go to the toilet every day at the same hour, in order to reestablish the habit that has been lost.

In many patients constipation is due to a one-sided diet, and they have to be taught a proper diet. They should be urged to eat plenty of bread and vegetables and fruit, and plenty of salads. The more indigestible food these patients take, the better. It increases the activity of the digestion and augments the peristalsis. If they are given food that will digest readily there is too little work for the bowel to do. Many patients take too little water. These should be encouraged to drink more water, since drinking water between meals increases the action of the bowels.

If all this has been done and it is not enough, the question arises whether we are justified in giving the

patient cathartics. Mild aperients are rational. If the patient does not do well enough with dietetic measures, we must resort to other means. There is no harm in them; also sedatives, as already mentioned, should be given. As mild cathartics, I would consider cascara sagrada or tincture of rhubarb, 15 grains twice a day; also small amounts of licorice powder. These remedies can also be employed in combination with agar-agar. Agar alone is sometimes sufficient. It is a substance which takes up fluid and does not give it up readily, but retains some of it. Constipation is sometimes due to the stool being too dry. The water has been taken away by the digestive tract, the excrement is too dry, and the peristalsis cannot push it along easily. Therefore, if agar is given, which is not digested in passing through the tract, it takes up fluid and lubricates the fecal matter and gives it a more moist character and appearance. It is helpful to the bowel and eases the movements, so that it can be given in large quantities. But often this is not enough, and the combination of a mild cathartic remedy with it is beneficial. The idea of using the cathartic remedy in this way is that instead of being absorbed in the stomach it is carried along farther in the tract. The agar has the advantage that if the remedy is incorporated with it, the remedy does not act too quickly but emerges slowly along the entire digestive tract by the process of osmosis. That is why these mild cathartic remedies incorporated with the agar act so much better than either alone. In this way one can give phenolphthalein-agar or rhubarb-agar with great benefit. The principle with all these remedies is that instead of increasing the quantity the patient should be told to take a little less gradually from day to day or week to week, so that ultimately he may not need to take anything; but if the patient does not succeed in this, there is no harm in taking a little once in a while.

No one should be operated on for these conditions unless there is some organic lesion present. If there is a stricture of the colon there are sometimes fever and vomiting, and an operation may be required; but not with these symptoms of plain, habitual constipation. In such cases an operation is not justified. I well know that my remarks conflict with the views of others. These are my views, and I assure my colleagues that my experience leads me to state that they can relieve without operation their patients suffering from constipation.

In treating patients with habitual constipation, saline enemas may be used, and olive oil injections may be given. The latter is especially good in spastic constipation, when the fecal matter is hard and dry. An injection of from 5 to 7 ounces of olive oil may be given, and left in the bowel over night. This treatment may be continued for two or three weeks every night, and then it may be given every other night for a few weeks. That is apt to cure the patient. Klempner has given water instead of oil with good results, but the oil is better. It is not necessary to give these injections too high up. It is well to have the patient lie first on the left side, and during the night it will flow in. The olive oil should be used at blood temperature.

All these measures are more or less reassuring to the patient, and act subjectively as well as directly.

Liquid petrolatum is also good, but in many cases in which it does not act, agar gives a satisfactory result.

20 East Sixty-Third Street.

THE INDUSTRIAL DISPENSARY IN PREVENTIVE MEDICINE *

S. M. McCURDY, M.D.

YOUNGSTOWN, OHIO

Civilization must progress by means of ideas and ideals, and as a protest against any existing order of affairs an idea must take root in some one's mind. For the acceptance of an idea, if it is to be useful, the public must realize its necessity, since necessity is the motive power of all progress. We have repeatedly listened to statistics indicating the cost of waste produced by preventable illness, but now, as never before, we realize the importance this question has for our nation. Man power conserved now, both in civilian and military life, assumes such an important place in our preparedness schemes that all agencies must be employed for the conservation and protection of our people.

We have never been satisfied with our preventive medical work, and never can we be until we enlist new forces for the cause. We have placed our faith largely in police power, and have educated our people in spite of themselves to mass for community protection. We have never, through our spasmodic periods of medical education, enlisted the cooperation of the individual for his own protection. Witness the fact that, in spite of police power, our city streets are covered with salvia, and remember that it is so because individuals have not recognized the danger. Remember the work accomplished by our campaign against tuberculosis, and do not forget that in most communities many do not receive an early diagnosis because of (1) inability to purchase the services of a good physician, and (2) ignorance of the necessity for medical care.

How many cities or states can boast of having set aside beds enough to care for their tuberculous patients? How many can show me that they do not harbor tenements that are breeding places for tuberculosis? How many boards of health will tell you that all the physicians are making prompt and accurate returns of their preventable cases? Individuals must be medically educated. They must develop a medical conscience before greater results can be obtained. We have discussed the increase in heart and kidney lesions, and pointed out their early mortality, which we say represents the wear and tear of life. In any given industry do we know what a physiologic day's work is or have we arrived at the length and amount of a turn at labor by noting what the average can stand for a given space of time.

Within a very few years we have seen our preventive work take a turn for the better. In regard to children, we have recognized the fact that education is worth little without health. We know that many parents either through ignorance or wilfulness send children to school who are suffering from contagious diseases that are dangerous to others; hence the rise of school inspection, with all its benefits. We learned soon that many physical handicaps could be removed and before long parents were willing to aid in the medical school work. We presently found that some children must be placed in a selective school environment, lest their deficient mentality should ruin others. We taught our educators that children could have

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

incipient tuberculosis and still be educated in open air rooms without danger.

Up to within a few years ago we assumed that the man grown child, brought up without school inspection, was able to care for himself. Today we know that he has not the medical knowledge, that he is careless about his health, and that his employer often asks him to work in a place that we know is detrimental to well-being. Some industrial organizations have recognized the economic loss due to preventable illness, and are meeting the conditions with industrial dispensaries. No movement of late years holds out so much promise to preventive medicine as do these diagnostic clinics and clearing stations. Here is joined together the sum total of the health of workers and the world's production. Here is introduced into industry a spirit of humanness that is beneficial to employer and employee. Here we have a compulsory medical education for those who need it most. In this movement we shall realize the actual national asset that we must have in order to insure a country prosperous because of healthy human workers.

Industrial dispensaries demand for their success two fundamental principles:

1. Men must not have preventable illness, whether due to their own or to their employer's neglect.

2. If sick, they must be returned to work in the shortest possible time with a minimum of permanent impairment.

These diagnostic clinics have grown by leaps and bounds. Some are doing most excellent work, while others are more or less in the formative stages. We should unite on a desired program, and then from all parts of the country drive home to employer and employee this great entering wedge which will open up the way to a better knowledge of preventive medicine. Business men will recognize the necessity for medical supervision, for it promotes greater efficiency and makes for economy. They will eliminate the cause within their gates as soon as medical men show them the way. The individual and society must recognize the moral obligations resting on them and do away with those causes of illness for which they are to blame. Industry will assume the cost of dispensaries until the people can be educated to bear their own share of the burden.

Dispensaries for accidents are already a recognized obligation on the part of industry, and dispensaries for sickness soon will be introduced. The best work in this field can be accomplished by the recognition of a few fixed principles and a definite program:

1. All men working in the various industries should be physically examined.

2. All new applicants for work should be physically examined.

3. All employees should be reexamined at stated intervals, and their previous condition checked. A system should be introduced by which all men leaving work because of illness, or returning to work following illness, are compelled to go through the dispensary.

4. Educational work should be carried on among the men by means of talks, pamphlets and moving pictures.

5. The dispensary should be so equipped that it can treat minor illnesses and act as a diagnostic clearing house.

6. To insure adequate medical attention a system of insurance should be installed, the expense to be borne by employer and employee.

7. Visiting nurses should follow the patient to the home, aid in nursing care and give health and household education.

8. Later, industry should employ its own physicians to treat illness in the home, exactly as it now does in accident cases.

9. Dental dispensaries should be organized as rapidly as possible.

10. Defects in old employees must be remedied free of charge whenever possible.

Under such an organization one will insure:

1. Adequate medical attention.

2. Minimum amount of permanent impairment.

3. Diminished loss of time owing to absence from work.

4. Diminished waste due to loss in production. Lessened numbers of green men hired and increased wages to the individual worker.

5. Happier people and pleasanter industries.

6. Collection of data on the hazards of a given industry at a point most useful.

7. A real work and contribution to the cause of preventive medicine.

That such an organization is possible and can produce such results has been proved by many industries. Several firms have, on the one hand, constantly reduced tuberculosis, as their work progressed, and, on the other hand, they can show men at work in whom the disease has been arrested.

There are firms that can positively show a decreased labor turnover, and the acknowledged cause is their dispensary. Many firms have long lists of defects remedied, some pertaining to the eye, some to general diseases, and some to deformities acquired or inherited. Any number of industrial physicians can tell of the benefits of the industrial diagnostic dispensary as shown by less time off duty and by the awakening of the community to health needs.

But our work is not limited to treating sickness after it is acquired. We supervise all phases of sanitation within the plant. Water is constantly tested to see that it is proper for drinking. Water closets are arranged so that they may be sanitary. Washing facilities are installed. Work places that are insanitary whether owing to poor heating facilities or to excess of dust, poor light, poisonous gases, etc., are improved by mechanical means. Problems pertaining to hours of work and the relation of fatigue to health are being solved and will eventually be placed on a scientific basis. Rest and nutrition become a branch of the industrial physician's work, as well as all matters pertaining to the well-being of an employee.

Let us be honest pessimists and look facts in the face. Under the present system of the practice of medicine, two conditions occur. A large majority of our workers are not receiving adequate medical attention, with the natural result that there are many unnecessary days' absence from work and many permanent deformities. The science of preventive medicine has not progressed as far as is possible with industry enlisted in the cause. While I am a firm believer in the principle of health insurance and participation therein by the state, I know that the time is not yet opportune. We must go ahead with our industrial dispensaries, and they will show us the way to our dream, national compulsory health insurance.

243 Norwood Avenue.

ABSTRACT OF DISCUSSION

DR. GEORGE M. KOBER, Washington, D. C.: It has been well said that the highest aim of scientific medicine is the eradication of preventable diseases, and that the health of the people is the highest law. Now, if these are axioms, the question arises, What shall be done to secure the most beneficent results? It is evident that the solution of the problem can scarcely be left to the practitioner alone. The man who has equipped himself primarily for the cure of disease can

hardly be expected to give his utmost effort to the prevention of disease. I believe that the protection of industrial workers in all its broad aspects, including the industrial dispensary, is a public health function and clearly a duty of the state, and I am glad that some of our health departments—notably that of New York City—have assumed this function.

To get the best results it is necessary that there should be a corps of medical workers in the employ of the state whose primary function is the prevention of disease; a body composed of men who are not only well trained in every department of medicine, but more especially in preventive medicine. Such men will not only render valuable service in the prevention of disease and accidents, but can be relied on to restore as speedily as possible the earning capacity of the wage earner. All this work should be done at the expense of the state or community. It will be found that large sums of money will be saved in preventive efforts. Moreover, it should be remembered that in the ultimate analysis the taxpayer pays the bills incurred as a result of sickness, accident and permanent disabilities in the majority of wage earners. The sooner we work to that one end the better it will be for humanity.

Those men should be full-time medical officers and should give evidence of proficiency, not only on admission, but should be subjected, every five years, to reexaminations to determine their fitness. Naturally, such a corps ought to be absolutely free from politics, and quite as independent as the Medical Corps of the Army, Navy and Public Health Service. When this is accomplished I believe we can look forward to really beneficent effects, and there is certainly hope in that direction. I realize that in spite of certain discouragements there is a growing interest in preventive medicine, as evidenced by the ever-increasing attendance in this section.

THE RÔLE OF THE TRANSVERSE MESO-COLON FOLLOWING GASTRO-ENTEROSTOMY

C. A. ROEDER, M.D.

OMAHA

A gastro-enterostomy is no exception to the rule that it is impossible to short-circuit completely any portion of the gastro-intestinal tract unless a complete obstruction is present. However, if the operation is properly performed the irritating gastric juices are drained off as fast as secreted, affording Nature an opportunity to heal the ulcer. She ejects the food when ready through the most convenient opening. It is now definitely established that we obtain equally as good results whether or not the pylorus or duodenum is blocked, and that we obtain better results for gastric ulcer when the ulcer is destroyed by cautery or excision, the former method being preferred. The good results are attributed by many to the presence of the alkaline bile and pancreatic juices in the stomach neutralizing the acid. This makes it quite difficult to explain why a duodenal ulcer becomes chronic when we know that from its beginning it is almost constantly bathed with these alkaline fluids. We have no proof that practically all duodenal ulcers do not become chronic. Not infrequently an entero-anastomosis is performed below a gastro-enterostomy, and with this procedure, as in the Roux Y operation, none of the bile and pancreatic juice is carried to the stomach, yet our results are equally as good as when a simple gastro-enterostomy is performed which allows free interchange of fluids.

Directly opposed to the therapeutic theory, many consider the presence of these fluids in the stomach as the cause of our poor results of varying degree, par-

ticularly vomiting. Various experiments and case reports, however, have settled this controversy, particularly the three cases reported by Collinson and Braithwaite,¹ in which the duodenums were resected for disease with a closure of the proximal and distal ends, forcing all the duodenal contents back into the stomach and which left the latter by way of an anastomosis. With all plastics on the pylorus and duodenum and simple gastro-enterostomies there is a free interchange of fluids; while with the Polya operation there is a common vesicle formed by the jejunum and stomach. Gerster feeds bile by tube from a wasting biliary fistula with good results.

There is no definite proof that the presence of these fluids in the stomach has any beneficial or harmful effect on gastric and duodenal ulcer. The duodenal contents evidently play a negative rôle, and nearly all patients explored properly for persistent vomiting or indefinite distress following gastro-enterostomy have shown a deficient drainage of the stomach, duodenum or afferent jejunum if a secondary ulcer is not present. Our results correspond to the perfection of the mechanical features of the operation. With gastric

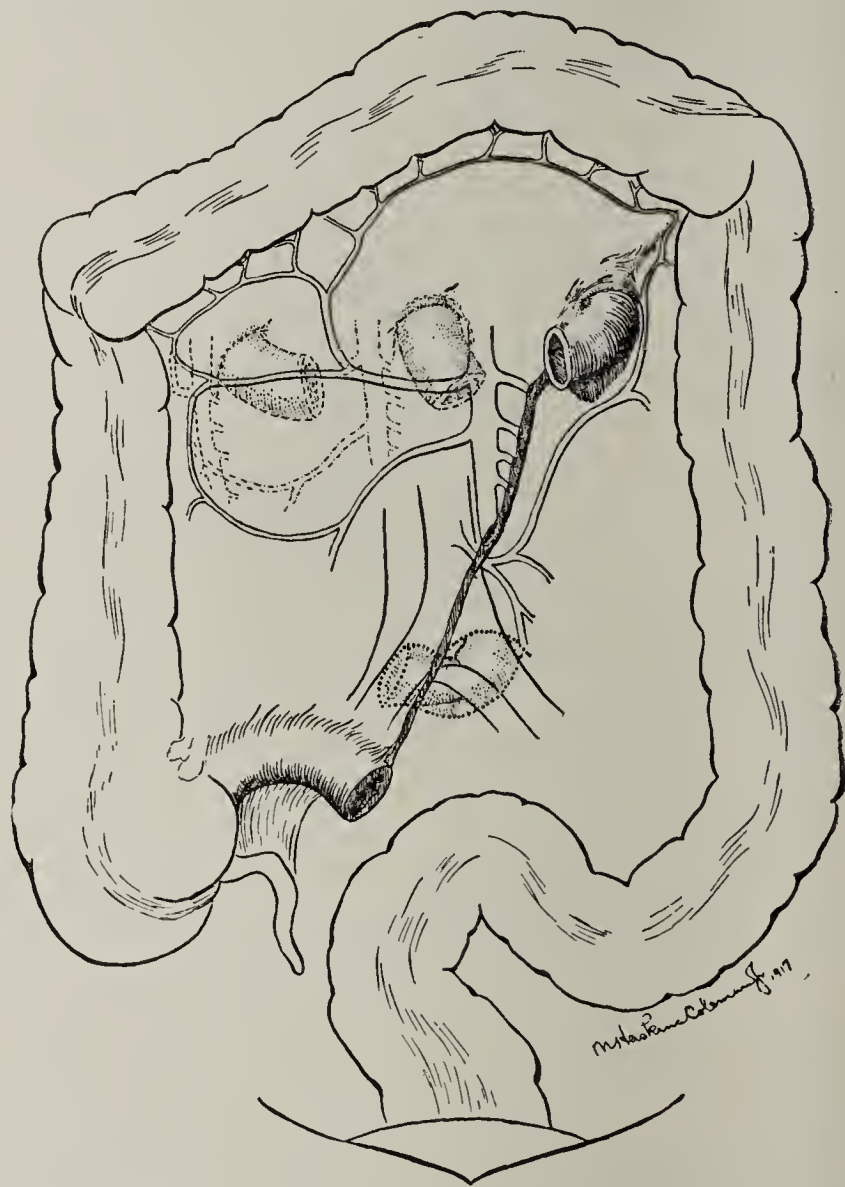


Fig. 1.—The various points at which the jejunum has been found projecting into the greater peritoneal cavity.

ulcer it is assumed that the ulcer is destroyed by cautery or knife.

In performing a gastro-enterostomy we are joining two organs of opposite function. The stomach is a reservoir, the muscular action of which is activated by its secretion, emptying itself through a relatively high opening. The duodenum and first jejunum comprise a rapid transit duct as shown by fluoroscopic exami-

1. Collinson and Braithwaite: Brit. Jour. Surg., 1913-1914, 1, 665.

nation. In performing this operation it is essential that the stomach and duodenum are freely and constantly drained into the efferent jejunum by way of the anastomosis, and any interference at any point in the performance of this double rôle will bring on varying degrees of imperfect results. Following all

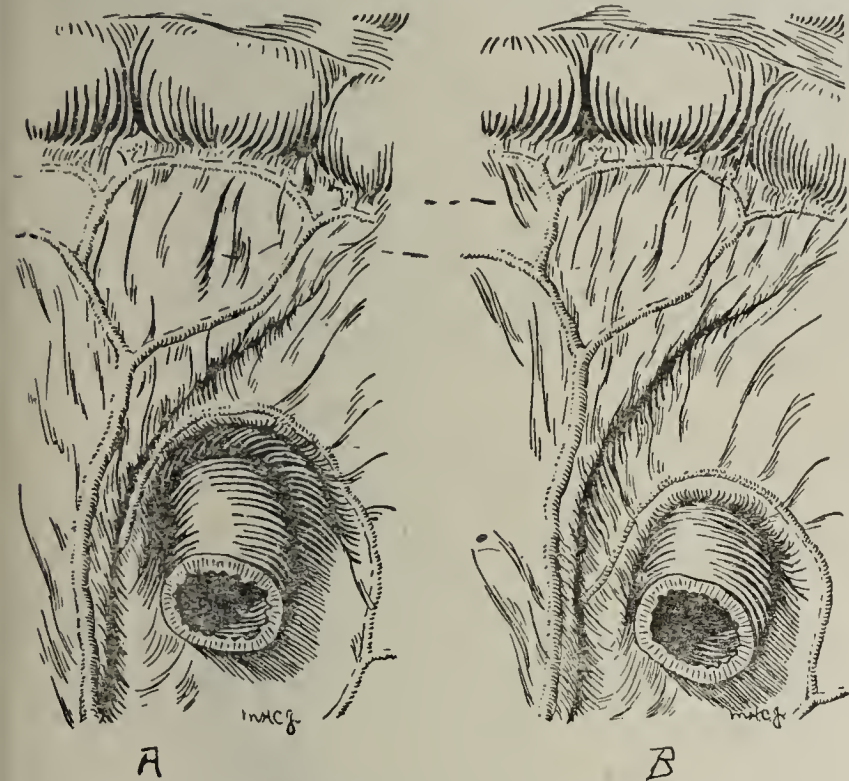


Fig. 2.—A, a space between the superior duodenojejunal fold and the flexure forming the superior duodenojejunal fossa; B, this fold attached to the bowel with no fossa present. The vessel along the edge should be noted.

gastro-enterostomies a small percentage of patients vomit for a short time, later going on to complete recovery. This no doubt is due to a moderate kink, gradually adjusting itself.

The stomach enjoys considerable excursion and the anastomosis lies sharply above the only fixed point in the gastro-intestinal tract involved. Following the operation the stomach tends to assume its normal position, retracting upward, and if dilated at the time of the operation will generally contract afterward, further increasing this upward pull. With these three factors present, namely (1) excursion, (2) retraction and (3) contraction, it becomes necessary to note the point of origin of the flexure and the amount of its fixation.

The Mayos unite the mesocolon to the stomach just above the suture line in order to prevent an intraperitoneal hernia and to help form a funnel-shaped depression in the stomach for drainage. In addition, this attachment no doubt retards the active excursions in all directions, thus preventing angulations in the proximal jejunum. The portion of the stomach surrounding the anastomosis is held firmly enough to prevent an upward pull, which, if present, might kink the afferent jejunum beneath the edge of the mesocolon and at the anastomosis, as happened in Mumford's case.² This attached mesocolon acts as an anchor.

The Mayo method conforms to all the best mechanical principles which are so essential to the success of this operation. It unites the jejunum right to left as near the fixed point (flexure) as possible to the lowest point of the stomach, which is opposite the cardiac orifice. Occasionally, however, the jejunum comes through the mesocolon farther to the left than usual, and in such instances the jejunum is better united

from left to right in order to prevent angulation in the proximal jejunum at the anastomosis and flexure. With the opening placed at the lowest point, the ever-present gastric juice is constantly and freely drained. This free drainage prevents the painful gastropastic wave which has been shown by Carlson to be the cause of considerable distress. The stomach then loses its hyperperistaltic stimulant, and even lapses into a temporary atonic state, as demonstrated by Wilensky.³ The Hartman method of connecting the jejunum to the pyloric portion of the stomach has not produced the results expected. The opening is placed in a sphincteric area which has a tendency to close it. It is also placed too high and too far to the right, which does not allow constant and free drainage. It has a greater tendency to angulate the afferent jejunum.

If the mesocolon were not present, and the duodenum and first jejunum were on a free mesentery, gastro-enterostomy would be much simpler. As it is, we have a portion of the bowel (the flexure) fixed to a varying degree to the posterior abdominal wall. This fixed point acts as a potential angle and also tends to keep the flexure at a lower level than the anastomosis.

ANATOMY

The usual origin of the jejunum is at the dorsal border of the mesocolon, opposite the left border of



Fig. 3.—Finger inserted beneath the fold to determine the degree of constriction. Higher up the amount of fixation of the duodenum by the plica duodenojejunalis and the ligament of Treitz can be determined. It should be noted that the last two are not seen at operation.

the second lumbar vertebra. This point may vary and may be any place between the hepatic⁴ and the splenic flexure (author's case), and if farther to the left than usual it may indicate a left to right anastomosis. We must look on the duodenojejunal flexure as a fixed

2. Mumford: One Hundred Surgical Problems, Ed. 1, 1911, p. 22.

3. Wilensky: Ann. Surg., June, 1917.

4. Boyd: Brit. Med. Jour., Sept. 19, 1914.

point with an active duodenum above (Alvarez) and a free jejunum below. This flexure is held fast by three structures, two described by Crymble,⁵ and the third, which is not constant, observed by myself. Crymble has shown from dissection that the ligament of Treitz and the supramesocolic portion of the plica duodenojejunalis extend from the anterior surface of the flexure to the posterior abdominal wall, thereby limiting markedly the mobility of this portion of the bowel. These structures lie above the mesocolon and are never seen at operation.

Another point of occasional obstruction I have observed is where the superior duodenojejunal fold is attached closely to the duodenojejunal flexure or just below it. When this fold, which is *not constant*, crosses the flexure with a space between it and the bowel, we have formed the superior duodenojejunal fossa; and when no space separates it from the bowel no fossa exists; and we may then have this fold, if sufficiently developed, limiting the excursion of the bowel, acting as a potential point of obstruction. This fold generally contains an artery adding to its tensile strength.

Occasionally, even without the presence of a gastro-enterostomy, we find at operation or necropsy the duo-

RELATIONSHIP OF STRUCTURES AND VESSELS AROUND THE FLEXURE

- | | | | |
|------------------------------------|-------|---------|-----------------------------|
| 1. Lesser sac peritoneum | | | |
| 2. Coronary artery | | | |
| 3. Splenic vessels | | | |
| 4. Body of pancreas | | | |
| 5. Inferior mesenteric vein | | | |
| ANTERIOR | | | |
| 1. Superior mesenteric artery | RIGHT | FLEXURE | LEFT |
| 2. Celiac axis | | | 1. Inferior mesenteric vein |
| POSTERIOR | | | |
| 1. Left renal vein | | | |
| 2. Nerve cords semilunar ganglion. | | | |
| 3. Inferior phrenic arteries | | | |
| 4. Aorta | | | |

denum markedly dilated. While I was assisting the late E. H. Beckman of Rochester, an occasion was offered to explore a patient for indefinite gastric complaint, and the only abnormality found was a greatly dilated duodenum, equaling the stomach in size, and extending beyond the superior mesenteric artery to the flexure.

Many writers attribute the dilated duodenum previous to or following operations to the compression of tense superior mesenteric vessels passing over it. It is difficult to imagine much tension on these vessels when we recall that they are attached to "floating organs," the contents of which have usually been cleaned out. In addition, the patient is lying down or is in a semirecumbent position, with the abdomen supported by dressings. Careful exploration will find the dilatation usually extending beyond these vessels.

In dividing this superior duodenojejunal fold it is necessary that one should be familiar with the anatomy in this region.

REPORT OF CASES.

CASE 1.—A woman, aged 43, was operated on elsewhere by an excellent surgeon for duodenal ulcer. One week following the operation, persistent vomiting of bile and fluids started, which lasted, in spite of various conservative measures such as lavage, etc., until a second operation was performed three months later. A most interesting point was a negative roentgen-ray examination. The bismuth meal flowed freely

into the efferent jejunum through the anastomosis, and the stomach emptied in less than two hours. At the second operation I found a perfect appearing anastomosis. It was soft and pliable, admitting the tips of three fingers. The lumen of the jejunum was not used up in the sewing. The opening from the anastomotic ring into the afferent and efferent jejunum seemed ample, and there was no kink at the proximal and distal edge of the new opening. There was no spur formation by mucous membrane. The afferent jejunum, the portion extending from the anastomosis to the duodenojejunal flexure, was a short loop of 2½ inches, not dilated, and it emerged from the mesocolon opposite the left border of the vertebral column and was attached to the posterior wall of the stomach from right to left (Mayo). The situation was puzzling, to say the least, as I had expected to find an obstruction. Further exploration displayed to the right of the vertebral column a greatly dilated duodenum, three times normal, extending on past the superior mesenteric artery to the duodenojejunal flexure. No superior duodenojejunal fossa



Fig. 4.—The fold cut between ligatures to relieve any constriction present. The manner of attaching the divided fold to the bowel in order to prevent a retroperitoneal hernia should be noted.

existed here, which, when present, allows considerable mobility to this portion of the intestine. Division of this fold between two ligatures, as it almost always contains a vessel, relieved the obstruction. With the finger the duodenum higher up was partially freed from its attachment to the posterior abdominal wall. The enlarged opening was carefully attached to the jejunum in order to prevent a possible retroperitoneal hernia. The patient recovered.

CASE 2.—On this patient, a man aged 56, I performed a gastrojejunostomy for duodenal ulcer three months previously. The roentgen ray in this case showed bismuth entering the efferent jejunum freely, as in the previous case. The emptying time of the stomach was not recorded. The jejunum in this case emerged from the mesocolon, just beneath the splenic flexure, so a left to right anastomosis was performed, and the jejunum was attached 1½ inches beyond the anastomosis, in order to prevent a kink, which was first suggested

5. Crymble: Brit. Med. Jour., Oct. 15, 1910.

by Hadra in 1891. A fairly short loop resulted, preventing a sag in the jejunum. At the second operation, for persistent vomiting, the field of operation appeared normal. There were ample stomata at the anastomosis opening into the stomach, afferent and efferent jejunum, and no kinks or dilations were seen below the mesocolon. In this case the duodenum was tremendously dilated, being four times normal and most prominent to the right of the vertebral column. The dilatation extended up to the duodenojejunal flexure, which was moderately constricted by this crescent-shaped fold in the mesocolon, as was easily determined by the finger. In this case the jejunum had been drawn sharply to the right by its attachment to the stomach. The short loop proved to be too short, kinking a moderately fixed portion of the bowel, which contained a potential angulation. The finger was carefully inserted around the duodenojejunal flexure, gently dissecting it free, and this fold in the mesocolon was divided between ligatures. This patient died of peritonitis five weeks later, following a cholecystectomy.

COMMENT

These two cases were extremely interesting, and strongly emphasized three points: 1. The negative roentgen-ray examination, as the anastomosis worked perfectly. 2. The obstruction being caused by a too rigid opening in the mesocolon, and by structures close to it. 3. The point of exit of the jejunum in Case 2 and the direction of the anastomosis rendered necessary (left to right), in order to prevent angulation.

SUMMARY

1. A gastro-enterostomy is a mechanical affair, the chemistry of the alkaline duodenal contents playing a negative rôle.

2. It must assume a double function, draining constantly and freely the gastric and also the duodenal contents into the efferent jejunum.

3. A roentgen-ray examination may disclose the anastomosis working perfectly with marked symptoms of vomiting, etc., owing to the fact that the duodenum is obstructed by the dorsal border of the mesocolon.

4. The point of origin through the mesocolon is not constant, and the anastomosis should be made accordingly in the most convenient direction.

5. Occasionally the inferior border of the transverse mesocolon forms a distinct fold over the duodenojejunal flexure which, when attached to the bowel, may form a point of obstruction, even before and also after a gastro-enterostomy is performed.

6. If this fold at the time of operation is found to be developed sufficiently to constrict the bowel, it should be divided between ligatures.

Opium, Morphin and China.—In an address by Dr. Wu Lien Teh at the National Medical Congress in Canton, China, he said that the year 1917 would be made historic because of the banishment of opium, the curse of China for seventy-five years. The ten-year agreement between Great Britain and China regarding the importation of opium expired in March. Dr. Wu, however, gave warning of the alarming increase of the importation of morphin. In 1911 it is said from Great Britain alone came $5\frac{1}{2}$ tons of morphin; in 1914, 14 tons, and the estimate for 1916 was over 16 tons. In the provinces of Manchuria and Shantung the ravages of the drug are dreadful, more than half of the "jail-birds" showing signs of the needle, and thousands of professional beggars and other poor people in the northern cities becoming victims and many dying in the winter months, not from cold, but from inability to work on account of the morphin habit. The practice, first introduced by emigrants from Swatow, is increasing rapidly. The drug is put up in small packages, sometimes with fancy names, such as white powder, soothing stuff, dreamland elixir, etc.

BLADDER DISTURBANCES DUE TO
NERVE LESIONS *

GILBERT SMITH, M.D.

BOSTON

The occurrence of bladder disturbances as the early or predominant symptoms of certain rather unusual nerve lesions was called to my attention by two cases, one of syringomyelia and one of multiple sclerosis. Unless the possibility of such an etiology is borne in mind, the urologist may fail to find the reason for the persistence of certain abnormal conditions in the bladder.

Search through the literature of the past four years failed to reveal more than three papers on the subject written from the urologic point of view.¹ Caulk and Greditzer² call attention to the relaxation of the vesical sphincter in tabes dorsalis, dementia paralytica, tumor or gumma of the spinal cord, postapoplectic conditions, exophthalmic goiter, paralysis agitans, lead poisoning, and the continuous retention catheter.

Koll³ and Greenberg⁴ have both written about the diagnosis of nerve lesions by the use of the cystoscope, but nowhere in urologic writings have I found reference to the vesical aspects of certain diseases of the nervous system. Boxwell,⁵ a neurologist, has published a brief but fairly comprehensive discussion of the subject, and mentions instances of vesical disturbance in cases of myelitis, alcoholic neuritis, hemiplegia and tabes. According to the neurologists, bladder disturbances are frequent and sometimes early accompaniments of various nerve conditions which are not mentioned by urologists. It would seem probable that some of these patients are seen first by the latter, and possibly, in the course of routine treatment, escape a correct diagnosis.

The exact relationship between disturbances of the bladder function and the pathology of nerve lesions is not always clear. In fact, the physiology of the normal act of urination is not absolutely definite. Langley and Anderson⁶ have shown that the bladder in cats, dogs and rabbits receives motor fibers (1) from the second to fifth lumbar nerves, the fibers passing through the inferior mesenteric ganglion and reaching the bladder by way of the hypogastric nerves, and (2) from the second and third sacral spinal nerves, reaching the bladder by way of the nervi erigentes and the hypogastric plexus. The nerve fibers from the sacral cord seem to be more actively concerned in the reflex of urination; stimulation of the lumbar fibers sets up only gentle contractions of the bladder.

The classical work of Goltz⁷ in 1874 established the general principles of the vesical reflex. He pointed out that gradual distention of the bladder induced gentle contractions. These expressed several drops of urine into the posterior urethra, causing thereby a

* Read before the Section on Genito-Urinary Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Since this paper was written, my attention has been called to two articles bearing on this question. Lewis, Bransford: *Contra-Indications to Surgical Intervention in Obstruction at the Vesical Neck*, Tr. Am. Urol. Assn., 1915, p. 274; *Studies in Obscure Forms of Prostatic Obstruction and Vesical Atony*, *ibid.*, 1914, p. 13.

2. Caulk and Greditzer: *Observations on the Bladder in Diseases of the Central Nervous System*, *Interstate Med. Jour.*, 1916, **23**, 36-41.

3. Koll: *Study of Twenty-Five Tabetic Bladders*, *Surg., Gynec. and Obst.*, 1915, **20**.

4. Greenberg: *Cystoscopy as a Diagnostic Aid in Spinal Disease*, *Med. Rec.*, New York, 1916, **90**, 634-636.

5. Boxwell: *Disordered Bladder Function*, in *Nervous Diseases*, Tr. Roy. Acad. of Med., Ireland, 1914, **32**, 63.

6. Langley and Anderson: *Jour. Physiol.*, 1895, **19**, 71.

7. Goltz: *Arch. f. d. ges. Physiol.*, 1874, **8**, 478.

sensory stimulation. This—the afferent part of the reflex—aroused the efferent impulse by which the bladder is made to contract vigorously and the sphincters to relax. Goltz showed that in dogs with spinal cord severed between dorsal and lumbar regions the reflex still existed, and that it persisted even when the lumbar cord was entirely destroyed. Thus it was established that the act of micturition is a reflex of a very primitive type, requiring not even a spinal center. The problem is complicated, however, by the fact that this reflex is very completely under the control of the will.

Before the bladder is anywhere near full, one can initiate the act of urination. By consciously relaxing certain perineal muscles and contracting others in the abdominal wall, one probably squeezes out the first few drops, which are sufficient to set the reflex in motion. The act then becomes automatic, unless, by a definite exertion of the will power, one closes the external sphincter and holds it shut until the contractions of the bladder have ceased. Conversely, when the bladder is overdistended, and urine squeezed into the posterior urethra sets in motion the reflex, the carrying out of the reflex can be prevented by an exercise of will power.

It is evident that the nerve mechanism of micturition is vulnerable at several points. If the roots of the sensory nerves are affected, as in tabes, the reflex arc is broken. If communication between the lower centers and the brain is interrupted, the act should theoretically become purely reflex and should be free from the inhibitive influence of the brain.

In general, disturbances of the bladder due to nerve lesions take one of several forms:

1. Those due to irritation of the sensory nerves, giving rise to frequency, urgency and hyperesthesia of the bladder neck. This occurs sometimes in tabes, in syringomyelia and in multiple sclerosis.

2. Retention, partial or complete, due to spasm of the external sphincter. Barney⁸ explains this phenomenon in his careful work on tabes dorsalis. This condition occurs in other diseases besides tabes—in multiple sclerosis for example. It may be followed by dribbling from an overdistended bladder, but this is due primarily to retention.

3. True incontinence due to paralysis of the sphincters. This occurs in later tabes, in transverse myelitis of the lumbosacral region, and in syringomyelia.

4. Involuntary micturition. This may occur when the lower centers are cut off from the higher, as in trauma of the cord or in transverse myelitis, when these lesions are situated above the lumbar segments. The bladder will empty itself when the stimulus caused by increasing distention becomes sufficient.

Probably the most common disturbance of the bladder from the neurologic point of view is tabes dorsalis. This subject was worked up by Barney in 1910, and little can be added today to his thorough exposition. It would be unnecessary to take up the reader's time by a recapitulation of the well known course of that disease.

The only extraordinary cases which I found reported were those of tabes in children, described by Barkan.⁹ He speaks of a girl of 9 years with tabes and nocturnal

enuresis, and says that he has seen twelve cases of tabes in children within two years.

Another lesion of the spinal cord which may cause bladder disturbance is myelitis. If the lesion occurs in the lumbar cord, according to Gowers,¹⁰ it will cause loss of vesical reflexes which results in dribbling without retention. If above that region, the reflex is first lost, and then becomes hyperactive. In other words, there is first retention, then involuntary voiding.

Trophic disturbances in myelitis may cause ulceration of the bladder.¹⁰

Syringomyelia is the occurrence of a glia-lined cavity in the gray matter of the cord. The symptoms are necessarily variable, depending on the location and size of the cavity. Jelliffe and White¹¹ speak of the loss of sexual desire and of testicle pains which occur. They refer to analgesia of the bladder and persistent priapism as occasional symptoms. In regard to bladder disturbances, they say that these "are not the rule, although at times appearing, usually late in the disease. When appearing early, they are apt to be transitory. They may be sensory or motor, irritative or paralytic. Cystitis is not infrequent in the later stages of the disease." With the dorsolumbar type of the disease, involvement of the bladder and rectum is not infrequent, while in the sacrolumbar type, it is usually present.

A patient with syringomyelia exhibiting marked bladder symptoms entered the Massachusetts General Hospital on the genito-urinary service in October, 1916. The relation between the vesical disturbances and the nerve lesion was not perfectly clear, yet we were unable to account for the former in any other way. The patient was a woman of 30, a domestic who had had three illegitimate children. Two of them were born dead; the last one, which lived, was born five years before. The patient complained of painful, burning micturition of eight weeks' duration. Urination was followed by dribbling, tenesmus, and a desire to urinate again. The urine contained pus and colon bacilli. Cystoscopy was done under spinal anesthesia. Considerable trabeculation of the bladder wall with a distention of 6 ounces was noted. Both ureters were catheterized; a small amount of pus and a growth of colon bacilli were obtained from each. Roentgenoscopy and the Wassermann test were negative. The peculiar thing was that during her twelve days in the hospital, the patient continued to have constant severe spasms of the bladder, in spite of every kind of local treatment. Also, she had, on several separate observations, a residuum of 6 ounces.

She was seen in consultation by Drs. Taylor and Paul, who made the diagnosis of syringomyelia, because of atrophy of the small muscles of the hands and various sensory disturbances.

Multiple sclerosis, or disseminated sclerosis, is characterized by the occurrence of small patches of sclerosis in the spinal cord, or brain, or both. These patches are due to the degeneration of the included nerve tissue, which is later replaced by neuroglia. Their size varies from that of a pea to that of a walnut, and they involve the white matter primarily. Sometimes the nerve roots are affected as well.

The etiology of this condition is unknown. It occurs most often between the ages of 25 and 35 years, and although naturally the symptoms vary according to the location of the patches, the most usual symptoms are loss of muscular power in the limbs, a jerky incoordination, nystagmus, and staccato utterance. The individual is prone to outbreaks of emotion, manifested either by laughter or by tears. Babinski's sign is always

8. Barney, J. D.: The Care and Management of the Tabetic Bladder, Boston Med. and Surg. Jour., 1910, **163**, Nos. 25 and 26; 1911, **164**, No. 1.

9. Barkan, H.: Infantile and Juvenile Tabes, California State Jour. Med., 1914, **12**, 488-491.

10. Gowers: Diseases of the Nervous System, 1903, **1**, 247, 361.

11. Jelliffe and White: Diseases of the Nervous System, 1915, p. 355.

present; the absence of abdominal and epigastric reflexes is a valuable point in the diagnosis (Gowers¹²).

The importance of this disease to the urologist is suggested by the words of Collins and Baehr.¹³

Frequently there is associated a weakness of the bladder; there is inability to hold the urine as well as usual, and there may be urinary incontinence at times. . . . Urgency is an early symptom, and is due to hypertonicity of the bladder muscle. Intense spasms of the sphincter may occur, causing retention; later in the disease, incontinence is present practically always.

Sixty-five per cent. of Collins and Baehr's cases were of the spastic type, usually accompanied by bladder disturbances. Jelliffe and White¹⁴ say that the bladder is involved in from 75 to 80 per cent. of all cases. "The patient feels a sense of insufficiency, and has to strain to pass water. Complete paresis with incontinence is rare." The many ups and downs in the bladder symptoms are remarkable. The disease is progressive, with intervals of improvement, but care of the bladder as in tabes would seem to be indicated.

The bladder manifestations of multiple sclerosis described by these authors were reproduced with striking accuracy in the following case:

M. C., a nurse, aged 28, was seen about one year ago. Four years before, while in training, she became "run down" and very nervous. Previously, she had always been well, except for measles. Accompanying her breakdown were bladder symptoms—great frequency and inability to hold the water. Association with insane persons led her to fear that she might have some nervous disease, so she went to the Massachusetts General Hospital and had an examination of the spinal fluid. This was normal. She returned to work and has remained at it, in spite of a sense of weakness in the legs, and what she characterized as a "weakness of the bladder." At times she wet the bed at night.

She was a rather pale, tired looking girl. The pupils reacted normally. There was no Romberg; the knee jerks were normal; general examination was negative; the kidneys were not palpable; the pelvic organs were normal. The urine by catheter was hazy, revealing no sugar nor albumin. A centrifuged sediment showed some pus cells, a few red blood cells, and vast quantities of staphylococci. No tubercle bacilli were found. Roentgenoscopy was negative for stone.

The bladder contained 4 ounces of residual urine, with distention of 8 ounces; the bladder wall showed a fine trabeculation; the mucous membrane was clean. The ureteral orifices were normal. Both ureters were catheterized with a flow of normal urine.

Not being awake to the diagnosis, and finding the urethra abnormally red and granular, I treated her with urethral applications, sandalwood oil and bladder lavage. The residual urine remained about 4 ounces throughout July, August and September. In November, I noted that her chief trouble was fatigue in the front of the legs. The bladder symptoms improved a very little, the greatest improvement following rest from work, bromids and belladonna.

The patient was very emotional, laughing one moment, crying the next. On December 22, the residuum was only 1½ ounces. In December, I sent her to Dr. George Clymer for neurologic examination. He reported that he found a positive Babinski, negative abdominal and epigastric reflexes, and positive ankle clonus—in short, that she unquestionably had multiple sclerosis.

He started treatment with solution of potassium arsenite (Fowler's solution) and the application of electricity over the bladder. Whether or not as a result of this treatment, the patient showed remarkable improvement. The residuum

cleared up, the urine became normal, and for two months she wet the bed only during menstruation. She has had a slight remission, but generally speaking is much better, and has started to work again.

I have reported this case at some length because it is a striking example of the vesical manifestations of multiple sclerosis. Bladder trouble was practically her only complaint, yet there was the definite background of a nervous disease which escaped detection on routine physical examination.

The presence of residual urine should have suggested at once the necessity of a more thorough nerve examination.

Syphilis of the brain and cord, whether of the diffuse type or circumscribed, as in gumma, may produce disturbances of the bladder, varying with the location and extent of the lesion.

Tuberculous meningitis may do likewise. Pearson,¹⁵ in 1902, and Moody¹⁶ in 1916, called attention to the fact that retention of urine coming on in a person with tuberculosis is an early symptom of an invasion of the meninges. Moody quotes four cases, all proved by necropsy, in support of this theory.

Neuritis of alcoholic origin (Boxwell) may produce incontinence, and that postdiphtheritic neuritis can result in retention, the following case will show:

In 1909, J. K. (162960), aged 62, a laborer, was sent into the Massachusetts General Hospital from the outpatient department because he was found to have a residuum of 30 ounces. His only previous illness had been diphtheria twenty years before. At that time he had stoppage of water, and had had dribbling of urine, with pain at the beginning of urination, and he has had difficulty in starting the stream ever since. There was slight frequency at night. The reflexes were normal. The patient's general physical condition was negative except for some cardiac hypertrophy. The prostate was not enlarged nor tender. The catheter passed easily and drained 30 ounces of foul urine. He was seen by the consulting neurologists, who found evidence of nerve lesions. A cystoscopy was done by Dr. Lincoln Davis, who found nothing obstructive, and thought the bladder condition due to his diphtheria. Epididymitis set in, then pericarditis. He died, and at necropsy, the kidneys showed suppurative nephritis, the ureters and pelves were dilated, the bladder showed a thickening of the walls with fibrous induration in the region of the outer coat and much hypertrophy of the trabeculae. Between the hypertrophied trabeculae in several places, there were smooth walled diverticula, the largest being about 3 cm. in the greatest dimension. The prostate showed very slight, if any, enlargement of the lateral lobes. There was a very small eminence in the situation of the median lobe. The prostatic urethra was free and somewhat dilated.

That various forms of insanity are accompanied by disturbances of the vesical and rectal sphincter is, of course, well known; the bladder disturbances are usually late symptoms.

Not so much in them as in the field of organic nervous diseases, such as multiple sclerosis, syringomyelia and tabes, is cooperation between urologist and neurologist most necessary. The most troublesome symptom of those conditions may be vesical, and the first assistance sought by the patient may be from the urologist. It is well for the latter to have in mind the fact that a nerve lesion may be the cause of marked hyperesthesia of the bladder, characterized by great frequency, or of unexplained residual urine in cases without urethral obstruction.

12. Gowers: Diseases of the Nervous System, 2, 543.

13. Collins and Baehr: Disseminated Multiple Sclerosis, Am. Jour. Med. Sc., 1914, 148, 495-520.

14. Jelliffe and White: Diseases of the Nervous System, 1915, p. 379.

15. Pearson: Retention of Urine in a Patient with Tuberculous Meningitis, Clin. Jour., December, 1902.

16. Moody: Retention of Urine in the Adult, Without Known Cause, a Sign of Tuberculous Meningitis, Lancet, London, 1916, 1, 104.

ABSTRACT OF DISCUSSION

DR. W. C. QUINBY, Boston: I think it would be of value to place along side of Dr. Smith's results those of a rather hasty investigation of cases occurring in the last four years at the Brigham Hospital in Boston, in the service of Dr. Cushing, which showed definite bladder lesions and bladder symptomatology due to various known lesions of the cord. The bladder symptoms following these various spinal cord lesions depend entirely on the location and nature of the lesion; therefore we find the greatest difference in the symptoms, as has already been pointed out by Dr. Smith. In going over the cases at the Brigham I have chosen twenty which showed definite symptomatology in the bladder. These were as follows: 1 case of transverse myelitis; 3 cases of spinal cord endothelioma; 1 case of spinal cord angioma; 1 case of metastatic sarcoma; 1 bullet wound of the cord; 12 cases of fracture of the spine; 1 case of hematomyelia without fracture of the spine.

I wish to call attention merely to the broad deductions and conclusions which one can draw from a study of these cases, without going into the details at this time.

A lesion at the proper level to cause a complete paraplegia always involves the bladder, causing a paralysis of the detrusor, with resulting retention of urine. Following this, at a later or earlier period according to the severity of the injury, there supervenes incontinence with overflow; then, later on, if the patient lives and the condition persists, true incontinence, with a greater or less degree of residual urine, is usually seen. Sooner or later infection always occurs. Sometimes it occurs with startling severity, with symptoms and signs of infection of the kidney and bladder of greater intensity than those signs from the spinal lesion, and death ensues. In other cases, however, the infection may be partly resisted by the patient, and fairly often cases occur showing a chronic cystitis and pyelitis from time to time, increasing in intensity and causing symptoms of general sepsis.

DR. BRANSFORD LEWIS, St. Louis: There is one phase of the subject of involvement of the mechanism of urination that is interesting rather more from the urologic standpoint, and I read a paper on the subject before the American Urological Association about three years ago, under the title of "Studies in Obscure Forms of Prostatic Obstruction and Vesical Atony" (Ann. Surg., March, 1915). During the last ten years or so there have appeared from time to time discussions of prostatic obstruction by very able men, like Thomson Walker of England, Albarran and others, and Germans of equal prominence, in which they spoke of cases of prostatic obstruction with what they termed unrecognizable causation. They, to their own satisfaction, excluded nervous origin and let it go at that—apparently what we used to term idiopathic, whatever that means. I discussed the subject and adduced a number of cases, and from my standpoint I could not believe there was such a thing as a retention of urine, atony and all those sequelae, without causation, and in the study of obscure forms of prostatic obstruction mentioned I declared they were due to certain physical conditions that were not recognizable according to the methods employed for diagnosis; such, for instance, as a moderate degree of contracture of the vesical neck that was not recognizable by the various methods of instrumentation, either endoscopic or cystoscopic, until one got one's finger right there and felt the contracture that until then was not recognizable.

Another form of obstruction that ought to be given more consideration, I said, was that of syphilitic influences through the spine, producing interference with the evacuation of the bladder without there being an evident tabes or any lesion that was apparent excepting on the most careful analytic study of the case. And that applied to younger individuals as well as to the old ones, and also to inherited syphilis. I spoke of one patient who had been subject to numerous surgical operations; he had had five major operations done on him, and he was only about 18 or 20 years of age when I saw him, and he had never been able to urinate with any degree of satisfaction. He had never acquired syphilis, but he did have inherited syphilis that had bestowed on him this stigma that had required all his attention all of his life. It was proved by

the Wassermann and other tests, and he improved under the influence of antisyphilitic treatment.

DR. JOHN T. GERAGHTY, Baltimore: In connection with Dr. Smith's paper and Dr. Lewis' discussion, I would disagree with Dr. Lewis. I was much astonished a few years ago to find some cases of obstruction to urination for which we could find no cause. We supposed, of course, that they were probably unrecognized cases of contracture of the vesical neck. Operation to divide the vesical neck, however, gave no relief. We have had now a series of six cases of that type in which all of the clinical findings were simply those found with a spinal cord lesion; sometimes dilatation of the vesical orifice, residual urine as a rule, and all of the classical symptoms that go with the spinal cord cases that Dr. Smith has mentioned. Two of these cases have come to necropsy, and we were able to obtain a most complete necropsy, including the central nervous system, and the most careful studies of the central nervous system, and the bladder and the urinary apparatus failed to show the slightest cause for the obstruction. There is only one explanation which I can think of which will account for these cases, and that is that we will probably have to admit the possibility of a peripheral lesion; that it is possible to have a peripheral neuritis which will affect the bladder. That is hard to understand, because if there is a degeneration of the peripheral nerves, sooner or later there should be evidences of that in the spinal cord. In these cases there was nothing in the spinal cord to indicate that the nerves had been injured. Furthermore, these two patients, instead of having atrophied bladders, had hypertrophied bladders. In each instance the vesical orifice was dilated; there was no valve formation, no diaphragm.

DR. C. M. HARPSTER, Toledo, Ohio: The idea that trabeculation is one of the earliest premonitory symptoms in tabes I think is not absolutely substantiated. I should like to call attention to a very unique case the study of which it was my pleasure to take part in. This was of a man who had a fracture of the fifth and sixth cervical vertebrae. If I remember my anatomy correctly, the brachial plexus is made up of the four lower cervical and first dorsal nerves.

I was especially interested in studying the effect of this injury of the spine on his bladder phenomena. We studied this patient for about six months, and we could put him to sleep, make him cease talking and paralyze him from the neck down at will. That is, we had him in a plaster helmet and when that was removed he would immediately lapse into a paralysis of speech, a paralysis of one or both limbs and of the bladder and rectum. I repeatedly induced these phenomena; that is, when the cast was removed or replaced for investigation this patient had an incontinence of his urine. We had to catheterize him. He always had an incontinence, which was always relieved on the replacement of the cast. By making traction on his neck and chin, even if he could not speak to us, he immediately would begin to talk and move his arm, and on the removal of the pressure of the fragments of bone on the cord he could move his limbs and void his urine.

DR. LEO BUERGER, New York: I readily appreciate that the phenomena of urination are developing into an understandable quantity. If I understood Dr. Smith correctly he said that injuries to the spinal cord above the lumbar region seemingly had no effect on urination. Dr. Quinby said that a fracture of the spine had caused incontinence and other phenomena. Now, the bladder is developed from the rectum; it is a part of the same tissue. If that be true about this etiologic factor neurologically that the spinal cord does not necessarily control urination, it would bring it down to the view that it must be either due to the sympathetic or to the vasoconstrictors or the vasodilators—the vasomotor system. This becomes very interesting, because from the vasomotor system we might have any sort of a condition producing urinary symptomatology.

I had a man who had not been able to pass his urine and every sort of an examination had been made on him. He was a man of importance in his neighborhood. He could not urinate, and there was no known reason. He was the father of healthy children. He was a very healthy appearing man

and came from healthy antecedents. I played with him for about six months. At the end of that time he was riding one day in his automobile, the chauffeur was intoxicated, there was an accident in which the patient's back was injured, and he has been able to urinate ever since.

DR. MARTIN KROTOSZYNER, San Francisco: In every otherwise not explainable bladder lesion of functional character the urologist always must be on the lookout for the possibility of an underlying etiologic factor in the cerebrospinal center, the insidious onset of which may first manifest itself by bladder symptoms. A great many of these conditions are either diagnosed too late for adequate specific treatment, or, especially when occurring in men of the age of prostatic, are diagnosed and treated as lesions due to mechanical obstruction. The solution of that problem, to my mind, does not depend so much on competent neurologic counsel, which often is obtained when nerve centers are irreparably damaged, but rather lies in the acquisition on the part of the urologist of a better knowledge of neurologic diagnostic methods as the only means of establishing an early diagnosis.

DR. WILLIAM F. BRAASCH, Rochester, Minn.: The value of cystoscopic data in the early diagnosis of neurologic conditions is not generally appreciated among neurologists. The cooperation of the urologist and the neurologist is often very necessary. Whenever there is any doubt as to whether or not a patient has a central nerve lesion he should be referred to a competent urologist for cystoscopic data. In a high percentage of the cases such data are of great practical value to the neurologist. The well-known changes in the bladder following cord lesions are of two types, namely, trabeculation and dilatation of the internal sphincter. The dilatation of the internal sphincter takes place, in the majority of cases, in the later stages of nerve lesions. The first change is trabeculation, which, as you know, with a cord lesion is quite typical of a large percentage of cases. The trabeculae appear ridge-like and are confined largely to the upper portion of the bladder. Without any nerve lesion, however, patients are frequently seen with irritable bladders which on cystoscopic examination appear trabeculated similarly to nerve lesions. We cannot always, therefore, depend on the cystoscopic picture, particularly in the early stages of nerve lesion.

DR. EDWARD L. KEYES, JR., New York: One diagnostic point has been of so much value to me that I venture to bring it to the attention of this assembly. I have in only one case known a tabetic with bladder paralysis to show active ankle jerks, though a number of patients have shown normal knee jerks. Therefore, it seems wise to examine all of our prostatists for ankle jerk. There are cases in which we cannot elicit the ankle jerk and in which there is no cord lesion; nevertheless the absence of the ankle jerk will frequently put us on the right track. In one instance I remember particularly, while the neurologist was in the ward examining the man a laboratory report on the spinal fluid came in. The neurologist said that although the patient had absent ankle jerks and had loss of deep muscle sense in his calves, nevertheless he had no spine lesion. Whereupon the report was read showing characteristic tabetic changes in the spinal fluid.

DR. CHARLES W. BETHUNE, Buffalo: There is another sign which I have frequently observed in tabetic bladders; that is, a gaping of the ureter due to paralysis. Sometimes if one can turn the cystoscope in the right direction one can see a quarter to half an inch up the ureter. If a ureter catheter is introduced through the cystoscope in tabes the patient is unable to feel contact at any point within the bladder.

DR. WINFIELD AYERS, New York: I believe we can make one of the earliest diagnoses of beginning tabes in any form by examining the bladder. I recall the last case that came under my observation. The patient had been under a first-class man in New York, who had been treating him with bladder lavage for about a year. On my first observation I immediately asked him if he had had syphilis. He said he had. I tested him for the lesions commonly shown as tabetic, for instance, the pupil, knee jerk, etc. The pupil reacted perfectly, the knee jerk was increased, the ankle jerk

was increased. I had a Wassermann made and it was four plus. The only symptom the patient had was a twitching. In washing his bladder his legs would twitch. I put him on a course of sodium cacodylate and all of his bladder symptoms disappeared. His jerk has not disappeared, but he is beginning to have a loss of contraction of the pupils to light, and that seems to me to indicate that he came to me in the pretabetic stage. I think that by seeing these patients early, recognizing them at once from the bladder, the possibly severer effects of tabes may be blocked off. I have not had so much experience in the other forms, but in the cases of fracture of the spine that I have seen, in almost every instance they followed out the symptoms described here.

DR. G. G. SMITH, Boston: The record in the paper of nerve lesions is very incomplete, I realize, and yet I felt from my comparatively slight study of the situation that I had learned several valuable lessons. There are a number of nervous diseases causing bladder symptoms which must be diagnosed by a consideration of something more in a patient's condition than the mere examination of knee jerks, pupils and Romberg. Unless one is quite familiar with the symptomatology of some of these nervous diseases, one is likely to overlook them. There is no reason why the urologist should not know these things, but most of us do not. I know I was entirely ignorant of the symptoms of multiple sclerosis, and I had to look up the description of syringomyelia before I knew what that was.

I think the diagnosis of nerve lesions with the cystoscope is difficult, because, as Dr. Braasch pointed out, the bladder manifestations are necessarily limited; we have practically only three things: first, hyperesthesia; second, retention; third, relaxation of the sphincter, with perhaps dribbling. Dribbling may be caused by any one of a number of different nerve lesions, and these different nerve lesions are not always easy to reconcile with the pathology of the disease.

Dr. Geraghty spoke of unexplained bladder disturbances and said that they might be caused by a peripheral neuritis. I would simply say in connection with that that I did have one such case, one of postdiphtheritic paralysis, in which a postmortem examination of the spinal cord was not made, but in which apparently a peripheral neuritis limited to the bladder was the thing that was causing the symptoms.

In regard to Dr. Buerger's remark that I had said injuries above the lumbar cord did not cause symptoms, I think he did not quite understand what I said. I said that injuries of the cord above the lumbar region would allow the reflex to go on, but if the lower centers were cut off from the brain the patient would not be able to stop the act of urination. It is a fact, however, that complete section of the cord is followed by retention of urine at first, although theoretically it should have no effect on the act of urination.

Work of Rockefeller Foundation in China.—The China Medical Board of the Rockefeller Foundation has made its annual report describing the preliminary steps which have been taken in Chinese cities to "promote the development of a comprehensive and efficient system of medicine in China." The main plan of the board is to establish in Peking and Shanghai medical schools which shall be of the same grade as the better medical schools of this country, but the creation of these institutions has been delayed by the failure of Chinese schools to turn out students sufficiently well grounded in science and general education to take advantage of these courses in medicine. Hence, the first step has been to open in Peking a premedical school. The board has granted \$150,000 to the Tsinafu Union Medical College, which has been cooperating in furnishing the necessary preliminary training to Chinese students. Until the medical school is built by the China Medical Board its work will be carried on by the school and laboratories of the Chinese Red Cross Society. This plant was operated by the Harvard Medical School of China until July, 1916, when it was taken over by the Rockefeller Foundation. While preparing for the founding of these two medical colleges, the foundation extends medical help through various missionary societies.

DIARRHEAS ACCOMPANYING GASTRIC ACHYLIA*

MARTIN E. REHFUSS, M.D.
PHILADELPHIA

In the study of the diarrheas accompanying gastric achylia, it is essential that we have a rational conception of that condition. It is my intention in this paper to consider first some studies which we have carried out on achylia and then to follow it by our observations on the form of diarrhea accompanying that condition. In a former contribution, I pointed out the fact that by means of fractional analysis, it was possible to throw considerable light on certain phases of achylia and to make two broad distinctions, namely, a differentiation between true and false, or spurious, achylia, the former being a condition which persists throughout the entire stage of gastric digestion, the latter being simply a form of delayed gastric secretion,

to study to definitely attach a cause, the removal of which resulted in a disappearance of the gastric condition. The following cases to my mind represent at least a close association of the disappearance of a causative agent with the clearing up of a gastric condition. Apparently, it can come from fright or nerve inhibition (Case 1, student), through severe blood dyscrasias (Case Wa), through direct infection in the gastric wall (Cases Si, Ka, Du, H., K., D., T.), through a ductless gland disturbance (Case K.), besides the chronic forms of inflammation of the stomach (Cases Hi., and Mrs. H.). At least in the cases cited there is an association between improvement in the gastric condition and a disappearance of the cause.

The studies that have been carried on in the department of physiologic chemistry under the direction of Drs. Hawk, Bergeim, Fishback, Fowler, Smith and myself seem to indicate that there are many important points regarding the human gastric secretion that have not been sufficiently emphasized. In the first

TABLE 1.—EXPERIMENT WITH 0.2 PER CENT. HYDROCHLORIC ACID, 30 C.C. "REPEATED"

| No. | Time | Vol. | Character | Total | Sahli | NH ₂ | Pep |
|--------|-------|------|--|-------|-------|-----------------|------|
| Resid. | | 24 | Mucus-like; opalescent; colorless | 2.0 | 0.0 | 5.0 | |
| 1 | 9:17 | 4 | Liq. fairly turb. L. yel. (regurg)..... | 26.5 | 22.5 | 3.0 | 0.5 |
| 2 | 9:22 | 3 | Liq. fairly turb. L. yel. (regurg)..... | 17.5 | 13.5 | 4.0 | |
| 3 | 9:27 | 4 | Liq. fairly turb. L. yel. (regurg)..... | 11.5 | 5.5 | 4.5 | 0.1 |
| 4 | 9:32 | 2 | Empty mostly mucus L. yel..... | 9.0 | .... | 6.0 | |
| Give | 9:36 | 30 | 0.2 per cent. hydrochloric acid..... | 53.5 | 53.0 | 0.0 | |
| 5 | 9:41 | 4 | Clear v. sl. yel. (regurg)..... | 34.5 | 32.5 | 3.0 | 0.5 |
| 6 | 9:46 | 5 | 0.1 muc. up v. sl. turb. yel..... | 29.5 | 25.0 | 3.5 | 1.0 |
| 7 | 9:51 | 5 | 0.1 muc. up v. sl. turb. yel..... | 25.0 | 20.5 | 4.0 | 1.0 |
| 8 | 9:56 | 2 | Empty 14 mucus up turb. yel..... | 18.5 | .... | 5.0 | |
| Give | 9:59 | 30 | 0.2 per cent. hydrochloric acid..... | 53.5 | 53.0 | 0.0 | |
| 9 | 10:04 | 3 | Clear colorless | 37.0 | 34.5 | 3.0 | 1.0 |
| 10 | 10:09 | 5 | 0.5 Muc. sl. turb. L. yel. (regurg)..... | 31.0 | 26.0 | 4.5 | 1.75 |
| Lavage | | 80 | V. sl. turb. sl. yel | 1.5 | | | |

TABLE 2.—EXPERIMENT WITH SODIUM BICARBONATE, 0.5 PER CENT. "REPEATED"

| No. | Time | Vol. | Character | Total | Sahli | NH ₂ | Alk. |
|--------|-------|------|--|-------|-------|-----------------|------|
| Resid. | 9:13 | 18 | Mostly muc. colorless opalescent..... | 2.0 | 0.0 | 5.0 | 44.5 |
| 1 | 9:28 | 5 | Clear colorless, tr. muc..... | .... | .... | ... | 44.5 |
| 2 | 9:33 | 4 | Clear colorless, tr. muc..... | .... | .... | ... | 45.5 |
| 3 | 9:38 | 5 | Clear colorless, tr. muc..... | .... | .... | ... | 45.5 |
| 4 | 9:43 | 5 | Clear colorless, tr. muc..... | .... | .... | ... | 44.0 |
| 5 | 9:48 | 3 | Empty colorless v. sl. yel (regurg)..... | .... | .... | ... | 43.5 |
| Give | 9:51 | 30 | 0.5 per cent. sod. bicarb. 15 degrees C..... | .... | .... | ... | 64.5 |
| 6 | 9:56 | 5 | 0.2 down muc. Liq. clear deep yel..... | .... | .... | ... | 47.5 |
| 7 | 10:01 | 4 | 0.2 down muc. Liq. clear deep yel..... | .... | .... | ... | 44.5 |
| 8 | 10:06 | 5 | Flakes of muc. yellow..... | .... | .... | ... | 43.5 |
| 9 | 10:11 | 4 | Flakes of muc. yellow..... | .... | .... | ... | 43.5 |
| 10 | 10:16 | 5 | Flakes of muc. yellow..... | .... | .... | ... | 41.5 |
| 11 | 10:21 | 4 | Flakes of muc. yellow..... | .... | .... | ... | 40.5 |
| Give | 10:24 | 30 | 0.5 per cent. sod. bicarb. 15 degrees C..... | .... | .... | ... | 46.0 |
| 12 | 10:29 | 5 | 0.1 down muc. liq. clear colorless..... | .... | .... | ... | 46.0 |
| 13 | 10:34 | 6 | 0.2 up muc. liq. sl. turb. L. yellow..... | .... | .... | ... | 46.5 |
| 14 | 10:39 | 5 | Flakes of muc. yel..... | .... | .... | ... | 43.5 |
| 15 | 10:44 | | Empty; no sample | | | | |

since after a period of one hour and a half there is to be found a perceptible secretion. If this method had been employed in previous studies of this subject, the number of true achylia recorded would be very much less. This does not alter the fact, however, that these spurious forms of achylia are likewise accompanied by diarrhea in a certain proportion of cases. The second distinction which was brought out in that paper was the differentiation between psychic achylia embracing a suppression of the first stage, and a chemical suppression which for the want of a better name we called chemical achylia. These are both spurious or false achylia, since there is not a total suppression of secretion.

I wish to present some cases illustrating different phases in the mechanism of achylia. I am aware that gastric achylia is associated with many toxic, infectious, nervous and vascular disturbances, but I have attempted in the limited number that I have been able

place, in a series of studies on the psychic secretion in normal untraumatized persons, we were able to demonstrate a very pronounced psychic secretion lasting from sixty to eighty minutes (from 105 to 274 c.c., averaging 122 T. A.; from 74 to 114.5 c.c., averaging 97.3). Atropin reduced this secretion approximately two thirds as to both its quantity and its acidity, showing that even during this secretion there is probably initiated a chemical mechanism uncontrolled by atropin. On the other hand, there are persons in whom this secretion does not occur, and in a large series of persons subjected to several thousand fractional analyses (Carlson, Schmidt and others) in order to ascertain the action of the various foodstuffs in the stomach, we came across several perfectly healthy persons who presented a total and persistent gastric achylia.

On one of these persons we made a series of studies. This person was found to have a persistent achylia regardless of the type of food administered. An Ewald meal, toast, beef, beef extract with salt and pepper, were all incapable of inducing any acidity or any peptic activity. We therefore gave this person

* From the Jefferson Medical College.
* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

dilute hydrochloric acid on one occasion and sodium bicarbonate on another occasion. In both instances, although the substances were markedly different, the person poured out, or rather secreted, a fluid that served as a diluting agent, but possessed apparently none of the ordinary characteristics of the gastric secretion. In other words, it is probable that, even in achylia, there is poured out a secretion that, while not acid and not containing pepsinogen or renninogen, nevertheless might be capable of activating the intestinal secretion. Whether this occurs in pathologic cases, I cannot say, but we feel that our ordinary chemical methods did not develop the possibilities in this secretion. Experimentally, we found that it was possible to produce a marked delay in the appearance of the secretion by means of concentrated solutions of glucose and salt. Furthermore, it is possible by intermittent neutralization and feeding to produce a total anachlorhydria over long periods of time, as we learned from studies that we made in connection with ulcer treatment.

All these observations bring us down to the diarrheas accompanying achylia. In considering this subject we must realize these important points: 1. Approximately only 30 per cent. of patients with achylia present diarrhea, for many in my experience

and (b) even inflammation of the intestine or infection; (2) the association of a similar disturbance in the secretions of other organs, such as the pancreas, and (3) a removal of inhibition of fermentative changes in the bowel (normally controlled by gastric hydrochloric acid) resulting in a form of fermentative catarrh of the bowel.

I have attempted to study, from all these angles, those cases in which there was looseness of the bowels or diarrhea, and it seems to me that the following statements are justifiable: It is hardly likely, with the exception of profoundly heightened nerve irritability, that increased gastric peristalsis is alone responsible for the appearance of diarrhea, since I have frequently injected improperly digested material into the duodenum through the duodenal tube without inducing looseness of the bowels. I have even injected irritants such as silver nitrate and iodine into the duodenum without inducing diarrhea. It is my belief that any acceleration of gastric peristalsis induced simply by rapid evacuation is lost in the small bowel and has little to do with, or at least does not control, the movements of the colon. Irritating material as long as it remains irritating might, however, induce hyperperistalsis, but even partially digested or undigested fibrin or connective tissue, when introduced into the small

TABLE 3.—EXPERIMENT WITH ROAST BEEF, MEDIUM AND WELL DONE, COLD, 100 GM.

| No. | Time | C.C. | Character | Total | HCl | NH ₂ |
|------|-------|------|--|-------|-----|-----------------|
| 1 | 9:26 | 5 | Mostly muc. few coarse fine Liq | 3.5 | 0.0 | 7.0 |
| 2 | 9:41 | 5 | Hom. f. & course, muc. little fl. | 12.0 | ... | 16.5 |
| 3 | 9:56 | 5 | Hom. f. & course, muc. little fl. | 14.0 | ... | 19.0 |
| 4 | 10:11 | 4 | Hom. muc. & meat decidedly red blood | 13.0 | ... | 16.5 |
| 5 | 10:26 | 3 | Muc. w. tr. meat red (blood) | 11.0 | ... | 14.0 |
| Lav. | | 62 | ..... | 3.5 | | |

TABLE 4.—EXPERIMENT WITH ONE-FOURTH TEASPOONFUL BEEF EXTRACT, 250 C.C. WATER, SALT AND PEPPER, 50 C.*

| No. | Time | C.C. | Character | Total | HCl | NH ₂ | Pep |
|------|------|------|-------------------------------------|-------|-----|-----------------|-----|
| 1 | 8:44 | 4 | Clear l. yel. | 7.0 | 0.0 | 7.0 | 0.0 |
| 2 | 8:59 | 4 | Clear l. yel. | 6.5 | 0.0 | 7.5 | 0.0 |
| 3 | 9:14 | 7 | Clear sl. l. yel. tr. muc. | 6.5 | 0.0 | 8.0 | 0.0 |
| 4 | 9:29 | 7 | Sl. turb. v. l. yel., lot muc. | 7.0 | 0.0 | 7.0 | 0.0 |
| 5 | 9:44 | 5 | Sl. turb. v. l. yel., lot muc. | 8.5 | 0.0 | 7.0 | 0.0 |
| 6 | 9:54 | 1 | Clear v. l. yel. brown. | 8.0 | ... | 6.0 | 0.0 |
| Lav. | | 88 | Clear colorless con. muc. | 2.0 | | | |

*Pepsins incubated 24 hours.

show constipation, and a large percentage show merely a tendency toward looseness of the bowels on slight provocation. 2. The incidence of diarrhea is almost as great in subacidities. 3. There can be no question that a simple total achylia alone is by no means followed by diarrhea. In the foregoing studies none of the experimentally induced delays were followed by looseness of the bowels, and in the instances observed among normal persons there was no diarrhea. We must therefore look not in the stomach, but elsewhere for an explanation of this phenomenon. The points which impress me in gastrogenous diarrhea are:

1. The apparently acute onset in many of the cases, ushered in frequently by signs of infection, not infrequently by some systemic disturbances.

2. The intermittence in the appearance of the symptoms. Many of these cases showed a marked intermission punctuated by simultaneous disturbances elsewhere.

3. The frequent association of evidence of inflammatory condition of the small bowel rather than simply exaggerated peristalsis as revealed by fecal study.

We have been told that the causative factors in gastrogenous diarrhea are: (1) gastric hypermotility resulting in too rapid evacuation of insufficiently digested material from the stomach, which results in (a) irritation and exalted small intestinal peristalsis,

bowel, is incapable of producing this effect. In other words, intestinal compensation is the normal safeguard, and must be considered in any explanation for regular or even delayed bowel action in over half the cases of achylia. On the other hand, ruptured intestinal compensation, either through a primary weakness in the intestinal mechanism or a secondarily induced inflammation or infection, is, I believe, in most instances responsible for gastrogenous diarrhea.

I have been on the lookout for these cases for a long time, and in practically each case of unquestioned achylia in which there was looseness of the bowels, or even fifteen to twenty movements a day, there was associated with the condition certain other factors which more or less explain the condition. For instance, psychic disturbances were nearly always responsible for diarrhea (Potter's). On several occasions one patient had protracted periods associated, or rather ushered in, with signs of intestinal infection. In other cases (Simpson, Hirsch and Kane) the diarrhea came at intervals, nearly always associated with an unquestioned enteritis, an achylous gastro-enteritis. Mr. H. practically always developed diarrhea after the eating of certain kinds of food, particularly fish. Whether this was anaphylactic or not, I am not prepared to state. On four separate occasions covering a duration of several months, he was found to have a most per-

sistent achylia. On three occasions he developed a diarrhea. At one time there were signs of cholecystitis, at another time unquestioned angiocholitis with slight jaundice, and in all cases there was a general enteritis. The connective tissue lientery, alone supposedly characteristic of achylia, is to my way of thinking rare. Nearly always the fecal formula will include evidences of small bowel infection, intimately mixed mucus, not infrequently biliverdin, and often poor fat digestion and deficient cellulose consumption. But rarely are there associated signs of pancreatic disturbance. In only one case could I find the two associated, and in that case duodenal intubation revealed a secretion simply giving the reactions for amylase, while the fecal studies showed deficiency in the digestion of all the foodstuffs. This patient, however, had chronic diffuse nephritis, and has since showed improvement in her gastric secretion as well as her ability to handle food. The diarrhea in gastric achylia may be of four types:

1. The first type comprises simply loose pasty movements containing little or no mucus, but undigested

fat-free or a low fat diet removing irritating fatty acids produces much better results. In Type 3 hydrochloric acid is without effect, in many instances, while in clean-cut cases of Types 1 and 2 it often works magically, but not so magically as I have been lead to believe.

A careful study of these achylia cases reveals many factors at work besides a simple reduction in secretion. In the majority of cases the achylia is secondary. In many there is the vicarious elimination of toxins of extragastric origin. Cultures of the duodenal, pancreatic and biliary secretions are in many instances positive. Not infrequently *Bacillus coli* infections are to be blamed for the trouble, at least, in three cases. Evidences of inflammation of the duodenal mucous membrane can be shown in some instances. A curious paradoxical effect of hydrochloric acid is that very small doses may cure, and overdoses may induce the trouble, the explanation, according to our experiments, being that a small dose delays gastric peristalsis, and a large dose may, by going into the intestinal tract, temporarily induce irritation.

TABLE 5.—RATE OF EVACUATION OF YEAST; ORANGE JUICE (1-3), 15 GM. YEAST*

| No. | Time | Inter. | Vol. | Procedure and Character | Count | Total | HCl | NH ₂ |
|---|-------|--------|------|-----------------------------------|---------|-------|------|-----------------|
| Resid. | 9:15 | | 20 | | | | | |
| Lav. | 9:20 | | 96 | | | | | |
| L2 | 9:25 | 5 | 0 | | | | | |
| ... | 9:30 | | 200 | Orange juice yeast 15 degrees C.. | 656,000 | | | |
| 1 | 9:47 | 15 | 192 | Empty | | 43.0 | 22.5 | 4.5 |
| E1 | 10:02 | 15 | 15 | Empty | | 22.0 | 8.5 | 6.0 |
| E2 | 10:09 | 5 | 5 | Be sure empty | | 28.5 | .... | 11.5 |
| ... | 10:12 | .. | 200 | Orange juice yeast 15 degrees C.. | | | | |
| 2 | 10:57 | 15 | 4 | Empty | | | | |
| E3 | 11:15 | 15 | 0 | Empty | | | | |
| E4 | .... | 5 | ... | Be sure empty not taken..... | | | | |
| ... | 11:24 | .. | 200 | Orange juice yeast 15 degrees C.. | | | | |
| 3 | 11:54 | 30 | 150 | Empty | | 37.0 | 23.0 | 3.0 |
| *Orange juice (analysis) 0.5 per cent urea..... | | | | | | 64.5 | 24.0 | 8.5 |

TABLE 6—TOAST, 35 GM.; DISTILLED WATER, 250 C.C.

| No. | Time | C.C. | Character | Total | HCl | NH ₂ |
|------|-------|------|--|-------|-----|-----------------|
| 1 | 8:59 | .. | No sample, diff. tak. tube..... | | | |
| 2 | 9:14 | 5 | Tr. solids mostly | 5.0 | ... | 3.0 |
| 3 | 9:29 | 5 | 0.4 down l. f. liq. tur. white | 6.0 | 0.0 | 4.5 |
| 4 | 9:44 | 5 | 0.8 down f. f. liq. f. tur. white | 12.0 | 2.0 | 4.5 |
| 5 | 9:59 | 8 | 0.8 down f. f. liq. tur. white | 10.0 | 1.0 | 5.0 |
| 6 | 10:14 | 6 | 0.8 down f. f. liq. sl. turbid | 10.0 | 1.5 | 5.0 |
| 7 | 10:29 | 2 | Tr. down f. f. liq. clear, colorless | 7.0 | ... | 3.0 |
| Lav. | .... | 88 | No sol. clear, colorless..... | 2.0 | | |

meat and connective tissue. Meat fibers are in clumps, but partially digested fibers are seen.

2. The second type is marked by watery movements with the above morphology and undigested cellulose; bile is converted; fats split are often unabsorbed.

3. The third type consists of either of the foregoing with excessive mucus. The mucus may contain excessive leukocytes or not.

4. The fourth, a greasy type, comprises two forms, one greasy, consisting of split fats and connective tissue and meat fibers, and a second in which an enormous amount of neutral fats predominate over normal often undigested starches.

The first and second are the so-called typical types of achylous diarrhea, the second being due to the excessive irritability of the undigested food. Type 3 is the type usually seen with putrefaction in infected gastritis, in gastric carcinoma, and in the gastro-intestinal catarrhs. Type 4 in both forms is seen with the association of the biliary and pancreatic syndrome.

The difficult point for me to establish is, just how far the diarrheas are due simply to secretory loss and how far to infection and to irritation. Only in a certain proportion of cases do small doses of dilute hydrochloric acid correct the condition. In Type 4, hydrochloric acid is without effect, and the substitution of a

On account of the great number of cases of true achylia without diarrhea that I have seen, it is my belief that in those cases in which it occurs, the probable explanation is that owing to a lack of secretion the small intestinal tract becomes either infected or irritated, in which case rapid peristalsis results in diarrhea. The more pronounced the infection or the irritation, the more pronounced the diarrhea, and the same mechanism that induced achylia may induce hyperirritability of the entire gastro-intestinal tract. This is surely the mechanism in those cases accompanied by frequent mucoid stools. What is the explanation of gastric achylia and gastric hyperperistalsis without diarrhea? The inference to my mind in these cases is, that there has been either a previously existing constipation or that the initial impulse is outweighed by compensatory intestinal digestion. Another point of importance which seems to be lost sight of is the absence of fecal findings of achylia in some bona fide cases of gastric achylia. Here again, in spite of the fact that the specific rôle of gastric digestion is to digest connective tissue, a vicarious digestion occurs in the intestine which leaves in the movement little or no evidence of the gastric achylia. This is the exception rather than the rule, but I have seen some cases in which there are unquestioned evidences of such

findings. In other words, there are two broad general groups, a clean-cut achylia and the achylia due to carcinoma, catarrh, gastritis, etc., on the one hand, and over against this group, achylia with a clean-cut diarrhea furnishing evidence alone of perverted gastric function, as contrasted with diarrhea due to a multitude of causes, gastric, hepatic, pancreatic, intestinal. Hydrochloric acid gives the best results in the first group.

The administration of hydrochloric acid in some form is a time honored procedure in the treatment of gastric achylia and in the diarrheas of achylia. Let us see the action of hydrochloric acid in the stomach. Apparently a small amount has little effect on normal digestion, while large excessive amounts, excessive so far as the optimal acidity is concerned, are rapidly neutralized or brought down to optimum by the *verdünnungssaft*, or regurgitant pancreatic secretion. The manner in which hydrochloric acid operates in the achylia stomach may be seen from its use in the following cases:

It is astonishing that in pellagra and in certain forms of purpura there seems to be an achylia, often accompanied by an infected gastritis, which disappears with the gastric infection if the administration of dilute hydrochloric acid is kept up for a sufficiently long time. This is also seen in the subacid infected stomachs of the tuberculous, and especially in those cases of infected diarrhea with achylia. The following

TABLE 7.—EXPERIMENTS ON A NORMAL INDIVIDUAL WITH ACHYLIA GASTRICA

| | | |
|-------|-------|------------|
| 21.0 | | } 250 c.c. |
| 14.5 | ..... |  |
| 18.0 | ..... |  |
| | | |
| 31.0 | | } 200 c.c. |
| 33.0 | ..... |  |
| 85.0 | ..... |  |
| 87.0 | ..... |  |

method seems to produce good permanent results: Insert the fractional tube and perform lavage, and if need be disinfection; then on the empty stomach introduce at fifteen or thirty minute intervals through the tube from 15 to 20 minims of dilute hydrochloric acid, largely diluted with water, or better still, as I have done, 2 ounces of 0.25 per cent. hydrochloric acid. Keep this up for several hours, and after several treatments (which may be done by the nurse) have the patient eat a full meal, and with the last liquid taken swallow the fractional tube, and then give fractional installations of the 0.25 per cent. artificial acid. A rapid change occurs in many cases, not in all, and in some cases the results in the improvement of appetite and gastric function are remarkable. Another point — in those achylia in which the difficulty in fixing the etiology becomes acute, the administration of parathyroid extract is indicated, on the principle of the stimulatory action of the aparathyroid secretion. I have had two such cases.

CONCLUSIONS

1. Gastric achylia may be due to a number of different etiologic factors inducing in each instance presumably a different type of the disturbance. Instances of psychic, infected, anemic and ductless gland types are given.
2. Studies on achylia seem to indicate that either the entire cycle of gastric digestion, or only certain phases,

are affected, which enables us to make a differentiation in types.

3. Achylia may be found in apparently normal persons, and studies in one such case indicate that there is a secretion formed without enzymes or acidity, but probably possessing other properties which as yet are not clear.
4. Artificially delayed secretion and induced achylia, as well as the normal types observed, were all unaccompanied by diarrhea.
5. The injection of partially digested material, or even irritants, into the duodenum fails to induce diarrhea.
6. In the so-called gastrogenous diarrheas the cause is to be found in an associated condition besides achylia, namely, an enteritis most frequently, or if not an enteritis, it is, in all probability, due to a disappearance of the normal protective barrier of the gastric hydrochloric acid. The lack of the acid alone, however, seems insufficient as an explanation of the cause.
7. Implantation of an intestinal infection, or possibly a common cause, inducing both achylia and enteritis, may be responsible.
8. In only one case was it possible to discover an associated pancreatic disturbance.
9. A method of fractional and continuous administration of hydrochloric acid is given as a new method in the treatment of this condition.

1934 Chestnut Street.

ABSTRACT OF DISCUSSION

DR. CHARLES D. AARON, Detroit: When gastric secretion is deficient the first physiologic derangement that follows is in the chemical transformation of the food; the prime requisite, therefore, is the administration of comminuted food which makes the least demand on gastric digestion. Knowing that gastric juice is the only digestive secretion capable of dissolving raw connective tissue, it is advisable to forbid raw, parboiled or smoked meat. Even with adequate mechanical division, the insoluble connective tissue of such food burdens the intestine with waste material, which may either directly or indirectly prove extremely irritating, with consequent diarrhea. In achylia diarrhea, hydrochloric acid, the stimulator of trypsin secretion, is absent; pancreatic digestion is inadequate and the feces are apt to contain microscopic meat remnants, not connective tissue only. Therefore, meat should be given in restricted quantities. Vegetables and fruit should also be given sparingly, on account of the irritation likely to follow from the cellulose they contain. It is necessary to boil thoroughly all vegetable food.

As to the disturbances from the intestinal indigestion, there is practically only the diarrhea to be considered, the ultimate cause of which is, in all probability, an insufficient digestion of the cellulose. It follows that in diarrhea the dominant principle should be complete elimination of cellulose from the food. According to my experience, the articles of diet which can be ingested with increasingly less and less impunity in this condition are, in the order named, sugar, finest wheat meal, rice meal, arrowroot, grits, zwieback or toast, sago, spaghetti, rice, white bread. Potato starch is always poorly assimilated, and mashed potatoes agree with scarcely any of these patients. The artificial carbohydrates constitute a very suitable article of diet, the starch they contain being more or less dextrinized. As long as putrefaction of the intestinal contents continues, sweet milk is unsuitable and apt to cause diarrhea.

DR. ALBERT F. R. ANDRESEN, Brooklyn: At the Brooklyn Hospital we have made fractional examination of gastric contents by the Rehfuß method in about 500 cases of gastro-intestinal disorders. Of these cases, fifty-two showed a true achylia, including eight carcinoma cases. The "false achylia," that is, cases showing no free hydrochloric acid at

the three-quarter hour point, but a subsequent rise, numbered twenty-five, so that we should have had nearly 50 per cent. more cases if only the regular single removal at the three-quarter hour interval had been made. Some of these "false" cases showed a free hydrochloric acid index as high as 70 during the latter part of the two-hour period, being really delayed hyperacidities. All true achylia showed a marked hypermotility, the stomach being empty at or before the two-hour point in over 80 per cent. of my cases.

Diarrhea occurred in 24 per cent. of my fifty-two cases, constipation in 67 per cent., regular bowels in 9 per cent. The diarrhea cases were nearly all associated with infections elsewhere, and were probably infectious in origin. I feel that achylia gastrica itself is merely a name given to a symptom of an infection of the gastric mucosa, an endogastritis, as it were, secondary to a focus of infection elsewhere in the body. I found blood in the stomach contents in over 90 per cent. of my cases, and in the stools in 67 per cent. Vomiting occurred in 38 per cent. The loss of weight averaged over 30 pounds.

As for treatment, it is remarkable how quickly the use of dilute hydrochloric acid, even in small doses, will affect certain symptoms, notably the diarrhea and the epigastric pain. I think this effect is distinct from the benefit to be obtained from the other, and perhaps more important, part of the treatment, the dietetic, which has already been so ably discussed. The occasional diarrhea following the feeding of milk can usually be overcome by acidifying the milk—a teaspoonful of dilute hydrochloric acid to a glass of milk, added just before drinking.

DR. MAX EINHORN, New York: A great many physicians think or speak of diarrhea as being associated with achylia, but I always maintain that the larger group of cases is accompanied by constipation. We have those cases also in which diarrhea alternates with constipation, and again a group in which diarrhea is present. Achylia can also exist together with other conditions in organisms which do not manifest any symptoms at all, with the patient in apparent perfect health. In one of my first papers on the subject I mentioned the case of a patient who had had this condition for forty years and did not know he had any stomach trouble, nor did I, and I discovered the achylia only accidentally.

With regard to the division into achylia and spurious achylia, I think those cases in which some secretion appears later are not real achylia but cases of subacidity in which a little ferment is found that ultimately increases. Dr. Rehffuss mentioned that we may have a condition in which no gastric ferments can be detected—no pepsin, no hydrochloric acid—and still there may be something oozing from the mechanism. I would subscribe to that. In fact, I have described such a condition (*hydrorrhoea gastrica*), finding it principally in instances of cirrhosis of the liver accompanied by pyloric obstruction. I took this to mean that there is too much fluid in the blood vessels and a kind of pressure relief by exudation through the gastric walls. That may be a different type, but I am sure in ordinary achylia there may be something oozing from the mucous membrane, although the glands are not active. This is a matter difficult to decide.

In regard to the treatment, Ewald and a great many other clinicians lay much stress on the value of hydrochloric acid in the treatment of achylia, but personally I do not ascribe so much importance to that medication. In the majority of my patients with true achylia, where there is no secretion, I may give it for a short while, but on the whole they go along for years without a drop of hydrochloric acid, and just as well.

DR. LOUIS LEFRAK, New York: The term achylia gastrica is a comparatively recent addition to medical nomenclature. Friedenwald, in Osler's "Modern Medicine," gives Einhorn the credit of having been the first to use the term in conditions in which there was an absence of gastric secretion. I believe that, with the exception of secondary achylia, the condition in a majority of cases is simply one of chronic gastritis with atrophy of the secretory glands. This contention is borne out by the following observations made in the gastro-intestinal clinic with which I am connected and, to a lesser extent, in my private practice: It usually occurs in patients over 30;

its incidence is almost equal in both sexes; often there is no other evidence of neurasthenia. This opinion is also held by Dr. Cheney in his paper published in *THE JOURNAL*, May 19, 1917.

I believe if we had a clearer conception of its pathology, achylia gastrica would be classed as a symptom of chronic gastritis instead of a clinical entity; that is, as an organic disease instead of a functional disease. It can readily be seen that if this statement has any value it must affect the treatment considerably.

DR. SEYMOUR BASCH, New York: Achylia gastrica has always been one of the unsolved problems in gastro-enterology and I fear it will remain so for some time. This is illustrated by the fact that patients who come to us for other conditions, feeling well and looking well, on analysis are discovered to have an absence of hydrochloric acid. On the other hand, we have patients coming to us with all the clinical signs, often showing associated diarrhea with loss of weight, etc., and they are treated for a while and then leave our hands; years afterward we find that they are well without any treatment whatever. There are deeper problems than those which appear on the surface. One has been brought out and solved by Dr. Rehffuss in dividing achylia into two groups—psychic and chemical. I think that is an important addition. Another point which will have to be solved is with reference to the protective fluids of the stomach in achylia. To illustrate: In hyperacidity we have antipepsin. Perhaps there is some protective ferment or fluid which protects the patients in an unknown way. It is only by definite study that we will be enabled to solve some of these problems.

The clinical value of achylia studies comes out in the differentiation between true achylia and achylia which is associated with other conditions such as carcinoma, or achylia as a reflex condition, etc., where we cannot talk of achylia merely as a clinical entity, but as a complication, as Dr. Rehffuss has said. I failed to hear any mention made in this differentiation between true achylia and achylia associated with neoplasms. Some years ago Dr. Steel tabulated a number of cases and found that in patients with chronic appendicitis, where undigested meat had been found in the stools, the intestinal condition cleared up entirely after operation. I myself have seen a case of achylia associated with hernia in which, also, the achylia cleared up after operation.

Another form, which is rare and often overlooked, has been pointed out, and that is the achylia associated with benign tumors of the stomach. We are apt to think that this is infrequent, but investigation will show that it is not as infrequent as we believe.

DR. J. W. WEINSTEIN, New York: Dr. Rehffuss omitted to point out that achylia gastrica is often not achylia gastrica, but is often chronic atrophic gastritis; it is often a carcinoma of the stomach; in the more exceptional cases, perhaps, achylia gastrica has a neurotic basis; and then there is achylia gastrica as such.

Dr. Rehffuss spoke of spurious achylia. I find that spurious achylia is very common in the practice of those whose experience is limited. Of course, that remark does not refer to Dr. Rehffuss, whose experience is extensive. I find that my assistants at the clinic, before they have had a large experience, meet with a large number of cases of achylia, but that after their experience has been augmented, the number of achylia cases becomes much smaller. What is the reason? It is this: There is a certain time only when stomach contents should be extracted. I am not speaking of the fractional method which Dr. Rehffuss is using, but that method which the majority of the profession is using. It is necessary to take out the stomach contents at the height of digestion; for the ordinary test meal it is fifty minutes. It is also necessary that the patient take a full meal, because if the patient takes but one half or one quarter of the meal, one is likely to get achylia, since at the end of digestion the secretion declines. Moreover, we have other factors to consider—the secretion of the saliva which neutralizes the acid, and also regurgitation of intestinal juice.

As to the treatment, I agree with Dr. Einhorn that treatment by means of acid is not very successful. It is true

that in some cases it is very successful, and it is worth while in every case to give the patient some hydrochloric acid. I make it my rule always, however, to tell patients that this is only an experiment, that it may decidedly disagree with them, for it is very unpleasant after going through tests and examinations and giving them diet and medication to hear patients say that they feel much worse than they ever felt before. It is unquestionably common to hear this from patients if hydrochloric acid is administered. I find it is especially contraindicated and not tolerated in those cases in which there is true achylia, where there is no secretion at all. It seems that the mucous membrane acquires a hyperesthesia toward hydrochloric acid, and they feel worse than ever if it is administered in these cases.

DR. I. O. PALEFSKI, New York: I agree with Dr. Einhorn that the so-called "spurious achylia" mentioned by Dr. Rehffuss in his paper is probably one of the forms of subacidity which tardily respond to stimulation by an Ewald test meal. The presence or absence of mucus should serve as a basis of differentiation between these conditions and achylia. The trained eye will readily recognize the existence of achylia by mere inspection of the characteristic two-layer test meal, the rapidly settling lower layer consisting of the undigested food and the superimposed, clear, colorless liquid layer, devoid of mucus and free acid. In pyloric regurgitation caused by transient relaxation of the pylorus, the regurgitated alkaline duodenal contents will not only neutralize the acids but will also dissolve the mucus in the gastric contents. It is impossible, therefore, to differentiate between this condition and achylia unless the examination be prolonged, as Dr. Rehffuss did, or, even better, be repeated on the following day, when normal gastric findings may be obtained.

I rely on clinical observation in declaring that the association of achylia and chronic pancreatitis is not an infrequent occurrence. This should be suspected in achylia with a history of loss of weight and the presence of anemia. Dr. Aaron justly emphasized the value of Schmidt's functional test diet as a control of pancreatic digestive power in achylia. Owing to the disturbing elements present in the examination of feces, however, the quantitative analysis of the pancreatic enzymes in the fresh duodenal contents is preferable.

Clinically, one readily observes the beneficial effects of hydrochloric acid in achylia. This I am inclined to attribute, in no small degree, to its controlling effect on the pylorus. The stomach empties rapidly in achylia, due to the relaxation of the pylorus. This allows insufficiently liquefied and improperly subdivided food to enter the intestines, which serves as an intestinal irritant and causes abdominal cramps and diarrhea. Conversely, the administration of hydrochloric acid increases the tonicity of the pylorus, thus prolonging the stay of the ingested food in the stomach, where it undergoes a more thorough subdivision prior to its entrance into the intestines.

DR. HARRIS WEINSTEIN, New York: I have no doubt that in time Dr. Rehffuss may clear up various etiologic factors of achylia. We know that achylia may be either functional or organic. Functional achylia appears in conditions in which all the functions of the system are more or less depressed, as in chronic infectious diseases, anemias, particularly pernicious anemia, circulatory disturbances, nephritis, etc. In tuberculosis we find that the disease induces more or less progressive reduction in both the motor and secretory functions of the stomach. Dr. Rehffuss analyzes these conditions, and he may be able to throw more light on them in time, particularly as to the effect of the hormonopoeitic system on the nervous system and its resulting effect on the secretory condition of the stomach.

As to the effect of hydrochloric acid in achylia, nobody believes that a small quantity, or even large quantities, of hydrochloric acid can have any telling effect on digestion. I do not believe anybody gives it with that aim. We give it as an activator of the pancreatic pro-enzymes, and in this manner it probably takes the strain off the intestines in so far as it causes better digestion in the intestine. Achylia may run along (in fact, 40 per cent. of the cases do run along) with no symptoms at all, and achylia, if it is not due to

chronic gastritis or a malignant condition of the stomach, does not become evident unless pancreatic digestion breaks down. Dr. Rehffuss injected some irritating substance into the duodenum and did not get any diarrhea. We must not forget that achylia does not mean the introduction of undigested food into the intestine one, two or three times; it means that this has been going on for years, and sooner or later the mucosa will become irritated and enterocolitis will result.

DR. B. B. VINCENT LYON, Philadelphia: In my opinion the greatest contribution that Dr. Rehffuss has made is the differentiation between true chemical achylia and spurious achylia. I do not believe it is possible for us to determine cases of spurious achylia by any other than the fractional method. It is fallacious to select any single point of time for test meal extraction—be it fifty, sixty or seventy-five minutes—and limit the classification of achylia as determined by that one point. There is no doubt that in true chemical achylia we are fundamentally dealing with a progressive atrophy of the mucous membrane, and this atrophy is probably complete, inasmuch as few of us have seen the return of true gastric secretion. In some of the cases there has been a moderate and slow increase in the return of the juices, but in such cases we are dealing with an incomplete gastritis in which some cells are still capable of functioning.

The chief differential point to determine is the presence or absence of pro-enzymes. If we can determine the absence of pro-enzymes, we must conclude that we are dealing with gastric cells whose function has been pathologically destroyed.

In the treatment of the achylia it seems to me it is much more important to preserve the efficiency of the pancreatic ferments. If the intestinal digestants fail in compensation, the patient develops diarrhea. If the pancreatic ferments are studied by duodenal intubation, the proportional amounts of pancreatic ferments can be determined by the Crohn method and pancreatic substitution therapy instituted, and this may be very much more important than the administration of hydrochloric acid.

DR. MARTIN E. REHFUSS, Philadelphia: I realize that in fifteen minutes allotted to me it was not possible to do justice to the question of achylia gastrica. The question I tried to investigate most was the etiology of these cases. I have a very large number of so-called cases of achylia, but I maintain that careful study by careful methods will show that there is a so-called spurious type, a type in which delayed gastric secretion is frequent. At the hospital we have made a little over 15,000 examinations on all sorts of stomachs and have been able to note the effect of various foodstuffs under normal conditions. I consider this a rather important point from the gastric standpoint. We investigated a great many of these conditions and found various forms of achylia. I have said comparatively nothing regarding the so-called malignant achylia. One can hardly go into the wards of the Jefferson Hospital without finding at least one case, and at times several cases. I am speaking of those cases which are mostly functional. In looking over these cases we find, as Dr. Einhorn has said, that diarrhea when present is secondary and plays a minor rôle. Over 50 per cent. of our patients were constipated, and the remainder was distributed among patients who had attacks of diarrhea and of dietetic intoxication. The point made is that the cases are subject to careful analysis. I have found only one case in which on duodenal intubation there was true insufficiency of the pancreas. I have in my paper a list of the various types of bowel movements, but the interesting thing is that a careful study of the mechanism of the bowel movements will demonstrate that they are very different, depending on the different factors at work.

The question of benign and malignant achylia ought to be taken up. I wrote a paper regarding the protein content and material in the stomach in benign and malignant achylia. In the latter I found that there was a very different curve running throughout the gastric cycle; in other words, the increase of protein was brought out.

Duty of Maintaining Health.—Keeping healthy is a part of doing "your bit."—Connecticut *Health Bulletin*.

VESICAL DIVERTICULUM

REPORT OF TWO CASES, WITH REMARKS ON
OPERATIVE TECHNIC *

BRANSFORD LEWIS, M.D., B.Sc.

Fellow of the American College of Surgeons; Professor of Genito-
Urinary Surgery, St. Louis University, School of Medicine

AND

NEIL S. MOORE, M.D.

ST. LOUIS

Vesical diverticula represent exaggerated sacculations of the mucous membrane, connected with the general bladder cavity by an opening of variable size. Some writers have expressed the belief that practically all cases are congenital, but latterly there has been a reaction from this position, with a tendency to ascribe most cases to acquired conditions (Lower¹), the result of obstruction located mainly at the vesical neck.

In the two cases reported herewith the causative relation between obstruction at the vesical neck and the diverticula was plainly shown in the well defined ring of fibrous tissue that surrounded the neck of each bladder; while in the few other cases observed by us, but without being brought to operation, an obstruction was always demonstrable, so that our own inclination is to share belief in the predominance of acquired over the congenital origin of this malady.

Englisch² based a differentiation between congenital and acquired diverticula on the question as to whether their walls possessed muscular bands or not, asserting that those with muscular tissue were congenital; those without were acquired.

This classification, however, has been difficult of proof and has not been supported by all writers. Thomas,³ in reviewing twenty cases of diverticulum observed in the Mayo Clinic, asserts that they were incapable of making such a classification. But whether congenital or acquired, it is probable that some obstruction has been present at some time in every case, either during intra-uterine life or subsequently.

Rokitansky's⁴ declaration that diverticula were found only in bladders having hypertrophied walls was not borne out by the two cases herewith reported. In one the bladder wall was as thin as paper and broke down precipitately under gentle manipulation.

Diverticula are single or multiple, and vary considerably in their size as compared with the bladder cavity. Sometimes they are as large as, or even larger than, the bladder cavity.

Whether congenital or acquired, the walls of diverticula are supplied with so little muscular structure that they are inert and incapable of contributing to the evacuation of the organ. Urine contained in them tends to stagnate and undergo infection and decomposition, becoming then highly irritating and a frequent source of urinary sepsis, with chills, fever and other sequels.

No form of treatment has been able to supply this deficiency of muscular activity or contractility to the sacculation and hence, until a definite plan for their removal was finally evolved, operative treatment was a failure. Dilating or incising their orifice, for increas-

ing the ease of communication between the main cavity and the accessory one, failed for the same reason.

Marked developments in respect to both diagnosis and treatment within the past half-dozen years have inspired the greatly added interest, as well as the more frequent recognition of this very imposing and portentous malady. Previous to 1912, although recognized in the abstract, vesical diverticulum was looked on in the light of a surgical curiosity, rather than a pathologic condition subject to remedial measures. Since then conditions have materially changed, and many persons the subject of diverticula and their attendant evils have been reclaimed from a very miserable existence to comfortable living. This satisfactory development has been due to progress in the technic of diagnosis and of operative therapy.

In addition to wider recognition of diverticula through the better and more universal practice of cystoscopy latterly in vogue, the taking of roentgenograms of the suspected bladder filled with a fluid opaque to the roentgen ray has proved a wonderful service. This has permitted ready identification of the sacculation, its location, size and number, if multiple, and has afforded evidence on which to base a conclusion as to the advisability and mode of surgical attack.

But more important still has been the simplifying of the surgical operative procedure by adopting measures to convert the more or less elusive and intangible diverticulum into a solid tumor by inserting into it the rubber elastic bag of Lerche,⁵ or packing the sack with strips of gauze, as suggested by Cabot⁶ and popularized by Lower in his several very valuable contributions on the subject. This feature of the technic has proved so valuable that much of the advance in this work must be ascribed to it.

The ureter, occasionally injured or severed during the operation, has been protected or repaired, as the case might be, by measures promoting that objective, such as preliminary ureteral catheterization, as advised by Beer, or the use of valve-flap transplantation, as suggested by Young.

Experience has proved the propriety of keeping the operation extraperitoneal, stripping the peritoneal membrane from the bladder wall as far as necessary to give access to the sac; and of sewing up the bladder wall tightly, using a retained catheter in the urethra for urinary drainage. It has been the habit of operators to drain the pocket from which the diverticulum has been removed by a rubber tube or cigaret drain passed through the abdominal wound that was made to gain access to the bladder; but we have used with entire satisfaction, and it is believed with distinct advantage, a stab-wound cigaret drain into the extraperitoneal space, thus avoiding contact with the main wound edges and promoting their early and complete union.

The indwelling urethral catheter is preferred by us over the method of repeated catheterization for emptying the bladder following the operation. There are few patients who cannot easily and comfortably wear a soft rubber catheter for this purpose for the few days required to secure union of the wound area, notwithstanding a widely prevalent impression to the contrary. Many patients can wear urethral catheters for weeks or months, without serious discomfort.

This measure is often one of the most efficient for preparing the patient for operation, affording gratify-

* Read before the Section on Genito-Urinary Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Lower, W. E.: Diverticula of the Urinary Bladder, *THE JOURNAL A. M. A.*, Dec. 5, 1914, p. 2015; *Cleveland Med. Jour.*, January, 1914.

2. Englisch: *Arch. f. klin. Chir.*, 1904, **73**, 1.

3. Thomas: *Surg., Gynec. and Obst.*, October, 1916.

4. Rokitansky: *Manual of Pathological Anatomy*, 1855, **3**, 48.

5. Lerche: *Ann. Surg.*, 1912, **55**, 285.

6. Cabot: *Am. Assn. Gen.-Urin. Surgeons*, 1912.

ing if temporary relief from retention and sepsis, and contributing much to the restoration of functional activity to the organs most involved.

It goes without saying that all preparatory measures now recognized as essential to the attainment of success in major genito-urinary operations should be provided.

The steps of diverticulum resection as carried out by us are as follows:

1. The ureter of the affected side is catheterized, the bladder being left filled with fluid and a rubber catheter in the bladder.
2. Epicystotomy is done, the bladder wall being attached to the abdominal wall on each side, but especially on the side opposite the diverticulum.
3. The diverticulum is packed with gauze.
4. The peritoneum is stripped off.
5. If the ureter has been cut, its end is opened and it is drawn through a button-hole into the bladder and attached.
6. The hole in the bladder wall from which the diverticulum was excised is sewed up. The stitches are reinforced, chromic catgut being employed.
7. Operation is performed on the prostate or neck of the bladder if necessary.
8. Stab wound drainage is used, with a cigaret drain.
9. The retained urethral catheter is inserted.
10. The anterior wall of the bladder is sutured and closed completely, with catgut.
11. The abdominal wound is sutured with catgut and silk-worm gut.

The clinical pictures, as well as the method of securing permanent relief, are fairly well illustrated in the histories of two cases herewith reported.

REPORT OF CASES

CASE 1.—A man, aged 51, railroad engineer, American, married, had no history of any venereal diseases. The patient's health had been good up to the beginning of the present illness, which occurred Nov. 4, 1916. Up to this time he had been in the habit of urinating only four or five times daily and did not void at night. November 4, without recognizable cause, he began to have severe burning with urination and undue frequency. There was no blood in the urine at that time, but with a continuance of the irritative symptoms he noticed that blood appeared ten days later (about November 14). The blood was mixed with the urine and did not precede or follow the act. With remissions there was a continuation of these symptoms until his arrival at the Frisco Hospital, in the service of Dr. G. W. Cale, Nov. 25, 1916. His general condition then seemed very poor; he was thin and looked run down. There was excessive frequency of urination day and night, together with much pain each time; both urines were cloudy with pus and blood appearing microscopically. There was colon bacillus infection. Cystoscopy, November 29, showed widely diffused cystitis of marked intensity. The well defined orifice of a diverticulum was located in the left posterolateral segment of the bladder, anterior (distal) to the ureteral ridge. The orifice appeared about the size of a dime. The bottom of the diverticulum was not visible. The ureter catheter inserted into it reappeared at the orifice after 3 or 4 inches of catheter were used. No stone was observed. The ureteral orifice was not visible on this side. Roentgenograms of the bladder filled with thorium solution showed a definite sacculation about the size of an apple, posteriorly and to the left of the bladder, attached to it by a narrow neck.

Operation was performed Dec. 9, 1916, with the assistance of Drs. Moore, Woolsey and Smith. Anesthesia was given by Dr. Wood. This operation followed ten days after preparatory treatment, consisting of frequent irrigations through a retained catheter, rest, internal antisepsis, etc. With the bladder fairly well filled and the patient in the semi-Trendelenberg posture, an incision was made in the midline of the abdomen until the anterior wall of the bladder was reached. The peritoneum was stripped from the bladder, partly by a dissection with scissors but more by the gauze-covered finger. It was

noticed that the whole anterior wall of the bladder, particularly toward the left, was very thin, at some parts as thin as paper; which explained the fact that when an attempt was made to place stay-sutures in the anterior wall, the wall suddenly broke down and opened up the bladder cavity. After the field had been dried, several catgut sutures were placed in the right wall of the bladder, attaching it to the abdominal wall on that side. The left wall was controlled by a stay-suture left loose and was serviceable later as a guide. Inspection revealed a spacious bladder cavity with ureteral openings plainly visible; and slightly anterior to the left ureteral opening could be seen the orifice of the diverticulum, corresponding to the observation made by cystoscopy. Narrow strips of gauze were then stuffed into the diverticulum until it was quite full. This maneuver was facilitated by grasping the margins of the orifice with forceps and holding them well up, thus permitting a much larger quantity of gauze to be inserted than would otherwise have been the case. The diverticulum was in this way converted into a solid tumor about the size of a pear, outside of the bladder. The peritoneum was then stripped from the left bladder wall and from the tumor. The earlier part of this maneuver was easy, but became more difficult later, as the diverticulum was situated so low down in the pelvis and behind the bladder that it became less accessible. Part of the separation had to be made with scissors. The pedicle was found to be as thick as a finger. With one forefinger through this neck for guidance it was excised with scissors after the tumor had been well lifted out of the cavity. Hot moist gauze controlled the rather rapid oozing of blood into the pocket from which the tumor had been removed. Before closing the bladder it was observed that a dense, fibrous ring surrounded the neck of the bladder and presented positive and marked obstruction to the outflow of the urine. This ring was strongly dilated with a uterine dilator until it presented no further obstruction. Evidently this had had a marked bearing on the development of the diverticulum. The wound in the bladder wall was closed with several layers of chromatinized catgut; reinforced until the closure seemed satisfactory.

At this point effort was made again to identify the left ureteral orifice which had been disturbed by the operative manipulations, but it could not be identified. However, no leakage of urine could be seen outside of the bladder on that side and the discharge of the urine into the bladder seemed regular. From this observation it appeared highly desirable to catheterize the ureter of the side involved previous to beginning the operation so that it might be identified at any step. This was carried out with complete satisfaction at another, subsequent operation. The anterior wound of access through the bladder wall was closed tightly with a continuous chain-stitch of catgut, without drainage. Two cigaret drains of large size were placed in the pocket to the left of the bladder and were brought out of a stab wound in the left inguinal region, serving the good purpose of providing ample drainage without interfering with the union of the abdominal wound. The muscles of the abdominal wound were united with catgut; skin with silkworm-gut without drainage. A retention catheter, size 20 French, was left in the urethra. Considerable drainage of bloody serum and urine escaped from the stab wound in the next two or three days, due largely to the fact that the catheter became slightly displaced, but on replacing it and applying the Bremerman suction drainage apparatus this impediment was relieved and the operative field remained dry thereafter. No bleeding nor any objectionable symptoms occurred. The only rise in temperature at any time was on the third day, when it was 100 F.; the remainder of the time it was normal. No drainage occurred from the wound after the fifth day; primary union occurred throughout. In a week the patient was able to urinate voluntarily, completely emptying the bladder.

December 15 (the sixth postoperative day), the wound was dry, all sutures were removed and urination was normal and not attended with residuum. No measures were necessary thereafter.

CASE 2.—An American manufacturer, aged 39, at the time of his first visit, July 21, 1913, was referred by Dr. J. T. Barbee. The earliest memories of childhood of the patient

were connected with slow, difficult, prolonged urination, frequently repeated. He was never able to urinate promptly and satisfactorily as compared with other children of his acquaintance. This difficulty persisted throughout his younger life, and about fifteen years ago there was an increase in the various symptoms, including painful urination, infection, intense clouding of the urine, constant desire, etc. There had been no bloody urine that the patient had noted except after using the catheter, which he had begun about a month previously and had used daily since. The white sediment in the urine he had noticed for the previous ten years. He had found a glassful of urine left over after each effort of voluntary urination. His general health had been poor; he has always been thin and anemic. There was never a definite investigation of his condition prior to March, 1913. At that time Dr. Barbee examined and recognized obstruction at the vesical neck and prescribed irrigations to relieve the infection, together with the use of sounds. This produced only partial success so that the patient was referred to us, July 21, 1913. Neither palpation by rectum nor cystoscopy disclosed any evidence of prostatic enlargement or outgrowth. On the contrary, the prostate seemed unduly small. There was, however, a large, relaxed, atonic bladder holding from 25 to 35 ounces of urine without difficulty; and through the cystoscope was observed at this time the opening of a diverticulum located in the posterior wall of the bladder, low down. Although no especial resistance to the dilator was encountered on the introduction of this instrument, the above evidence, together with the history, led to the conclusion that there was contracture at the vesical neck and a diverticulum connected with the bladder was noted. Both ureters were catheterized, and healthy urine was drawn from each.

At this time the operative technic for diverticula had not been worked out to the degree of satisfaction since attained, so that it was concluded to omit operative measures on it and apply those for the purpose of removing the obstruction at the neck. At this time the usual quantity of residual urine following voluntary urination was about 28 ounces. Progressively increasing dilation of the neck by means of the Kollmann dilator improved the patient's ability to urinate and reduced the quantity of residuum to about 8 ounces within a month. It did not relieve the infection or relieve him from the recurrence of septic urinary chills and fever that had been one of his most disagreeable symptoms. After a period of this form of treatments given at home the patient returned, Jan. 13, 1914, and was found again to have 20 ounces residuum. Then a perineal urethrotomy was made; a finger introduced through the perineal wound revealed a definite ring of fibrous tissue that surrounded the neck of the bladder and made positive resistance. This was at first stretched widely with the uterine dilator; but being still appreciable it was incised with the probe-pointed bistoury until free access was obtained. Drainage by means of a urethral catheter was secured.

Great improvement ensued, but still there was a tendency later to recurrence, which was treated with dilatings. The residuum was then reduced to 2 or 3 ounces, less than ever before. After the patient went home the dilatings were continued even up to 45 F., but the benefit was not maintained. Frequent chills and fever and other manifestations of urinary sepsis recurred, and the patient's health continued below par so that when he returned in January, 1917, we concluded it best to go at once to the removal of the diverticulum, which was then believed to be the cause of the continued disturbance.

Cystoscopy again confirmed the presence of the diverticulum, the orifice of which seemed to be even larger than it had been in former years. The operation was done, Jan. 20, 1917; ether was administered by Dr. Clapsaddle; Drs. Moore and Woolsey assisted. The same method as in the case previously reported was carried out. About ten yards of gauze in strips was packed into the diverticulum, the peritoneum was stripped from the bladder diverticulum, the latter being very inconveniently located under the base of the bladder. This, however, did not prevent its enucleation, after which it was resected. The opening was sutured tightly with chromic catgut. Before closure of the anterior vesical wound, the fibrous

tissue surrounding the neck of the bladder was again demonstrated with the finger, though it was not nearly so tight as formerly. It was widely stretched with the uterine dilator until it offered no further resistance. The bladder wound was then sewed; a stab wound to the left of the bladder was made for draining the cavity from which the diverticulum had been removed. The bladder wound and abdominal wound were closed without drainage.

Following the operation there was scarcely any bleeding; there was good drainage and no systemic reaction. January 25, the patient was in excellent condition. There had been only a small amount of drainage from the stab-wound. The cigaret drain was then removed. The retained catheter was removed from the urethra, January 31, and the patient's ability to urinate freely and to empty the bladder completely was then demonstrated. The patient could not remember ever having been able to urinate with such completeness and satisfaction. This practically completed convalescence, and he went home in good condition.

THE RESULTS OF TREATMENT OF BLADDER TUMORS *

JOHN T. GERAGHTY, M.D.
BALTIMORE

The treatment of bladder tumors prior to 1910 was in almost all cases a surgical one, with an attempt at partial or complete removal of the growth. Whether the tumor was benign or malignant, operative procedure offered the only hope of cure or alleviation. The brilliant results obtained by Nitze in his endovesical treatment of bladder tumors were not duplicated by other urologists, as the skill necessary for the employment of his methods was not perfected. The introduction of fulguration by Beer and later the employment of radium are two procedures which have served radically to change our ideas, and have consequently affected our attitude in the selection of the proper treatment for any individual case.

When fulguration was first employed, the results obtained by different surgeons were apparently immeasurably superior to the results secured by old operative methods. It began gradually to be realized, however, that all vesical tumors were not amenable to this form of treatment, and that while certain tumors disappeared with surprising rapidity, others responded only after long and vigorous applications, while others again were not affected in the slightest degree.

In order to secure an explanation of the difference in the response to treatment, we have made a study of the pathology of the different tumors and tried to correlate the different types and their response or resistance to fulguration. The results of this study have shown that the tumors which respond most readily to fulguration belong to the benign papilloma type, while those which are not affected, or are often stimulated in their growth, are histologically papillary carcinoma. There is, however, an intermediate group of tumors, the malignant papilloma, which varies in its response to this treatment, some responding almost as readily as the purely benign type, while others approach in their resistance the true papillary carcinoma. The differentiation between the malignant papilloma and the papillary carcinoma may, in many cases, be extremely difficult, and, notwithstanding the

* From the James Buchanan Brady Urological Institute, Johns Hopkins Hospital.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

histologic picture, the final diagnosis may be reached purely by the response to fulguration or radium. The employment of radium within the last few years has necessitated still further studies regarding the type of tumor in which this agent has proved valuable. As with fulguration, it has been learned by experience that certain tumors disappear under its influence, while others apparently are not affected by it.

Much confusion has always existed concerning the nature and pathology of bladder tumors. Most of this confusion exists as regards the papillary tumors which are the commonest of vesical neoplasms. Until a definite classification is adopted and a specific nomenclature employed, these inaccuracies will continue. For example, the use of the term "cancer" for the papillomatous, noninfiltrating types of tumor, even though there be histologically malignant changes present in the epithelium, is confusing, because experience has shown definitely that certain therapeutic measures suitable for one are wholly inadequate for the other. Frequently the surgeon in reporting the results of a given form of treatment for cancer may include in his series cases of malignant papilloma. The result of such a report leads to erroneous conclusions. A classification which has proved at least a satisfactory working basis is the following, because it is possible to correlate the histologic and clinical picture with the response to different therapeutic agents.

The papillary tumors may be classified as benign papilloma, malignant papilloma and papillary carcinoma. Papilloma is a name which common usage has popularized in medical literature, and it is used to denote a group of tumors having certain gross characteristics. The term "papilloma" has come to imply a pedunculated, papillary form of villous tumor springing from the mucous membrane of the bladder and being essentially composed of a branching connective tissue framework, lined by epithelium in several or many layers. Statistics prove conclusively that papilloma is by far the most frequent tumor of the bladder, and when it is further considered that practically all the papillary carcinomas represent an advanced malignant degeneration of tumors which in their early stages were papillomas, the preponderance of this type of vesical neoplasm can be appreciated.

The gross appearance of papillomas varies considerably, and there is no definite characteristic which will differentiate the benign from the malignant. In most instances it is impossible from the gross appearance to decide the character of the growth, so closely in general appearance do the benign and malignant papillomas resemble each other. The pedicle in the malignant papilloma is freely movable over the underlying mucosa, and there may be nothing in its appearance to reveal its malignant character. In the vast majority of cases, the differentiation between the benign and malignant papillomas can be made only by the most careful microscopic study, and it sometimes necessitates the examination of sections from various portions of the tumor. In the benign papilloma, the connective tissue axis is lined by an epithelium which has a palisade arrangement at the base and above this many layers of oval longtailed cells which are uniform in size, shape and staining characteristics. Toward the surface the cells become flattened, and the most superficial are similar to the epithelium of the normal bladder mucosa. In the malignant, the arrangement of the epithelium is changed, and instead of being in regular, uniform layers, it is disordered. The indi-

vidual cells are very irregular in size and shape, and take the stain with varying degrees of intensity. These variations from normal are even more evident in the nuclei. At times, owing to the lawless growth of the epithelium, the papillae fuse so that the regular papillary arrangement is destroyed. Not infrequently in the same field, papillae may be seen undergoing various degrees of alteration. In one portion the epithelium may have all the characteristics of the benign papilloma, but close by may be papillae in which epithelial changes characteristic of malignant papilloma are very evident.

The term "malignant papilloma" should be reserved for those tumors in which the malignant changes are confined to the epithelium, and in which there is no infiltration of the epithelium into the connective tissue framework. When the epithelium breaks through its basement membrane and begins to invade the axis of the papilla or its main stalk, it no longer should be considered a papilloma, but a papillary carcinoma.

In order to arrive at some conclusion as to what may be expected from the different forms of treatment, we have included in our studies only those cases which have been seen since January, 1911. This makes it possible to compare our results of the last six years in which recent procedures have been employed with the results obtained prior to this time when operative measures alone were used. From Jan. 1, 1911, at which time fulguration began to be employed for the first time in our clinic, until April 1, 1917, 145 cases of bladder tumor have been observed. Of these there were 64 cases of papilloma, 74 of papillary carcinoma, 3 of adenocarcinoma, 1 of colloid carcinoma, 1 of cystic adenoma and 2 of multiple vesical polyps.

THE TREATMENT OF PAPILLOMAS

Of the sixty-five cases of papilloma in our series, thirty-four were treated by fulguration alone, the Oudin or unipolar current being almost exclusively used. In five of these, previous suprapubic excision had been performed and the tumors represented recurrences. In twenty-six of the thirty-four cases treated by fulguration, subsequent cystoscopic examinations were carried out, and in ten cases, or 29 per cent., recurrences were noted. In seven cases the recurrence was present in less than one year, in one case after one year, in one case after one and one-half years and in one case after two years. In three of these cases the recurrence was in the region of the original tumor, and in the remaining seven they were on portions of the bladder wall distant from the site of the primary tumor. Of the sixteen cases in which there was no recurrence, one patient was well for six years, one for five years, one for four years, three patients for three years, three for two years, two for one year and five for less than one year.

The recurrent tumors, with one exception, have all responded to fulguration like the original tumor. This one exception is of extreme interest.

CASE 1.—This patient had a papilloma several centimeters in diameter just back of the ureteral orifice, which disappeared rapidly under fulguration. For several months after the disappearance of the tumor, the mucous membrane in the tumor-bearing area appeared perfectly healthy. Shortly after, cystoscopy revealed a peculiar reddening and slight bulging of the mucous membrane in this region without ulceration or definite tumor formation. At first this was thought to be a localized inflammatory area. The process, however, seemed to spread, and a piece removed by the cystoscopic rongeur revealed an infiltrating carcinoma with the mucosa covering

it practically intact. This is undoubtedly a case in which cancer cells from the malignant papilloma had metastasized into the deep bladder wall and there continued to grow after the original tumor had completely disappeared. This case really should be considered as a metastasis rather than a recurrence.

One other case is deserving of special mention because the recurrences continued over so long a period.

CASE 2.—This patient, aged 52, was seen in February, 1912, with a large papillomatous tumor covering the left lateral wall and with several smaller tumors around the vesical orifice. The small tumors readily disappeared, but the large tumor responded only after months of vigorous and intense fulguration. Within a few months after the last vestige of the original tumor had disappeared, several recurrences the size of a pinhead were seen in widely separated portions of the bladder. These responded readily to fulguration. Since then the patient has been examined with the cystoscope on an average of about once a month, and practically at every examination small papillomas are found. During the last five years, probably several hundred tumors have been removed in this way. At the present time, the tendency to recurrence is just as active as it was five years ago, but it has been possible by watchful and persistent care to destroy the recurrence as fast as they form.

Treatment by Radium and Fulguration.—During the past two years, for papillomatous tumors which have shown histologic changes characteristic of the malignant papilloma or which were unusually resistant to fulguration, radium has been employed in combination with fulguration. Depending on the size of the tumor, varying amounts of radium have been employed, ranging from 200 to 1,000 milligram hours. Of the eighteen cases treated by this combination, in seven the tumors were multiple. Two patients discontinued treatment before the tumors had been removed. In the remaining sixteen cases, the tumors were completely destroyed. In all but one of these, subsequent cystoscopic examinations have been made, and in four cases, or 27 per cent., recurrences were found. In all four cases the recurrences were present in less than one year. The remaining eleven cases were free from recurrence for periods of time as follows: three for two years, four for one year, three for six months, and one for three months.

The following case illustrates the specific rôle which radium seems to play in rendering malignant papillomas, which have proved resistant to fulguration, amenable to this form of treatment.

CASE 3.—A man, aged 75, had a papillomatous tumor 3 cm. in diameter just back of the trigon. Cystoscopically the tumor was pedunculated, with short stubby papillae. Microscopic examination of a piece of tissue removed showed the characteristic changes of malignant papilloma. The tumor was apparently in no way different, either cystoscopically or microscopically, from other tumors in which fulguration is effective. The tumor was fulgurated over a period of six months at biweekly intervals, and at the end of this time it was about three-fourths its original size. In the beginning of the treatment, the tumor decreased definitely but slowly, and finally it seemed to remain stationary in size. Frequently a fulguration sufficiently vigorous to coagulate apparently the entire tumor mass was employed, but examination two weeks later, on the separation of the slough, would reveal the tumor apparently unchanged. Finally radium was applied directly to the surface of the tumor, both the beta and gamma rays being employed. These radiations totaled 600 milligram-hours and were carried out over a period of eight weeks, 103 mg. of radium being applied for one hour at approximately weekly intervals. At the conclusion of this radiation, the tumor showed no evident changes either in size or appearance.

The tumor was now vigorously fulgurated, and disappeared completely after one treatment. The patient died six months later of pneumonia. Necropsy revealed no recurrence in the bladder and there were no metastases present.

Up to the present time there have been six other cases responding only slightly to fulguration which, after varying amounts of radium, have yielded readily to the high-frequency treatment. All of these cases were of the malignant papilloma type.

Another case of considerable interest is the following:

CASE 4.—A man, aged 50, had two papillomatous masses on the anterior bladder wall which had received a large amount of fulguration elsewhere without any apparent improvement. The resistance to this type of treatment was confirmed by us. A course of radium was then employed which was followed subsequently by fulguration, the tumors apparently disappearing promptly. Cystoscopy one month later revealed a recurrence in the same area. This was treated in a manner similar to the other tumors, with disappearance. There was noted on cystoscopy after the disappearance of the tumor, in the region formerly occupied by it, a small shallow cuplike depression in the bladder wall, resembling a cellule. Examination three months later revealed another recurrence. The tumor occupied so ideal a position for resection that operation was decided on. When the bladder was exposed, a diverticulum was found at the point of the insertion of the urachus. This was filled with tumor, which readily explained the recurrences. The diverticulum communicated with the bladder by a narrow orifice and the tumors previously destroyed were implantations of the tumor concealed in the diverticulum.

Treatment with Radium.—In three cases the papillomas were treated with radium alone, and in all three cases the tumors treated disappeared under the influence of radium. One of these cases is of particular interest in that the patient had numerous malignant papillomas around the vesical orifice and a localized infiltrating papillary carcinoma involving the right ureteral orifice. Any operative procedure, short of complete cystectomy and prostatectomy, would have been useless. It was possible, however, to destroy the papillomas by means of radium within a few weeks, after which a resection of the papillary carcinoma, with transplantation of the ureter, was successfully carried out. The papillary carcinoma and other forms of infiltrating malignant tumor, in our experience, as will be considered later, have not responded to this form of treatment, and resection was consequently indicated. This case probably illustrates very well the possibilities of a combination of treatments for securing results practically impossible of attainment by any one procedure.

Technic of Radium Applications.—In this connection it may be well to outline briefly the technic we have followed in the application of radium to bladder tumors. The treatment in practically all cases has been carried out with 103.7 mg. of radium element. In the majority of the treatments a fenestrated brass capsule has been employed and both the beta and gamma rays utilized. In other cases, however, the radium has been contained in a capsule of platinum 1.5 mm. in thickness, a screenage sufficient to filter out practically all of the irritating beta rays. The capsule containing the radium had been introduced into the bladder in the beak of an instrument not unlike the sheath of the irrigating cystoscope. These instruments permit the passage through them of an observation cystoscope by means of which the tumor may be viewed and the radium accurately placed on it. After the radium has been directed against the

tumor, the instrument is held in a fixed position by means of a mechanical arm attached to the cystoscopic table. The radiations are usually given throughout the period of an hour at each seance and carried out from one to three times weekly, depending on the tumor and the reaction of the patient to the treatment.

Treatment by Suprapubic Removal.—This procedure was carried out in ten cases. In six of them the tumors were removed by the actual cautery and in four by resection. Of the former there were two recurrences in less than one year, while in the latter no recurrences were noted. It should be stated that in both cases in which recurrences were found the tumors were very extensive and occupied a large portion of the bladder wall. Of the patients treated by removal with the cautery, one has been well six years; one, two years; one, one year, and one for six months. Of those resected, three have been well five years, and one, one year.

PAPILLARY CARCINOMA

In eighteen of the seventy-four cases of papillary carcinoma, the tumors were considered operable, and in all of them radical resections were carried out. In five cases the ureter was transplanted, and in one case both ureters were similarly treated. In these eighteen cases there was only one operative mortality, that being the case in which both ureters were transplanted. The death in this case occurred in the third week, being due apparently to pulmonary embolism. It has been possible to secure data concerning all of the eighteen patients. Eight have since died, and of the ten living, one has been well for six years, one for five years, one for four years, and seven for less than one year. It is noteworthy that recurrence in the suprapubic scar, which was a not infrequent sequela in our earlier operation, has not been observed in any of these cases. This is probably due to the greater care which has been exercised in preventing implantations during operation.

In fifty-six cases, or 75 per cent., the papillary carcinomas were so extensive that radical excision was considered impossible. In eleven of our extensive cases fulguration was employed, but aside from symptomatic relief, nothing was accomplished. In a few instances, it was possible to destroy enough of the tumor to give temporary relief from mechanical obstruction, while in certain of the cases, hemorrhage was relieved. In no instance was it possible completely to destroy the tumor.

Treatment by Radium and Fulguration.—In eleven cases a combination of radium and fulguration was used. The radium in every instance was applied directly against the tumor mass, and varying amounts, from a few hundred to several thousand milligram hours of radiation, were given. In the majority of cases both the beta and gamma rays were employed, but in the remaining the radium was heavily screened with sufficient platinum to filter out practically all of the beta rays. The combination of radium and fulguration of this type of case in no instance caused the complete disappearance of the tumor, or, in fact, any marked effect on it. In some cases, however, some symptomatic relief was obtained.

Treatment with Radium.—In thirteen cases with extensive infiltrating carcinoma, radium alone was employed. The results in this series differ in no respect from the cases treated by the combination of radium and fulguration. As in the latter series, a

number of cases were relieved symptomatically, but in no case was there complete disappearance of the tumor.

Diagnosis.—The study of our results strongly emphasizes the necessity of early differentiation of the papilloma from the papillary carcinoma, because the endovesical methods at our command have proved to be futile in the treatment of the latter type. On the other hand, these endovesical methods for the treatment of papilloma yield results incomparably superior to any of the more radical procedures. The differentiation of the benign and malignant papilloma, so far as treatment is concerned, is not so essential, for in the majority of the latter variety, fulguration proves most satisfactory. In the small group which proved resistant, the combination of radium and fulguration will accomplish the desired result.

The differentiation between the papillary carcinoma and the malignant papilloma is not always easy, but in the majority of cases cystoscopy, palpation, histologic examination of a portion removed and a consideration of symptoms, either alone or, as is usually the case, in combination, will furnish information sufficient to make an accurate diagnosis.

Cystoscopy.—It is surprising how frequently from cystoscopy alone one is able to distinguish the papilloma from the true carcinoma. While the pedicle of the papilloma is rarely distinctly visible, often the tumor mass can be seen to sway as a whole in the fluid, which indicates its pedunculated character; and at other times it is possible to view slightly beneath the mushroom-like edge of the tumor. It is impossible from the cystoscopic appearance of papillomas to determine whether they are benign or malignant. When, however, the malignant changes are so advanced that infiltration of the bladder wall has occurred, there are certain cystoscopic appearances which nearly always enable one to arrive at a fairly accurate diagnosis. The presence of necrosis in the papillae is indicative of carcinoma, and is usually associated with invasion of the underlying bladder wall. In the earlier stages, when the tumor has just begun to invade the bladder wall, it may not be possible cystoscopically to determine this point; but when the process is at all advanced, the tumor loses its pedunculated character and becomes sessile in type. Frequently, around the margin of the tumor is seen edema, or bullae, which are usually indicative of a cancerous invasion of the bladder wall below. At other times little tumor nodules can be seen beyond the main tumor growth. This again is indicative of cancer. While it is impossible definitely to describe all the appearances which serve to diagnosticate the papillary carcinoma from the malignant papilloma, the cystoscopist of experience is usually able to differentiate them, and it is interesting to note how frequently the cystoscopic diagnosis proves to be correct.

Palpation.—Occasionally, when the bladder is extensively involved with an infiltrating form of growth and the abdominal wall is thin and soft, the hard, irregular mass can be detected. When malignant growths occur on the posterior wall of the bladder, or on the posterior lateral wall, rectal examination frequently gives most valuable information regarding the nature of the growth and its extent, and frequently determines the possibility of complete eradication by operative procedures. When the growth infiltrates the bladder wall, induration can be detected, and the extent of the bladder wall involvement can

be more or less accurately mapped out. About 50 per cent. of bladder tumors occur on the posterior bladder wall in a position accessible to the examining finger. Sometimes not only the induration is detected in the bladder wall, but later the seminal vesicles are also involved, and still later the prostate. In rare instances, the growth may extend through the rectum and a rectovesical fistula may result. This complication occurred in three cases in our series. It may be safely said that marked induration of the bladder wall, which is felt through the rectum, is strong evidence of carcinoma. In the female, valuable information regarding the condition of the posterior bladder wall may be obtained by vaginal examination.

EXCISION OF A PIECE OF TUMOR FOR DIAGNOSIS

For a number of years we systematically removed pieces of bladder tumor by means of the Young cystoscopic rongeur for the purpose of histologic examination. The information derived from this method would seem to furnish conclusive evidence of the nature of the tumor, and consequently enable one to select accurately the type of treatment best suited to the tumor in question. Unfortunately, the evidence derived is not always conclusive, because of the fact that the portion removed is not always a safe index of the character of the remainder of the tumor. The piece removed may show no, or very few, malignant changes; while other portions of the tumor may be definitely carcinomatous. When the piece of tumor excised shows, however, definite carcinoma, the employment of radical procedures suitable for the individual case should be adopted without delay, and time should not be lost in the employment of the usual endovesical methods of treatment. The excision of a piece of tissue will also prove of value in differentiating the different types of vesical tumors. It should be noted, however, that the removal of the tissue by this means has been criticized as increasing the risk of metastasis. This has not been our experience, and the information obtained frequently counterbalances the theoretically increased risk of metastasis.

SYMPTOMS

It has also been our experience that when a severe, intractable cystitis is associated with bladder tumor, the tumor has proved practically always to be cancer.

In rare instances, when the cancerous process is very early, it may be impossible to determine this by the usual methods. In these cases it has been our custom to test out, as it were, the nature of the tumor by means of fulguration and radium. If the tumor does not show prompt response to this combination, it can be assumed that it is of a cancerous nature.

METASTASIS

When the possibility of metastasis in a given case is considered, it is again important to know the type of vesical tumor concerned. In our series of sixty-four papillomas, 75 per cent. of which were malignant, four cases of metastasis were noted. In all four cases the tumor was a pedunculated papilloma, which in every instance disappeared completely under fulguration alone, or fulguration and radium combined. In one case, evidences of metastasis did not develop for four years after the removal of the primary tumor, but in the interval a great many recurrences had been destroyed.

Of eighteen papillary carcinomas in which the carcinoma was considered sufficiently well localized to attempt resection, and in which it was possible completely to remove the local growth, seven patients have since died of cancer and one of intercurrent disease. Of those living, only three have been well for a period of more than four years. When the carcinoma is extensive and deeply infiltrates the bladder wall, metastases are usually present. It should be recognized, however, that at times most extensive involvement of the bladder may be present with negative findings at necropsy, so far as metastases are concerned. In three of our cases in which the tumor was so extensive that complete removal seemed impossible, and in which death occurred while under observation, no metastases were demonstrated postmortem.

CONCLUSIONS

The results of our experience in the past six years may be thus summarized: It is essential to determine accurately the type of tumor in a given case, in order to select the treatment best suited to the particular type in question. The early recognition of papillary carcinoma is most essential, and the diagnosis being made, the tumor should be radically resected, if operable. In our experience fulguration and radium have proved valueless in the cure of this type of tumor.

In this connection, it should be emphasized that, following the complete removal of a papillary carcinoma by resection, a recurrence may develop which in some cases proves to be, in its early stages, a malignant papilloma, and in this stage will respond to fulguration, or to a combination of fulguration and radium. In three of our cases in which a papillary carcinoma was radically removed, recurrences were found later and destroyed, by fulguration in two cases, and by radium and fulguration in the third.

While the results following the use of radium in the infiltrating carcinomas have been disappointing, the response of the more resistant malignant papillomas to this agent has been most encouraging. Radium alone will unquestionably destroy both the malignant and the benign papillomas, and on account of its influence on the former makes possible their cure without the employment of radical procedures which would otherwise be necessary. It has been our custom, when the diagnosis of malignant papilloma had been made, to give a varying amount of radiation, dependent on the size of the tumor, and to follow this by fulguration. Some of our malignant papillomas, in which fulguration was first tried without success, radium has rendered readily responsive to this treatment. Indeed, several cases which have stubbornly resisted frequent and vigorous fulguration, after a course of radiation have responded promptly to this measure.

The development of the endovesical methods has rendered it possible to effect a cure in practically all cases of papillomas, and the employment of the more radical operative methods has not been productive of results at all comparable with those following the more conservative methods. With the exception of rare cases, in which an operative procedure is carried out, resection alone should be performed, because operation is indicated only when the tumor is a papillary carcinoma, and mere superficial destruction, as with the cautery, etc., will usually be futile.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. LEWIS AND MOORE, AND GERAGHTY

DR. EDWARD L. KEYES, JR., New York: As regards carcinoma of the prostate, I confess I have been a little more enthusiastic about "cures" than I am now. Without being cured these patients may stay in very good health, but even those who get brilliant results from a single treatment, like the two men shown here, have to be treated again and again, to keep those results good. Of course, the condition of the prostate itself is no index of the patient's general health. I saw a patient recently who was treated with radium elsewhere and whose prostate feels almost normal, but who is dying of carcinoma in his lumbar glands. But one would expect to cure patients captured early enough for radium treatment at a time when the carcinoma has not extended beyond the prostate.

Dr. Geraghty has noted that fulguration after radium works better than fulguration before radium. It seems possible that those tumors would have disappeared if he had been able to keep his hands off them for a sufficient number of months after the radium. I have seen a case of what Dr. Geraghty would call malignant papilloma improve very much in the second three months after a dose of radium.

DR. WILLIAM F. BRAASCH, Rochester, Minn.: As Dr. Geraghty has pointed out, the treatment of tumors of the bladder unquestionably has been greatly improved in recent years. It is reasonable to assume that in the first attempts to remove tumors by these less formidable measures a certain number of unsuitable cases would be treated, with consequent failures. If we were to judge the comparative value of non-operative methods from statistics of past years, the operative procedure would suffer very much by the comparison. This is illustrated in recent papers by Drs. Gardner and Young.

The improvement in surgical technic has been along several lines. First, the bladders are cleaned up. Many of the patients with bladder tumor have a coincident cystitis and pyelonephritis and should be treated prior to operation much the same as patients suffering with prostatic conditions. Second, the wound should be carefully protected at the time of operation to prevent infection. Third, resection with the cautery knife is better than with the ordinary knife, and, together with cauterization of the surrounding area, should preclude any infection of the wound area. Fourth, formerly the ureters were often transplanted into other portions of the bladder with poor success, and sometimes with the death of the patient. If the ureter is markedly diseased, as it frequently is, it may be simply ligated and dropped into the wound. In such cases the kidney is usually largely destroyed and the patient does not suffer much reaction.

With the last year or two I have frequently seen patients who had been fulgurated over long periods of time. One patient had had forty fulgurations in two years. When I cystoscoped him it was evident that he had carcinoma and that it was too late for resection. Undoubtedly the tumor could have been resected if the patient had been operated on earlier.

I wish to emphasize that if, after three or four fulgurations, and possibly after using radium, the tumor does not markedly decrease in size, there is no excuse for continuing such treatment, and surgical procedures should be used. We have tried radium alone in a few cases of carcinoma, but with poor results. I disagree with Dr. Geraghty when he says that if a tumor of the bladder cannot be resected there is no object in attacking it surgically. Unquestionably good results can be obtained by using a cautery and searing the tumor almost to the muscular wall.

DR. G. G. SMITH, Boston: I should like to bear witness to the efficiency of radium in one case which I have had under personal observation. About two years ago I operated on an elderly man and took out an adenomatous prostate and a papilloma of the bladder. He did very well for two years. About Christmas I cystoscoped him and found he had an infiltrating growth extending upward from the sphincter. I sent him to Dr. Barringer, who treated him with one application of radium. That was some six weeks or two months

prior to this meeting. I cystoscoped him recently and the growth had entirely disappeared, as far as one could tell. There was some sloughing around the base of the bladder.

In regard to the treatment of diverticulum, there is one point in the technic. I am not sure whether it has been put on record or not. After a diverticulum has been freed outside of the bladder by dissecting around it, it is easier to cut off the diverticulum and to approximate the cut edge if the diverticulum is inverted so that it projects into the bladder. The cutting and suturing can then be done inside the bladder in a more accessible situation.

DR. LEO BUEGER, New York: The great value of histologic examination in determining the presence of malignancy is not sufficiently appreciated, because adequate material is rarely obtained by the cystoscopist. I have, therefore, made it a routine for a number of years to attack all papillomas situated in accessible portions of the bladder with the snare, through my operating cystoscope. With this procedure we can often succeed in removing papillomas *en masse*, sometimes in two or more pieces, and can often completely eradicate the growth in one, two or three sittings, following up the removal of the growth by fulguration of the pedicle. Thus, not only is the time of treatment, the number of séances of the fulguration method, much reduced, but the pathologist receives adequate material for the thorough investigation of the nature of the tumor.

I think it is bad teaching that permits the cystoscopist to determine by the effects of fulguration as to whether a given tumor is malignant or not. Many men are treating such tumors who are not sufficiently expert to know whether a tumor is responding or not, the lack of response being attributed to faulty technic, improperly applied or improperly functioning current, or what not. Thus, patients have been referred to me after having been subjected for weeks and months to the fulguration treatment, in which the application of the snare or operating forceps through the operating cystoscope permitted a diagnosis of carcinoma at the very first visit.

The snare is a simple instrument, and with a little practice can be applied almost as easily as a ureteral catheter.

DR. KEYES: Do you fulgurate at the end of each treatment?

DR. BUEGER: Whenever feasible I fulgurate at the end of each treatment.

DR. MARTIN KROTOSZYNER, San Francisco: With reference to the method used in the treatment of diverticulum of the bladder mentioned by Dr. Smith, I recall a patient 73 years old in whom a very large diverticular sac was drawn into the bladder, just like one would turn a glove finger; the sack was then resected and its cut edges were stitched by several rows of catgut sutures. The patient eventually made a good recovery.

While the early and radical operative removal of malignant bladder tumors must be always recommended and carried out wherever feasible, the observation, nevertheless, that not infrequently patients live longer without than with operative interference would open the question whether, in the absence of distressing symptoms, an operation is indicated in all cases and under all circumstances.

DR. W. C. QUINBY, Boston: I want to add my mite to the paper of Dr. Lewis on diverticulum of the bladder by the brief report of one case. A man aged 55 had suffered from intermittent chills and fever, which had kept him a chronic invalid for twenty years, until I eventually got hold of him and succeeded in demonstrating and removing a large diverticulum on the right side of his bladder, much in the same way as Dr. Lewis has detailed to us. The first point which I wish you to note is the long story of invalidism which these patients so often bring. I hope that that period is going to be much diminished in the future. It is now being much diminished; the more so as the attention of the general practitioner is more forcibly called to such lesions as a cause of pyuria. The second point of note occurred during the convalescence of this patient. While water was being given in very liberal amount to help out the severe renal infection, the heart suddenly became irregular and weak. It was impossible by the usual means to rule out an acute dilatation from

too much fluid. The electrocardiogram, however, came to our assistance. The tracing showed the condition to be due to an auricular fibrillation and not to decompensation of the heart due to the fluid. I was able to continue the fluid, and, under appropriate treatment, the fibrillation ceased. The patient is now cured of his diverticulum.

DR. BRANSFORD LEWIS, St. Louis: I think that Dr. Quinby and I have a similar impression as to the value of presenting these reports, and that is one of encouragement for undertaking, in the first place, the diagnosis of these cases, and, in the next place, operating. One of these patients whose case I reported had a longer history of trouble than the one that he speaks of. He was 42 years of age and gave a history that ever since he could remember he had had chills and fever and could never clean his bladder; he was always septic; and he recovered just as promptly as did the other. Before I undertook these operations I was rather fearful that they were difficult to carry out and that the convalescence would be prolonged. I remember in certain cases of other operators the patients did have very difficult convalescence. These men both were well within ten days after the operation, and were thoroughly comfortable, urinating and emptying the bladder completely, and happy over the result. I think encouragement is the keynote of the presentation of the cases.

DR. JOHN T. GERAGHTY, Baltimore: With regard to Dr. Keyes' remarks about the disappearance of these tumors under radium, I think that is perfectly true. In some of the cases which have been allowed to go without fulguration the tumors have disappeared. We have used fulguration to cause a more rapid disappearance of the tumor. Those which disappeared under fulguration after irradiation would probably have disappeared under irradiation alone.

With regard to the technic of resection, we make it a rule to burn the tumor vigorously before attempting resection. As soon as the bladder is opened the whole tumor is destroyed down to the base. Whether one carries on the dissection by the knife or the cautery makes little difference. When one destroys the whole area thoroughly it amounts to resecting that area of the bladder wall.

With regard to the cases mentioned by Dr. Braasch, it has been my experience that the tumors which we can destroy by the cautery are tumors that practically always respond to fulguration and radium. Those cases with infiltration I do not think would be cured by destroying with the cautery. There are a few cases in which the tumor is a definite, infiltrating carcinoma with a pedicle, and that tumor must be resected. Cutting off the tumor through the mucosa at the pedicle with the cautery is probably just as efficient as a resection.

With regard to the remark that the mortality from resection should not be as high as 12 per cent., our mortality in twenty-two resections has been one death.

A Family Epidemic of Syphilis.—E. Jeanselme reports that syphilis was brought into a previously healthy family by the soldier husband of one of the daughters. He had been at the front for nine months. Three weeks after his return to his troop from his brief furlough, his young wife and her nursing babe began to show syphilitic lesions. The child was weaned at the tenth month, and the grandmother and a younger sister, who tended the babe, both developed syphilids in the mouth and tonsils, and the latter in the skin. They also took care of the babe of a third sister, and this infant soon developed syphilids in the palate, with roseola and mucous patches in the mouth. The mother of this infant was infected in turn. There are now six syphilitic members of the family, and only three in the household are still apparently exempt. As one of these, a girl of 12, has been sleeping with the younger sister, she is probably infected likewise. In making his report to the Société médicale des hôpitaux (*Bulletins*, p. 854), Jeanselme added there is a regulation forbidding furloughs to soldiers in a contagious stage, and asked why this regulation was not enforced. The syphilitic lesions developed in the mouth of those tending the babes, probably from the habit of tasting the infant's food, using the same spoon.

A CASE OF CYSTITIS CAUSED BY BACILLUS COLI-HEMOLYTICUS

M. W. LYON, JR., M.D.

WASHINGTON, D. C.

As little mention of the hemolytic properties of colon bacilli is made in the literature, the following report may not be without interest.

From a patient, an adult woman with some obscure bladder or kidney trouble, several samples of catheterized urine were collected in sterile bottles and submitted for bacteriologic examination with the suggestion that the case might be tuberculous. The urine when received was cloudy, but on standing or centrifuging rapidly settled out clear. Microscopically the sediment showed numerous pus cells, no casts, and large numbers of a doubtfully motile and gram-negative bacillus of general colon morphology. No acid-fast organisms were found in the urine.

Three guinea-pigs were inoculated in the groin with the centrifuged urine sediment as follows: Oct. 9, 1916, one was inoculated with the sediment of about 50 c.c. of urine, and died, November 6, showing at the site of inoculation a necrotic area and pocket under the skin, but no enlarged glands or other signs of tuberculosis. A mixed growth was obtained in cultures from the inoculation site and from the heart's blood. None of these organisms could with certainty be identified with those originally found in the urine. October 18, two guinea-pigs were inoculated with the sediment of about 100 c.c. of urine. One of these died, November 14, showing no evidences of tuberculosis, the chief lesions being ascites, slight peritoneal inflammation, and, as in the case of the first animal, a necrotic area and pocket at the site of inoculation. The third guinea-pig died nearly a week later, November 20, and showed lesions in every respect like those of the second animal. As in the case of the first guinea-pig, mixed cultures were obtained from the second and third animals, but none of the organisms so obtained could be identified with the original organism in the urine. It seems probable that the guinea-pigs died from slow toxic effects of the bacilli and pus cells injected, and that the inoculation sites became infected with outside organisms.

Four white mice were inoculated with the urine sediment, two intraperitoneally, and two subcutaneously at the root of the tail. All four mice lived about one month without showing evidences of ill effects of the inoculations when, along with other mice in the laboratory, they were destroyed by rats.

Cultures of the sediment of the urine and of the urine itself were made with the following results: On plain agar, on starch agar, and on plain broth no growth was made. On coagulated pleuritic fluid, on hydrocele agar, and on Petroff's egg medium for tubercle bacilli, an abundant moist colorless growth occurred.

On blood agar plates by the addition of a few drops of blood taken from a finger to melted agar tubes and inoculated with some of the urine, colonies readily developed, in marked contrast to their absence when plated on plain agar. On the blood agar plates a distinct zone of hemolysis occurred around the colonies resembling that produced by *Streptococcus hemolyticus*. Four different samples of the urine were plated in the foregoing manner and always with the same results. After preliminary inoculations on the

more special mediums, growth occurred on plain mediums.

After preliminary insolation the bacillus reacted on sugars as follows: Acid and gas with glucose, lactose, and mannite; no acid or gas with saccharose, raffinose, or inulin. Gelatin was not liquefied. Indol was produced.

A macroscopic agglutination test was made, with a suspension in salt solution of the bacilli grown on coagulated serum, serum from the patient, and serum from an apparently normal person. After five hours in the incubator the following unsatisfactory results were obtained, the marks in parentheses being those obtained with the normal serum: Dilution 1:10, — (++++); 1:20, ++ (++++); 1:40, ++ (++++); 1:80, ++ (++) ; 1:160, ± (+).

The organism seems to be the same as that which Schottmüller and Much¹ called *Bacillus coli-hemolyticus*. Schmidt,² in a review of hemolytic intestinal bacteria, says *Bacillus coli-hemolyticus* cannot be considered as a well established variety, and thinks the hemolytic properties of the organism are rather accidental. He does not believe that power to cause hemolysis is any special indication of pathogenicity.

The inability of this bacillus to grow on plain agar when first planted from the urine is very interesting, as colon bacilli are usually easy of cultivation. It shows a high degree of specialization and adaptability on the part of the colon bacillus when what is ordinarily an intestinal saprophyte can become so restricted in its habits as to need human blood or other complex proteins for its nutrition. Administration of hexamethylenamin in this case had no effect in restraining the organisms. The patient was given general and local treatment and an autogenous vaccine, and made marked improvement.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

CAMIOFEN OINTMENT.—An ointment obtained by mixing iocamfen (a liquid obtained by the interaction of iodine 10 parts, phenol 20 parts and camphor 70 parts, containing about 7.25 per cent. free iodine) with an equal weight of a mixture composed of lard, wax and oil of theobroma, but containing nearly all of its iodine in the combined form.

Actions and Uses.—The ointment has the properties of fatty iodine compounds, phenol and camphor.

It is used in various skin diseases, inflammatory swellings, itching, etc.

Dosage.—It is applied directly or on gauze, undiluted or mixed with fatty substances. The parts to which camiofen ointment is applied should be dry and the application of mercuric chloride before or after the use of the ointment must be guarded against.

Prepared by Schering and Glatz, New York. No U. S. patent or trademark.

1. Schottmüller and Much: München. med. Wchnschr., 1908, 55, 435.

2. Schmidt: Centralbl. f. Bakteriöl., Orig., 1909, 50, 359-373.

Military Medicine and Surgery

PRESENT STATUS OF SURGERY AT CASUALTY CLEARING STATIONS

KELLOGG SPEED, M.D., CHICAGO

Fellow of the American College of Surgeons; Major M. R. C.,
U. S. Army

FRANCE

Service in two years of the great war, with an interval visit to civil life, leads one readily to comparative views. The periods of service have been passed at base hospitals and casualty clearing stations under British Expeditionary Force control. About one half of the base hospital work was performed under clearing station conditions, and it is desired to convey to readers in the United States a general conception of the progress of war surgery and of the detailed work of advanced casualty clearing stations.

ORIGINAL FUNCTION OF CASUALTY CLEARING STATIONS

The original function of casualty clearing stations was to act as a very advanced collective depot for patients from contributory field ambulances with their outlying dressing posts. The position selected was one within a few miles of the firing line, fairly well isolated and remote if possible from the danger of active shelling (chance shelling and aerial bombing must always be anticipated). The situation chosen must also be near the rail head, where ambulance railroad trains can be sidetracked and rapid evacuations practiced. The invaluable aid of gasoline motor ambulances makes these short transportations rapid and quite painless to injured men. Patients are brought from the field ambulances very quickly after their reception there, because little major operative work is attempted at these posts—merely a classification and dressing are all that is desired. Formerly the clearing stations did not attempt much surgery, especially in rushed times, but some serious cases were dealt with and retained, for which a relatively small but very efficient medical staff was maintained. Stations two years ago averaged a capacity of 200 wounded; they now can care for a thousand.

PRESENT STATUS

Method of Group Arrangements.—In the present status of casualty clearing stations, we find them grouped in series of three, in close geographical proximity, provided with ample staff and with tent facilities to withstand a maximum strain. This close position permits the feeding of one ambulance train from all three, and allows of the following arrangement: Motor ambulances with patients are received by No. 1 in the series of three, until 200 patients are taken in, or until twenty-four hours have expired from the time the first patient came in. The next station in the series then receives in like manner 200 patients or for a period of twenty-four hours; following that the third station completes the round. Such an interrupted distribution gives each station an opportunity to operate on the patients that enter and to evacuate rapidly as many as possible. Rest for the staff is also provided. The capacity for the wounded is equivalent to a thousand men. This does not, however, indicate 1,000 beds, because many men are left lying on the stretchers

without being put in bed and are passed along thus to the base.

Method of Reception and Distribution of Patients.—This is simple. Separate reception tents are provided for walking and lying patients with a medical officer in charge of each. Officers—even prisoner officers—are segregated. Walking patients are dressed, fed and evacuated, unless they demand surgical interference, in which event they are sent to the theater for minor operations, cared for, and then evacuated in chronological order of reception.

Lying patients are distributed, marked with colored tags, into resuscitation, preoperative (major and minor) and medical wards (for gassed or other medical conditions). Not yet diagnosed patients or instances of doubtful diagnosis are carried to an examination room and are carefully gone over by two medical officers. For the resuscitation ward those patients are intended who are moribund. There are facilities for administration of salt solution, external heat and stimulants. The men are not handled or removed from their stretchers, so that this ward need contain no beds. In the preoperation ward the same rule is followed: Patients are prepared on their stretchers; a preoperative dressing is applied and they await movement, in order, to the roentgen-ray or operating room. The various tents and structures are so arranged, moreover, that a continuity of traffic of these patients is possible, resulting in no confusion of passing stretcher bearers or recarrying over the same ground. Human energy and distress of the patient are minimized. Hospital tents are marked with colored flags corresponding to the colored tags, so that bearers make no errors.

Personnel.—A commanding administrative officer, a head of the surgical division, a quartermaster, a laboratory officer, a roentgen-ray operator and various medical officers needed in the different positions outlined compose the official list. There are, of course, the necessary number of enlisted men, clerks, sergeants, servants, etc. In addition there are assigned to each station surgical teams, composed of picked men of surgical ability, each supplied with his own anesthetist, operating nurse and orderly. These teams divide the major and minor surgical patients in rotation as fast as they are able to finish each operation. Team work is divided thus: Each team works for eight hours a day, except during rush times, when they are expected to perform sixteen hours of duty. Three teams are on duty from 9 a. m. to 5 p. m. in the major theater, using five or six operating tables; two teams work from 5 p. m. to 1 a. m., and one team from 1 to 9 a. m. under ordinary conditions. The work is continuous as long as the hospital is taking in. Teams cease to take on patients one-half hour before the expiration of their time, so that their table may be cleaned and prepared for the next group.

Operating Theater.—The major operating theater is centrally located; the minor theater is near the dressing tent. All are electrically lighted. The arrangement of five or six tables in the major theater permits the anesthetist to move from patient to patient in advance of the operator, while dressings and splints are being applied or the operation is being finished. The operating nurse assists the surgeon; the orderly brings supplies, helps with the dressings, and cleans up the table. There is complete independence for each team.

An ample supply of dressings, gloves, instruments and splints is at hand, and the sterilizers for instruments are constantly boiling during work. After in-

stances of gas infection or before serious operations—especially head and joint—a complete clean-up of the surgeon and nurse is expected; otherwise, for extremity wounds, gloves may be washed on the hands, and then dipped into sterilizing solutions.

Nitrous oxid gas, ethyl chlorid, chloroform and ether anesthetics are used. The Shipway warm vapor chloroform-ether apparatus is much in vogue, and is very useful for nasal anesthesia in head operations.

Great rapidity and thoroughness of operative procedure is required. In times of stress, the minor operating theater can be expanded to permit the performance of major operations.

Dictation of the pathologic condition found, together with the details of the operation, is made by the surgeon to a clerk who enters this information on the field card and then copies it into an operative book, together with the patient's name, rank, distribution, etc. A serial hospital number is given to each patient as he enters the reception tent. As he leaves, this is removed from the field envelop by the evacuation officer, in order to provide a record of each man and to prevent any one getting lost. Varying with the severity of the injury sustained, patients are retained for a period of from a day or two to ten days. Many are sent to tents near the evacuation compound to await removal to the base by train as soon as they have recovered from the anesthesia. No beds are needed in these tents. Wounded prisoners are given the same treatment as the allied soldiers.

Character of the Surgery.—The character and practice of surgery in these stations is fairly uniform. Team surgery has but recently been introduced; statistics, however, from a push still in progress have shown that individual suffering and length of convalescence are lessened and mortality greatly lowered by this method. The policy of operating as early as possible in at least 90 per cent. of casualties—except moribund patients—has come to stay. In brief, this course may be outlined as an intent to do radical early excision of contused and tousled tissues, to remove foreign bodies, to irrigate and close opened joints, and to close most wounds snugly thereafter if possible. The use of bismuth iodoform petrolatum paste, to which I recently called attention,¹ varies with different surgeons. It has distinct value; its limitations demand a broader discussion. For gas infections or suspected gas infections, muscle group excisions, very radical in character, are indicated. The Carrel-Dakin solution irrigation method usually follows, and field envelops are marked C. D. so that the treatment may be continued on the train during transfer to the base.

Distribution of selected types of wounds to different groups of casualty clearing stations is also now being practiced. One group cares for all the head injuries in its vicinity; another all the chest and abdomens and another, extremity surgery so far as this is possible. It is understood, of course, that the surgeon cares for all wounds received by the man, regardless of the type of his most severe injury.

Head injuries are treated by complete excision of contused scalp and pericranium, bone edges and buried fragments. Dural and cortical tissues are gently trimmed off, and foreign bodies extracted when possible. Careful closure of the wound is very important, capillary drains being used, the scalp being dissected from the pericranium, or a plastic repair performed.

1. Speed, Kellogg: Prompt Removal of Foreign Bodies in Gunshot Wounds, THE JOURNAL A. M. A., Sept. 29, 1917, p. 1079.

In all brain injuries, bromids are given, and the patients kept at rest for some time.

Chest injuries are likewise exercised, even rib excisions being performed; and pneumothorax is closed off, foreign bodies being extracted if possible. Hemothorax is aspirated early, and cultures are made. If positive, early drainage is performed.

In the extremities, all contused and dirtied tissues are excised down to freshly bleeding and contracting muscle, regardless of extent. Joints are approached with the greatest caution because the synovial surface may not be invaded. A painstaking careful dissection of dirtied tissues is made, and if the joint is opened or a foreign body is within, it is taken out, irrigation with neutral solution of chlorinated soda, ether, or the injection of glycerin-formaldehyd solution is made and then the joint is *quickly closed off* by suturing its capsule together or into the bone. The external wound is sutured or not depending on circumstances, and splint immobilization follows. I wish to impress the value of this method on surgeons entering war service. I have in preparation an article dealing with gunshots of the knee which shows plainly the great advantage of this treatment over the "leave-it-alone" or continuous irrigation treatment. All patients from casualty clearing stations are evacuated to the base as soon as they can be safely and consistently moved.

No. 12 Casualty Clearing Station, B. E. F.

FIELD SANITARY ORDERS

C. C. McCULLOCH, M.D.

Colonel, Medical Corps, U. S. Army; Professor of Military Hygiene,
Army Medical School

WASHINGTON, D. C.

The science and practice of military hygiene, not so many years ago, in the field at least and on a large scale, was in a somewhat unsatisfactory state. It is true that we had ideas on the subject—many of them good ones—but some very important things were not known even so recently as the Spanish-American War. For instance, our ideas were comparatively hazy as to the methods of transference of typhoid fever; we did not know that flies act as vectors, and we had but crude notions as to the effect of contact in spreading the disease. The average physician knew little about the microscopic diagnosis of malaria. Much of the typhoid fever in our army camps was erroneously called malaria—to the considerable detriment of the sanitary situation. Again, we did not appreciate the great importance of what we now call "carriers" in the propagation of infectious disease, and consequently our quarantine methods were quite imperfect.

Decided changes have, however, occurred. As the result of great improvements in laboratory and experimental methods, and the application of these to hygienic problems, we have now formed rather complete ideas as to how camp sanitation ought to be effected, at least with reference to the most important of the camp diseases. Our doctrine has been abundantly verified by the results of the practical experience of our army surgeons. Many of them, certainly those who have had considerable field experience in later years, nowadays know what to do along these lines. If we could carry out fully the scientific measures that we now know how to apply, camp diseases would no longer be serious matters. The new men will readily learn in the instruction camps, or, if they

do not have the benefit of these, soon after seeing active service with the troops, all the important points, most of them quite simple, as to what can and should be done in field sanitation.

The real issue of importance nowadays in military sanitation is whether those things that we know how to do and that can readily be done will actually be put into practice. This, in turn, depends almost entirely on whether the sanitary officer can obtain the cooperation of the line officers and soldiers. Everything in the army comes back in the end to the question of rank and command. I think that, without doubt, the most satisfactory—indeed, the only sure way—is to induce the commanding officer to issue a general sanitary order in the beginning, signed by his authority, and explaining in a general way the sanitary duties of the command, and the methods prescribed for their accomplishment. This persuasion ought not, in these times, to be very difficult. Laymen are coming more and more to realize that something must be done in the way of sanitation. Having issued this order himself, the commander will continue to support it, especially after he sees the results, including much benefit to his own peace of mind, that accrue from the plan.

The real secret of success in military sanitation—the key to practical results along these lines—is the sanitary order. I think the idea important enough, at least, to be exploited for the benefit of the many civilian physicians now in army service. A minor benefit accruing from the order is the avoidance of differences among medical officers themselves as to the sanitary measures advised in their several organizations. These might all be good and yet conflict with each other when it comes to the question of administration.

We have always had some notion in the Army as to sanitary orders and their value; but the first time that the idea was worked out in detail in a camp of large dimensions, and used in a practical way, was at the divisional maneuver camp at San Antonio, Texas, in 1911. This was, indeed, the first camp on a large scale, of which we have record in our Army, in which the sanitary arrangements and results may be said to have been entirely satisfactory. There was no serious disease—very little of any kind—thus affording a most striking contrast with our Spanish War camps of a few years before. The occasion was, indeed, an epoch-making one for field sanitation. The main point is that the remarkable sanitary results attained there coincided with the fact stated above, namely, that this was the first occasion of the issue and use as a working basis of the divisional sanitary order. We had the antityphoid vaccination, it is true; we had many improved sanitary methods; but that these really proved effective was no doubt largely due to the order. It was issued by Major-Gen. W. H. Carter, under advice of Col. H. P. Birmingham, division surgeon, and Major P. F. Straub, sanitary inspector. The experience was repeated, and entirely adequate sanitary results were attained in the division camp at Galveston, Texas, a few years later. Major-General Carter was again in command. Col. W. B. Banister was division surgeon, and Major R. B. Miller, sanitary inspector.

The following model for a divisional sanitary order, which shows about what we should aim at, is based on the San Antonio order, and is constructed in accordance with the form recommended by Straub.¹

1. Straub, P. F.: Sanitation of the Maneuver Camp at San Antonio, Texas, Mil. Surgeon, 1911, 29, 607.

MODEL FOR DIVISIONAL SANITARY ORDER

Headquarters, Nth Infantry Division,
(Place)General Orders,
No. — (Date)

The following regulations for field sanitation are published for the guidance of all concerned:

1. **DIVISION SURGEON.**—The division surgeon is charged, under the commanding general, with the general conduct and supervision of the Medical Department of the division, and will make timely recommendation concerning all matters pertaining to the sanitary welfare of the command.

2. **SANITARY INSPECTOR.**—The division sanitary inspector is charged, under the division surgeon, with investigating and reporting on the sanitation of the command. He will report the results of his inspections to local commanders as well as to the division surgeon. Commanders of all grades are responsible for the sanitary condition of the localities occupied by their commands and for the enforcement of sanitary regulations within their organizations.

3. **REGIMENTAL SURGEONS.**—The senior medical officer of each regiment or other organization will make at least one inspection daily of his command, and report orally any sanitary defects, with proper recommendations for the correction of the same, to his immediate commanding officer, who will immediately take the necessary steps for their correction, if within his authority. If beyond his facilities, or if considered impracticable, he will immediately report the facts, with full explanation, for action of higher authority.

4. **WATER SUPPLY.**—All drinking water supplies will be disinfected by the hypochlorite process in the field sterilizing water bag. To prevent subsequent contamination, containers must be kept scrupulously clean and protected from dust and other sources of infection.

5. **DISPOSAL OF WASTE.**—Defilement of the ground in or about the camp is absolutely prohibited, and organization commanders will be held strictly responsible for the sanitary police of their respective camps. (a) *Human Excreta.*—Human excreta will be disposed of in pits provided with latrine boxes; urine by day in urine soakage pits, and at night by urinal cans placed in the company streets. Pits and cans will be burned out with crude oil and hay, and seats scrubbed with cresol solution, daily. It must be remembered that fly-proofing is the essential end aimed at in these waste disposal measures. (b) *Kitchen Wastes.*—Each company or other organization will construct and use exclusively rock pile incinerators for the disposal of all solid and liquid garbage. Garbage cans must be kept scrupulously clean. For the general waste of the camp areas not under the jurisdiction of subordinate commanders, rock pile crematories will be erected and used under the direction of the regimental sanitary squad. No bath or other waste water collections that might breed mosquitoes will be allowed. (c) *Picket Line Wastes.*—Picket lines will be gone over daily, and all manure and sweepings collected and hauled to the designated dumping ground, where they will be burned in incinerators. The picket lines will be burned over weekly with crude oil.

6. **FOOD AND DRINK.**—No articles of food or drink will be sold in camp, except in the authorized exchanges, and no purchases of such articles made by soldiers, outside of camp, except from properly licensed venders. Company kitchens and mess rooms will be securely screened, or such additional or alternative method instituted, acceptable to the division surgeon, as will prevent access of flies and dust to food or its containers.

7. **TENT HYGIENE.**—Organization commanders are directed to assure themselves personally that suitable ventilation of tents and sunning of tent areas are practiced by their men; as also, adequate personal cleanliness. Mosquito bars and head nets and prophylactic quinin will be used when directed by competent medical authority.

8. **QUARANTINE.**—All regulations imposed by competent medical authority as to isolation in the case of infectious disease, or prophylactic measures in regard to the same, will be scrupulously observed by the command.

9. **SANITARY SQUADS.**—Sanitary squads will be organized by the division surgeon for each regiment, or other organization. One of the regimental medical officers will act as local sanitary police officer. He will be assisted by a Hospital Corps sergeant and the requisite number of Hospital Corps privates and civilian laborers. These squads will do whole-time work, and will supervise and assist in the purification of drinking water, the disposal of camp wastes, and in disinfection. A general sanitary squad, under a divisional sanitary police officer, will also be organized for sanitary work not pertaining to organizations, such as the handling of manure, general drainage, antimalarial work, the final police of vacated grounds, etc. Civilian sanitary laborers will be employed by the Quartermaster Corps and turned over to the Medical Department. The sanitary police officers will make requisition on the chief quartermaster for such transportation, labor or material as may be needed for sanitary work; when assigned to this service, they will not be diverted to other uses except by orders from these headquarters.

By COMMAND OF MAJOR-GENERAL BLANK:

OFFICIAL.

X. Y. Z.,

Adjutant-General.

A. B. C.,
Chief of Staff.

COMMENT

The foregoing order, as stated, follows Straub's outline, which is the best for practical purposes. In Sections 4 and 5, certain suppositions are made for clearness' sake, as to the water supply and the methods employed for the disposal of excreta. Of course, in some camps, the water supply might be piped from a pure source, and disinfection would not be necessary; or, again, the incineration method might be used for the disposal of excreta. In such cases, the order could easily be modified to correspond with the local situation. In most other respects, the order, as written, would apply in any situation. The order can also, when necessary, be easily changed to apply to a brigade or regimental or even smaller camp. In any case, however, an order should issue.

Field orders should not go into too much detail as to methods; merely the authority and a general statement as to the kind of methods to be employed are wanted. The details are described from time to time in circulars published by the Surgeon-General's Office or the War Department. The order, in other words, is not intended as a sanitary text, but merely as a sanitary *authority*. Directness and conciseness are necessarily the chief desiderata in military orders.

The model suggested is perhaps a little too long, but by making it long I have been able to include by mention, or at least by inference, practically all the subjects to which the neophyte in field sanitation would be likely to have his attention at first directed. It is hoped that a careful perusal of the order will clear up what at first seems a rather difficult matter, and afford an easy and satisfactory means of orientation at this period for the new medical officer in the work of cultivating "preparedness" for his service in actual campaign.

The medical officer should never forget that *results* are what the nation demands. They must be produced. The way for the medical officer to secure them is to establish a satisfactory working relation with line officers, who alone have the power, and on whose action the successful or unsuccessful issue of the sanitary as well as of the military situation must in the final analysis really depend.

Army Medical Museum, Seventh and B Streets S.W.

THE VENEREAL DISEASES

(Concluded from page 126)

NOTE.—This is the fifth and final instalment of the series on "The Venereal Diseases." As already announced, these articles are being reprinted in the form of a manual which will be ready in about two weeks, price 25 cents.

PROGRAM OF ATTACK ON VENEREAL DISEASES

AN OUTLINE OF ACTIVITIES AND COOPERATING AGENCIES PLANNED TO REDUCE THE PREVALENCE OF THE VENEREAL DISEASES

Methods of attack on venereal diseases divide themselves into four classes:

- A. Social measures to diminish sexual temptations.
- B. Education of soldiers and civilians in regard to venereal diseases.
- C. Prophylactic measures against venereal diseases.
- D. Medical care.

A. SOCIAL MEASURES TO DIMINISH SEXUAL TEMPTATIONS:

- (1) The suppression of prostitution and the liquor traffic.
 - (2) Provision of proper social surroundings and recreation.
- These activities which have to do with social matters largely fall outside the jurisdiction of the medical service of the Army, but this service can render these activities more efficient by stimulating and supporting them, and wherever practicable such support should be given.

(1) *Suppression of prostitution and liquor traffic in zones.*

Keep careful track of conditions as regards these two matters in surrounding districts, in cities or towns where soldiers go, and in travel gateways.

In camps and zones, we have the following agencies which may be utilized:

The constituted authorities, military and civil.

The Commission on Training Camp Activities, War Department.

Local and national volunteer agencies may be utilized to discover failures and abuses, and to help otherwise in the work under direction of the proper authorities.

Outside the zones, a large number of forces can be used. Among these:

State Councils of National Defense.

Civil police and health administrations.

Associations of commerce.

Women's clubs.

The press.

Social hygiene and vigilance societies, and other social and religious organizations of influence in civil communities.

(2) *Provision of proper social surroundings and recreation.*

In camps and zones, plan to:

Develop social activities and amusements.

Provide places where soldiers may go for comradeship, to meet friends, to "loaf."

Supply an attractive place, or places, for soldiers to meet their women callers in camps and near camps.

Establish, under police authority, women patrols in zones.

Enforce rules against women being received in soldiers' tents or being allowed the freedom of camps.

Encourage facilities for interesting the soldier in reading, lectures, music, congenial friendships, hobbies.

For this purpose, we have for use in camps or zones, or both:

The Commission on Training Camp Activities, supervising activities of the Young Men's Christian Association, Playground and Recreation Association, Knights of Columbus, Young Women's Christian Association through its hostess houses, the American Social Hygiene Association, and other national and local organizations invited to carry on special activities.

Similar provisions for social diversions and proper social surroundings should be provided outside the zones, and if possible, provision at least for their inspection by military inspectors should be provided.

For use outside the zones, we have practically all the above agencies which are organized to conduct similar work in communities accessible to soldiers but not within the military zones.

An effort should be made to stimulate local organizations in towns near camps and at railroad centers to furnish proper social diversions and amusements for soldiers, and to provide places where they may go when on leave.

Enlisted men's clubs for this purpose, charging a small fee, say 25 cents monthly membership, are greatly to be desired.

Organizations of men and mature women to furnish members to meet soldiers in a friendly way, and to give them information and directions are desirable in towns and at railroad centers and other points in large cities where soldiers come in numbers. Fraternal organizations should be enlisted in this work.

Pressure should be brought to bear on the civil authorities to suppress vicious amusement places, to clean up parks and other recreation places, and to furnish for such places morals police. For this purpose, the members of special law enforcement organizations could be used.

Inspection of social and moral conditions in the camps, in the zones, and in contiguous districts and of the work being done by the various agencies for social betterment should be made by federal authorities. Similar volunteer inspections by dependable vigilance and other civic associations should be encouraged.

B. EDUCATION OF SOLDIERS AND CIVILIANS:

(1) *For Soldiers: (a) Lectures; (b) Pamphlets; (c) Exhibits.*

(a) Lectures to soldiers should be given by medical and line officers and by competent volunteers furnished by outside agencies, under invitation and direction of the Medical Department. These, beside inculcating continence, should explain the risk and waste of venereal diseases and the program adopted to avoid them. Lecturers without authority should not be permitted.

(b) A pamphlet should be given the soldier as soon as possible after enlistment. This pamphlet should be very brief and should warn the soldier of the venereal dangers to which he may be exposed and give instructions, if he should be exposed, to report as promptly as possible to his regimental infirmary.

It would be very desirable if a pamphlet could be distributed at the place of meeting of Exemption Boards. Later somewhat fuller pamphlets should be distributed to soldiers through medical and line officers, or by accredited volunteer social hygiene societies.

(c) Exhibits, such as the Coney Island exhibit of the New York Society of Social Hygiene, the exhibit of the National Cash Register Company, the exhibits of the Oregon Social Hygiene Society, the Missouri Society and other exhibits and demonstration methods worked out by the American Social Hygiene Association should be adapted to the needs of military life and furnished to each cantonment.

(2) *For Civilians:*

In the attack on the venereal problem, it is highly desirable that such educational activities as those outlined above for soldiers should be stimulated for the civilian population.

The influence of the military authorities should be given to the national organizations for social hygiene and to the numerous sanely conducted local organizations of the same sort.

Encouragement should be given to the organizations which are undertaking to arouse the interest of the woman population of the country in matters of social hygiene and for instructing women in regard to venereal diseases.

Organizations dealing with these matters which attempt to reach women should be encouraged, especially in the vicinity of camps. An increasing number of influential organizations, such as the General Federation of Women's Clubs and Patriotic Women's League, are indorsing and supporting sound social hygiene programs, and supplementing the more specialized efforts of such organizations as the Young Women's Christian Association and the Women's Christian Temperance Union.

C. PROPHYLACTIC MEASURES

Instruction in Prophylaxis:

Soldiers should be informed of the fact that there are prophylactic measures that reduce the dangers of venereal infection. But this instruction should take

particular care to inform them that there are limitations to such prophylactic measures and that they furnish only partial protection and in no sense give freedom from risk.

Regimental Infirmaries:

The provision of prophylaxis (early treatment) in regimental infirmaries, which should be open day and night, is imperative in any sane attack on venereal diseases. The prophylactic station should be utilized as a place for personal advice and education against future exposure, and should be conducted as an early treatment dispensary. Any spirit of levity or condoning sexual promiscuity should be discouraged, and obscene stories or objectionable conduct should be rigidly repressed. The men assigned as officers in charge of these stations should be mature and with the personality and force of character calculated to gain the confidence and respect of the men applying for treatment. The medical officer in command should be impressed with the strategic importance of the prophylactic station for education, appeal, and the securing of social facts of vital importance in the prevention of venereal diseases.

Infirmaries in Civil Centers:

In cities, where there are no adequate civil dispensaries to be used and through which soldiers in considerable numbers pass, either while on leave or in travel, there should be provided in accessible locations regimental infirmaries. In a few cities, where dispensary services are particularly well developed, regimental infirmaries may be replaced to advantage by accrediting these civil dispensaries for use. Information should be furnished to soldiers of the existence and location of such regimental infirmaries and available dispensaries.

Leaves of Absence: In the interest of health, long leaves of absence for soldiers should as far as possible be discouraged. Leaves of absence of more than twenty-four hours are particularly dangerous, and it would be desirable if leaves of absence should be timed from as early an hour in the day as possible.

In cases where soldiers have been exposed, particularly if for any reason exposure seems unusually dangerous, special observation of such exposed men should be made, and if practicable these observations should be repeated at intervals of a couple of days for two or three weeks.

All pressure possible should be made by military authorities against houses or women which experience shows are frequent sources of infection, and this should be extended as far as practical to prostitution generally. The more effective the repression of prostitution can be made the greater will be the reduction in venereal diseases.

All possible influences should be brought to bear to encourage civil authorities in the attack on prostitution in all its phases. A medical program for civil communities equivalent to the military program for prevention and treatment should be encouraged.

D. MEDICAL CARE

Hospital Organization:

There should be a special service in each cantonment hospital to care for skin and venereal diseases.

As far as possible, all such cases should be in charge of the venereal service, and where, for any special reasons, such cases must be under other services, the senior officer of the venereal services should be, if possible, consulted in regard to them.

In the venereal disease service, there should be at the head an experienced specialist in these diseases, and whenever possible another medical officer trained in venereal diseases should also be in the service. The other medical officers assigned to the service need not necessarily at the beginning be trained in venereal diseases.

In the event that mature specialists from the Medical Officers' Reserve Corps cannot be furnished for the head of the service in each one of the cantonment hospitals, it would be practicable to use two half-time men, serving on alternate days, to act as head of this service, these men to be obtained from adjacent large cities. Under such conditions, there should always be furnished a qualified junior officer.

Instruction in Venereal Disease for Medical Officers:

One of the important functions of these services will be to train a group of men in venereal diseases. The service will, if well conducted, rapidly develop the knowledge of these diseases among medical officers.

It should be distinctly understood that one of the duties of the trained specialists who go into this service will be that of teachers of venereal diseases to the less well trained medical officers, and regimental officers should be encouraged to avail themselves of the opportunity for instruction furnished by these services.

Emphasis should be placed on the necessity of high standards of technic in carrying out treatment.

Hospital Cases:

The cantonment hospital should have under its care all cases of venereal diseases which are in the acute, infectious stages: These include:

All cases of acute gonorrhea.

All cases of syphilis during the early infectious stage and which have chancres, mucous patches, or condylomata.

But it should be seen to that hospitalization of venereal disease does not become an abuse which is allowed to interfere unduly with military duty.

There should be no leaves of absence for infectious venereal cases, and cases which have passed the acute infectious stage but which might become dangerous through the possible development of mucous patches or of chronic gonorrheal discharge should not be allowed leaves of absence from camp.

Standard Records:

The syphilitic register of the army should be carefully and fully kept and social facts of epidemiologic importance should be secured in every case if possible.

Standardized Treatment:

An effort should be made to standardize in a general way methods of treatment, and provision should be made for some special instructions in venereal diseases for all medical officers who have charge of troops. To this end, a manual of instructions should be issued to each of the medical officers in the army. This should especially emphasize the great importance of early diagnosis and treatment in venereal diseases and outline suitable methods of treatment.

There should be furnished cards of brief instruction to patients with gonorrhea or syphilis.

Laboratory Facilities:

Laboratory facilities are necessary:

- (1) For demonstrating gonococci and other bacteria.
- (2) For demonstrating spirochetes by dark field illumination.
- (3) For urinalysis (which should be required once a week for every syphilitic patient under treatment). These laboratory facilities should be in the wards of the venereal service.
- (4) For Wassermann tests.

These to be in the general laboratory.

Inspections:

In order to keep up a high standard of effectiveness, there should be provision for inspection of these services by special inspectors in venereal diseases from the Surgeon-General's Office. These inspections should cover each of the four classes of attack specified.

INSTRUCTIONS FOR THOSE HAVING SYPHILIS (SYNONYM POX)

Syphilis is a deceptive disease. Usually it is a very mild disease in its early course, giving the person afflicted with it little or no distress. Because it is so mild its victim is likely to pay little attention to it and to fail to go to the trouble to have it thoroughly treated. But in spite of its mild beginning, syphilis is one of the very serious diseases because, if it is not properly treated, it may later attack vital parts of the body and cause the greatest damage. It may produce ugly deformities; destroy health and shorten life; produce blindness and at times cause insanity. These results do not occur so often that you should become panic-stricken because you have syphilis, but they are common enough to make it necessary for your safety that you make every effort to get rid of the disease. These accidents of syphilis almost never occur in the early course of the disease. When they happen, it is usually years after infection, in cases which have not been cured.

The earlier in its course syphilis is thoroughly treated, the better are the results; it is, therefore, of the utmost importance to your future health and happiness that you should have your disease promptly and skilfully treated. If you do this, there is little danger that you will have further trouble from it; and after a few years you can marry without danger to your wife or to your future children. Your medical officers will attend to treatment of your condition, but it rests on you to do your part. Unless you cooperate and live up to instructions, treatment cannot be carried out with the best results.

One of the difficult things about syphilis is that to cure it often requires a long time—two years or more. In two or three weeks after you begin treatment; you will not know from any symptom that you have syphilis, and you will, therefore, be tempted to neglect further treatment. This is the great mistake that many persons with syphilis make. To insure future safety, treatment must be continued long after all evidence of the disease has disappeared. For your own good, you must see to it that you do not neglect your treatment after the first few months.

Syphilis is a contagious disease, but spreads only by contact with the virus or poison. The parts of the body that most often carry the virus are the mouth and the genital organs (privates). In order not to spread the disease you must be careful in your associations with others. If you are careful, you are not dangerous to others.

Obey the Following Instructions:

If you have any sore on your genitals, no matter how small, or if you think you have syphilis, report to your medical officer. Do not under any conditions rely on the "blood medicines" that promise to eradicate syphilis, and do not be caught by advertising doctors—quacks—who try to get your money by promising to cure you quickly. Do not let druggists prescribe for you; they are not qualified to treat syphilis.

Do not hesitate to tell your doctor or dentist of your disease. Later in life if you get sick at any time, you should tell your doctors that you have had syphilis, since this fact may furnish a clue to the treatment on which your cure depends.

Live temperately and sensibly. Do not go to extreme in any direction in your habits of life.

Try to get a reasonable amount of sleep—eight hours is the amount needed by the average person. And as a safeguard to others, sleep alone.

You should not smoke or chew tobacco.

Absolutely do not use alcoholic liquors. All experience shows that drinking—even moderate drinking—is bad for syphilis.

Take good care of your teeth. Brush them two or three times a day. If they are not in good condition, have them attended to by a dentist. But when you go to him, tell him that you have syphilis.

Do not have sexual intercourse until you are told by your physician that you are no longer contagious. It will interfere with the cure of the disease, and it is criminal, for it is likely to give the disease to your wife.

You must not marry until you have the doctor's consent, which cannot be properly given until at least two years have passed after cure seems complete. If you do, you run the risk of infecting your wife and your children with syphilis.

Early in the course of syphilis, while it is contagious, the greatest danger of infecting other people is by the mouth. Because of this danger, do not kiss anybody. Particularly, do not endanger children by kissing them.

Do not allow anything that has come in contact with your lips or has been in your mouth to be left around so that anybody can use it before it has been cleaned. This applies to cups and glasses, knives, forks and spoons, pipes, cigars, tooth picks and all such things. It is better to use your own towels, brushes, comb, razor, soap, etc., though these are much less likely to contamination than objects that go in your mouth.

If you have any open sores—you will not have any after the first week or two, if you are treated—everything that comes in contact with them should be destroyed or disinfected.

To live up to these instructions will only require a little care until you get used to them; after that, it will be easy. If you do live up to them, there is a good prospect that syphilis will not do your health permanent harm nor cause injury to others; and you will have the satisfaction of knowing that, after your misfortune, you have acted the part of an honest man in your efforts to overcome it.

INSTRUCTIONS FOR THOSE HAVING GONORRHEA

*Clap—a Dose—Chordee (Painful Erection)—Swollen
Testicle—Gleet*

Gonorrhea causes so much discomfort that, unlike syphilis, it is not apt to be overlooked or neglected in its early course; but the discomfort of gonorrhea disappears long before the disease is gone, and patients are therefore apt to discontinue treatment before they are well. In such cases, the disease persists indefinitely as a morning drop or as "gleet"; perhaps not even these symptoms may be present, and the patient may suffer no particular discomfort of any kind, and yet be exposed to serious accidents to health and be a source of danger to any woman with whom he has intercourse.

It is a serious mistake to regard gonorrhea lightly. Gonorrhea may occasionally be very mild in its symptoms, but if neglected painful early complications and, later, very serious ones are likely to occur. Common early complications of gonorrhea are chordee, inflammation of the prostate and bladder, and swollen testicle. Common later complications are gonorrheal rheumatism, gonorrheal disease of the heart, and stricture. These later complications are all serious troubles. In addition to the dangers to the patient, uncured gonorrhea—which may show as a gleet or a morning drop or not at all—is as contagious as an acute gonorrhea; so that for the protection of your wife you must get well. Gonorrhea is the commonest cause of sterility and serious diseases of the pelvic organs in women.

The time to cure gonorrhea easily is early in its course. The sooner proper treatment is begun, the sooner gonorrhea can be controlled and the less likely are complications. After gonorrhea has become chronic, its cure is extremely difficult. It is, therefore, very important that the disease should be properly treated early in its course and that the patient should cooperate with his physician in doing those things which facilitate the cure. Gonorrhea can be completely cured, but in its treatment the patient must do his part.

Obey the Following Instructions:

Persist in treatment until your doctor tells you you are cured.

Do not try to treat yourself.

Do not use a patent medicine or some "sure shot" that may stop the discharges, but will not cure you.

Do not let an advertising doctor—a quack—get your money, and do not let a drug clerk treat you.

If you have had gonorrhea and you suspect that it is not cured, report to your medical officer.

During the acute stages keep quiet, and take little exercise. As long as you have any discharge avoid violent exercise, especially dancing.

In order to avoid chordee, while the disease is acute, sleep on your side, urinate just before going to bed, and drink no water after supper.

Never "break" a chordee. To get rid of it wrap the penis in cold wet cloths or pour cold water on it.

Except at night, drink plenty of water—8 or 10 glasses a day.

Do not drink any alcoholic liquors; they always make the disease worse and delay its cure. Also avoid spicy drinks, such as ginger ale.

Do not eat irritating, highly seasoned, spicy foods, such as pepper, horse radish, mustard, pickles, salt and smoked meats or fish.

Always wash your hands after handling the penis, particularly in order to protect your eyes. Gonorrhea of the eyes is very dangerous; it will produce blindness if not at once treated, and the infection is easily carried to the eyes on the fingers.

Keep your penis clean. Do not plug up the opening with cotton or wear a dressing that prevents the escape of the pus from it. Wash the penis several times daily.

Burn old dressings, or put into a disinfecting solution.

Never use anybody's else syringe or let others use yours. While you are using a syringe keep it clean by washing it in very hot water, and, when you have finished with its use, destroy it.

Avoid sexual excitement. Stay away from women. Do not have intercourse. It will bring your disease back to its acute stage and it is almost sure to infect the woman. Sexual intercourse while you have gonorrhea is a criminal act.

You are likely to obey instructions while your gonorrhea is acute, because it causes so much pain. Persist in them after the pain is gone; by so doing you will prevent relapses, make your cure much easier and more certain, and expose no one else to the disease.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . "Medic, Chicago"

Subscription price Five dollars per annum in advance

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SATURDAY, OCTOBER 20, 1917

THE TREATMENT OF EPIDEMIC POLIOMY- ELITIS WITH SO-CALLED SPECIFIC HORSE SERUM

The recent reports by Rosenow¹ and by Nuzum and Willy² on the treatment of epidemic poliomyelitis with the serum of immunized horses, for which excellent results are claimed, are of considerable interest. The horses were immunized with the coccus recently found by several observers in the central nervous system in epidemic poliomyelitis, and consequently the question of the exact relation of this coccus to poliomyelitis is again raised.³ In both reports, it is asserted that the serum used has protective and curative powers with respect to the experimental poliomyelitis of the monkey produced by means of poliomyelitis virus, that is, suspensions in physiologic sodium chlorid solution of fresh or glycerinated nervous tissue from human beings that have died with this disease, or from monkeys experimentally infected. While the coccus with which the horses were injected unquestionably occurs in poliomyelitis, and frequently may be present in the so-called virus, its exact relations to the disease have not been made fully clear because thus far it has not been possible to produce poliomyelitis in the monkey by injections of this coccus in undoubted pure culture. But in spite of the lack of this essential link in the chain of evidence necessary to establish that the coccus is the cause of the disease, it must be acknowledged that if the serum of horses immunized with the coccus protects against and even cures poliomyelitis in the monkey, an adequate experimental basis for a thorough trial of such serum in the treatment of the human disease certainly has been provided. It is clear, however, that the results of further experiments on the action of the serum in monkey poliomyelitis are required before the claims in favor of its protective and curative powers may be regarded as fully established. At this point it may be stated also that the assertion by Nuzum and Willy that a coccus quite like the one found in the

central nervous system in poliomyelitis occurs regularly in the cerebrospinal fluid of poliomyelitis patients, not being in accord with the results obtained by other observers, cannot yet be accepted without confirmation from other sources.

Turning now to a brief consideration of the recorded results from the use of serum produced as indicated, we find that Rosenow treated fifty-four patients with nine deaths, but that six of the patients that died were moribund when the serum was injected, "and hence should not be included as treated cases." This would leave a death rate of 8 per cent. Sixteen of these patients were in the preparalytic stage, and all recovered. Of twenty-three patients in the same epidemic, nine died (35 per cent.). The effects of the serum in the individual case are often striking, at least apparently, because the symptoms soon subside, paralysis, for instance, being arrested and sometimes disappearing completely if in the early stages. As rapid improvement may occur spontaneously in poliomyelitis, as the diagnosis in the preparalytic stage must be difficult (sixteen of the patients treated with recovery are said to have been in this stage), and as it is impossible to form any opinion whether the treated and untreated patients that were the subject of this report are fairly comparable, it evidently is necessary, as Rosenow himself says, that many more patients be treated before conclusions can be drawn as to the exact value of the serum he used.

Nuzum and Willy have treated 159 patients, eighteen of whom died (11.3 per cent.). Of 100 untreated patients admitted during the same period of time to the same hospital, forty-five died (45 per cent.). We lack, however, a more detailed comparison as to the ages, severity of attack and general condition of the patients composing the treated and untreated groups. We have no information whatever in regard to the principles of selection followed in forming these two groups; consequently it is difficult to determine how much importance may be assigned to the apparently very favorable figures given in this report. These observers also emphasize the rapid general improvement commonly seen after the injection of the serum, there being in many cases a critical drop of temperature.

In conclusion, it may be said that the injection of horse serum, in the manner described with detail in these two reports, appears to be quite harmless in poliomyelitis; that the authors of the reports are deeply impressed with the apparent good effects of the serum; that their figures appear to show a great reduction in the death rate, but that the figures are probably not to be accepted without the reservation that they may seem more favorable than is actually warranted. Further observations will be awaited with much interest. We hope it may be found, and quickly, that a potent, specific antipoliomyelitis

1. Rosenow, E. C.: The Treatment of Epidemic Poliomyelitis with Immune Horse Serum, *THE JOURNAL A. M. A.*, Sept. 29, 1917, p. 1074.

2. Nuzum, J. W., and Willy, R. G.: Specific Serum Therapy of Epidemic Poliomyelitis, *THE JOURNAL A. M. A.*, Oct. 13, 1917, p. 1247.

3. The Bacteriology of Poliomyelitis, editorial, *THE JOURNAL A. M. A.*, April 14, 1917, p. 1122.

serum, protective and curative, has been discovered. The suggestion may be ventured that even if it eventually should be found that serum produced as described in these reports has little or no specific effect on the essential cause of poliomyelitis, its use may be followed by favorable results due on the one hand to general nonspecific effects such as follow the intravenous injections of foreign proteins, and on the other hand to its action, specific in nature, on the coccus used in the immunization, which may be a secondary invader of no little importance in poliomyelitis.

THE QUALITY GRADES OF PROTEINS

It is beginning to be recognized by all students of nutrition that proteins from different sources may have unequal nutritional value. This is exhibited, for example, in the unlike efficiency of different proteins in sparing the body from a loss of tissue protein; it is likewise manifested by the striking differences in growth on diets alike in every respect except the character of the proteins they contain.

The reason for these biologic differences is now known to lie in the amino-acid content of the different proteins. Those albuminous compounds, which furnish the essential amino-acids in proportions approximating the ideal as determined by the body's synthetic needs, are most economical from the standpoint of nutrition. As a rule, though by no means in every instance, the proteins of meat, fish, eggs and milk exhibit a superior value as conservers of body protein when they are contrasted with the proteins of the widely consumed cereal grains. It is for this reason that Graham Lusk has proposed the grading of protein products offered for sale. He has advocated the sale of food by calories and not by pounds as the foremost step in true food reform; but in addition to this he suggests the indication of quality distinctions.¹ For instance, such proteins as will replace body protein part for part might be classified as Group A. Gelatin has practically no power to replace body protein and is therefore put by Lusk in Grade D. Wheat contains a mixture of proteins of Grades A and D in which those of Grade A predominate, so that wheat may be classified as having a protein value of Grade B; whereas corn, from analogous reasoning, may be said to have a protein value of Grade C. Lusk's plan is conceived by him to work out as follows: An ordinary dietary with a liberal allowance of protein contains 15 per cent. of its calories in that form. A can or package of food containing 15 per cent. of its calories in protein should have, Lusk proposes, a star placed with the letter determination of the grade of protein. For example, the label on a can of corn might read: "This can contains x calories, of which y per cent. are in protein of Grade C."

1. Lusk, Graham: *Elements of the Science of Nutrition*, Philadelphia, W. B. Saunders Company, 1917, p. 562.

The initiation of a plan such as that here developed would do scarcely more for man than has been attempted for our domestic animals during the past few years. Concentrated cattle feeds are commonly sold in containers plainly stamped with the proximate analysis of their contents, so that the addition of caloric values and quality labels would mean merely the extension of an already accepted principle in the feed industries. Hart and Humphrey² of the Wisconsin Agricultural Experiment Station have, however, recently pointed out certain practical objections to so much of the food classification scheme as has been reviewed above in relation to the quality of proteins. A few years ago it would scarcely have been anticipated that different proteins might exhibit supplementary values toward each other. The researches of McCollum, Osborne and Mendel, in particular, have made clear how an "incomplete" protein may be supplemented by a small quantity of another protein so as to produce a more perfect combination than either portion alone could exhibit from the standpoint of nutritive efficiency. It is further doubtless possible to select a combination of two "incomplete" proteins so that the mixture will afford all of the amino-acids of an ideal diet. In such an instance two proteins of Lusk's inferior Group C might yield a very satisfactory ration.

This is essentially what Hart and Humphrey have experimentally demonstrated in actual feeding experiments on a large scale on cattle. Thus they found that with corn stover and corn meal as the basal ration there were very appreciable differences in the efficiency with which certain protein concentrates could supplement such a ration for milk production. Gluten feed, for example, was measurably inferior to casein or milk powder.³ In the proportions used and with corn stover as the roughage, none of several concentrates tested was able to maintain the animals in nitrogen equilibrium. Gluten feed was particularly unfit. But when the roughage was changed from corn stover to clover hay, the corn kernel being maintained as the basal grain, the inefficiency of the gluten feed as a supplement disappeared.² Evidently, Hart and Humphrey write, the proteins of clover hay will supplement the proteins of gluten feed in a much more efficient manner than will those of corn stover. These results, they continue, emphasize in a striking way the limitations of any classification of natural food in respect to the efficiency of their proteins, based on the determination of such nutritive value in a single food material or single mixture. When they are used in mixtures, as they generally are, the efficiency may be very greatly modified by the supplementary materials. This applies to human as well as animal nutrition.

2. Hart, E. B., and Humphrey, G. C.: *The Relation of the Quality of Proteins to Milk Production*, III, *Jour. Biol. Chem.*, 1917, **31**, 445.

3. Hart, E. B., and Humphrey, G. C.: *Jour. Biol. Chem.*, 1916, **26**, 457.

Before condemning any particular type of protein or protein-rich food, it will be well to bear in mind that our dietaries usually are, or at any rate ought to be, drawn from varied sources unless we are certain of the adequate nutrient efficiency of the proteins supplied. The proposed classification of the proteins of foods into the Groups A, B and C, according to their physiologic value, has significance, as Hart and Humphrey insist, only so far as the individual food materials form the sole article of diet. In a mixture, Class A would probably always improve Class C; but it is possible to conceive of Class C proteins from independent sources making an efficient mixture. What applies to proteins is applicable in a somewhat comparable manner to other deficiencies in single sources of food. A suitable source of protein may lack desired inorganic elements or needed vitamins. Adequate nutrition is coming to be recognized more and more as a scheme dependent on the rational selection of suitable combinations of foods whereby their supplementary relationships can be duly exhibited.

THE IMPORTANCE OF FURTHER STUDY OF THE DIPHTHERIA GROUP OF BACTERIA

After the discovery by Loeffler and Hoffmann of an organism now known as *B. hoffmannii* or the pseudo-diphtheria bacillus, morphologically identical with the diphtheria bacillus but seldom pathogenic and a non-fermenter of glucose, it was soon found that there was a whole group of diphtheroid organisms with slight morphologic and cultural differences, and identical with neither the true diphtheria bacillus nor *B. hoffmannii*. The intensive study of this group has never attracted investigators as it deserved, probably because of the general opinion that diphtheroids possess slight pathogenic powers and generally are secondary invaders. This opinion may be due to the fact that these organisms are so widespread, occurring in the air, in milk, and apparently at some time or other in nearly every organ of the body, normal as well as diseased. But their possible relation to Hodgkin's disease as indicated by the discovery of a diphtheroid (*B. hodgkinii*) in the lymph glands of this disease (Bunting and Yates and others) has reawakened interest in the whole group. In a recent review of the entire literature on diphtheroid organisms, Mellon¹ has conclusively shown that at times they may be the cause of various acute inflammatory processes. In many cases they are the only organisms isolated from such processes, and injection of suspensions of the killed organisms often seem to exert a marked benefit on the course of the disease. He cites cases, due to diphtheroid infection, of "tonsillitis, chalazion, acute and chronic purulent otitis media, arthritis, caseous and ulcerative

lymphadenitis in cattle, bronchopneumonia, interstitial pneumonia, ulcerative cystitis, and an epizootic of infective abortion in guinea-pigs." He finds, too, that the difficulties encountered in correlating the work of various observers, and the multiplication of names and types are due not so much to differences in the bacteria themselves as to lack of uniformity in the mediums used in growing them and of well controlled immunologic studies. In many cases, reactions have been recorded by growth on glucose broth only. By the use of ten fermentable substances and a careful titration of the amount of acid formed in a definite period of time, and by the extensive study of immunologic reactions, especially complement fixation, Mellon thinks it is possible to divide diphtheroids into seven groups, four of which contain the greater number of saprophytes and three the greater number of pathogenic organisms, though any of the subgroups may become pathogenic under favorable conditions. One strain he found particularly interesting because of its pleomorphic character; under certain conditions of growth it assumed the form of a diplococcus, and it was only with great difficulty that it was brought back to the bacillary form. This relationship to the streptococcus was carried out in the immunologic reactions also, the relationship to some strains of streptococci being closer than to some strains of the diphtheroids.

The need for the further investigation of this particular sort of phenomenon is suggested also by Heinemann² in his report of a strain of diphtheria bacillus, otherwise typical, which on growth in glucose veal broth assumed a coccus form identical in morphology with the coccus form of Mellon's pleomorphic diphtheroid. This organism, however, could be easily reconverted into bacillary form by growth on Loeffler's blood serum.

THE LUNG PHENOMENA IN ANAPHYLAXIS

The phenomena of anaphylaxis have begun to play a prominent part in various departments of medicine. The anaphylactic nature of so-called serum sickness is now generally recognized, as it occurs as a direct consequence of the injection of a foreign protein into a human being. The analogy between asthma and anaphylaxis has been clearly set forth by Meltzer,³ among others, who points out that in both conditions the symptoms consist in a tonic stenosis of the small bronchioles of peripheral origin. The connection of hay-fever with anaphylaxis is one of great likelihood, and current investigation is being guided in the direction of such probability. Zinsser⁴ has remarked that there are a number of other clinical conditions which are less obviously anaphylactic in nature, but in which

1. Mellon: Jour. Bacteriol., 1917, 2, 81.

2. Heinemann: Jour. Bacteriol., 1917, 2, 361.

3. Meltzer, S. J.: Bronchial Asthma as a Phenomenon of Anaphylaxis, JOURNAL A. M. A., 1910, 55, 1021.

4. Zinsser, H.: Infection and Resistance, New York, 1914, p. 433.

we have many good reasons for attributing an important part of the etiology to a state of hypersusceptibility. Thus the peculiar so-called "idiosyncrasies" observed in many people who suffer from urticarial skin rashes, gastro-intestinal difficulties, and even severe systemic illness after certain varieties of food seem to depend on an acquired or possibly inherited hypersusceptibility to the particular proteins involved, which, at certain times of abnormal gastro-enteric conditions, can get into the circulation in small quantity. It is not impossible, furthermore, that such unfortunate cases as the severe forms of angioneurotic edema, which seem, at least in part, to be associated with gastro-intestinal disturbance, and which may be transmitted from mother to child, have their root in anaphylaxis. For this, however, we have only inference based on clinical observation.

For the more accurate experimental study of the manifestations of anaphylaxis we are still restricted to observations on sensitive animals. In order to unravel satisfactorily the problems of clinical medicine in which the possibility of anaphylaxis can be considered, it is highly essential to continue the intensive investigation of the more purely experimental aspects of the subject. In some species, notably the very sensitive guinea-pig, the respiratory symptoms are the most striking feature of the clinical picture of anaphylaxis. During the later stages little or no air enters the lungs, although the animal makes violent respiratory efforts. This is due to a tetanic contraction of the small bronchioles which practically occludes the air passages. The conspicuous noncollapsible expansion of the lungs after death is due to the imprisonment of the air in the alveoli by the contracted musculature of the small bronchioles.

In the Department of Bacteriology and Experimental Pathology of the Leland Stanford Jr. University, Manwaring and Crowe⁵ have found, through the study of isolated anaphylactic lungs by perfusion methods, that there are three types of pulmonary anaphylactic reaction, namely: (1) bronchial anaphylaxis, or the spasmodic contraction of the bronchial musculature, unassociated with recognizable changes in the pulmonary blood vessels; (2) vascular anaphylaxis, or the spasmodic contraction of the pulmonary blood vessels, usually accompanied with edema. The vascular reaction is usually followed by a mild bronchial reaction; (3) pseudo-anaphylaxis, or the plugging of the pulmonary blood vessels with thrombi and agglutinated corpuscle masses. Despite the seemingly technical character of such results, it is through investigations of precisely this sort, defining the mechanism underlying some of the conspicuous symptoms of anaphylaxis, that the understanding essential to progress in rational clinical therapy is to be derived.

5. Manwaring, W. H., and Crowe, H. E.: Types of Anaphylactic Reaction, *Proc. Soc. Exper. Biol. and Med.*, 1917, **14**, 173.

Current Comment

HELPS TO THE SCOFFER AT FOOD VALUES

It is often said that necessity is the mother of invention; but necessity is also a good teacher in many other ways. In times of plenty we may be oblivious to the needs of the moment, whereas we soon learn to count the cost when "every little helps." Only a short time ago the earnest student of nutrition and dietetics was perenially twitted with the humor of the man who smilingly insisted that he wanted food, not calories. But times have changed, and the jokes about book learning and scientific feeding are replaced by an earnest desire for education in the tenets of nutrition. As Professor Bevier¹ of the Department of Household Science at the University of Illinois has aptly expressed the situation, with the shortage of food and the demands for saving it, there has come even to the mind of "the people" their helplessness because of their ignorance of food values. The people are writing to Washington, to the agricultural colleges, to anybody and to everybody for help in saving food. In response to this demand a great variety of helps to the housewife are appearing. Mr. Hoover's instruction card and the government devices are variations of lessons in food values. Every one understands perfectly that four quarters may take the place of one dollar in buying food, but many people cannot tell how many eggs at 40 cents a dozen may be used to replace in food value round steak at 25 cents a pound, or how to substitute for a quart of milk. It is easy even now to see that the term "food value" is beginning to receive respectful attention, and that way lies the basis for wise buying of food. War tends to make kindred of men. We can forgive the erstwhile scoffer, and we urge him to satisfy his newly acquired curiosity as to food values by consulting a timely series of well edited bulletins on "How to Select Foods," which the United States Department of Agriculture has lately put at the disposal of the public without cost.²

THE DANGER TO MUNITION WORKERS FROM TRINITROTOLUENE

Trinitrotoluene, or T. N. T., as it is commonly called, has been increasingly used abroad as a substitute for picric acid as a filler for shells, and is now used in America for that purpose. It has a lower melting point than picric acid, and is more stable; it is an explosive of the strength of nitroglycerin, and is manufactured by nitration from pure toluene. That it is dangerous to the human system we know from reports of necropsies in cases of fatal poisoning among trinitrotoluene workers, published recently in England and America; from the recent studies of cases of illness

1. Bevier, Isabel: An Experiment in Teaching Food Values, *Jour. Home Economics*, 1917, **9**, 415.

2. These are issued under the editorship of Caroline L. Hunt and Helen W. Atwater as Farmers' Bulletins. They are available for free distribution on postal card request to the Department of Agriculture at Washington.

among trinitrotoluene workers in England by Panton,¹ and from Alice Hamilton's² study of four or five plants in America in 1916 in which she found 703 cases of poisoning, with thirteen deaths. In the manufacture of trinitrotoluene itself there is little danger to the worker, the process being carried out in closed retorts. But in filling the shells with the molten material, the workers are exposed to the fumes; and in chipping off the solidified trinitrotoluene from the top of the shells and boring holes in them for the detonator, they are exposed to the yellow dust. Occasionally symptoms due to the irritant action on the mucous membranes are observed, such as epistaxis, smarting of the eyes, constriction of the throat, and dry cough with a yellow bitter sputum. The toxic symptoms, like nausea, vomiting, anorexia, jaundice, mental depression, blurred vision and transient peripheral neuritis, are probably due to the absorption of the fumes and dust through the respiratory and the digestive tracts and especially the skin. The action of the poison on the liver seems to be marked. At necropsy the liver shows the most striking changes, and of the thirty-four cases of illness among the workers Panton studied, twenty-eight were cases of toxic jaundice. The microscopic study of the liver shows fatty changes of the liver cells, and in some cases increased bile duct proliferation, with infiltration of small lymphocytes around the ducts. Further, Panton examined the blood of a hundred apparently healthy women in a trinitrotoluene factory, and found the serum of twenty to be bile tinged. He suggests that even in the absence of symptoms there may be slight damage to the liver in these cases. The blood and blood-forming organs also are probably affected, for eight of the thirty-four patients showed anemia. This anemia Panton regards as of the aplastic type, that is, an anemia in which the number of the red cells is reduced while their form remains unchanged. He thinks the anemia is due to a destruction of the red marrow; and though rare among trinitrotoluene workers, it seems to be always fatal. The evidence on this point is still fragmentary, and needs for confirmation a careful study of the blood in more cases of poisoning, and further animal experiments.

PRIMARY PHLEGMONOUS GASTRITIS

Within the last few years the subject of phlegmonous gastritis has been investigated from various points of view, and reports of cases of this disease are now not infrequent. It would seem that the former lack of familiarity with the condition was due not wholly to its rarity, but in part to failure of recognition. The number and completeness of recent reports serve not only to stimulate the general interest in the subject, but also to increase greatly our knowledge of its various phases. Thus it now seems clear that the disease unquestionably belongs among the numerous manifestations of streptococcal infection. Phlegmonous gastritis may be superimposed on a chronic ulcer or car-

cinomatous process in the stomach, and in such case it may become the immediate cause of death. Of great interest are the cases in which the infection follows or accompanies an acute streptococcal process elsewhere, and especially noteworthy are the comparatively few cases in which the process in the stomach is the only focus of infection as far as the examination discloses. It is the latter group of cases that is most baffling; here the mode of entrance of the streptococci is often a matter of conjecture. Emge¹ described a case of this kind, but makes no suggestion as to the route by which the infection may have taken place. According to Emge, the streptococcus is the sole infecting organism in 70 per cent. of the reported cases of primary phlegmonous gastritis, and in the remaining 30 per cent. it is associated with the staphylococcus, the colon bacillus or the pneumococcus. The chief associated and probably predisposing conditions are alcoholism, dietetic errors, and food and drug poisoning. Streptococcus gastritis occurs five times more frequently in the male than in the female sex, and so far half of the cases have been found in laborers. Rixford² reports four cases, three of which occurred during the epidemic of streptococcal sore throat in San Francisco last winter. In such cases there seems no difficulty in accounting for the source of infection. The symptoms are sudden, severe from the onset, with a burning sensation in the stomach which is not relieved by drinking fluids, persistent vomiting, fever, not high at first but gradually or rapidly rising to 102 F. and occasionally to 105 or 106, and early prostration. The disease runs a rapid course, from three to ten days, and is usually fatal. The stomach wall is much increased in thickness and feels boggy, the mucosa is pale and swollen, and the folds are absent or indistinct. The mucous membrane is generally intact, but may be perforated or even entirely necrotic if the process has continued for some time. The submucous coat is greatly increased in width, often to the extent of half an inch, and firm, while the serosa is generally unchanged, but may be covered with a film of fibrin. There is an infiltration of leukocytes in the mucosa, but ordinarily the glands appear normal. There is a huge exudate of fibrin and leukocytes, both mononuclear and polymorphonuclear, in the submucosa, which is the part chiefly affected. The muscularis may be swollen and infiltrated with round cells, although generally little changed. As indicated, streptococci are easily demonstrable in the exudate.

1. Emge: Tr. Chicago Path. Soc., 1913-1915, 82.

2. Rixford: Ann. Surg., 1917, 66, 325.

1. Panton: Effect of Trinitrotoluene on Blood, Lancet, London, 1917, 2, 77.

2. Hamilton, Alice: Trinitrotoluene Poisoning, Med. and Surg., 1917, 1, 761.

Mortality Rates Among Negro Babies.—In analyzing the infant death rate for 1915, it was ascertained that while the infant death rate for New York City was 98.2 per thousand births, the infant mortality of the colored race was 202, as against 96.2 for the whites, a difference of 110 per cent. The health department then started an educational campaign, instituting intensive work along the lines usually found effective in reducing the infant death rate, and has just made public the results. While the negro death rate among babies in 1915 was 202, in 1916 it was 193.3 per thousand children born, and for the first six months of 1917, the rate was still further reduced to 180 per thousand births.

Medical Mobilization and the War

THE FULL SACRIFICE

♣ ♣ *Our country is at war. Men are called according to their talents and training to enter the different branches of the service. Physicians occupy an important place, and this applies particularly to those of special training. No choice has been left to youth because its strength and enthusiasm are called by the state. Men of maturer age have the glory of choice. They choose to serve or to let others serve. ♣ ♣ For the moment the enemy is at a distance, and those without imagination see him always there. Because disaster is still without our gates we feel secure. Many, therefore, are putting off the day of service. Some hesitate and question: a few even bargain. ♣ ♣ To relinquish individual liberty causes not a few to hold back. Yet those who have made the decision and are now doing the duties assigned to them as well as they may, cherish as dearly as the heart can the liberty to be with wife and family, to continue to engage in private or public practice, to carry on their investigations, to teach in hospital or medical school, and to provide for their old age. ♣ ♣ The right to these blessings of peace belongs to no one man. Some there are, however, who by actions or words seem to claim a right to these blessings over their brothers. ♣ ♣ No work is too trivial in a cause so sacred. Some have thought otherwise. But whoever is above the work which naturally falls to him, and works, if at all, only with reservations, misses the finest inspiration that duty fully done can supply. ♣ ♣ He who consciously or unconsciously allows self to decide in this matter is not to be envied. The spirit of service, which, if allowed, would almost transfigure him, he has failed to grasp. Greater peace can no man have than he who has made the full sacrifice.*

Commissioning of Medical Reserve Officers

The chief of staff of the Army has given instructions to the Adjutant-General that no more commissions are to be issued in any branch of the military service until a complete check is made of the number of commissioned reserve officers on the rolls. It is expected that this will hold up all the appointments for at least three, and possibly four, weeks. Hence physicians who have applied for commissions must not be disappointed if they do not hear regarding them for the period mentioned.

Number in Medical Reserve Corps

On October 12, there had been recommended for commissions in the Medical Officers Reserve Corps approximately 17,500 physicians. About 1,200 of these finally declined to carry out their declared intention to accept commissions, and a few over 200 officers have been discharged for one cause or another, most of them because of physical disqualifications. Slightly over 13,500 have accepted their commissions. This number does not include, of course, the officers of the regular medical corps and of the medical corps of the National Guard, over 2,000 in all.

During the week ending Oct. 13, 1917, there were recommended for commissions in the Medical Reserve Corps 402 physicians, the proportion being seven majors, eighty-nine captains and 306 lieutenants.

Competition Increases

Capt. S. T. Millard, M. R. C., U. S. Army, Topeka, Kan., writes that Topeka has a better record than Sioux City (THE JOURNAL, Oct. 6, 1917) so far as physicians volunteering for the Medical Reserve Corps is concerned. With a population of 50,000 and eighty physicians, twenty-four physicians have volunteered for service.

Conference of Examiners for Medical Reserve Corps

At a meeting of the examiners for the Medical Reserve Corps, held at Fort Benjamin Harrison on October 8, a national association was formed with the title of the National Association of the Presidents of the Boards for the Examination of Applicants for Appointment in the Medical Reserve Corps of the United States Army. The following officers were elected: president, Capt. George N. Kreider, Springfield, Ill.; vice president, Major Robert D. Maddox, Cincinnati; secretary, Major Fred W. Bailey, St. Louis. An adjourned meeting will be held at the Congress Hotel, Chicago, Monday, October 22, at 3 p. m.

Creating a Dental Corps in the Army

By concurrence of the House in Senate amendments to House Bill 4897 in the closing hours of Congress, October 6, a Dental Corps has been created in the Army, corresponding to the Medical Corps, the membership of which shall have the rank, pay, promotion and allowance of officers of and shall be of the corresponding grade of the Medical Corps. Chairman Dent of the House Military Committee explained that the House bill relating to members of the Dental Service of the Army corresponded to the section of the national defense law which waived the former requirement of the law of five years' previous service in the Army as lieutenant before a member could be promoted to the next higher rank, and so on for the higher grades. The Senate practically adopted the House bill with the material amendment that a Dental Corps be created in the Army. Heretofore, the highest rank a member of the dental service could attain was that of major, and it would require twenty-four years of service before he could obtain that rank. At present the highest officers in the Army dental service have the rank of captain.

AMERICAN ASSOCIATION OF MILITARY SURGEONS

(Continued from page 1273)

Meeting at Fort Benjamin Harrison

The second day of the convention was opened by the president, Surg.-Gen. Rupert Blue. The first speaker of the session, Col. T. H. Goodwin, British Medical Service, dealt with the subject of the "Personnel of the British Army." The current of the thought in his address was sportsmanship, as illustrated by a favorite phrase of Colonel Goodwin's—*esprit de corps*. This he illustrated by many personal experiences with his troops. An officer and three of the enlisted sanitary personnel were in "No Man's Land" (called by Colonel Goodwin "Our Land," now that the British Army is gaining with every "show"), assembling the wounded, when a gas alarm sounded. This detachment was assisting in a particularly bad case at this time, and the wounded officer had no mask. It happened that between the officer and his three assistants there were only two masks all together. After each had refused, even when ordered to don a mask, one was finally put on the wounded man. The result was that later the wounded man was brought in alive, but the officer and his three men were found dead. That is playing the game, even though it is bad from a military standpoint, when four good men are lost to save one wounded, who may be permanently out of the war. Colonel Goodwin labeled as malicious lies the stories that the British Army is killing the wounded in the conquered trenches. "Quite the contrary," he said; "we make particular efforts to get them back to the dressing stations behind our lines." He said, "It will be this *esprit de corps*, which is such a dominant characteristic of the English-speaking people, that will win in this war, and never again will these peoples be separated, so long as the world lasts."

The next speaker, Capt. J. Gilmour, R. A. M. C., a veteran of many campaigns, though a young man, addressed the convention on the "Transportation of the Wounded on the Western Front." The address was extremely technical, but interesting to military men. The comparison of the British methods with those of our own Army shows that the United States has followed the British Army Sanitary Service Manual quite closely in writing its own. The scheme is illustrated by this outline: (1) Man transportation, by which the wounded man is carried on the bearer's back, or other scheme to get him back in the quickest and safest manner possible; (2) man transportation, with the use of litters and other apparatus not on wheels; (3) conveyances on wheels, drawn

The "medics" of the Medical Officers' Training Camp took the point personally, and cheered wildly.

ADDRESS OF SURGEON BAINBRIDGE

Surg. William Seaman Bainbridge, U. S. Navy, spoke on "Reconstruction of the Crippled," and applied the subject to the reconstruction of the nations after the war. "I believe," said the speaker, "that the entrance into the war of my country means a better civilization for the future. I know that the people of Germany are heart and soul behind the kaiser in the war, and that the German women would drive the men back to the battle front if they showed any signs of weakening."



PARADE AND REVIEW OF THE MEDICAL OFFICERS' TRAINING CAMP, FORT BENJAMIN HARRISON, INDIANA, OCTOBER 8. IN THIS REVIEW THERE PERMANENT BARRACKS. IN ORDER TO PERMIT REPRODUCTION THIS PANORAMIC VIEW HAS BEEN CUT INTO FOUR PARTS; THE FOUR ILLUSTRATIONS,

by men; (4) on animals' backs, mules, horses, etc.; (5) conveyances on wheels drawn by animals; these have been largely supplanted by motors; (6) railroad transportation; (7) water transportation. Captain Gilmour modestly remarked on the dryness of his topic, but followed the example of the other speakers, with a story of a personal experience.

Prisoners were coming in after a particularly hard "show." Among them was a German officer. "I asked this officer, who was down on his luck and who spoke perfect English," said Captain Gilmour, "what he thought of the British charge. In reply, I learned that it was not much. He told me that our artillery fire was only fair. I finally asked him what he thought of the fact that the Americans had come in. He straightened up and said, 'That's bad. Now we have brains against us.'"

FIELD MANEUVERS

The afternoon was devoted to practical demonstrations of field maneuvers by sanitary troops. These were explained by Lieut.-Col. M. A. W. Shockley, M. C., U. S. Army. The maneuvers were in the form of a terrain exercise, in which a position of opposing forces was assumed, and casualties estimated and placed on the terrain and tagged. Under these assumed conditions the surgeons of the various combatant organizations were required to issue orders and manage their organizations and establishments in accordance with the principles of sanitary tactics. The sanitary troops had established the necessary regimental aid stations, dressing stations, ambulance stations and field hospitals.

The convention, about 2,000, hiked to the trenches with the U. S. Army instructors and the distinguished guests from our

Allies. The dressing stations were established in ravines, in shelter, at the head of the sanitary line to the evacuation hospital. These stations consisted of tent shelters, to which the wounded were brought by the sanitary privates on litters, and in which they received first aid. From these stations the wounded were transported by mule ambulances to field hospitals, where they were given temporary treatment, consisting mainly of dressing adjustment. On account of the necessity of the mobile units accompanying the commands to which they were attached, the near approach of the enemy required that the wounded be evacuated to the base hospital as rapidly as possible. This movement was executed in a rapid manner, and the patients were transported to the rail-

"War Neuroses." "I think," said Dr. Salmon, "that shell shock is purely a neurosis and has no organic basis, but is founded on fear or horror. Early in the war these patients were treated in England by pampering and rest, with an insignificant number of recoveries. Since the establishment of the definite etiology, suggestion, persuasion and hypnosis have restored many to the battlefields." By elimination, wounded men and prisoners being used for the study of the condition, it was found that only twelve definite cases of shell shock had occurred among 60,000 prisoners. A correct deduction is simple.

The convention was closed on the third day by an interesting address by Col. T. H. Goodwin, British Medical Ser-



WERE ASSEMBLED OVER 1,200 MEDICAL OFFICERS AND ABOUT 2,000 ENLISTED MEN OF THE MEDICAL DEPARTMENT. IN THE BACKGROUND ARE THE
HEREFORE, MUST BE REGARDED AS A CONTINUOUS PICTURE, READING FROM LEFT TO RIGHT.

way hospital train brought from the base to a nearby station. The visitors not only obtained a vivid picture of the work as done in actual battle, but also had the advantage of most interesting explanation by Lieutenant-Colonel Shockley.

ADDRESS BY COLONEL DIRCLE

In the evening, Col. Charles Dirclé of the French Army exhibited moving pictures of the "Medical Service on the Western Front." It was an inspiration to hear him speak of France. His reverence for his country and his devotion to it were stimulating and worthy of emulation.

ADDRESS OF MAJOR SALMON

Major Thomas H. Salmon, M. R. C., U. S. Army, detailed to the Surgeon-General's Office, illustrated his address on

vice, followed by the installation of the following officers: president, George A. Lung, Medical Director of the Navy; vice presidents, Lieut.-Col. Henry Allers, N. G., New Jersey; Brig.-Gen. Henry P. Birmingham, M. C., U. S. Army, and Asst. Surg.-Gen. J. S. Kerr, U. S. P. H. S.; secretary, Col. Edward Munson, M. C., U. S. Army (reelected), and treasurer, W. C. Rucker, U. S. P. H. S.

RESULTS OF THE MEETING

The holding of this meeting at one of the great officers' instruction camps has aided materially in impressing on the visitors the great need of thorough application for the attainment of technical knowledge of military affairs. The students in the medical camp also have profited immensely by personal contact with the guests, many of whom have been in actual campaigns within the war zone.

NEWS OF THE CANTONMENTS

[From Our Special Correspondents]

Thirty-First Division, Camp Wheeler, Macon, Ga.

The school of sanitation and medicomilitary tactics is progressing. Sessions are held four afternoons in each week; on Wednesday the officers of the mounted organizations take a ride into the country. These rides are a combination of pleasure, practice in riding, and instruction in topography and field work. Complete problems will be taken up soon.

NOTES

Major Harrold has secured medical officers to fill his complement with the 121st Infantry.

Colonel Fisher of the Surgeon-General's Office inspected the camp, October 8. He appeared surprised to find a new motor ambulance company here.

Captain Pratt, M. R. C., is here to give instruction in gas defense.

The tuberculosis board is progressing rapidly; likewise the board on disease of the heart and that on mental diseases.

The base hospital will open about October 15, with some 250 patients.

The men of the ambulance companies are putting in an underground first-aid station close to the firing trench of the trench system now under construction. It will be fitted up as if for actual use, and used for instruction in gas defense.

As the division is now being filled up with draft men the sanitary units and detachments will also be filled. All units have already been organized, but there is a shortage of medical officers.

Capt. William A. Padgett of the Alabama National Guard has been promoted to major.

BASE HOSPITAL NOTES

The officers' quarters were completed, October 4, and promptly occupied. After several weeks in tents, the individual rooms were properly appreciated.

The administration building, receiving ward, two single ward buildings, laboratory building and operating pavilion are all practically complete, with the exception of electrical connections. The first is now being occupied by the administrative staff; intensive training and instruction is being given the enlisted personnel in order that they may be quite ready for their duties when we begin to receive patients, Wednesday next.

Lieutenant Horne, M. R. C., is now convalescent, following an operation for appendicitis.

Capt. Samuel C. Baker, M. R. C., specialist in brain surgery, reported for duty, October 10, and Capt. Francis R. Lyman, M. R. C., specialist in plastic surgery of the head, on October 11, thus probably completing the personnel of the staff.

ONE HUNDREDTH AND SIXTH
SANITARY TRAIN

The camp hospital has still averaged 270 patients and great interest is taken by the local Red Cross in providing comforts. The meeting of the Red Cross, October 12, will surely be productive of added comforts.

Dr. Snively of Atlantic, national director of the Red Cross, visited the camp hospital, October 12, and was greatly pleased with conditions.

The weekly social and dance took place Wednesday, and a most enjoyable time was had by all. Many visiting officers and ladies of Macon attended. Coffee and sandwiches à la buffet were served. Music was furnished by the Florida Field Hospital Orchestra.

The sanitary train is now being conducted as a regiment with its battalions of field hospital and ambulance companies. A supply organization is making its need felt.

The sick rate is dropping steadily.

Major George C. O'Connell, Alabama, has reported from leave of absence, and is now on full duty.

Lieut. Edward S. Byrd of the (Georgia) Field Hospital No. 122, about to enter the ranks of the benedicts, is receiving the congratulations of brother officers. The lady is Miss Lucy B. Boyd of Enterprise, Ala.

Eightieth Division, Camp Lee, Petersburg, Va.

CONSTRUCTION OF BASE HOSPITAL

The past two weeks have witnessed rapid progress in the construction of the base hospital which although not completed, has received a large number of patients. The number, however, has been comparatively small, and has consisted largely of minor cases which could not be cared for in the regimental infirmaries. The staff has been working under difficulties owing to delay of manufacturers in sending equipment and a large part of the time of the staff has been occupied in making special examinations in doubtful cases shortly after the arrival of the drafted men.

The majority of the enlisted men are new and inexperienced in nursing, and the arrival of sixteen trained female nurses during the past week will insure better care for the patients.

One woman arrived in camp alone, the first woman to stay here over night. What Major Hope christened her can readily be imagined. Congratulations are in order for Capts. J. Bayard Clark, M. R. C.; Ewing B. Day, M. R. C., and Samuel B. Moore, M. R. C., who now wear their well deserved gold oak leaves. There have been a few changes in the staff, as the following men have been transferred from duties in the division to assignments in the base hospital: Lieuts. A. C. Butcher, M. C. Campbell, A. J. Colborn, W. J. Davies and William F. Davison, all of the M. R. C.

The staff are comfortably quartered in the receiving ward and now have their own mess, and since Captain Merritt has had charge of it he is more popular than ever. Major Clark has been assigned to the work of supervising the care and prevention of venereal diseases in the division, and has devised a most satisfactory wash stand similar in shape to a urinal for the purpose of administering venereal prophylaxis. These stands are now being made and will shortly be installed. A prophylaxis station has been opened in Petersburg, and treatments are now given within a very short time after the men have exposed themselves to infection.

PSYCHOLOGIC EXAMINATIONS

One of the most interesting and novel experiences which the medical officers have had at Camp Lee was the psychologic examination which was given by the ten psychologic examiners stationed here to examine the troops, under the direction of Lieut. Clarence S. Yoakum of the Sanitary Corps. Lieutenant Yoakum is professor of psychology in the University of Texas, and he and his assistants are well known in the field of practical applied psychology. The medical officers were examined at the request of Lieut.-Col. T. L. Rhoads, the division surgeon,

with the hope that the examination would indicate in a general way the comparative adaptability of the different men.

The examinations were not difficult, but called for the alertness and accuracy so essential for a good soldier. No man can make a successful soldier or officer unless he grasps the actual meaning of his orders and knows how to obey them with precision and dispatch. The tests that were given rank the men on such qualities as these and, at the same time, rank them quite accurately on general intelligence. Tests have already been given to men of the regular Army and the results compare, in a high degree, with the estimates of the men made by the officers themselves. The gradings given compare quite accurately with the provisional estimate of the men made by Lieut.-Col. Rhoads and Major Schmitter. The results of the examinations of medical officers are very interesting. The base hospital physicians rank first, the regimental surgeons second and the Dental and Veterinary Corps,



Col. Thomas Herbert Goodwin, C. M. G., D. S. O., of the British Army, assigned to the Surgeon-General's office of the United States Army.

third and fourth. It is perhaps only fair to say that there were relatively few of the last two groups, so that their rankings are necessarily less accurate than the others. It required a staff of almost 100 men to give the tests and score and record the results. The tests created much comment and were enjoyed by the men as much as an interesting game would be.

EARLY DUTIES

The medical officers of the regiments have had their time very largely occupied in examining recruits, administering "triple typhoid" vaccine and learning their routine duties, and it has not as yet been possible to organize the sanitary personnel of the regiments and begin their formal instruction. This will begin shortly.

SANITARY TRAIN

The sanitary train under the direction of Capt. Elliott B. Edie, M. R. C., has been able to start systematic instructions. Lieut. Burr Ferguson, now Captain Ferguson, has been appointed instructor of ambulance companies by Colonel Hamilton, the commander of the trains, and work has been commenced. Drill, instructions and first aid will occupy most of the time during the first few weeks. The ambulance companies have been rechristened. Ambulance Company A, organized at Fort Oglethorpe, Ga., becoming No. 318; No. 43, organized by the Red Cross of Raleigh, N. C., is now No. 317, and Ambulance Company No. 46, organized by the Red Cross of Richmond, Va., is now No. 319. Odd numbered companies are motor drawn and even numbered companies animal drawn.

PAPER WORK

After the first quota of troops are examined this week the real work for the winter will begin, for which the regimental officers are all eager. Paper work is losing its terror and is gradually becoming comprehensive and easy.

HEADQUARTERS GOSSIP

The sanitary office, the headquarters of the division surgeon, is one of the busiest offices in the division, and Colonel Rhoads has already earned a reputation for industry and fairness. One of the assistants in the office, Capt. Hugh T. Nelson, Charlottesville, Va., quietly asked for a pass over Sunday and arrived back Monday morning but preceded by the announcement of his marriage to Miss Edith Rankin of Richmond, Va., on October 6. Captain Nelson is the only war bride among the medical officers since Camp Lee has opened.

THE DIVISION OF INTERNAL MEDICINE OF THE SURGEON-GENERAL'S OFFICE

The following is a list of physicians—internists—who have been appointed chiefs of the medical service in the great hospitals connected with the cantonments of the National Army and the National Guard. It is a guaranty of the high character of the professional work that will be done in them, and of the care that the sick soldiers will receive during their training. It is also an index of the patriotism of the best men in the medical profession:

CHIEFS OF MEDICAL SERVICE, CAMP HOSPITALS

NATIONAL ARMY

CAMP DEVENS, AYER, MASS., Maj. Joseph H. Pratt, Boston, Mass., instructor in medicine, Harvard University Medical School; assistant visiting physician, Massachusetts General Hospital.

CAMP UPTON, YAPHANK, LONG ISLAND, NEW YORK, Maj. Harlow Brooks, New York City; professor of clinical medicine, New York University Medical College; visiting physician, City Hospital.

CAMP DIX, WRIGHTSTOWN, N. J., Maj. David Bovaird, New York City; assistant professor of clinical medicine, College of Physicians and Surgeons, Columbia University; visiting physician, Presbyterian Hospital.

CAMP MEADE, ADMIRAL, MD., Maj. Nellis B. Foster, Ann Arbor, Mich., professor of internal medicine, University of Michigan Medical School.

CAMP LEE, PETERSBURG, VA., Maj. Lawrence Litchfield, Pittsburgh, Pa., practicing physician and consultant.

CAMP JACKSON, COLUMBIA, S. C., Maj. W. W. Herrick, New York City, associate in medicine, College of Physicians and Surgeons, Columbia University, chief of clinic in medicine, Vanderbilt Clinic; assistant attending physician, Roosevelt Hospital.

CAMP GORDON, ATLANTA, GA., Maj. Eugene E. Murphey, Augusta, Ga., professor of medicine, Medical Department, University of Georgia.

CAMP SHERMAN, CHILLICOTHE, OHIO, Maj. Dudley D. Roberts, Brooklyn, N. Y., clinical professor of gastro-enterology, Long Island College Hospital; visiting physician, Brooklyn Hospital.

CAMP TAYLOR, LOUISVILLE, KY., Maj. Walter W. Hamburger, Chicago, Ill., assistant professor of medicine, Rush Medical College, University of Chicago; visiting physician, Michael Reese and Cook County hospitals.

CAMP CUSTER, BATTLE CREEK, MICH., Maj. Ernest E. Irons, Chicago, Ill., assistant professor of medicine, Rush Medical College, University of Chicago; visiting physician, St. Luke's and Cook County hospitals.

CAMP GRANT, ROCKFORD, ILL., Maj. Joseph A. Capps, Chicago, Ill., associate professor of medicine, Rush Medical College, University of Chicago; visiting physician, St. Luke's and Cook County hospitals.

CAMP PIKE, LITTLE ROCK, ARK., Maj. Arthur A. Small, Chicago, Ill., instructor in medicine, Rush Medical College, University of Chicago; visiting physician, St. Joseph's Hospital.

CAMP DODGE, DES MOINES, IOWA, Maj. Joseph L. Miller, Chicago, Ill., associate professor of medicine, Rush Medical College, University of Chicago; visiting physician, Presbyterian and Cook County Hospitals.

CAMP FUNSTON, FORT RILEY, KANSAS, Maj. Andrew MacFarlane, Albany, N. Y., clinical professor of medicine, Albany Medical College, Union University; visiting physician, St. Peter's Hospital.

CAMP TRAVIS, FORT SAM HOUSTON, TEXAS, Maj. Herbert C. Moffitt, San Francisco, professor of medicine, University of California; physician to University Hospital.

CAMP LEWIS, AMERICAN LAKE, WASHINGTON, Maj. Calvin S. White, Portland, Oregon, assistant professor of medicine, University of Oregon, Medical School; health officer, Portland.

NATIONAL GUARD

CAMP GREENE, CHARLOTTE, N. C., Maj. Francis W. Palfrey, Boston, Medical School; assistant visiting

instructor in medicine, Harvard

CAMP WADSWORTH, SPARTANBURG, S. C., Maj. Llewellyn Sale, St. Louis, Mo., instructor in medicine, Washington University Medical School, St. Louis; visiting physician, St. Louis City Hospital.

CAMP HANCOCK, AUGUSTA, GA., Maj. Frederick J. Barrett, New York, adjunct professor of medicine, Post-Graduate School of Medicine, New York; visiting physician, Post-Graduate Hospital, New York.

CAMP McCLELLAN, ANNISTON, ALA., Maj. William H. Robey, Jr., Boston, Member of Faculty of Harvard Medical School; visiting physician, Boston City Hospital.

CAMP SEVIER, GREENVILLE, S. C., Maj. Edward H. Goodman, Philadelphia, associate in medicine, University of Pennsylvania; visiting physician, Presbyterian Hospital, Philadelphia.

CAMP WHEELER, MACON, GA., Maj. Richard Weil, New York, professor of experimental medicine, Cornell University Medical School; adjunct visiting physician, Mount Sinai Hospital, New York.

CAMP McARTHUR, WACO, TEXAS, Maj. Oliver H. Campbell, St. Louis, visiting physician, St. Louis City Hospital, St. Louis; assistant in medicine, Washington University Medical School.

CAMP LOGAN, HOUSTON, TEXAS, Maj. Josiah N. Hall, Denver, professor of medicine, University of Colorado.

CAMP CODY, DEMING, N. MEX., Maj. William S. Bigelow, Boston, physician and consultant.



Col. Percy M. Ashburn and Surg.-Gen. William C. Gorgas at the Medical Officers' Training Camp, Fort Benjamin Harrison, Indiana.

CAMP DONIPHAN, FORT SILL, OKLA., Maj. Sidney Strauss, Chicago, assistant professor of medicine, Rush Medical College, Chicago; assistant attending physician, Michael Reese and Presbyterian hospitals, Chicago.

CAMP BOWIE, FORT WORTH, TEXAS, Maj. James C. Greenway, New Haven, Conn., director of department of medical supervision, Yale University, New Haven, Conn.

CAMP SHERIDAN, MONTGOMERY, ALA., Maj. James S. McLester, Birmingham, Ala., professor of medicine, Graduate School of Medicine, University of Alabama; physician in chief, Hillman Hospital.

CAMP SHELBY, HATTIESBURG, MISS., Maj. George H. Lathrope, Morristown, N. J., attending physician, Morristown Memorial Hospital.

CAMP BEAUREGARD, ALEXANDRIA, LA., Maj. Birnie J. Guthrie, New Orleans, La., professor of clinical medicine, Tulane University.

CAMP KEARNEY, LINDA VISTA, CALIF., Maj. Philip S. Chancellor, Santa Barbara, Calif., practicing physician and consultant.

BASE HOSPITALS

FORT MCPHERSON, Maj. C. N. B. Camac, New York, assistant professor of clinical medicine, College of Physicians and Surgeons, Columbia University, New York; director of medical service, Gouverneur Hospital, New York.

FORT DES MOINES, Maj. Herbert H. Frothingham, Chicago, practitioner of medicine and consultant.

FORT MCHENRY, Capt. J. Albert Chatard, Baltimore, Md., instructor in clinical medicine, Johns Hopkins Medical School, Baltimore, Md.

DIAGNOSIS OF CARDIOVASCULAR DISEASES

In addition to these, assistants have been assigned to the various hospitals, with special training in modern methods of diagnosis and treatment of cardiovascular diseases, and after a period of special instruction with Dr. Alfred E. Cohn in the Rockefeller Institute, as follows:

Cpts. Harold W. Stevens, Pittsburgh; Albert Vander Veer, Jr., New York City; James Howard Agnew, Mobile, Ala.; and Henry Rose Carter, Jr., Baltimore; Lieuts. Julien E. Benjamin, Cincinnati; Hugh K. Berkley, San Francisco; Ernest P. Boas, New York City; James H. Brown, Colorado Springs, Colo.; Carl R. Comstock, Saratoga Springs, N. Y.; W. L. Freyhoff, Cincinnati; Charles D. Giddings, New York City; Alpheus F. Jennings, Detroit; Berton Lattin, New York City; Frank B. Lusk, Chicago; Willard D. Mayer, Detroit; William J. Kerr, San Francisco; Louis H. Nahum, New York City; Harold E. B. Pardee, New York City; Edward J. Riley, New York City; Orville F. Rogers, Jr., Dorchester, Mass.; Truman G. Schnabel, Philadelphia; S. Calvin Smith, Philadelphia; F. Janney Smith, Detroit; Thayer A. Smith, New York City; Arthur E. Strauss, St. Louis; Francis C. Tyng, Salt Lake City.

SPECIAL EXAMINERS AND CONTRACT SURGEONS

Since July, special examiners, selected because of their experience and diagnostic skill, have been conducting the examination of the troops in the reserve officers' training camps, reorganization camps of the regular Army and of the National Guard when assembled for mustering into the federal service in the larger cities, and are now at work in the thirty-two cantonments of the National Army and the National Guard. Many of them are teachers of medicine and physicians to important hospitals, who could not accept commissions because of this obligation, and have patriotically volunteered as contract surgeons. Others, beyond the age limit for commission in the corps, have embraced this opportunity of rendering a service to the country with only the rank and pay of a first lieutenant, to which contract surgeons are entitled. Their names make it certain that so far as it is humanly possible no man will be forced to undertake military service whose health will be thereby endangered; and no man will escape service who is not suffering from actual disease of the heart or vessels. A list of these cardiovascular examiners follows:

Majors *David Boviard, New York City; Thomas D. Coleman, Augusta, Ga.; *Lewis A. Conner, New York City; James C. Greenway, New Haven, Conn.; Josiah N. Hall, Denver; W. W. Hamburger, Chicago; Walter A. Jayne, Denver; Herbert C. Moffitt, San Francisco; and Roger S. Morris, Cincinnati.

Cpts. James H. Agnew, Mobile, Ala.; Ralph C. Brown, Chicago; *S. L. Cash, New York City; *Joseph A. Chatard, Baltimore; Jule B. Frankenhimer, San Francisco; *Milton H. Fussell, Philadelphia; Cary Gamble, Baltimore; *William J. Hammer, New York City; Alpheus F. Jennings, Detroit; Oscar E. Lademann, Milwaukee; *John J. McClellan, Chicago; B. S. Oppenheimer, New York City; Ross V. Patterson, Philadelphia; Henry L. Smith, Baltimore; *Gerald B. Webb, Colorado Springs, Colo.; *Gordon Wilson, Baltimore, and Charles C. Wolforth, Philadelphia.

Lieuts. *James R. Arneill, Denver; Hugh K. Berkley, San Francisco; *Thomas F. Ellis, New York City; *Hermann Elwyn, New York City; *Augustus Eshner, New York City; *Harvey M. Ewing, Montclair, N. J.; William J. Kerr, San Francisco; *John T. Kling, Jr., Baltimore; *Geza Kremer, New York City; *Frank McLean, New York City; John H. Musser, Philadelphia; *David Reisman, Philadelphia; *Henry C. Thacher, New York City; Thayer A. Smith, New York City, and Frank N. Wilson, St. Louis.

Contract Surgeons Vanderpoel Adriance, Williamstown, Mass.; Arthur P. Beifeld, Chicago; Worth N. Brown, Baltimore; *F. R. Burke, Boston;

*E. A. Burnham, Boston; Glentworth R. Butler, Brooklyn; Robert J. Carlisle, New York City; Thomas A. Claytor, Washington, D. C.; *A. T. Downing, Boston; Frederick T. Fahlen, St. Louis; Harold Feil, Cleveland; *Cleveland Floyd, Boston; *W. B. Ford, Milwaukee; Hugo A. Freund, Detroit; Alfred Friedlander, Cincinnati; Joseph C. Friedman, Chicago; Lewis Fox Frissell, New York City; James H. Gibbes, Columbia, S. C.; Charles L. Greene, St. Paul; *Harry W. Goodall, Boston; T. Stuart Hart, New York City; George S. Hill, Boston; Tasker Howard, Brooklyn; William E. Hughes, Philadelphia; Henry Jackson, Boston; Thomas S. Lee, Washington, D. C.; Donald Macomber, Boston; *J. D. Madison, Milwaukee; *H. D. McCarty, Baltimore; Louis Mendelsohn, Boston; *G. R. Minot, Boston; *T. J. Murphy, Boston; *Lawrence T. Newhall, Boston; *Edward O. Otis, Boston; *Arthur J. Patek, Milwaukee; Peter J. Pothuisje, Denver; Thomas I. Simonton, Pittsburgh; Willard J. Stone, Toledo; *W. P. Stubbs, Baltimore; *Lawrence G. Sykes, Milwaukee; Arnold S. Taussig, Denver, and J. Gurney Taylor, Milwaukee.

MEN UNDER HALF-TIME CONTRACT

Doctors George Bachmann, Atlanta, Ga.; George S. Bond, Indianapolis, *Cary Eggleston, New York City; *Howard H. Mason, New York City; Martin A. Mortensen, Battle Creek, Mich., and *Leander H. Shearer, New York City.

*Tuberculosis examiners also.

COMPLETION OF INTERNSHIP OF COMMISSIONED OFFICERS

The Surgeon-General's Office has issued the following statement relative to interns in the Medical Reserve Corps:

When a regularly commissioned officer in the Medical Reserve Corps applies for permission to complete one year's hospital service, such permission will be granted by the Surgeon-General providing the exigencies of the service permit. In order to continue on the inactive list for the completion of internship, the officer concerned will make formal application to the Surgeon-General of the Army, which shall be accompanied by a statement from the executive officer of the hospital certifying the fact that the appointment as intern has been made, and the date on which the internship commenced. In granting permission to continue inactive as above, the following provisions will apply: (a) period of internship, in so far as this office is concerned, commences August 1 following graduation of any year and terminates July 31 following; (b) in event of termination of service prior to expiration of one year allowed, immediate report must be made to the Surgeon-General by both the executive officer of the hospital and the intern; (c) the term internship is hereby interpreted to mean one year's hospital service immediately following graduation and cannot be applied to hospital service entered into after August 1 next succeeding graduation.

Interns who have already received appointments in the Medical Reserve Corps but who have not accepted them may be allowed an opportunity to complete their service as interns either by entering the Medical Enlisted Reserve Corps, conformably to the regulations made and provided for the discharge of interns from military service under the selective service law, or by accepting appointment. In the latter case, application must be made at once as above provided. Those who have not already received commissions in the Medical Reserve Corps and who desire to complete hospital service but who come within the provisions of the selective service law, will be obliged to enlist in the Medical Enlisted Reserve Corps.

At the time of application for permission to continue inactive, commissioned officers to whom this privilege is granted and who are within the draft age will be supplied with a statement to the effect that they are regularly commissioned and subject to orders from this department, and Form 117, prepared by the Provost Marshal-General, and obtainable at the office of the local board, will be signed at this office if a copy is forwarded with the statement that it is required by the local board. Affidavit forms for such officers have been prepared and are being sent to interns commissioned as officers who desire to complete their internships.

Constitution of Board to Write Medical History of the War

A board constituted to write the medical history of the war consists of Lieut.-Col. C. C. McCulloch, M. C., U. S. Army; Major Fielding Garrison, M. R. C., U. S. Army, and Major John S. Fulton, M. R. C., U. S. Army. This committee may be addressed at the Army Medical Museum, Washington, D. C.

Orders to Officers of the Medical Corps

Col. William O. Owen, M. C., now on duty at the Army Medical Museum, to proceed to Detroit, Mich., for the purpose of inspecting the motion picture laboratory of the Ford Motor Works, and on completion of this duty to return to his proper station.

Lieut. Henry L. Krafft, M. C., to be relieved from duty at the Walter Reed General Hospital, Takoma Park, D. C., and to proceed to Camp Dix, Wrightstown, N. J., and report in person to the commanding general of that camp for duty with the division surgeon.

Major Benjamin B. Warriner, M. C., to be relieved from duty at Douglas, Ariz., and to proceed to Mineola, Long Island, N. Y., and report in person to the commanding officer, Hazlehurst Field, Aviation Section, Signal Corps, for duty.

Major Ross H. Skillern, M. C., Pennsylvania N. G., be relieved from his present duty at Camp Sheridan, Montgomery, Ala., and directed to report in person to the commanding general thereof and to the commanding officer of the base hospital for duty in the division of otolaryngology, section of surgery of the head.

Major Thomas D. Woodson, M. C., now in this office, be directed to proceed to the following named places for the purpose of inspecting these sites to determine their degree of availability for use as general hospitals, and on completion of this duty to return to his proper station: Fort Niagara, N. Y.; Fort Porter, N. Y.; Fort Ontario, N. Y.; Fort Ethan Allen, Vt.; Madison Barracks, N. Y.; Plattsburg Barracks, N. Y.

First Lieut. Walcott Denison, M. C., on the expiration of sick leave granted him in office orders No. 5403, Surgeon-General's Office, Oct. 9, 1917, be relieved from duty in the office of the Surgeon-General and directed to report in person to the chief surgeon, aviation section, signal corps, for duty in his office, and by letter to the commanding general, aviation section, signal corps, Washington, D. C.

Major Henry B. McIntyre, M. C., New York, N. Y., be directed to proceed to Fort Oglethorpe, Georgia, and report in person to the com-

ARKANSAS

To Camp Funston, Fort Riley, Kan., for duty, from Medical Officers' Training Camp, Lieut. Samuel G. Boyce, Little Rock.

To Camp Pike, Little Rock, Ark., from Camp Beauregard, Alexandria, La., for duty with the First Arkansas National Guard, Lieut. James E. Phillips, Eureka Springs.

To Fort Oglethorpe for instruction, Lieuts. John E. Burns, Black Rock; Mathew A. Bizzell, Doddridge; James E. Johnson, Fort Smith; Raphael W. Steele, Gentry; Mahlon D. Ogden, Geyer C. Wood, Little Rock; Everett N. Lipe, Scranton; John M. Bearden, Sonora.

To Washington University, St. Louis, Mo., for three weeks' intensive training, Lieut. Sydney J. Wolfermann, Ft. Smith.

CALIFORNIA

To Camp Cody, Deming, N. M., for duty, Lieut. Clarence W. Dodge, Los Angeles.

To Camp Lewis, American Lake, Wash., for duty, Lieuts. Robert W. Brace, Modesto; John E. Paulson, San Quentin.

To Camp Mills, Garden City, L. I., for duty with First Colorado Field Hospital, from Camp Baldwin, Denver, Colo., Lieut. Paul A. Opp, Los Angeles.

To Fort Oglethorpe for instruction, Lieut. John H. Woolsey, San Francisco.

To Los Angeles, for a course of instruction in military roentgenology, Lieut. John P. Byrnes, Oakland.

To their homes and return to the inactive list of the Medical Reserve Corps, Major James R. Moore, Los Angeles; Lieut. Charles H. Bailey, San Francisco.

CANAL ZONE

To Mineola, L. I., for duty with the Aviation Section, from duty at Balboa, Canal Zone, Capt. Edward P. Beverly, Cristobal.



The barbecue at the meeting of the Association of Military Surgeons at Fort Benjamin Harrison, Indiana. In the background may be seen the evacuation hospital established by Major H. M. Lyle.

mandant, Medical Officers' Training Camp, Camp Greenleaf, for duty as instructor.

Major Kerwin W. Kinard, M. C., be relieved from duty at the base hospital, Camp Sherman, Chillicothe, Ohio, and directed to proceed to Fort Riley, Kan., and report in person to the commandant, Medical Officers' Training Camp, for duty as instructor.

Lieut.-Col. Robert L. Carswell, M. C., be relieved from duty at the Medical Officers' Training Camp, Camp Greenleaf, Fort Oglethorpe, Georgia, and directed to proceed to Fort Sam Houston, Texas, and report in person to the commanding general, southern department, for duty.

Orders to Officers of the Medical Reserve Corps

ALABAMA

To Camp Jackson, Columbia, S. C., for the purpose of making examinations in his specialty, from Phipps Clinic, Baltimore, Md., Lieut. Wilbur L. Heard, Mt. Vernon.

To Camp Meade, Annapolis Junction, Md., for duty, Lieut. Thomas M. McMillan, Jr., Mobile.

To Fort Oglethorpe for instruction, Lieuts. Jacob D. Staples, Camp Hugh; Edward D. McAdory, Cullman; Joseph M. Weldon, Tallassee; Walter E. Allen, Ward; from Motor Ambulance Supply Depot, Louisville, Ky., Charles W. Williams, Cherokee.

To Newport News, Va., for duty with 303d Stevedore Regiment, from Fort Oglethorpe, Capt. Mack Rogers, Birmingham.

To his home and return to the inactive list of the Medical Reserve Corps of the Army on account of being physically disqualified for active service, Lieut. Horace L. McWhorter, Collinsville.

Honorably discharged, Lieuts. Joseph M. Theringer, Mobile; from the Medical Reserve Corps on account of holding a commission in the National Guard, Frank V. Meriwether, Samson, Ala.

COLORADO

To Dodge, Iowa, for duty in his specialty, from duty at Fort Douglas, Utah, Lieut. Philip Work, Pueblo.

To Camp Funston, Fort Riley, Kan., for duty, from Medical Officers' Training Camp, Lieuts. Floyd C. Turner, Stoneham; Aubert Durnell, Strong.

To Camp Robinson, Sparta, Wis., for duty with the 8th Field Artillery, Lieut. Robert L. Zaegel, Denver.

To Fort Logan, Colo., for duty, Major William W. Grant, Denver.

To Fort Oglethorpe for instruction, Lieuts. William S. Brown, Denver; James M. Shields, Grand Junction; Ernest G. Edwards, La Junta.

To his home and return to the inactive list of the Medical Reserve Corps on account of being physically disqualified for active service, from duty at Fort Oglethorpe, Lieut. Harry B. Sobernheimer, Meeker.

CONNECTICUT

To Fort McHenry, Md., for duty in the laboratory, Lieut. Abraham L. O'Shansky, New Haven.

To Fort Oglethorpe, for instruction, Lieut. Owen O'Neill, Willimantic. *To Neurological Institute*, New York, N. Y., for intensive study in his specialty, Lieut. Harold A. Bancroft, Hartford.

Honorably discharged on account of being physically disqualified, Lieut. Albert A. Wheelock, New Canaan.

DELAWARE

To Fort Oglethorpe for instruction, Lieut. John B. Rutherford, Wilmington.

DISTRICT OF COLUMBIA

To Camp Hancock, Augusta, Ga., from Fort Oglethorpe, for duty in the division of plastic and oral surgery, section of surgery of the head, Lieut. Oliver C. Cox, Washington.

To Camp Logan, Houston, Tex., for duty as a member of a board of medical officers for tuberculosis examination, Lieut. Richard M. Little, Washington.

To *Camp Wheeler*, Macon, Ga., 31st Division, for duty as member of a board of medical officers for tuberculosis examination, from Fort Myer, Va., Lieut. Frederick Sohon, Washington.

To *Cornell Medical College*, New York, for a course of instruction in military roentgenology, Lieut. Stuart C. Johnson, Washington.

To *Fort Oglethorpe* for instruction, Lieuts. True S. Burgess, Albert E. Pagan, David G. Sampson, James S. Taylor, Washington.

To *Langley Field*, Hampton, Va., for temporary duty in connection with aviation and upon completion of this duty to return to their proper station, Majors Edward G. Seibert and William H. Wilmer, Washington.

To *Mineola*, L. I., from Washington, D. C., for temporary duty in connection with the Aviation Service of the Army, Majors William H. Wilmer and Edward G. Seibert, Washington.

To *Rockefeller Institute*, New York, for a course of instruction and upon completion of this course to return to his home and to the inactive list of the Medical Reserve Corps, Major James F. Mitchell, Washington.

FLORIDA

To *Camp Meade*, Annapolis Junction, Md., for duty with 23rd Engineer Regiment, from Fort Oglethorpe, Lieut. Adam C. Walkup, McIntosh.

To *Fort Oglethorpe* for instruction, Capt. Thomas A. Neal, Sanford; Lieut. Henry P. Bevis, Arcadia.

To *Mineola*, L. I., Signal Corps Aviation School, Hazelhurst Field, from Aero Squadron at Fort Wood, N. Y., for duty, Lieuts. James L. Pennington, Fountain; Claude V. Gautier, Passagrilla.

To *Yaphank*, L. I., from Fort Oglethorpe for duty as assistant to the division surgeon, Lieut. James B. Griffin, St. Augustine.

Honorably discharged, from the Medical Reserve Corps of the Army, from duty at Fort Oglethorpe, Capt. Joseph N. Fogarty, Key West.

GEORGIA

To *Camp Meade*, Annapolis Junction, Md., for duty with 23rd Engineer Regiment, from Camp Greenleaf, Fort Oglethorpe, Lieut. Henry D. Coffee, Auburn.

To *Camp Wheeler*, Macon, Ga., for duty, from duty at Atlanta, Ga., Lieuts. Thomas F. Jackson, Atlanta; for temporary duty, William F. Cross, Cassville.

To *Fort Oglethorpe* for instruction, Lieuts. Northen C. Tribble, Atlanta; Donald T. Rankin, Blackshear; Robert H. McDonald, Bullochville; Gordon S. Sumner, Poulan; Jesse H. Hendry, Shellman; Walter E. Mobley, Social Circle; Carl B. Walch, Tifton; Claude G. Scruggs, Valdosta.

To *Newport News*, Va., for duty with 304th Stevedore Regiment, from Fort Oglethorpe, Lieut. Clifford M. Mitchell, Dalton.

Par. 10, special orders No. 201, War Dept., Aug. 29, 1917, as relates to Lieut. John H. Hall, Atlanta, be modified so as to assign him to active duty at Emory University, Atlanta, Ga., with examining unit at that place.

To return to the inactive list of the Medical Reserve Corps, from duty at Fort Oglethorpe, Lieut. Grady L. Carter, Talbotton.

ILLINOIS

To *Camp Dodge*, Des Moines, Ia., from Fort Riley, Capt. Robert R. B. Jacks, Highwood; Lieuts. Harry I. Stevens, Ashley; Louis L. Brodsky, Lewis H. L. Lippmann, Edward T. Robinson, Chicago; Knud Hartnack, Downers Grove; Franklin B. Pearce, Eldorado; Edward E. Edmondson, Mt. Vernon; for temporary duty, John Higginson, Chicago.

To *Camp Funston*, Fort Riley, Kan., for duty, from Medical Officers' Training Camp, Lieuts. Hart H. Fisher, Urban B. Harris, Vernon M. Jared, Ellis V. C. Moulton, Chicago; Joseph C. Kaczowski, Dunning; Robert G. Bond, Harrisburg; Randolph F. Snider, St. Francisville; Roy H. Wilson, Tampico.

To *Camp Gordon*, Atlanta, Ga., for duty in the surgical service after completion of course at Rockefeller Institute, New York, Capt. Herbert L. Thompson, Harrisburg.

To *Camp Grant*, Rockford, for duty, Lieut. Imas P. Rice, Oak Park.

To *Camp Logan*, Houston, Tex., for duty in division of otolaryngology, section of surgery of the head, from the base hospital at Camp Logan, Lieut. Jerome F. Strauss, Chicago.

To *Camp Pike*, Little Rock, Ark., for duty in charge of the division of brain surgery, section of surgery of the head, Capt. William Fuller, Chicago.

To *Camp Sevier*, Greenville, S. C., from Fort Benjamin Harrison, Ind., for duty in the division of plastic and oral surgery, section of surgery of the head, Lieut. Lyman A. Burnside, West Union.

To *Camp Taylor*, Louisville, Ky., for temporary duty, Capt. Albert A. Ankenbrandt, Mt. Carmel.

To *Columbus Barracks*, Ohio, for duty, Lieut. Edmund B. Owens, Dixon.

To *Cook County Hospital*, Chicago, for a course of instruction in military roentgenology, Lieut. Edward W. Johannes, Chicago.

To *Fort Benjamin Harrison*, for instruction, Lieuts. William H. Crede, Chicago; Roy M. Montfort, Danville; for tuberculosis instruction, Samuel M. Marcus, Chicago.

To *Fort Des Moines*, Iowa, for duty in orthopedic service, Capt. Frederick C. Test, Chicago.

To *Fort Leavenworth*, Kan., for duty, Capt. Louis Thexton, Chicago.

To *Fort Oglethorpe*, for instruction, Lieuts. Oluf J. Pederson, Robert S. Salk, Alonzo W. Saunders, Samuel J. Taub, Earl DeW. Wise, Chicago; Harver W. Tupper, Nokomis; Ira E. Neer, Springfield, and Franklin A. Martin, Tower Hill.

To *Fort Slocum*, N. Y., for duty, Capt. Henry F. Lewis, Chicago.

To *Physical Examining Unit*, Aviation Section, Signal Officers Reserve Corps, New York, for duty as medical member of examining board, Lieut. Grover C. Otrich, Belleville.

To *Tenasly*, N. J., for duty from Army Medical School, Lieut. Edwin R. May, Chicago.

To report in person to the commanding officer of the base hospital for duty, from Camp Bowie, Fort Worth, Texas, Lieut. Charles W. Monroe, Arthur.

To their homes and the inactive list of the Medical Reserve Corps, Lieuts. Robert E. Flannery, George M. Landau, Chicago; Edmon E. Richardson, Mattoon; Adelbert M. Sustin, Mendon.

INDIANA

To *Camp Cody*, Deming, N. M., from Fort Benjamin Harrison, for duty in the division of plastic and oral surgery, section of surgery of the head, Lieut. Reavill M. Walden, Evansville.

To *Camp McClellan*, Anniston, Ala., from Fort Benjamin Harrison, for duty in the division of plastic and oral surgery, section of surgery of the head, Lieut. Elmer C. Singer, Fort Wayne.

To *Fort McHenry*, Md., for duty in the division of ophthalmology and otolaryngology, section of surgery of the head, Lieut. George W. Boner, Washington.

To *Fort Oglethorpe*, for instruction, Capt. Henry O. Bruggeman, Fort Wayne; Lieuts. Raymond A. Butler, Beech Grove; Grover A. Smith, Bryant; Arthur J. Fletcher, Connorsville; Ephraim M. Folsom, Evansville; Frank A. Brayton, Sewell B. Coulson, Edward A. Willis, Indianapolis; Cyrus B. Gardner, Kendallville; James L. Saunders, Newport; John J. Connelly, Rockville; Jules L. Bierach, Salem.

IOWA

To *Camp Bowie*, Fort Worth, Texas, from Fort Riley, for duty in the division of plastic and oral surgery, section of surgery of the head, Lieut. Prentice B. Cleaves, Cherokee.

To *Camp Dodge*, Des Moines, Iowa, from Fort Riley, for duty, Lieuts. Roy C. Alt, Cedar Rapids; Leo C. Kuhn, Chariton; John W. Elder, Alfred S. Price, Des Moines; Joseph L. Ruyabitz, Duncombe; Charles L. Jones, Gilmore City; Royal C. Danley, Hamburg; Lawrence J. Kaasa, Lake Mills; Sylvanus E. Gorbin, Millerton; Walter E. Anthony, Ottumwa; Christian H. Dewey, Perry; Gardner F. Parker, Pocahontas; William H. Clary, Prescott; Stephen B. Rybolt, Troy Mills; for temporary duty, Gerald V. Coughlan, Pacific Junction; for duty in connection with the division of otolaryngology, section of surgery of the head, James A. Downing, Des Moines.

To *Camp Funston*, Fort Riley, Kan., for duty, Lieut. Jesse L. Saar, Summitville.

To *Camp Grant*, Rockford, Ill., for duty, Lieuts. Louis L. Bowie, Buckeye; for temporary duty, Clarence Harman, Whiting.

To *Camp Lewis*, American Lake, Wash., for duty, Lieut. William F. Brinkman, Des Moines.

To *Camp Logan*, Houston, Texas, for duty, Lieut. Jesse T. Grayston, Hazleton.

To *Fort Meyer*, Va., for duty with the Twelfth Field Artillery, Lieut. Charles T. Maxwell, Sioux City.

To *Fort Oglethorpe*, for instruction, Lieuts. Arthur C. Strong, Burlington; Thomas F. Thomson, Charter Oak; Emery W. Lehman, Des Moines; Garnett S. Felt, New Providence; Samuel W. Hartwell, New Sharon; Charles B. Bentz, Sioux City.

To *Iowa City*, Iowa, for the purpose of procuring material at the University of Iowa for a course of lectures to be given at Medical Officers' Training Camp, Fort Riley, Kan., Capt. Clarence Van Epps, Iowa City.

To *Washington*, D. C., for duty in the Surgeon-General's Office, Des Moines.

Par. 87, Special Orders, No. 213, War Department, Sept. 13, 1917, as relates to Major James F. Clarke, Fairfield, be modified so as to direct him on completion of his course at Rockefeller Institute, New York, to report to Major F. H. Albee, New York, for a course of instruction in bone grafting, and on completion of this duty to proceed to his home and return to the inactive list of the Medical Reserve Corps of the Army.

KANSAS

To *Camp Dodge*, Des Moines, Iowa, from Fort Riley, for duty, Lieuts. Roy W. Layton, Kansas City; Joseph E. Miller, Salina; Foy J. M. Ernest, Topeka.



Around the bonfire at the meeting of Military Surgeons, Medical Officers' Training Camp, Fort Benjamin Harrison, Indiana.

To *Camp Funston*, Fort Riley, Kan., for Medical Officers' Training Camp, Capt. James C. Butler, Stafford; Lieuts. Charles M. Hensley, Topeka, Wilhelm A. Gartner, Troy; William T. Doherty, George E. Egloff, William P. Greening, Wichita.

To *Camp Mills*, Garden City, L. I., for duty, Capt. Samuel T. Millard, Topeka.

To *Cornell Medical College*, New York, from Fort Riley, Kan., for a course of instruction in military roentgenology, Capt. Charles J. McGee, Leavenworth.

To *Fort Oglethorpe*, for a course of instruction, Major Frederick W. O'Donnell, Junction City; Lieuts. George L. Dailey, Almena; George W. Potts, New Lancaster; Charles M. McKinley, Strong.

To report in person to the commanding officer of the base hospital for duty, from Camp Bowie, Fort Worth, Texas, Lieut. Arthur Knisely, Liberal.

To *Washington, D. C.*, and report in person to the Surgeon-General of the Army, for duty in his office, Capt. John S. Fulton, Kiowa.

Par. 9, Special Orders, No. 186, War Department, Aug. 11, 1917, as relates to Lieut. Ronald O. Logsdon, Wichita, be modified so as to direct him to Camp Greenleaf, Fort Oglethorpe.

To their homes and return to the inactive list of the Medical Reserve Corps of the Army on account of being physically disqualified for active service, Lieuts. James B. Donnell, Kinsley; Alexander Haggart, Ottawa.

KENTUCKY

To *Camp Dodge*, Des Moines, Iowa, from Fort Riley, for duty, Lieut. Clarence DeWeese, Fordsville.

To *Camp Funston*, Fort Riley, Kan., for duty, from Medical Officers Training Camp, Lieuts. Walter L. Coolidge, Louisville; Thomas R. Griffin, Somerset.

To *Camp Lee*, Petersburg, Va., for duty, Capt. David P. Crockett, Hardy.

To *Camp Taylor*, Springfield, Ky., for duty, Capt. Meredith W. Hyatt, Springfield.

To *Camp Wheeler*, Macon, Ga., for regimental duty, from Fort Oglethorpe, Capt. Charles M. Gower, Trenton; for duty with ambulance companies, from Fort Oglethorpe, Lieut. John R. Jones, Princeton.

To *Cornell Medical College*, New York, for a course of instruction in military roentgenology, Capt. Vernon Blythe, Paducah.

To *Fort Monroe*, Va., for duty in the division of otolaryngology, section of surgery of the head, Capt. James R. Peabody, Louisville.

To *Fort Oglethorpe*, for instruction, Lieuts. William H. Nash, Finchville; Oliver H. P. Parrigin, Lexington; George M. McLeish, Louisville.

To *Fort Thomas*, Ky., for duty, Lieut. Owen B. Dameree, Mount Sterling.

To *Provisional Hospital*, Fort Oglethorpe, for duty as roentgenologist, from Camp Greenleaf, Lieut. John C. Howard, Middlesboro.

To *Washington University*, St. Louis, for three weeks' intensive training, Capt. Robert M. Coleman, Lexington.

LOUISIANA

To *Boston*, from Army Medical School, Washington, D. C., for a course of instruction in orthopedic work and on completion of this course to return to their proper station, Lieuts. Lucian A. Fortier and Henry T. Simon, New Orleans.

To *Camp Funston*, Fort Riley, Kan., for duty from Medical Officers Training Camp, Lieuts. Walter F. Henderson, Belcher; Doctor D. Gill, Gilbert.

To *Camp Greene*, Charlotte, N. C., for duty, Lieut. Philips J. Carter, New Orleans.

To *Camp Shelby*, Hattiesburg, Miss., for duty in charge of the division of brain surgery, section of surgery of the head, Lieut. Karl W. Ney, New Orleans.

To *Camp Vail*, Little Silver, N. J., for duty, Lieut. Haston V. Jones, Zona.

To *Camp Wheeler*, Macon, Ga., for duty with ambulance companies, from Camp Greenleaf, Fort Oglethorpe, Lieut. Solon R. Humphries, New Orleans.

To *Fort Oglethorpe*, for the purpose of examining the personnel of that camp in his specialty, Major Roy McL. Van Wart, New Orleans, for instruction, Lieuts. William L. Atkins, Athens; William R. Strange, New Orleans.

MAINE

To *Boston*, for instruction in military roentgenology, Lieut. Herbert W. Hall, Hallowell.

To *Fort Oglethorpe*, for instruction, Lieut. Gilman H. Clough, Dexter.

MARYLAND

To *Camp Dodge*, Des Moines, Iowa, for temporary duty, Lieut. Thomas N. Toomey, Baltimore.

To *Camp Sheridan*, Montgomery, Ala., Thirty-Seventh Division, for duty as member of a board of medical officers for tuberculosis examination, from Fort Myer, Va., Lieuts. Algernon D. Atkinson, for duty in the division of plastic and oral surgery, section of surgery of the head, from Fort Benjamin Harrison, Herbert W. Rogers, Baltimore.

To *Camp Wheeler*, Macon, Ga., for duty with ambulance companies, from Fort Oglethorpe, Lieut. Charles L. Magruder, New Market.

To *Fort McHenry*, Md., for duty as acting medical chief of General Hospital No. 2, Capt. Joseph A. Chatard, Baltimore.

To *Fort Oglethorpe*, for instruction, Lieuts. Julio R. Rolenson, George P. Ross, Leo F. Steindler, Baltimore.

To inactive list of *Medical Reserve Corps*, Lieut. John T. King, Jr., Baltimore.

To report by wire to the commanding general Southern Department, for assignment to duty, Lieut. Francis O. Barrett, Baltimore.

To *Washington, D. C.*, for duty in the food section, Lieut. Albert T. Shohl, Baltimore.

To *Washington University*, St. Louis, for three weeks' intensive training, Lieut. Fred Rankin, Baltimore.

MASSACHUSETTS

To *Boston*, for a course of instruction in military roentgenology, Lieuts. Roy S. Perkins, Lowell; Charles L. M. Judkins, Lynn.

To *Boston Psychopathic Hospital*, Boston, for intensive study in his specialty, Lieut. Cyrus B. Partington, Fall River.

To *Boston State Hospital*, for a course of intensive study in his specialty, Lieut. Carl B. Hudson, Boston.

To *Camp Bowie*, Fort Worth, Texas, for duty, Lieut. John F. Ford, Boston.

To *Camp Devens*, Ayer, Mass., Camp Upton, Yaphank, L. I.; Camp Mills, Garden City, L. I., and Camp Dix, Wrightstown, N. J., for the purpose of making a special inspection of the section of surgery of the head for the Medical Department, and on completion to return to his proper station, Major Harris P. Mosher, Boston.

To *Camp Devens*, Ayer, Mass., for duty, Lieut. William A. Moncrieff, New Bedford.

To *Camp Gordon*, Atlanta, Ga., for duty in division of ophthalmology section of surgery of the head, Lieut. Dennis F. O'Conner, Worcester.

To *Camp Meade*, Annapolis Junction, Md., for temporary duty, Lieut. Harry C. Burrell, Medford.

To *Camp Upton*, Yaphank, L. I., for duty with division of otolaryngology, section of surgery of the head, Lieut. Charles T. Porter, Boston.

To *Camp Wheeler*, Macon, Ga., Thirty-First Division, for duty as a member of a board of medical officers for tuberculosis examination, from Fort Benjamin Harrison, Lieut. Charles E. Perry, Haydenville.

To *Fort Leavenworth*, Kan., for duty, Major John J. Thomas, Boston.

To *Fort Oglethorpe*, for instruction, Capt. John W. Lane, Boston; Charles Whelan, Hingham; Lieuts. Joseph C. Savage, Boston; Edmund A. Rogers, Brookline; Aimo N. Fregeau, Fitchburg; Nicholas A. Gallagher, Malden; William A. McCormick, New Bedford; Louis I. Skirball, Revere.

To his home and honorably discharged on account of being physically disqualified for active service, Lieut. Walter D. Berry, S. Weymouth.

MEXICO

Par. 9, Special Orders, No. 186, War Department, Aug. 11, 1917, as relates to Lieut. Ezra A. Lines, Piedros Negros, modified so as to direct him to Fort Oglethorpe.

MICHIGAN

To *Camp Custer*, Battle Creek, Mich., for duty, Lieut. Alford E. W. Yale, Pigeon.

To *Camp Funston*, Fort Riley, Kan., for duty, from Medical Officers Training Camp, Capt. William B. Lunn, Marquette; Lieut. James H. Kelsey, Cassopolis.

To *Camp Shelby*, Hattiesburg, Miss., from Fort Benjamin Harrison, for duty in the division of plastic and oral surgery, section of surgery of the head, Lieut. David D. Todd, Calumet.

To *Fort McHenry*, Md., for duty in the surgical service, Lieut. George C. Hafford, Albion.

To *Fort Oglethorpe*, for instruction, Capt. Frank C. Kinsey, Grand Rapids; Lieuts. Abraham W. Hudson, Vincent S. Mancuso, John T. Watkins, Detroit; Willard R. Vaughan, Plainwell.

To *Mincola*, L. I., for duty in charge of the Division of Ophthalmology, section of surgery of the head in aviation, from Fort Benjamin Harrison, Capt. Donald E. MacPhrail, Wakefield.

To *Rockefeller Institute*, New York, for a course of instruction and upon completion of this course to return to his home and to the inactive list of the Medical Reserve Corps, Capt. Alexander M. Campbell and Lieut. John T. Hodgen, Grand Rapids.

To *Washington University*, St. Louis, Mo., for three weeks' intensive training, Major Peter D. MacNaughton, Calumet; Lieut. Albert S. Barr, Greenville.

Par. 1 of letter of Sept. 26, 1917 (4730), as relates to Lieut. John M. Carter, Detroit, be modified so as to relieve him from duty in the ophthalmic division, of the base hospital, Camp Wadsworth, and direct him to report in person to the commanding general of that camp for duty.

MINNESOTA

To *Camp Bowie*, Fort Worth, Tex., from Fort Snelling, Minn., for duty as a member of a board of medical officers for the special examination for tuberculosis, Lieut. Alexander Josewich, Minneapolis.

To *Camp Dodge*, Des Moines, Ia., from Fort Riley, for duty, Capt. John B. Robertson, Cottonwood; Lieuts. Ronald L. Laney, Brown Valley; James R. Elsey, Glennwood; Frederick A. Engstrom, Hills; William P. O'Malley, St. Paul.

To *Camp Funston*, Fort Riley, Kan., for duty, from Medical Officers Training Camp, Lieut. Samuel T. Forsythe, Rochester.

To *Camp Grant*, Rockford, Ill., for duty, Lieuts. John R. Wood, Hallock; Harry M. Lowell, Rochester; Hugh W. Reynolds, Chatfield.

To *Camp Lewis*, American Lake, Wash., for duty, Lieut. Roy E. Swanson, Alexandria.

To *Fort Oglethorpe* for instruction, Lieuts. Percy A. Ward, Minneapolis; William J. Stock, Waconia.

To *Rockefeller Institute*, New York, for a course of instruction and upon completion of this course to return to his home and to the inactive list of the Medical Reserve Corps, Lieut. Thomas J. Snodgrass, Minneapolis.

To his home and return to the inactive list of the Medical Reserve Corps from duty in the Surgeon-General's Office, Major Charles H. Mayo, Rochester.

MISSISSIPPI

To Camp Doniphan, Fort Sill, Okla., from Camp Greenleaf, Fort Oglethorpe, Ga., and report in person to the commanding general thereof and to the commanding officer of the base hospital for duty, Lieut. Thomas W. Holmes, Winona.

To Camp Funston, Fort Riley, Kan., for duty, from Medical Officers' Training Camp, Lieut. Oliver R. Fore, Flora.

To Camp Grant, Rockford, Ill., for duty with 35th Engineer regiment, from Camp Greenleaf, Fort Oglethorpe, Lieut. John E. McDill, Shaw.

To Camp Meade, Annapolis Junction, Md., for duty with 23d Engineer Regiment, from Camp Greenleaf, Fort Oglethorpe, Lieut. Leonidas F. Barrier, Greenwood.

To Camp Wheeler, Macon, Ga., for regimental duty, from Camp Greenleaf, Fort Oglethorpe, Lieut. Robert M. Leigh, Meridian.

To Fort Oglethorpe, for instruction, Lieuts. John S. Adams, Bay St. Louis, Ellis P. Burns, Ratliff.

Par. 9, Special Orders, No. 186, War Dept., August 11, 1917, as relates to Lieut. William C. Lester, Isola, is modified so as to direct him to Camp Greenleaf, Fort Oglethorpe.

MISSOURI

To Camp Bowie, Fort Worth, Tex., for duty, from Base Hospital, Lieut. Arthur C. F. Brown, Kansas City.

To Camp Dodge, Des Moines, Ia., from Fort Riley, for duty, Capt. Robert Middlebrook, Lieut. Evan S. Connell, Kansas City.

To Camp Funston, Fort Riley, Kan., for duty, from Medical Officers' Training Camp, Lieuts. Fred. C. Albright, Bronaugh; Joseph Getelson, Zacharian G. Jones, Ward H. Leonard, John C. Lynch, Kansas City; Jasper LeR. Atherton, Springfield; Martin F. Kouri, St. Louis.

To Fort McHenry, Md., for duty, in the surgical service after completion of course at Rockefeller Institute, New York, Lieut. Hilen K. Wallace, St. Joseph.

To Fort Oglethorpe, for instruction, Capt. Oscar F. Baerens, St. Louis; Lieuts. George W. Rice, Kansas City; Abram E. Platter, Memphis; John M. Percy, Princeton; Martin H. Post, St. Louis.

To Kansas City, Mo., from Camp Wheeler, Macon, Ga., for the purpose of examining applicants for appointment in the Officers' Reserve Corps, Capt. Roger B. Brewster, Kansas City; for duty in connection with the Medical Reserve Corps of the Army and upon completion of this duty to return to his proper station, William H. Luedde, St. Louis.

To Minneola, L. I., N. Y., Signal Corps Aviation School, Hazlehurst Field, from Aero Squadrons at Fort Wood, N. Y., for duty, Lieut. Clyde O. Brown, St. Louis, Mo.

To Tenaflly, N. J., 501st Battalion from Camp Mills, Lieuts. Charles H. Brown, Fair Play; for duty from Army Medical School, Washington, D. C., Edward P. Heller, Kansas City.

To Washington, D. C., Army Medical School, for instruction, Lieut. Rollo P. Bourbon, St. Louis, Mo.

To Washington University, St. Louis, Mo., for three weeks' intensive training, Capt. Virgil Loeb, Charles A. Vosburgh, St. Louis.

Honorably discharged, Capt. Guy L. Noyes, Columbia; Lieut. Albert L. Evans, Bonne Terre.

To his home and return to the inactive list of the Medical Reserve Corps of the Army, Lieut. Montague M. Meyers, St. Louis.

MONTANA

To Camp Funston, Fort Riley, Kan., for duty, from Medical Officers' Training Camp, Lieuts. Lindsay W. Baskett, Baker; Cornelius B. Boyle, Eureka; Serge Androp, Richey.

To Camp Lewis, American Lake, Wash., for duty, Lieut. Carl L. Koehn, Red Lodge.

To Fort Oglethorpe for instruction, Lieuts. Joseph C. Denney, Clydepark; Charles B. Fleischmann, Froid; John J. Tobinski, Missoula; Stacy T. Noland, Warm Springs.

To Fort Russell, Wyo., for duty, Lieut. Ralph S. Hedges, Lewistown.

NEBRASKA

To Camp Dodge, Des Moines, Iowa, from Fort Riley, for duty, Lieuts. Charles E. Legg, Champion; Frank D. Ryder, Lyons; Charles F. Shock, Omaha; Harry L. Wells, West Point.

To Camp Funston, Fort Riley, Kan., for duty from Medical Officers' Training Camp, Lieut. Samuel Earl Metheny, Cairo.

To Camp Logan, Houston, Tex., from Fort Riley, for duty in the division of plastic and oral surgery, section of surgery of the head, Lieut. Frank M. Barns, Omaha.

To Camp Robinson, Sparta, Wis., from the 17th Field Artillery, Camp Robinson, for duty with the Provisional Recruit Battalion, 7th Field Artillery, Lieut. Frederick A. Van Buren, Omaha.

To Camp Taylor, Louisville, Ky., for duty with the Ambulance Co. No. 35, Lieut. Joseph A. Fleischman, Shelton.

To Fort Oglethorpe for instruction, Capt. Charles E. Remy, Ainsworth; Judd A. Strong, Kearney; Lieuts. Neil P. McKee, Atkinson; Dexter D. King, York; Laird W. Elwood, Weston.

To Kansas City, Mo., for a course of instruction in military roentgenology, Lieut. Joseph Antony, Burning.

To Mineola, L. I., Signal Corps Aviation School, Hazlehurst Field, from Aero Squadrons at Fort Wood, N. Y., for duty, Lieut. Ralph C. Christie, Clarks.

NEVADA

To Fort Douglass, Utah, for duty, Lieut. William T. Gleason, Ely.

To Fort Oglethorpe for instruction, Lieut. Only J. Chaney, McDermit.

NEW HAMPSHIRE

To St. Elizabeth's Hospital, Washington, D. C., for a course of instruction in his specialty, Capt. Albert E. Brownrigg, Nashua.

To his home and return to the inactive list of the Medical Reserve Corps, Lieut. Clarence E. Dunbar, Manchester.

NEW JERSEY

To Camp Dix, Wrightstown, N. J., for duty, Capt. Joseph W. Williams, Paterson; for duty as assistant in the general surgical section, Lieuts. James B. Griswold, Morristown; for duty in the genito-urinary section, Charles H. deT. Shivers, Atlantic City.

To Camp Wheeler, Macon, Ga., from Camp Mills, for duty as member of the board of medical officers for tuberculosis examination, Lieut. Harvey M. Ewing, Montclair.

To Cornell Medical College, New York, for a course of instruction in military roentgenology, Lieuts. Alfred L. L. Bell, Englewood; Robert D. Schimelpfennig, Montclair.

To Fort Oglethorpe for instruction, Lieuts. Joseph Binder, Jersey City; Maurice Cohen, Paterson; Samuel T. Day, Jr., Port Norris; from duty with Medical Officers Training Camp and report to commanding officer for duty with 6th Infantry, Harvey S. Brown, Freehold.

To Madison Barracks, N. Y., for duty, Capt. Henry H. Mayne, Lockport.

To Newport News, Va., for duty with 304th Stevedore Regiment, from Fort Oglethorpe, Lieut. Julius Gerendasy, Elizabeth.

NEW YORK

To Boston, Mass., for instruction in orthopedic surgery and upon completion of this course to proceed to Philadelphia, Pa., Neurological School, University of Pennsylvania, for instruction in brain surgery, Lieut. Joseph E. J. King, New York City.

To Buffalo, N. Y., Rochester, N. Y., Utica, N. Y., for duty in connection with the Medical Reserve Corps of the Army and upon completion of this duty to return to his proper station, Capt. Frederick T. Van Beuren, New York City.

To Camp Bowie, Fort Worth, Tex., from Fort Benjamin Harrison, for duty as a member of the board of medical officers for tuberculosis examination, Lieuts. Herman Judkowitz, Brooklyn, and Robert E. Plunkett, Whitehall.

To Camp Custer, Battle Creek, Michigan, for duty, Lieut. Thomas G. Amos, New York City.

To Camp Dix, Wrightstown, N. J., for duty in the surgical service after completion of course at Rockefeller Institute, New York City, Capt. James W. Jameson, New York City.

To Camp Doniphan, Fort Sill, Okla., for duty, Capt. Frank G. Young, New York City; from Fort Slocum, N. Y., Lieut. Curtenine Gillette, New York City.

To Camp Funston, Fort Riley, Kan., for duty as assistant to the chief of the medical service, Lieut. John J. Beard, Cobleskill; for duty from Medical Officers' Training Camp, Lieut. Samuel W. Houston, Wolcott.

To Camp Greene, Charlotte, N. C., from Camp Mills, for duty as member of the board of medical officers for tuberculosis examinations, Capt. Geza Kremer and Lieut. Thomas F. Ellis, New York City.

To Camp Logan, Houston, Tex., for duty as a member of a board of medical officers for tuberculosis examination, from Fort Benjamin Harrison, Capt. Gilbert W. Crissey, Mechanicsville.

To Camp McClellan, Anniston, Ala., for duty, after completion of course at Rockefeller Institute, New York City, Capt. Edward M. Colie, New York City.

To Camp Meade, Annapolis Junction, Md., for the purpose of conferring with the Division Surgeon in connection with the mental and nervous examinations, Major Pearce Bailey, New York City.

To Camp Sevier, Greenville, S. C., for duty in the division of otolaryngology, section of surgery of the head, from Base Hospital, Lieut. George F. Gracey, New York City.

To Camp Taylor, Louisville, Ky., from Camp Mills, Garden City, L. I., for the purpose of examining the troops in his specialty, Capt. Morris J. Karpas, New York City.

To Camp Travis, Fort Sam Houston, Tex., for the purpose of making examinations in his specialty, from Neurological Institute, New York City, Lieut. Augustus B. Dykman, Poughkeepsie.

To Camp Upton, Yaphank, L. I., Camp Dix, Wrightstown, N. J., and report in person to the commanding general for conference with the division surgeon and psychiatrist at these stations, Major Pearce Bailey, New York City.

To Camp Upton, Yaphank, L. I., for duty in connection with the division of otolaryngology, section of surgery of the head, Lieut. Owen R. O'Neill, New York City.

To Camp Wheeler, Macon, Ga., from Fort Benjamin Harrison, Ind., for duty in the division of plastic and oral surgery, section of surgery of the Head, Capt. Francis R. Lyman, Hastings-on-Hudson; from Camp Mills, for duty as member of the board of medical officers for tuberculosis examinations, Capt. Stanmore L. Cash, New York City; Lieut. Frank McLean, New York City; from Camp Greenleaf, Fort Oglethorpe, Ga., for regimental duty, Lieut. Henry S. Fruitnight, New York City.

To Cornell Medical College, New York City, for duty as assistant instructor in military roentgenology, Capt. Frederick M. Law, New York City; for a course of instruction in military roentgenology, Lieuts. Theodore S. West, Albany; Barnett Aronson, and Max Mensch, Brooklyn; Samuel Tripler, New York City; Abraham Lebendig, Rochester; and Herbert deG. Sherman, White Plains.

To Fort Adams, Rhode Island, for duty, Capt. James E. Holden, Collins.

To Fort Benjamin Harrison, Indiana, for instruction, Maj. Linsley R. Williams, New York City.

To Fort Ethan Allen, Vt., for duty, Capt. Edward G. Clifton, New York City.

To Fort McPherson, Ga., for duty at the Base Hospital, Lieut. Karl M. Bowman, White Plains; for duty in orthopedic service, Lieut. Earl C. MacCordy, Amsterdam.

To Fort Oglethorpe, Ga., for a course of instruction, Capt. Arthur R. Green, Mt. Kisco; Ira Cohen, Geo. D. Hamlen, and James C. Harkins, New York City; Alexander C. Calisch, Oswego; Lieuts. Conrad A. Rissberger, Albany; Nelson M. Holden, Francis B. Ring, and Benjamin E. Spiegel, Brooklyn; Jerome A. Murphy and Alfred H. Vogt, Buffalo; Ernest G. Gilmore, Johnstown; Herbert F. Jackson, Edmond C. Linton, Aloysius M. Mulholland, Robert E. Pound, Nathan Rosenthal, Harold B. Scovern, Robert E. Walsh, and Charles Wolf, New York City; Lawrence D. Cremin, Ossining, and Fred Vosburgh, Standish; after completion of course at Rockefeller Institute, New York City, Lieut. Roscoe C. Webb, New York City.

To Fort Slocum, N. Y., for duty, Capt. Ira A. Allen, Ludlowville; for the purpose of examining recruits and troops in his specialty, Lieut. Abraham Skversky, New York City.

To Fort Wayne, Mich., for duty from Fort Benjamin Harrison, Lieuts. John J. Lancer and Milton R. Walter, New York City.

To Langley Field, Hampton, Va., Aviation School, for duty, from Newport News, Va., Lieut. Joseph C. Coleman.

To Mineola, L. I., N. Y., Signal Corps, Aviation School, Hazlehurst Field, from Aero Squadrons at Fort Wood, N. Y., for duty, Lieut. Scott R. Fisher, Syracuse.

To Neurological Institute, New York City, for a course of intensive study in his specialty, Capt. Ira Cohen, New York City.

To Newport News, Va., for duty with the 302d Stevedore Regiment, Capt. Charles W. Selover, Stanley; Lieuts. Emanuel M. Freund, Albany, and Benjamin H. Dike, Rochester.

To New York City, Islip, Long Island, Nyack, Harmon, Peekskill, Tuxedo, N. Y.; Norwalk, Conn.; Iselin, N. J., for inspecting hospital sites and then return to proper station, Major Thomas W. Salmon.

To New York City, for a course of instruction in orthopedic work and upon completion of this course to return to his proper station, from Fort Oglethorpe, Capt. Lee B. Meyer, New York City.

To Rockefeller Institute, New York City, from Fort Benjamin Harrison, for instruction and upon completion of this course to return to his home and to inactive list of the Medical Reserve Corps, Lieut. Henry L. Wenner, Jr., New York City.

To St. Elizabeth Hospital, Washington, D. C., for a course of intensive study in his specialty, Lieut. John Miller, New York City.

To St. Louis, Mo., School of Plastic and Oral Surgery, Washington University, from Fort Benjamin Harrison, for three weeks' intensive training, Capt. Robert T. Frank, New York City.

To Walter Reed General Hospital, Takoma Park, D. C., for duty as surgical assistant, Lieut. Maurice D. Barnette, Watertown.

To Washington, D. C., and report in person to the Surgeon-General of the Army for duty in his office, Major Thomas W. Salmon, New York City.

To Washington University, St. Louis, Mo., for three weeks' intensive training, Capt. Samuel L. Fisher, Brooklyn; Lieut. John L. Edwards, Hudson; from Fort Slocum, N. Y., and upon completion to return to his proper station, Lieut. Richard T. Atkins, New York City.

To his home from duty at Camp Merritt, N. J., and return to the inactive list of the Medical Reserve Corps of the Army on account of being physically disqualified for active service, Capt. Daniel W. Wynkoop, Babylon.

To his home and the inactive list of the Medical Reserve Corps from duty at Fort Monroe, Va., on account of being physically disqualified for active service, Lieut. Edward D. Fraser, Brooklyn.

NEW MEXICO

To Camp Cody, Deming, N. M., for duty, Capt. Henry R. Brown, Albuquerque.

To Camp Lewis, American Lake, Wash., for duty as tuberculosis specialist and member of the Army Medical Staff, Capt. David C. Twichell, Albuquerque.

NORTH CAROLINA

To Camp Gordon, Atlanta, Ga., for duty as chief of the surgical service, Capt. James S. Brown, Hendersonville.

To Camp Greene, Charlotte, N. C., and report in person to the commanding general and to the commanding officer of the base hospital for duty in the division of plastic and oral surgery, section of surgery of the head, Lieut. Charles W. Banner, Greensboro.

To Camp Sevier, Greenville, S. C., for duty in connection with orthopedic work, Lieut. Robert A. Moore, Charlotte.

To Fort Moultrie, S. C., for duty, Lieut. Mont R. Farrar, Greensboro.

To Fort Oglethorpe for instruction, Lieuts. Carl W. Bell, Raleigh; Edgar P. Norfleet, Roxobel; Thomas H. Royster, Tarboro; John B. Powers, Wake Forest; William T. Ruark, Wilmington.

To Richmond Medical College for a course in military roentgenology, Lieut. Henry C. Turlington, Cooper.

To Walter Reed General Hospital, Takoma Park, D. C., for duty, Lieut. Matthew L. McCorkle, Newton.

To his home and return to the inactive list of the Medical Reserve Corps of the Army, on account of being physically disqualified, Lieut. Joseph R. Shull, Cliffside.

NORTH DAKOTA

To Camp Dodge, Des Moines, Ia., for duty, Lieuts. Julius O. Arnson, Bismarck; Mark Mizener, Bowman.

To Fort Oglethorpe for instruction, Lieut. Howard L. Saylor, Cogswell.

To State Psychopathic Hospital, Ann Arbor, Mich., for intensive study in his specialty, Capt. Adolphus W. Guest, Jamestown.

OHIO

To Camp Bowie, Fort Worth, Tex., for duty, Lieut. Douglas R. Venable, Cleveland.

To Camp Cody, Deming, N. M., for duty, Capt. Henry R. Brown, Chillicothe.

To Camp Funston, Fort Riley, Kan., for duty, from Medical Officers' Training Camp, Lieuts. William M. Goff, Marysville; Myron Hanna, Scott.

To Camp Sherman, Chillicothe, O., for duty, Capt. Elmore E. Adel, Columbus; Lieuts. Daniel C. Handley, Cincinnati; George F. Glass, Cleveland; Edward D. Harper, Guysville; for temporary duty, Anthony Matuska, Cleveland; Clark E. Sharp, Columbus.

To Fort Oglethorpe for instruction, Capt. Paul G. Woolley, Cincinnati; Claude D. Hamilton, Canton; Charles G. LaRocco, Lewis A. Oster, Cleveland; Harold K. Mouser, Marion; Neville E. Stewart, Wauseon; William McG. Blaine, Youngstown.

To Fort Sheridan, Ill., for duty, Capt. Joseph S. Rardin, Portsmouth.

To Jefferson Barracks, Mo., for duty, Capt. Harry T. Miller, Springfield.

To Washington University, St. Louis, Mo., for three weeks of intensive training, from Allentown, Pa., Capt. Frederick J. Bierkamp, Youngstown.

OKLAHOMA

To Camp Bowie, Fort Worth, Tex., for duty, from Base Hospital, Lieuts. George M. McVey, Verden; Will W. Jackson, Vinita.

To Camp Doniphan, Fort Sill, Okla., for duty, Lieut. John B. Haggard, South Coffeyville.

To Camp MacArthur, Waco, Tex., for duty in charge of the division of brain surgery, section of surgery of the head, Capt. Robert M. Howard, Oklahoma.

To Camp Merritt, N. J., for duty, from Army Medical School, Lieut. Davy Lewis Garrett, Altus.

To Camp Vail, Little Silver, N. J., for duty with the 11th Telegraph Reserve Battalion, Lieut. Willis K. West, Oklahoma.

To Fort Oglethorpe for instruction, Lieuts. Samuel T. Campbell, Anadarko; James R. Bost, Cashion; Roland R. Culbertson, Hoyt.

To Kansas City, Mo., for course of instruction in military roentgenology from Ft. Riley, Lieut. Daniel E. Little, Eufaula.

To report in person to the commanding general, Camp MacArthur, Tex., for duty in the surgical service, Lieut. William G. Hushund, Gould.

OREGON

To Camp Dodge, Des Moines, Ia., from Fort Riley for duty, Capt. Joseph A. Pargon, Portland.

To Camp Lewis, American Lake, Wash., for duty, Lieut. Arthur C. McCown, Cove.

To Fort Oglethorpe for instruction, Lieut. Harry M. Bouvy, La Grande.

To Washington University, St. Louis, Mo., for a three weeks' course of intensive training, Capt. Justin M. Waugh, Hood River.

To report in person to the commanding general, Camp Lewis, American Lake, Wash., for duty as assistant in the surgical service, Capt. Paul Rockey, Portland.

PENNSYLVANIA

To Buffalo, N. Y., Rochester, N. Y., Barre, Vt., Manchester, N. H., Brooklyn, N. Y., for duty in connection with the Medical Reserve Corps of the Army and on completion of this duty to return to his proper station, Major Henry D. Jump, Philadelphia.

To Camp Dix, Wrightstown, N. J., for duty, Lieut. James E. James, Plymouth.

To Camp Dodge, Des Moines, Ia., from Fort Riley, for duty, Lieut. William H. Kober, Pittsburgh.

To Camp Grant, Rockford, Ill., for duty with 35th Engineer Regiment, from Fort Oglethorpe, Lieut. Clark H. Yeager, Wilkes-Barre.

To Camp Hancock, Augusta, Ga., for duty in the surgical service, after completion of course of instruction at Rockefeller Institute, New York, N. Y., Capt. David H. Boyd, Pittsburgh; for duty as member of board of medical officers for tuberculosis examination, from Walter Reed General Hospital, Lieut. William G. Spalding, Cresson.

To Camp Lee, Petersburg, Va., for duty, Lieuts. Llewellyn I. Thomas, Burnham; Charles B. Dotterer, Boyertown; Adam M. Robinhold, Hamburg; for temporary duty, Herbert F. Kenny, Pittsburgh.

To Camp Meade, Annapolis Junction, Md., for duty, Capt. Edward M. Haley, Blossburg; Lieut. Charles S. Fox, Philadelphia.

To Camp Mills, Garden City, L. I., for duty at Base Hospital, from duty at Field Hospital No. 3, Lieuts. George H. Tibbins, Beach Creek; for duty, Lieut. William W. Van Dolson, Philadelphia.

To Camp Pike, Little Rock, Ark., for the purpose of examining troops in his specialty, Capt. Percy DeLong, Cynwyd.

To Camp Sevier, Greenville, S. C., for duty in the Division of otolaryngology, section of surgery of the head, from duty at Base Hospital, Major George M. Coates, Philadelphia.

To Camp Vail, Little Silver, N. J., for duty, Lieut. John V. Kearney, Philadelphia.

To Camp Wheeler, Macon, Ga., for regimental duty, from Fort Oglethorpe, Lieuts. Nicholas E. Abbaticchio, Bert F. Ober, Latrobe; Charles M. McCoy, Lewistown; Amos K. DuBell, William H. McKeever, Philadelphia; Frank R. Wheelock, Scranton.

To Chicago, Ill., for the purpose of conferring with the State Committee of National Defense Medical Section, and upon completion of this duty to return to his proper station, Major Henry D. Jump, Philadelphia.

To Fort McPherson, Ga., for duty at the Base Hospital, Capt. Earl D. Bond, Philadelphia; Victor J. P. Jourdan, Bristol.

To Fort Oglethorpe for instruction, Capt. John F. McCloskey, Philadelphia; Lieuts. Andrew J. W. Hanwork, Altoona; Carlos P. Holcomb, Athens; Thomas I. Cotton, Carnegie; Ray H. Parker, Ehrenfeld; John P. Maus, Norristown; Toby Anthony Creco, Philadelphia; Burns S. Chaffee, John E. Newhouse, Dennis E. Szabo, Pittsburgh; Howard S. Smith, Reinholds Station; Le DeLance Parry, Rock Glen; Albert J.

Winebrake, Scranton; James G. Strickland, Shamokin; for instruction after completion of course at Rockefeller Institute, New York, Hubley R. Owen, Philadelphia; for duty with the 51st Infantry, from Medical Officers' Training Camp, Frederick B. Allen, Worth Wales.

To *Fort Slocum*, N. Y., for duty, Lieut. Charles H. Cloud, Philadelphia.

To *Jefferson Hospital*, Philadelphia, for a course of instruction in military roentgenology, Lieut. Agnew F. Frankhauser, Philadelphia.

To *Madison Barracks*, New York, for duty, Capt. Sidney K. Fenollosa, Pittsburgh.

To *Mincola*, L. I., N. Y., Signal Corps, aviation school, Hazlehurst Field, from aero squadrons at Fort Wood, N. Y., for duty, Lieuts. James E. Dull, Somerset; Forest A. Beck, Wind Gap.

To *Newport News*, Va., for duty with 303d Stevedore Regiment, from Fort Oglethorpe, Lieuts. Charles J. Shillott, Columbia; Wilbur E. Turner, Montgomery.

To *Pittsburgh*, in charge of the physical examining unit, aviation section, Signal Officers Reserve Corps, Capt. William C. Meaner, Pittsburgh.

To *Richmond Medical College*, Richmond, Va., for a course of instruction in military roentgenology, Lieut. William B. Trexler, Fullerton.

To *Rockefeller Institute*, New York, N. Y., for instruction, from duty at Fort Benjamin Harrison, and on completion of this course to proceed to Washington University, St. Louis, Mo., for further instruction, Capt. Ernest M. Vaughan, Royersford.

To report in person to the commanding officer repair shop unit, Quartermaster's Corps, Washington, D. C., for duty, from Army Medical School, Lieut. Maurice V. Brant, Cairnbrook.

To *University of Pennsylvania*, Philadelphia, for duty in connection with the investigation of treatment of infected wounds, Capt. William H. Furness, Wallingford.

To *Washington University*, St. Louis, Mo., for three weeks' course of intensive training, Lieuts. William Bates and Irvine M. Boykin, Philadelphia.

To their homes and return to the inactive list of the Medical Reserve Corps, Majors Walter S. Cornell and John H. Jopson, Lieuts. Charles S. Rottner, Philadelphia; John J. Dailey, McAdoo.

Honorably discharged from Medical Reserve Corps on account of holding commissions in the Pennsylvania National Guard, Majors George M. Coates and Ross H. Skillern, Philadelphia; on account of being physically disqualified for active service, Lieut. George H. Tibins, Beech Creek.

PHILIPPINE ISLANDS

To *Camp Gordon*, Atlanta, Ga., from Fort Russell, Wyo., for the purpose of examining the troops in his specialty, Lieut. Louis V. J. Lopez, Silay.

To *Philippine Islands*, Philippine Dept., for duty, Capt. Almon P. Goff, Manila.

SOUTH CAROLINA

To *Camp Grant*, Rockford, Ill., for duty with 35th Engineer Regiment from Fort Oglethorpe, Lieut. James M. Oliver, Orangeburg.

To *Camp Wheeler*, Macon, Ga., for duty in charge of the division of brain surgery, section of surgery of the head, Capt. Samuel C. Baker, Sumter.

To *Fort Des Moines*, Ia., for instruction, Lieut. Dan M. Moore, Enoree.

To *Fort Oglethorpe* for instruction, Capt. Theodore C. Stone, Aiken; Lieuts. Lawrence R. Kirkpatrick, Bennettsville; Julius D. Eaddy, Lake City; Karl L. Able, Leesville.

SOUTH DAKOTA

To *Camp Dodge*, Des Moines, Ia., from Fort Riley, for duty, Lieut. Burt A. Dyar, De Smet.

To *Camp Funston*, Fort Riley, Kan., for duty, from Medical Officers' Training Camp, Lieut. Maurice O. Pemberton, Deadwood.

To *Camp Grant*, Rockford, Ill., for temporary duty, Lieut. Henry J. T. Ince, Rapid City.

To *Fort Oglethorpe*, for instruction, Lieut. Willard A. Bates, Northville.

To report in person to the commanding officer of the base hospital for duty, from Camp Bowie, Fort Worth, Tex., Lieut. Glenn V. Sigler, Highmore.

To his home from Camp Pike, Little Rock, Ark., and return to the inactive list of the Medical Reserve Corps on account of being physically disqualified for active service, Lieut. James P. Valby, Viborg.

TENNESSEE

To *Camp Dodge*, Des Moines, Ia., from Fort Riley, for duty, Lieut. Benjamin G. Allen, Chattanooga.

To *Camp McClellan*, Anniston, Ala., for duty in charge of the division of brain surgery, section of surgery of the head, Major Lucius E. Burch, Nashville.

To *Camp Meade*, Annapolis Junction, Md., for temporary duty, Lieut. Allen L. Lear, Sewanee.

To *Camp Vaul*, Little Silver, N. J., for duty, Lieut. Cleveland Payne, Oakland.

To *Camp Wheeler*, Macon, Ga., for duty with Ambulance Companies, from Fort Oglethorpe, Lieut. Joseph P. Delabet, Arrington.

To *Fort Oglethorpe* for instruction, Capt. Bernard C. McMahon, Memphis; George A. Hatcher, Nashville; Leslie T. Bolton, Lucy; Maurice L. Connell, Ridgetop; with 23d Cavalry (F. A.) from Medical Officers' Training Camp, Samuel S. Caruthers, Nashville.

To *Newport News*, Va., for duty with 304th Stevedore Regiment from Fort Oglethorpe, Lieut. George R. McSwain, Paris.

To his home and honorably discharged from duty at Fort Des Moines, Ia., Lieut. William G. Raby, Memphis.

TEXAS

To *Camp MacArthur*, Waco, Tex., for duty as a member of a board of officers for tuberculosis examinations, Lieut. John T. Bernard, Dallas.

To *Camp Travis*, Fort Sam Houston, Tex., for temporary duty, Lieuts. Edgar V. Henry, Coleman; for duty, Sneed Strong, Dallas; Thomas H. Standlee, Lyra.

To *Fort Oglethorpe* for instruction, Capt. Jesse L. Womack, Lolita; Thomas A. Martin, Lorane; Lieuts. Dana E. Monro, Cameron; Edward J. Burns, Carrizo Springs; Talbert M. Hall, Osage; David C. Williams Post; Earl L. Sharp, Willis.

To *Fort Sam Houston*, Tex., for duty, Lieut. Thad Shaw, San Antonio.

To *New York*, and report in person to Major F. H. Albee, 40 E. 41st Street, New York, for a course of instruction, from Rockefeller Institute, New York, Major Charles S. Venable, San Antonio.

To report by telegraph to the commanding general Southern Dept., for assignment to duty, Lieut. William C. Barnard, Corpus Christi.

Honorably discharged on account of inaptitude for the service, Lieut. Squire M. Henry, Southland.

UTAH

To *Fort Oglethorpe* for instruction from Allentown, Pa., Lieut. James M. Graham, Fruita.

To his home, and return to inactive list of Medical Reserve Corps, on account of being physically disqualified for active service, from Letterman General Hospital, Presidio of San Francisco, Capt. Thomas A. Flood, Salt Lake City.

VERMONT

To *Boston*, for instruction in military roentgenology, Lieut. Frank C. Angell, Rudolph.

VIRGINIA

To *Boston*, Mass., for a course of instruction in orthopedic surgery, Lieut. Samuel B. Cary, Roanoke.

To *Camp Greene*, Charlotte, N. C., for duty in charge of the division of brain surgery, section of surgery of the head, Capt. Lomax Gwathmey, Norfolk.

To *Fort Monroe*, Va., for duty in division of ophthalmology and otolaryngology, section of surgery of the head, Lieut. Frank D. Willis, Newport News.

To *Fort Oglethorpe*, Ga., for instruction, Capt. Stanley H. Graves, Norfolk, and Lieut. Leslie T. Rusmisse, Lovettsville.

To *Richmond Medical College*, Richmond, Va., for a course of instruction in military roentgenology, Lieuts. John L. Tabb, Jr., Midlothian; Fayette A. Sinclair, Newport News; and Samuel A. Rhyne, Norfolk.

To *Washington University*, St. Louis, Mo., School of Plastic and Oral Surgery, for three weeks' course of intensive training, Lieut. Forsey G. Tyler, Richmond.

WASHINGTON

To *Camp Lewis*, American Lake, Wash., for duty as assistant chief of the medical service, Capt. Charles S. Wilson, Tacoma; for duty, Capt. Robert N. Tooker, Seattle; and Ira A. Nelson, Spokane; Lieut. Charles R. McCreery, Tacoma; for duty as Chief of the Surgical Service, from duty at Base Hospital, Lieut. Horace J. Whitacre, Tacoma.

To *Camp Robinson*, Sparta, Wis., for duty with the 17th Field Artillery, Capt. Ira C. Brown, Seattle.

To report in person to the commanding officer, Repair Shop Unit, Quartermaster's Corps, Washington, D. C., for duty, from Army Medical School, Capt. Francis W. Anderson, South Bend.

WEST VIRGINIA

To *Camp Funston*, Fort Riley, Kan., for duty, from Medical Officers' Training Camp, Lieut. Charles N. Brown, Elizabeth.

To *Fort Oglethorpe*, Ga., for instruction, Capt. David Hott, Morgantown; Lieuts. Harvey C. Powell, Morgantown; and Harold H. Talbott, Weirton.

WISCONSIN

To *Camp Beauregard*, Alexandria, La., for the purpose of making examinations in his specialty, and upon completion of this duty to return to his home and to the inactive list of the Medical Reserve Corps, Capt. Oscar E. Lademian, Milwaukee.

To *Camp Dodge*, Des Moines, Ia., from Fort Riley, for duty, Lieuts. Donne F. Gosin, Greenbay; James C. Tyvand, Whitehall; and Howard C. Miller, Whitewater.

To *Camp Funston*, Fort Riley, Kan., for duty, from Medical Officers' Training Camp, Lieuts. Judson A. Palmer, Arcadia; Frederick N. Ferguson, Elroy; William A. Joseph, Hancock; Norman O. Nelson, Madison; Richard W. A. Dehmel, South Germantown; and George R. Baker, Tomahawk.

To *Camp MacArthur*, Waco, Tex., from Fort Riley, for duty in the division of plastic and oral surgery, section of surgery of the head, Lieut. Max Bornstein, Milwaukee.

To *Camp Robinson*, Sparta, Wis., for duty, Lieut. Thomas C. Clarke, Oconto.

To *Colon Hospital*, for duty, from Fort Randolph, Canal Zone, Lieut. Robert L. Bowen, Oshkosh.

To *Fort Oglethorpe*, Ga., for instruction, Lieut. G. H. Schlenker, Cazenovia.

To *Neurological Institute*, New York City, for a course of intensive training in his specialty, Lieut. Smiley Blanton, Madison.

To *Washington University*, St. Louis, Mo., for three weeks' intensive training, from Fort Riley, and upon completion to return to his proper station, Capt. Gustaf R. Egeland, Sturgeon Bay.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Bill Compromised.—For work done in connection with the threatened epidemic of spinal meningitis in the naval training camp at Balboa Park, San Diego, the city health authorities rendered a bill for \$1,500 against the United States government. The bill occasioned considerable discussion by the members of the health board and the naval authorities. It was finally compromised by the government paying the city \$650.

Personal.—Dr. T. Brailsford Robertson, professor of biochemistry and pharmacology in the University of California, has donated to the university his patent rights in the product "Tethelin," isolated from the anterior lobe of the pituitary body and believed to control growth of cells, and to be capable of accelerating repair in slowly healing wounds. All profits resulting from this discovery are to constitute an endowment, the income to be applied to medical research.—Dr. Alfred E. Banks, health officer of San Diego, has resigned and resumed private practice. He has recommended that Dr. William W. Crawford be appointed his successor.—Dr. Ralph W. Nauss, Fresno, the newly appointed state district health officer, has established headquarters for the central district in Fresno.

GEORGIA

Personal.—Dr. William L. Funkhouser has moved from Rome to Atlanta, and will devote himself exclusively to the treatment of children.—Dr. John E. Toole has been elected mayor of Bainbridge.—Dr. Albert Fleming, Waycross, has been reappointed a member of the State Board of Examiners.

Tuberculosis Clinic in Savannah.—The Central Council of Charitable and Philanthropic Organizations of Savannah has advocated the immediate establishment of a free tuberculosis clinic in Savannah, and a committee, whose chairman is Rev. S. B. McGlohan, will act with a committee from the Georgia Medical Society, headed by Dr. James O. Baker, for the accomplishment of this much needed charity.

IDAHO

Personal.—Dr. Joseph H. Murry, surgeon of the Oregon Short Line Railroad, Nampa, has resigned, and Dr. Frank B. Smith has been appointed his successor.

Contract Let for Sanatorium.—The contract for the construction, completion and equipment of the main building of the Idaho State Sanatorium, Nampa, has been awarded for \$23,800.

ILLINOIS

Personal.—Dr. Alice Barlow Brown, Winnetka, has arrived at Toulouse, France, where she is to establish a free dispensary for women and children which is supported by the women of Winnetka, and the American Fund for French Wounded.—Dr. Max C. Hawley, Elgin, has been appointed superintendent of the Watertown State Hospital.—Dr. George Parker, medical director of the Peoria Life Insurance Company, has entered on the duties of commissioner of health of Peoria, succeeding Dr. Emmett A. Garrett, called to war service.—Dr. Emil Bunta, Chicago, has been appointed a member of the staff of the Oak Forest Infirmary.

INDIANA

New Surgeries Opened.—The north annex and new surgeries of the Methodist Episcopal Hospital, Indianapolis, were formally dedicated, October 14 and 15. The north wing of the hospital was completed last year, but had never been formally dedicated. The new surgical operating rooms have just been completed at a cost of \$40,000.

Sanatorium To Do Outpatient Work.—The directors of the Marion County Medical Society for the Prevention of Tuberculosis have decided to buy an automobile for the use of the outpatient department of Sunnyside Sanatorium. This will enable Miss Gaskill, nurse at the head of this department, to visit tuberculosis patients in all parts of the county in order

to advise and keep in touch with them after their discharge from the sanatorium.

Personal.—Dr. Abner H. Shaffer, Huntington, fell in his home, October 5, fracturing his hip.—Dr. Lewis P. Drayer, Fort Wayne, has been appointed secretary of the city health board, succeeding Dr. John H. Gilpin, resigned to enter the military service.—Dr. Daniel F. Randolph, Waldron, was seriously injured recently in an automobile accident in Van Buren Township.

Section Officers.—At the recent meeting of the Indiana State Medical Society, Dr. Charles P. Emerson, Indianapolis, was elected chairman of the medical section, and Dr. Jane M. Ketcham, Indianapolis, secretary. Dr. Ludson Worsham, Evansville, was elected chairman of the surgical section, Dr. Goethe Link, Indianapolis, vice chairman, and Dr. Howard O. Shafer, Rochester, secretary.

Memorial to Dr. Bobbs.—At Indianapolis, October 11, in the medical section of the new \$6,000,000 library building, a bronze tablet was erected in honor of the memory of Dr. John Stough Bobbs, a pioneer surgeon of Indiana. In the dedication of the tablet, addresses were made by Dr. Henry Jameson, of the Medical Department of the University of Indiana, formerly dean of the Indiana Medical College, founded by Dr. Bobbs; by Louis Howland, editor of the *Indianapolis News*, and by Dr. Hillary Gobin, president of De Pauw University, who was for three years secretary to Dr. Bobbs. Dr. Bobbs was born in 1809 and died in 1870. In addition to the founding of the Indiana Medical College in which he was a teacher until his death, he was also one of the founders of the state medical society, donated a medical library to the physicians of Indiana, endowed a dispensary which is now the Indianapolis City Dispensary, and was a brigade surgeon during the Civil War, and helped to carry from the field and care for wounded soldiers at the Battle of Bull Run. The memorial addresses credited Dr. Bobbs with being one of the great surgeons of America. The bronze tablet, executed by Gutzon Borglum, is 6 feet by 3½ feet in size, bears in bas relief the figure of Dr. Bobbs, and the following inscription: "Illustrious Surgeon, Patriotic Citizen, Self-Sacrificing Benefactor, Servant of God through Service to Mankind. First to perform the operation of cholecystotomy." That Dr. Bobbs was the originator of the operation of opening the gallbladder is fully attested. The work of securing funds and carrying out the establishment of the memorial was in the hands of a committee consisting of Drs. Henry Jameson, Alembert W. Brayton, William N. Wishard, John H. Oliver and Frank B. Wynn, some of the members having been associates of Dr. Bobbs.

MARYLAND

Typhoid Cases Increase.—Twenty-six new cases of typhoid fever were reported to the Health Department of Baltimore during the week. There were four deaths from the disease. The *Health Bulletin* also reports 189 deaths in Baltimore, for the week, and 300 births.

Personal.—Dr. Archibald C. Harrison, director of the University of Maryland Base Hospital Unit, was recently operated on by Dr. Thomas S. Cullen in St. Joseph's Hospital for acute abdominal trouble.—Miss Mary L. Kelly, assistant superintendent of nurses of the Health Department of Baltimore, has been appointed assistant bacteriologist of the health department.—Dr. Harry F. Shipley, Granite, was seriously injured, September 13, by the overturning of his automobile near Gwynn Oak; he sustained a fracture of the clavicle and two ribs.—Dr. Karl H. Van Norman, formerly assistant superintendent of Johns Hopkins Hospital, who resigned in November, 1915, for war service with the Canadian forces and was placed in charge of a base hospital in Ramsgate, England, and later was made assistant chief of the Canadian hospitals in England, has returned to this country to recuperate, and is in temporary charge of the Canadian recruiting station at Minneapolis.

MASSACHUSETTS

Health Department Moves.—New headquarters have been opened for the state department of health on the fifth floor of the state house, and the water, sewerage, food and drug laboratories are on the same floor.

Personal.—Dr. Philip Castleman has been appointed deputy health commissioner of Boston, and Dr. Honore Van de Velde, assistant director of pathologic laboratories in the health department.—Dr. M. Victor Safford, U. S. P. H. S., has been appointed epidemiologist of the Boston Health

Department.—Lieut. Harry R. Coburn, M. R. C., in charge of the men's department of the Tewksbury State Hospital, was given a farewell dinner, September 7, at which he was presented with a wrist watch.—Dr. Frank H. Carlisle, Wrentham, assistant superintendent of the Norfolk State Hospital, Pondville, for ten years past, has accepted an appointment as medical director of the Massachusetts Farm, Ridgewater.

MICHIGAN

New Officers.—At the annual meeting of the Wayne County Medical Society, held in Detroit, Dr. Warren L. Babcock was elected president, Dr. Clarence E. Simpson, vice president; Dr. Raymond C. Andries, secretary, and Dr. William H. Morley, treasurer.

State Board Members.—The following appointments are announced by the governor for membership in the Michigan State Board of Registration in Medicine: Dr. Guy L. Conner, Detroit, to succeed Dr. Colonel B. Burr, Flint; Dr. William S. Shipp, Battle Creek, to succeed Dr. William T. Dodge, Big Rapids, and Drs. Albertus Nyland, Grand Rapids, and Nelson McLaughlin, Lake Odessa, to succeed themselves.

Personal.—Dr. Edwin R. Vander Slice, Lincoln, for two years physician for the state board of health tuberculosis survey, has been appointed executive secretary of the Michigan Antituberculosis Association.—Dr. Eloise Walker, Binghamton, N. Y., has been appointed physician to the University of Michigan, health service, succeeding Dr. Elsie S. Pratt, Denver.—Dr. Richard M. Olin, secretary of the state board of health, Caro, has moved to Lansing.—Application has been made for a sanitary commission to examine Dr. Ralph E. Gustin, Detroit, who is said have been recently sentenced to serve one year for manslaughter.—Dr. William C. Bell has been appointed police surgeon of Detroit, succeeding Dr. Griffith A. Thomas, resigned to take command of an ambulance company at Fort Sherman, Chillicothe, Ohio.

MINNESOTA

Health League Trains Nurses.—The Minnesota Public Health Association announced that it will expend \$8,000 for the training of graduate nurses to do visiting work in towns and rural communities.

Personal.—Dr. George E. Putney, Paynesville, has been appointed a member of the State Board of Medical Examiners, succeeding Dr. Pierre C. Pilon, Paynesville, resigned to enter the Army.—Dr. Arthur T. Laird, superintendent and secretary of the Nopeming Sanatorium, Duluth, has been appointed by the Rockefeller Foundation to do tuberculosis work in France.

Hospital Items.—St. Peter's new hospital, known as the Field Hospital and Sanitarium, was opened for patients, October 1. The formal opening took place a week later. The building at present accommodates fifteen patients, and is under the charge of Dr. Merton Field.—Dr. Philip E. Stangl, formerly of St. Cloud, has assumed charge of the Paynesville Hospital.—Work on the new Itasca County Hospital, Grand Rapids, has been begun, and under the terms of the contract the building must be completed before April 1, 1918.

NEW YORK

Oppose Institution at Lake Mohansic.—For several days the joint legislative committee has been taking testimony in order to reach a decision as to the disposition to make of the 1,000-acre site bought for a state hospital and home for juvenile delinquents. Protests against having any buildings on this site have been made by the commissioner of the board of water supply and representatives of the New York Academy of Medicine, the real estate board, the Safety First Society, the Central Mercantile Association, and by a number of other civic bodies.

New York City

Carpenter Lecture.—The Wesley M. Carpenter lecture was delivered at the New York Academy of Medicine, October 18, by Dr. William J. Mayo, Rochester, Minn., on "The Relation of the Spleen to Some Obscure Clinical Phenomena."

To Organize Vital Economics Work.—John R. Murlin, for eight years assistant professor of physiology in the Medical School of Cornell University, has been appointed director of the new Department of Vital Economics in the University

of Rochester. This department has been endowed with funds made available by the will of Lewis E. Ross.

Surgical Conference.—Professor Campbell announces that a surgical conference will be held in the amphitheater of Long Island College Hospital, Brooklyn, every Wednesday afternoon at 3 o'clock. The subject for October 10 was "Hernia."

Draft Physician Punished.—Dr. Henry Seligman, Brooklyn, is said to have been convicted, October 3, of a conspiracy to cause the evasion of the selective draft law, and to have been sentenced to two years' imprisonment in the United States Penitentiary, Atlanta, and to pay a fine of \$3,000.

New School for Nurses.—Largely as a result of the appeal of the Council on National Defense that all hospitals in the country increase their educational facilities for training nurses, Bellevue Hospital School for Training Nurses has opened a school for students who do not live at the hospital. There will be no tuition charge, and textbooks and uniforms will be furnished to applicants. The training will cover forty-eight hours each week. The students must have a high school or college education.

Merger of Three Hospitals Planned.—At a conference recently called by Felix M. Warburg and attended by representatives of various city hospitals, plans were considered for merging the three large Jewish hospitals of the Bronx. The plan calls for the erection of a great central hospital building in place of the three separate institutions. It was proposed that a building should be erected to cost at least \$500,000 and to accommodate 300 patients. The plan also includes the establishment of dispensaries in different parts of the Bronx. Resolutions were adopted authorizing the appointment of a committee of those interested in the work to make a survey and to work out definite plans.

Personal.—Dr. Isadore Rosen has been appointed instructor in syphilology in the College of Physicians and Surgeons in the City of New York.—Dr. Louis R. Harris, director of the Bureau of Preventable Diseases, has been appointed successor to Dr. Bertram H. Waters, resigned.—Dr. Chester L. Carlisle, formerly senior assistant physician to the King's Park State Hospital, Long Island, has been appointed and has assumed office as superintendent of the Division of Mental Defects and Delinquency of the State Board of Charities, with office at the capital, Albany.—Dr. William G. Bissell, Buffalo, has been elected vice president of the Federated Alumni Association of the University of Buffalo.—Dr. James L. Gallagher, Buffalo, has been reelected supreme medical examiner of the Ancient Order of Foresters for the Atlantic, central and southern states.

OHIO

Personal.—Dr. Allen W. Freeman, U. S. P. H. S., took office, October 1, as the first commissioner of health of Ohio.—Dr. Joseph W. Lehr, Wooster, suffered severe injuries in a collision between an automobile and the buggy in which he was riding, September 30.—Dr. J. Sumner Teter has been appointed city epidemiologist at Toledo, succeeding Dr. Thomas L. Ramsey, resigned.—Dr. Oscar H. Sellenings has resigned as a member of the Columbus Board of Health.—Dr. DeWitt T. McGriff, Lima, has been appointed coroner of Allen County, succeeding Dr. Virgil H. Hay, resigned to enter the military service.—Dr. Leo S. Talaska has been appointed city physician of Toledo, succeeding Dr. J. Sumner Teter.—Dr. William E. Pricer, Ironton, and family have gone to St. Petersburg, Fla.

PENNSYLVANIA

Philadelphia

Personal.—Dr. Thomas McCrae, professor of medicine in Jefferson Medical College, who has been in charge of a large military hospital in England, has returned home and resumed his practice and teaching in Jefferson College and Hospital.—Dr. J. Clarence Keeler has been made assistant professor of otology in Jefferson Medical College.

Army Tuberculosis Unit.—This city has furnished a tuberculosis unit to the government. Twelve experts on diagnosis and treatment have been ordered to proceed to Camp Dix, Wrightstown, to examine the 47,000 drafted men. The physicians who make up this unit are: Drs. Henry R. M. Landis, Robert Shelmerdine McCombs, Frank A. Craig, Charles M. Montgomery, Joseph P. Walsh, Alexander Heron Davisson, Isadore Kaufman, John J. Robrecht, Clarence D. Smith, J.

Clinton Foltz, Elmer H. Funk, all of Philadelphia, and Marcus W. Newcomb, Browns Mills, N. J.

Substitutes for Doctors in War Service.—Drs. William W. Keen, George A. Knowles, James T. Rugh, George D. Fussell and Frederick P. Henry, secretary, 114 South Eighteenth Street, the committee to procure substitutes for physicians ordered in service requests all who are going to the front to notify the secretary of the committee of the names and residences of those who are to take charge of their practice during their absence. In case they have difficulty in procuring substitutes, the committee will be glad to assist them in making such arrangements. The committee would suggest to doctors leaving for the front that they inform their patients who their substitutes are and post on the doors of their offices the names and residences of such substitutes.

WEST VIRGINIA

Personal.—Drs. Robert U. Drinkard, John W. Gilmore, Andrew J. Wilson and Charles M. Truschel, Wheeling, have been selected as members of the visiting staff of the View Point Sanitarium, Wheeling.

Semi-Centennial of Medical Society.—The West Virginia State Medical Association held its fiftieth annual meeting at Fairmont, October 2 to 4, under the presidency of Dr. Joseph E. Rader, Huntington. Berkeley Springs was selected as the next place of meeting, and the following officers were elected: president, Dr. Samuel R. Holroyd, Athens; vice presidents, Drs. Charles O'Grady, Charleston; William J. Judy, Belleville, and Charles W. Waddell, Fairmont; secretary, Dr. J. Howard Anderson, Marytown; treasurer, Dr. Hugh G. Nicholson, Charleston; counsellors, first district, Dr. Henry R. Johnson, Fairmont; second district, Dr. Theodore K. Oates, Morgantown; third district, Dr. Chester R. Ogden, Clarksburg; fourth district, Dr. George D. Jeffers, Parkersburg; fifth district, Dr. James E. McDonald, Logan; sixth district, Dr. Horace L. Goodman, McKendree; delegate to the American Medical Association, Dr. F. LeMoyne Hupp, Wheeling, and editor of the journal of the association, Dr. James R. Bloss, Huntington.

WISCONSIN

Society Moves.—The Milwaukee Medical Society has moved into its new quarters in the Colby-Abbott building, and has transferred its library and reading rooms to the new home. The rooms were formally dedicated, October 7.

Personal.—Dr. Frederick M. Harris has resigned as full-time health commissioner of Fond du Lac, and director of the Fond du Lac Cooperative Laboratory.—Dr. Lewis J. Daniels has been appointed health commissioner of Milwaukee, succeeding Dr. George C. Ruhland, who has entered the United States service.

Hospital Notes.—Through the efforts and generosity of Dr. John G. Meachem, the establishment of a children's hospital in Racine has been made possible. Dr. Meachem has purchased a house south of the maternity home on Wisconsin Street, and has given it to St. Luke's Hospital and the Alice Horlick Hospital for a term of years, free of rent and taxes. The building will accommodate seventeen patients.—Sunny Rest Sanitarium, erected four years ago by Racine County at a cost of \$35,000, is found to be in need of immediate repairs which will cost more than \$5,000.

State Medical Society Meeting.—The State Medical Society of Wisconsin held its annual meeting in Milwaukee, October 3 to 5, under the presidency of Dr. Hoyt E. Dearholt, Milwaukee. The following officers were elected: president, Dr. Gustave Windesheim, Kenosha; vice presidents, Drs. Oscar Lotz, Milwaukee; Thomas W. Nuzum, Janesville, and Karl W. Doege, Marshfield; secretary, Dr. L. Rock Sleyster, Waupun (reelected); treasurer, Dr. Sidney S. Hale, Ripon (reelected); a delegate to the American Medical Association, Dr. Charles H. Lemon, Milwaukee; alternate, Dr. Wilson Cunningham, Platteville, and counsellor of the ninth district, Dr. Joseph F. Smith, Wausau; Dr. Louis M. Warfield, Milwaukee, was elected president, and Dr. Joseph S. Evans, Madison, secretary of the medical section; Dr. Edward W. Quick, Milwaukee, president, and Dr. Daniel Hopkinson, Milwaukee, secretary of the surgical section, and Dr. Sidney S. Hall, Ripon, president, and Dr. Joseph J. Bellin, Green Bay, secretary of the eye, ear, nose and throat section.

CANADA

Personal.—Major William John O. Malloch, Toronto, who returned to England from Saloniki with the Toronto University Base Hospital, has been appointed surgeon-in-chief

of the Ontario Military Hospital, Orpington, England.—Lieut.-Col. Thomas Bedford Richardson, Toronto, who has been medical officer to the British-Canadian War Mission, Chicago, has been recalled to Canada, and has been appointed to the staff of the Canadian Pension Board at Ottawa.—Lieut.-Col. P. Walter H. McKeown, Toronto, overseas for over two years, is temporary O. C., Kitchener Hospital, Brighton, England.—Major Donald McGillivray, Toronto, on three months' leave of absence, has not yet fully recovered his health as to permit him to return to England for hospital duty.—Major William J. Clark, Toronto, of the Ontario Military Hospital, Orpington, England, is home on three months' leave of absence.—Hon. Dr. William J. Roche, Minnedosa, Manitoba, who was a member of the late Borden government, has been appointed head of the Canadian Civil Service Commission, but at the present time is in a hospital, seriously ill.—Capt. Brefney R. O'Reilly, Toronto, will accompany the Canadian and American aviators to Texas for winter training. Dr. O'Reilly is medical officer to the Canadian Flying Corps.

Canadian Military Hospitals Commission.—There are now fifty-seven institutions operated directly by the Canadian Military Hospitals Commission, fourteen others at which definite accommodations are available, apart from the hospitals for the insane, and twenty-three hospitals where men may be sent for active treatment.—The commission has under control sixteen hospital cars for transportation of the men from hospital ships to their inland destination. It is expected from 1,200 to 1,500 soldiers will now be returning every month.—Arrangements have been made recently whereby the Canadian Army Medical Corps contributes to the medical service of the commission. The following are the special classes, including specialists, in the following branches: general practice; tuberculosis; orthopedics; mental diseases; eye, ear and throat diseases; dental; massage; electrical treatment; physical drill, and rheumatic treatment.—The Oakhill Military Convalescent Hospital, St. Catharines, Ont., is specially assigned for rheumatic cases. British Columbia has several; Winnipeg, one.—There are two classes of mental disability. The Ontario Military Hospital at Coburg, Ont., will be retained entirely for shell-shock cases, and arrangements have been made to open at Newmarket, Ont., an institution for the insane.—The commission only has one factory thus far for the manufacture of artificial limbs, that in North Toronto, but in the near future other manufactories will be established in different parts of Canada.

GENERAL

Eye, Nose and Throat Specialists to Meet.—The twenty-second annual meeting of the American Academy of Ophthalmology and Oto-Laryngology will be held in Pittsburgh, October 29 and 30, under the presidency of Dr. William L. Dayton, Lincoln, Neb.

National Housing Conference.—The sixth National Conference on Housing in America was held in Chicago, October 15 to 17, under the auspices of the National Housing Association, in cooperation with the city of Chicago, and the Chicago Civic and Social Service Organization. Among the chief topics for discussion were, "Chicago's Housing Problem," "Industrial Housing," and a symposium on housing famines.

Bequests and Donations.—The following bequests and donations have recently been announced:

Dr. John B. Briggs, Hartford, Conn., one-half the estate of Mrs. James E. Nichols, amounting to nearly half a million dollars.

To establish the Dr. James M. Ferguson Home for worthy poor and homeless white persons of El Paso County, Colo., the estate of Dr. James M. Ferguson, valued at about \$20,000.

George F. Geisinger, Memorial Hospital, Danville, Pa., an endowment of \$1,000,000, by Mrs. Abigale E. Geisinger.

The Alvarenga Prize.—The College of Physicians of Philadelphia announces that the Alvarenga Prize for 1917 has been awarded to Dr. Wilbur C. Davison, Baltimore, for his essay entitled "The Superiority of Inoculations with Mixed Triple Vaccine (*B. typhosus*, *B. paratyphosus* A and *B. paratyphosus* B). Over Successive Inoculations with the Single Vaccines, as Shown by Agglutinin Curves in Men and Rabbits." The next award of the prize, being the income for one year of the bequest of the late Señor Alvarenga, amounting to about \$250, will be made, July 14, 1918, provided an essay deemed by the committee of award to be worthy of the prize shall have been offered. Essays for competition may be on any subject in medicine, but cannot have been published. They must be typewritten, and if written in a language other than

English, should be accompanied by a translation. They must be received by the secretary, Dr. Francis C. Packard, 19 South Twenty-Second Street, Philadelphia, on or before May 1, 1918. Essays must not be signed, but must be marked with a motto, and accompanied by a sealed envelope having on the outside the motto, and inside the name and address of the author.

Meeting of Clinical Congress of Surgeons.—Special arrangements have been made for the evening sessions of the meeting of the Clinical Congress of Surgeons in Chicago, October 22 to 26. The programs of these sessions will be devoted especially to war subjects. As corrected to date of going to press, it is as follows:

MONDAY, OCTOBER 22, 8:15 P. M., ORCHESTRA HALL

Address by Chairman of Committee on Arrangements A. J. Ochsner, M.D., Chicago
Remarks of Retiring President Fred B. Lund, M.D., Boston
Inauguration of President-elect John G. Clark, M.D., Philadelphia
The General Medical Board of the Council of National Defense Franklin H. Martin, M.D., Chicago
Presentation of, and remarks by:
Hon. Josephus Daniels, Secretary of the Navy.
Surgeon-General William C. Gorgas, U. S. A.
Surgeon-General William C. Braisted, U. S. N.
Surgeon-General Rupert Blue, U. S. P. H. S.
Colonel T. H. Goodwin, Representative of the Director-General, British Army Medical Service.
Colonel C. Dercle, Representative of Medical Department, French Army.
Major Charles H. Mayo, M. R. C., President, American Medical Association.
Observations upon the Medical Service of the British Army Sir Berkeley Moynihan, Leeds, Eng.
The Work of the American Units in France, George W. Crile, M.D., Cleveland.

TUESDAY, OCTOBER 23, 8 P. M., GOLD ROOM, CONGRESS HOTEL

Symposium: Sanitation and Sepsis—
The Work of the Army Surgeon... Surg.-Gen. Wm. C. Gorgas, U. S. A.
The Work of the Navy Surgeon... Surg.-Gen. Wm. C. Braisted, U. S. N.
In the Training Camps..... Col. E. L. Munson, M. C., U. S. A.
Military Laboratories..... Col. F. F. Russell, M. C., U. S. A.
Symposium: Antiseptics—Edward Martin, M.D., Philadelphia; H. D. Dakin, M.D., New York; E. H. Dunham, M. D., Philadelphia; Alexis Carrel, M.D., New York; Wm. O'Neill Sherman, M.D., Pittsburgh; W. Estell Lee, M.D., Philadelphia.
Extra Cantonment Zones Raymond D. Fosdick, New York
The Control of Venereal Diseases... Wm. F. Snow, M.D., Washington

WEDNESDAY, OCTOBER 24, 8 P. M., GOLD ROOM, CONGRESS HOTEL

Symposium: Military Surgery and the Specialties—
General Surgery..... Maj. Charles H. Mayo, M. R. C., Rochester
Reconstruction Surgery Maj. Edgar King, M. C., U. S. A.
Head Surgery..... Maj. Walter R. Parker, M. R. C., Detroit
Brain Surgery Capt. Charles Bagley, Jr., M. R. C., Baltimore
Ophthalmic Surgery..... Maj. James Bordley, Jr., M. R. C., Baltimore
Surgery of the Ear, Nose and Throat C. W. Richardson, M.D., Washington
Oral Surgery Maj. Vilray P. Blair, M. R. C., St. Louis
Orthopedic Surgery Maj. E. G. Brackett, M. R. C., Boston

THURSDAY, OCTOBER 25, 8 P. M., GOLD ROOM, CONGRESS HOTEL

Presidential Address: The Use of Radium in Gynecology John G. Clark, M.D., Philadelphia
Surgery of the Spinal Cord..... Charles H. Frazier, M.D., Philadelphia
Discussion by Allen B. Kanavel, M.D., Chicago.
Surgery of the Stomach..... William J. Mayo, M.D., Rochester, Minn.
Discussion by A. J. Ochsner, M.D., and L. L. McArthur, M.D., Chicago.

FOREIGN

Red Cross Mission in Italy.—The *Policlinico* states that a mission from the American Red Cross is in Rome to study conditions on the Italian front, in the hospitals, etc. They were received and welcomed by Senator Comte Della Somaglia, president of the Italian Red Cross, the prefect of Rome, and other notables.

New Piñero Hospital at Buenos Aires.—The hospital provided for by the bequest of P. Piñero in 1907 has just been opened. There are to be five pavilions, with a capacity of 625 beds. The bequest stipulated that the hospital must be opened to the public before Sept. 12, 1917, but the war has interfered with obtaining materials from Europe and elsewhere, so that only the outpatient department and emergency station as yet are open to the public. Dr. R. Spurr is the chief medical director of the hospital. It is to be in charge of the Asistencia Publica of Buenos Aires, the central organization of all institutions devoted to the care of the sick poor.

Deaths in the Profession Abroad.—F. W. Kidd, professor of obstetrics at the University of Dublin, at one time president of the Irish Medical Association and member of the council of the British Gynecological Society.—R. Oeri, Basel, aged 68.—M. F. Escudero, prominent surgeon of Buenos Aires, aged 43.—B. Hernandez, Madrid, in charge of the antirabies service there.—A. Jouty, who succumbed to fulminating septicemia from an accidental infection incurred in his war service of otorhinolaryngology at Lyons. From

recent casualty lists, British: Lieut.-Col. E. H. Openshaw, presumably in Mesopotamia; Capt. B. A. Bull, Lieut. D. Anderson, Capt. W. J. Evans, Surgeon H. A. Potter, Col. T. Daly, assistant director of the medical services, lost in sinking of transport *Arcadian*; Capt. J. W. S. Wilson, Fleet Surgeon E. C. Ward, Capt. A. S. Taylor, Capt. R. W. Shegog, Captain Neligan, Lieut. A. G. Dunn, Capt. B. Woodhouse, Capt. N. G. Chavasse, awarded the Victoria Cross. In Italy: Lieut. F. Pittaluga, Capt. C. Zucchetti, Lieut. A. Buonomo, Lieut.-Col. D. Sonnino, Lieut. E. de G. di Santa Severina. In France: Aide-Major P. Reynaud, A. J. Giordani, Lieutenant Duguit, Captain Morin, chief of the hospital at Vadelaincourt, shelled by aeroplanes, one bomb killing him and the soldier on whom he was operating.

PARIS LETTER

PARIS, Sept. 6, 1917.

The Visit of the Uruguay Physicians

A party of medical men from Uruguay are touring the southwestern part of France at present. They started in the Arcachon region, investigating its climatotherapeutic resources. The party was entertained by the Arcachon Medical Society which took them to visit the summer and winter resorts and the headquarters of the society, its collections and its laboratory.

Physicians Victims of Their Devotion

The death of Dr. Leon Bonnet, aged 58, has been reported from Puy-en-Velay. He was one of the first medical men to study the roentgen rays, and he has just paid with his life for his devotion to science and his patients. He contracted the disease to which he succumbed while working with the roentgen rays.

Radiologic science has also to record another victim, Dr. Vaillant, chief of the service of radiology at the Lariboisière hospital. He has just had to have his left forearm amputated because it had become gangrenous under the use of the roentgen rays. During the twenty years that he has been working with these rays he has had a number of accidents. First, several years ago, one and then two fingers of the left hand had to be amputated, and then one finger of the right hand. In spite of the precautions taken, the evil grew constantly worse and the forearm has had to be removed.

The American Red Cross Canteens for Soldiers

The war council of the American Red Cross has decided to expend \$700,000 in the organization of canteens and lounging places for the use of French and American soldiers. They are to be close to the front and in the railway stations, and are to be equipped with writing materials, games, facilities for bathing and arrangements for the sale at cost price of small useful articles and comfort supplies.

Physicians and the Coal Card

I have already mentioned in a previous letter the institution of the coal card. The organized physicians of the Seine department, the Syndicat, has appealed to the highest local authorities, calling their attention to the situation as it affects physicians. Their communication says: "As the coal card is to be inaugurated, September 1, it is necessary that the situation as it affects the medical corps must be cleared up before that date. During the discussions preceding the inauguration of the coal card, it was heard that the liberal professions would be granted special privileges, as lawyers and physicians are obliged to have a room in which they receive their clients and a waiting room for them. It is estimated that these rooms would have to be heated on an average four hours a day, that is, omitting Sundays, $4 \times 2 \times 27 = 216$ hours of heating per month, which would have to be added to the amount apportioned for each individual coal card. The medical corps of Paris, not being under the jurisdiction of the Chamber of Commerce, is compelled to apply to the highest local authority, the prefect of the department, to obtain that to which it is entitled. We are convinced, besides, that it is only necessary to call your attention to the needs of the profession to have them recognized and satisfaction granted."

The War

THE MEDICAL SERVICE IN THE ARMY IN MACEDONIA

M. Justin Godart, undersecretary of state for the military medical department, on his return from his recent visit to the eastern firing line, sent the following letter to the commander in chief of the medical forces of the armée d'Orient:

"On my visit to the medical and surgical quarters of the armée d'Orient I saw at the front and even in Saloniki the results of the work and devotion of all the personnel in your command. The difficulties to be overcome, depending on the question of transportation and climatic conditions, were of the most serious kind, and were further aggravated by the colonial character of this war. But thanks to the close collaboration between the military command and your department, it has been possible to effect day by day material improvement both from the practical and from the scientific standpoints.

"Please convey my congratulations and my thanks to every stretcher bearer, nurse (men and women), physician, pharmacist, and administrative official. Far from their native land, they have served their country well, devoting themselves entirely to solicitude and care for the soldiers for whom we can never do too much. The Republic may justly be proud of all of them as well as of those doing the actual fighting."

THE SHELL SHOCK CASES

The report on the mental confusion cases among the men on active service was prepared in collaboration by Drs. Juquelier, Capgras and Bonhomme, and in an important summary of the subject, impossible to do justice to here, they called attention in particular to the following questions: (1) from the point of view of the etiology, the existence of cases of a purely commotional or emotional origin, without the influence of infection or intoxication; (2) the greater gravity of the prognosis in the commotional cases and their complication by sequelae, and (3) the importance of the sequelae, which may include psychoses and secondary psychoneuroses, among which are dementia praecox, masked epilepsy, the syndrome of hyperemotionalism and recurring conditions of oneirism, that is, dreamlike hallucinations while awake, etc.

The discussion bore mainly on points of detail. Dr. Delmas insisted on certain peculiarities of the war confusional state: its equal frequency in the wounded and the nonwounded; the importance among other sequelae of early dementia and the syndrome of hyperemotionalism, and the constant existence of a period of latency at the beginning of the "commotional confusion." Dr. Marie warned against the too early return to duty of the men thus afflicted; Dr. Meige, against errors of diagnosis between confusion and aphasia. Dr. Laignel-Lavastine emphasized the fact that emotional and concussional confusion are produced by a physiologic mechanism, the emotion generating the confusional state through the intermediation of the secretory disturbances which it induces.

THE DISTURBANCE IN THE PUPIL REACTIONS AFTER SHELL SHOCK

At a recent session of the Académie de médecine, Dr. G. Guillaumin, agrégé professor at the Paris Faculté de médecine and hospital physician, and Dr. J. A. Barré called attention to the changes in the pupil reactions which they had noted in twenty-six cases of concussion from explosion of a large shell without external wound. Sometimes, at first, the pupils are abnormally dilated, and show no reaction to light or accommodation. Usually the mydriasis is of different degrees in the two eyes; sometimes on one side only, sometimes on both there is no response to light; sometimes there is an actual Argyll Robertson sign; in other cases there may be a paradoxical reaction to light. In some of the cases of shell shock the pupils may be merely unevenly dilated without modification of the motor reaction to light or to accommodation. These disturbances in the milder cases of shell shock do not cause much trouble. They are transient, as a rule, lasting from three to fifteen or twenty days and sometimes longer, but they gradually improve and finally disappear completely. They remarked that it is somewhat difficult to understand the pathogenesis of these pupil disturbances. In six of the men, they coexisted with xanthochromia in the cerebrospinal fluid and slight meningeal hemorrhage, but in the majority of cases there was complete absence of any sign of meningeal hemorrhage. When there is a slight meningeal hemorrhage, it might be assumed that the cerebrospinal fluid had been rendered toxic by the products of hemolysis, and that this toxic influence had been felt by the fibers of the nerve roots, either on the centripetal or on the centrifugal path of the reflex, or else the small bacillary clots might have injured the fibers by compression. It seems also as if in many cases there may have been some direct peripheral source for the pupil anomalies, either from actual concussion of the retina or from some local concussion of the ciliary muscle or nerves under the influence of the

explosion of the shell. Whatever their pathogenesis, these pupil modifications should be made known. They are by no means exceptional and their causal relations with the concussion seem to be evident.

[The French term *concussion* is used, by some strange twist of the language, exclusively to mean "graft," especially extortion by a public official. Consequently it is never applied, as in English, to denote the condition resulting from a violent shock. They use the term *commotion*, and men suffering from shell shock are called *les commotionnés*.

LONDON LETTER

LONDON, Sept. 18, 1917.

The War

AMERICAN PHYSICIANS IN ENGLISH HOSPITALS

In consequence of the shortage of physicians in this country, the War Office is substituting American Army surgeons for civilian physicians that are employed for part time in military hospitals. There are several reasons for this. As stated in a previous letter to THE JOURNAL, the Central Medical War Committee has informed the government that no more physicians can be taken from civil practice. The release of part-time men from the military hospitals will help to ease the strain in civil practice and enable more men of military age to be called up. Moreover, it is held that part-time men, because of the exigencies of their private work, are not a good bargain for the state, and it is always preferable to employ full-time men. Finally, the urgent need of the present time is for orthopedic surgeons, and America is well able to supply these.

PARATYPHOID FEVER AMONG BRITISH PRISONERS OF WAR

A serious outbreak of paratyphoid has occurred among British officer prisoners of war in the hands of the Turks at Yozgad, in Turkey in Asia. The mortality among the rank and file of British and Indian prisoners captured in Kut has been very heavy, amounting almost to 70 per cent. of the men captured. Among the officer prisoners the mortality has been slight, and the latter are being treated as well as the circumstances of their captors allow.

TETANUS IN MILITARY HOSPITALS

The War Office Committee for the Study of Tetanus has published an analysis, compiled by Sir David Bruce, of the cases of tetanus that have occurred in military hospitals which is important, as it shows the effects of treatment. During four successive periods analyzed, the rate of mortality has steadily gone down. In the first period the mortality was 57.7 per cent.; in the second, 49.2; in the third, 36.5. In the fourth period there is a series of 100 cases of which sixty-nine patients recovered, a mortality of 31 per cent. The ratio of cases of tetanus to the number of wounded soldiers treated in home military hospitals was, roughly, six times as high in September, 1914, as it was two months later; and it remained at or about the lower level until the end of 1916. This fall in ratio was undoubtedly due to a great extent to the introduction of prophylactic injections of anti-tetanic serum, which took place about the middle of October, 1914.

The cases in the last period show once again that the shorter the incubation period the greater the mortality rate, and vice versa. There were only twelve cases with a short incubation period (that is, up to ten days), and sixty cases with an incubation period of more than twenty-two days; the shortest incubation period was seven days, and the longest 190. Since the beginning of the war there has been a diminution in the number of cases with short incubation periods, and a corresponding increase in the number of cases with long incubation periods. This is a measure of the action of the prophylactic inoculation of antitoxin. Sir David Bruce points out that it is sometimes by no means easy to decide whether a case is one of localized or generalized tetanus. He defines general tetanus as that in which spasticity or rigidity occurs in muscles distant from the site of the wound, trismus being the most common initial symptom. In local tetanus the spasticity or rigidity is confined to the muscles in the neighborhood of the wound. He looks on local tetanus as a much modified variety of the original disease, or even as a new type due to the action of the prophylactic injection. In general tetanus the toxin molecules may be pictured as gaining entrance to the circulation and so reaching all parts of the nervous system. In the last

100 cases, sixty-one were general and twenty-eight local; in the remainder there was doubt. In the sixty-one cases of generalized disease there were twenty-one deaths, a mortality of 34.4 per cent. All the patients with localized tetanus recovered. Trismus was recorded in fifty-four of the generalized cases, opisthotonos in seventeen. With regard to operative interference, the tetanus committee advises that when operations are performed at the site of wounds, even if they are healed, a prophylactic injection of serum should always be given; further, they consider it probably safer to abstain from surgical interference with the wound until the ordinary treatment for tetanus has been carried out, unless there are other and imperative reasons for immediate operation.

When the symptoms of the tetanus have subsided, and the tissues are flooded with antitoxin, then the wound can be opened up and searched for foreign bodies or hidden collections of pus and tetanus bacilli. The analysis of the cases furnishes no evidence either for or against the intrathecal route. In the first year of the war the figures seemed to show that this route was better than others.

ORTHOPEDIC HOSPITALS AND CURATIVE WORKSHOPS IN ENGLAND

Considerable attention is being directed in this country, as in France, to the development of military orthopedic hospitals and curative workshops, which are being established in various parts of the country. In London there is at Shepherd's Bush a military orthopedic hospital with 1,200 beds. Since this hospital was opened in March, 1916, 1,270 men have been discharged, of whom 390 were permanently unfit, 325 were returned to duty, 507 were sent to command depots, and 515 to employments. There are departments for electrotherapeutics, massage and hydrotherapeutics. Curative workshops are being completed which will provide places for over 200 men. The work done includes engineering, electrical work, metal grinding and polishing, felting, tailoring, fancy leather work, carpentering, photography, art iron work, oxy-acetylene welding, French polishing, painting and sign writing, metal engraving, coopering, motorcar overhauling, surgical bootmaking and repairing, and splint making. In all of these a high degree of efficiency is attained by the men.

INDIGENOUS MALARIA IN ENGLAND

Indigenous malaria has not been known in England since the early part of last century, when it was prevalent in certain marshy districts and known as marsh fever or ague. However, since the war several cases have been reported, especially among troops. The return of large numbers of men who have contracted malaria in the eastern campaigns means the presence of persons whose blood contains malarial parasites, and as anopheline mosquitoes are also present, the possibility of contagion exists. A case was recently recorded in the *Lancet* of malaria due to the benign tertian parasite in a soldier, aged 20, who had never been outside the British Isles. He was well until he reached a depot to which men who had returned from Saloniki with malaria were drafted. Under the advice of Sir Ronald Ross, the War Office has taken measures to prevent such infection. Patients with malaria will be segregated in special depots and hospitals, and quinin continually administered to soldiers that are likely to remain carriers of malaria. Health officers have been supplied with a memorandum on the subject to be circulated among physicians in order that they may report any cases of fever shown or suspected to be due to malaria, and that inquiries may be made as to the possible source of infection.

Low Birth Rate in Ireland

The fifty-third annual report of the Registrar-General for Ireland, giving statistics for 1916, shows that 22,245 marriages were registered during the year, equivalent to a rate of 5.13 per thousand of the estimated population. This rate is 0.44 per thousand below the rate for 1915, and 0.11 under the average for the ten years 1906-1915. The births registered numbered 91,437, being 21.1 per thousand, which is 1.9 below the average for the ten years 1906-1916. There were 71,391 deaths, equivalent to 16.5 per thousand of the population estimated to the middle of the year. The death rate is 1.1 below that for 1915, and 0.5 below the average rate for the ten years 1906-1915. The number of deaths from all forms of tuberculous disease was 9,323, equivalent to 2.15 per thousand. With the exceptions of 1912, 1913 and 1914, the rate for 1916 was the lowest recorded. The rate for tuberculous diseases in England and Wales during the same period was 1.35.

Marriages

LIEUT. LAVERNE B. SPAKE, M. R. C., U. S. Army, Kansas City, Kan., to Miss Ella Haines Vanneman of El Paso, Texas, June 30.

LIEUT. FRANCIS VINCENT GOWEN, M. R. C., U. S. Army, to Miss Marguerite J. Horan, both of Philadelphia, October 6.

LIEUT. MICHAEL JOSEPH MCCARTHY, M. R. C., U. S. Army, to Miss Blanche Reilly, both of Pottsville, Pa., October 3.

LIEUT. PHILIP MCQUESTEN, M. R. C., U. S. Army, Boston, to Miss Elizabeth Swart of Concord, N. H., September 27.

WILLIAM M. O'SHEA, M.D., Webster, Mass., to Miss Blanche E. M. White of Worcester, Mass., September 25.

LIEUT. LEON SOLIS-COHEN, M. R. C., U. S. Army, to Miss Marion Mansbach, both of Philadelphia, September 30.

SAMUEL RAYMOND FAIRCHILD, M.D., Pennsgrove, N. J., to Miss Ruth Lanahan of Louisville, Ky., September 15.

GAYLORD McE. ANDREWS, M.D., Stella, Neb., to Miss Elizabeth Bookwalter of Kansas City, Mo., October 2.

CHARLES DIMM DIETTERICH, M.D., Parkerford, Pa., to Miss Aneeda Hill of Collegeville, Pa., September 26.

HENRY ASLOP RILEY, M.D., to Miss Mary Chaplin Edgar, both of New York City, October 6.

GEORGE H. CRAFT, M.D., to Miss Flo J. Redfield, both of Pittsburgh, at Erie, Pa., October 1.

OTIS GUY BACON, M.D., to Miss Bonnie Caley, both of Davidson, Okla., September 21.

EDWIN J. OXFORD, M.D., to Miss Gladys Baker, both of Chambers, Neb., September 30.

MATT R. ROOT, M.D., to Miss Henrietta Ziegler, both of Denver, August 28.

Deaths

Moses Greeley Parker, M.D., Lowell, Mass.; Harvard Medical School, 1864; aged 74; a Fellow of the American Medical Association; consulting oculist to St. John's Hospital, Lowell; assistant surgeon, Second United States Cavalry, during the Civil War; once president of the Middlesex North District Medical Society, and of the Lowell Medical Journal Society; president-general of the National Society of the Sons of the American Revolution, in 1911 and 1912; died at his home, October 2.

Eli Leinbach Klopp, M.D., Philadelphia; Jefferson Medical College, 1889; aged 61; a Fellow of the American Medical Association, and a member of the American Academy of Ophthalmology and Oto-Laryngology; for many years assistant professor of otology in his alma mater; aural surgeon and chief of the nose and throat clinic of the Jefferson Hospital; for ten years a pharmacist; died at his home, Oak Lane, Philadelphia, September 29, from disease of the kidneys.

Allen DeVilbiss, M.D., Toledo, Ohio; Miami Medical College, 1868; aged 75; a Fellow of the American Medical Association; a member of the Mississippi Valley Medical Association, and American Academy of Ophthalmology and Oto-Laryngology, and a trustee of the Lucas County Academy of Medicine; president of the DeVilbiss Manufacturing Company; a veteran of the Civil War; died at his home, October 1, from cerebral hemorrhage.

Thomas P. Russell, M.D., Oshkosh, Wis.; Vermont Medical College, Woodstock, 1852; aged 90; a Fellow of the American Medical Association; said to have been the oldest practitioner of Wisconsin; assistant surgeon of the Second Wisconsin Volunteer Infantry, and later assistant surgeon of the First Wisconsin Volunteer Cavalry, during the Civil War; died at his home, October 5.

John Francis Wouters, M.D., New York City; College of Physicians and Surgeons of the City of New York, 1888; aged 65; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; for several years a member of the attending orthopedic staff of the French Hospital; died at his home, September 30, from heart disease.

Benjamin Franklin Spangler, M.D., York, Pa.; Jefferson Medical College, 1868; aged 73; a member of the Medical Society of the State of Pennsylvania; one of the organizers

and for many years a director of the Drivers and Mechanics' National Bank, York; a veteran of the Civil War; died at his home, September 29, from disease of the stomach.

Harold Havelock Kynett, M.D., Philadelphia; University of Pennsylvania, Philadelphia, 1886; aged 55; formerly a member of the Medical Society of the State of Pennsylvania; a gynecologist; for several years president of the Philadelphia Choral Society; who had been crippled for many years by reason of an accident; died at his home, October 1.

Brent L. Barker, M.D., Monticello, Ill.; Louisville (Ky.) Medical College, 1897; aged 46; formerly a Fellow of the American Medical Association; a member of the Illinois State Medical Society; once secretary of the Piatt County Medical Society; local surgeon of the Illinois Central Railroad; died at his home, September 29.

Lieut. John Henry Andres, Jr., M. R. C., U. S. Army, Duluth, Minn.; University of Pennsylvania, Philadelphia, 1911; on duty with a medical detachment of field artillery at El Paso, Texas; was found dead in his room at a hotel in El Paso, October 5; death being due to an incised wound of the throat.

Carl Oscar Bernhardt, M.D., Rock Island, Ill.; Rush Medical College, 1902; aged 37; a Fellow of the American Medical Association, and a well known surgeon of Rock Island; who had been suffering from heart disease for six months; died in the Presbyterian Hospital, Chicago, October 8, from lobar pneumonia.

Harlan Page Ustick, M.D., Boise, Idaho, Hahnemann Medical College, Philadelphia, 1883; aged 68; founder of the town of Ustick, Idaho, and for several years president of the Ustick Bank; died suddenly, September 26, from heart disease at the Cinnabar Mine, near Yellow Pine, on Fern Creek, Idaho.

John W. Hawkins, M.D., Glasgow, Mo.; Jefferson Medical College, 1861; aged 79; a member of the Missouri State Medical Association, and president of the Howard County Medical Association in 1915; died at his home, August 5, from malignant disease of the rectum.

Jessie B. Pierce Garwood, M.D., Princeton, Ill.; State University of Iowa, Iowa City, 1888; aged 59; formerly a Fellow of the American Medical Association; a member of the Illinois State Medical Society; died at her home, September 12, from diabetes.

Loran W.*Jordan, M.D., Wabash, Ind.; Hahnemann Medical College, Chicago, 1883; College of Physicians and Surgeons, Chicago, 1884; aged 64; formerly a member of the Indiana State Medical Association; died at his home, October 2.

Thomas McCrary Hughes, M.D., Russellville, Ala.; Chattanooga (Tenn.) Medical College, 1900; aged 41; a member of the Medical Association of the State of Alabama; was shot and killed by a companion, October 4, while on a hunting trip.

Joseph A. Hansler, M.D., St. Joseph, Mo.; Ensworth Medical College, St. Joseph, 1908; aged 40; a member of the Missouri State Medical Association; who went to San Antonio recently on account of his health; died at that city, October 4.

Fred Vandegriff Turk, M.D., Stilesboro, Ga.; Atlanta (Ga.) Medical College, 1892; aged 48; formerly a member of the Medical Association of Georgia; died at his home, September 5.

Emma Mehlmann, M.D., Oakland, Calif.; University of California, San Francisco, 1917; aged 33; died at the home of her sister, in Oakland, September 31, from leukemia.

Henry A. Litzenberger, M.D., Walnutport, Pa.; Medico-Chirurgical College of Philadelphia, 1897; aged 44; died at his home, about September 23, from heart disease.

Harry Vernon Weaver, M.D., New Bedford, Mass.; Boston University, 1893; aged 47; a Fellow of the American Medical Association; died at his home, September 21, from peritonitis.

Nicholos Soteriades, M.D., Waterloo, Ill.; University of Munich, Bavaria, 1876; aged 70; died at his home, September 10, from myocarditis.

James Heacock, M.D., Parsons, Kan.; Homeopathic Medical College of Missouri, St. Louis, 1872; died at his home, about September 24.

Charles E. Whitham, M.D., Lawrence, Kan.; Eclectic Medical Institute, Cincinnati, 1859; aged 87; died at his home, September 25.

Turner Eugene Balsley, M.D., Reidsville, N. C.; New York University, New York City, 1879; died at his home, September 1.

R. M. Hargett, M.D., Versailles, Mo.; St. Louis, Medical College, 1872; died at his home, September 23.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

ALCRESTA IPECAC

Report of the Council on Pharmacy and Chemistry

The Council has adopted the following report and authorized its publication.

W. A. PUCKNER, Secretary.

In 1915 Alcresta Ipecac Tablets (Eli Lilly and Co.) were admitted to New and Nonofficial Remedies as a preparation of ipecac that is insoluble in the stomach but soluble in the intestines. It was supposed that this property would permit the administration of ipecac without the accompanying nausea and vomiting, and that this would be of especial advantage when using the drug in amebic dysentery. The systemic effects, of course, would be those of ipecac.

More recently, the manufacturers of Alcresta Ipecac have been advising its use in conditions which were not contemplated by the Council when the preparation was accepted for New and Nonofficial Remedies. They now claim that ipecac alkaloids have been shown to be useful in the treatment of typhoid fever, flatulence, diarrhea and constipation and that Alcresta Ipecac has these properties. Such a statement is misleading. While it is true that at one time ipecac was used promiscuously against "flatulence, diarrhea and constipation" there never has been and is not now any scientific evidence of its efficiency in such conditions except, of course, in diarrhea of the amebic type. As to the alleged usefulness of ipecac in typhoid fever: This has not even the sanction of tradition and the claim certainly should not be accepted until there is strong evidence to support it.

The advertising matter on Alcresta Ipecac also contained statements to the effect that ipecac alkaloids have a demonstrated usefulness in pyorrhea. Such an unequivocal statement is unwarranted. In spite of the enthusiastic advocacy, in the past, of ipecac alkaloids as a specific in pyorrhea alveolaris the preponderance of scientific evidence indicates that ipecac is of questionable value in this condition. Neither is there any substantial evidence to warrant the claim that ipecac alkaloids, when absorbed through the intestines, are demonstrably useful in amebic infections of the tonsils.

The reputation of the best drugs, whether unofficial or official, is bound to suffer if extravagant claims for them are permitted to go unchallenged. The referee of the Council, therefore, believed it necessary to call the attention of the manufacturers of Alcresta Ipecac Tablets to the statements made for the product and suggested that they submit evidence to substantiate the claims. This the manufacturers have refused to do. Their attitude in the matter, as well as their attitude toward the Council's work is expressed in the following letter:

"Responding to your letter of March 10th, we beg to suggest that literature covering the different matters at issue are readily available to your referee, and all statements emanating from us are made advisedly.

"If you cannot satisfy yourselves that this preparation is a scientific product, ethically advertised, and a desirable advance in therapeutics, you can only delete it from your next issue of New and Nonofficial Remedies."

It is to be regretted that Eli Lilly and Co. refuse either to withdraw or modify their claims or to substantiate these claims by scientific evidence. The statements as they stand are exaggerated, misleading and harmful. As such they conflict with Rule 6 of the Council and necessitate the omission of Alcresta Ipecac from New and Nonofficial Remedies. The referee recommended the adoption and publication of this report.

HEPATICO TABLETS

Report of the Council on Pharmacy and Chemistry

The Council has adopted the following report and authorized its publication.

W. A. PUCKNER, Secretary.

"Hepatico Tablets" (David Laboratories, Inc., Brooklyn) are sold under such claims as:

"Hepatico Tablets directly stimulates the liver cells, producing an increased flow of bile rich in cholates, a solvent of cholestrin [*Sic!*] and a biliary antiseptic for Hepatic Insufficiency, Intestinal Putrefaction, Habitual Constipation and Gall Stones."

"Hepatico Tablets contain a combination of bile salts, pepsin, pancreatin, ext. nux vomica and cascara." [In a formula given in the same circular cascara is replaced by the nondescriptive term "cascarin"].

"These tablets are now being extensively used, with most excellent results, in intestinal putrefaction, or autointoxication conditions, as an intestinal antiseptic."

"The increased amount of bile, which contains an excess of cholates, flowing continuously through the intestines, prevents abnormal fermentative and putrefactive processes in the bowels."

Comparing the alleged composition of, and therapeutic claims for, "Hepatico Tablets" with those made for "Veracolate" (THE JOURNAL, April 24, 1915, p. 1440) many points of similarity are seen. Veracolate was claimed to contain sodium glycocholate and sodium taurocholate with cascara sagrada and phenolphthalein and the mixture was also offered in combination with pepsin and pancreatin. Hepatico Tablets are said to contain sodium glycocholate and sodium taurocholate, cascara sagrada, pepsin and pancreatin.

Both are said to stimulate bile activity and to be disinfectants of the intestinal tract. The general similarity of the claims made for these two preparations may be seen by a comparison of two sentences taken from the advertising matter:

"The action of Veracolate is to bring about a profuse flow of healthy bile which prevents bile stasis. As the flow of bile is stimulated so antiseptic action ensues, calculi softened and the concretion and mucous eliminated."

"Hepatico Tablets bring about the secretion of healthy bile, which prevents bile-stasis as the flow of bile is stimulated, so antiseptic action ensues, calculi softened, and concretions and mucous eliminated."

A comparison with the claim made for Taurocol (THE JOURNAL, April 24, 1915, p. 1441) shows a similar resemblance:

TAUROCOL CIRCULAR

"... Directly stimulates the liver cells, producing an abundant flow of bile rich in cholates, solvent of cholesterin and a biliary antiseptic."

HEPATICO CIRCULAR

"Hepatico Tablets directly stimulates the liver cells, producing an increased flow of bile rich in cholates, a solvent of cholesterin and a biliary antiseptic . . ."

It thus appears that not only is the composition of Hepatico Tablets essentially similar to Veracolate and Taurocol, but its promoters adopt virtually the same therapeutic nonsense used to exploit these competing preparations. There is no evidence that any of the constituents, of Hepatico Tablets, or the combination as a whole has any such therapeutic merit as would warrant the claims made.

The Council declared Hepatico Tablets in conflict with Rules 6, 8 and 10 (unwarranted therapeutic claims, objectionable name and irrational combination of substances).

SOME MISBRANDED NOSTRUMS*

Sherman's Compound Prickly Ash Bitters.—The Prickly Ash Bitters Co. of St. Louis, Mo., were the sole proprietors of "Dr. B. F. Sherman's Compound Prickly Ash Bitters," which the government declared misbranded. The product, which contained 20 per cent. alcohol, was recommended in wineglassful doses three times a day or less but was declared to be "not an intoxicating beverage!" The government chemists reported that in addition to the alcohol, buchu was indicated and emodin present, but alkaloids were absent. It was sold as an effective remedy for Bright's disease, dropsy, diabetes, inflammation of the bladder, gallstones, leukorrhea, irregular periods, incontinence, retention and suppression of

urine, for malignant diseases of the kidney and for various other conditions equally serious. The claims were declared recklessly and wantonly false and fraudulent. The company pleaded guilty and was fined \$10 and costs.—[*Notice of Judgment No. 4455.*]

"Thorn's Copaiba and Sarsaparilla" and "Tarrant's Cubebs and Copaiba."—The Tarrant Co., New York City, shipped in interstate commerce quantities of "Thorn's Compound Extract of Copaiba and Sarsaparilla" and "Tarrant's Compound Extract of Cubebs and Copaiba" both of which were declared misbranded under the Food and Drugs Act. Federal chemists reported that the former was essentially a mixture of copaiba and sarsaparilla extract. It was sold as a certain remedy for gonorrhea and gleet and as a remedy for pyelitis, whites, incipient stricture, affections of the kidneys and gravel. These claims were declared false and fraudulent. "Tarrant's Compound Extract" according to the federal chemists consisted essentially of a mixture of copaiba and cubeb extract. It was sold under claims very similar to those made for the first-named preparation, claims which also were declared false and fraudulent. The company pleaded guilty and was fined \$25.—[*Notice of Judgment No. 4473.*]

V. I. G.—The Van Vleet-Mansfield Drug Co. of Memphis, Tenn., marketed "V. I. G.," which contained morphin. The government chemists analyzed it and reported that it was "an aqueous solution of glycerin, morphin, berberin, hydrastin and salicylic acid." It was sold under the claim that it was a "cure" for gonorrhea, gleet and leukorrhea and would prevent contagion when used immediately after connection. These claims were naturally declared recklessly and wantonly false and fraudulent. The company pleaded guilty and was fined \$25 and costs.—[*Notice of Judgment No. 4423.*]

Correspondence

"THE OBJECTIONS TO RAW EGGS IN THE DIET"

To the Editor:—Your editorial of Sept. 22, 1917, p. 1006, on this subject, calling favorable attention to Bateman's article on the raw egg in the *American Journal of the Medical Sciences*, June, 1917, needs a preliminary reply. Were it not for the stamp of authority of the Sheffield Physiological Laboratory and the consequent serious results that its publication has already caused and likely will further cause, Bateman's flimsy, illogical, unscientific array of semifacts would not be entitled to notice. His conclusion is based on the narrow view that because of the loss of 15 per cent. of available albumin (which is not lost in feeding boiled egg white) the physician should discard the use of the raw egg as "illogical and inadvisable," and that "no advantage accrues." He cites out of but twelve persons observed (?) only one, a child 3 years old, who had diarrhea during the three days that one-half raw white of egg was given daily. Its effect on dogs of vomiting and purging were not reproduced on human subjects by Bateman. Bateman has ignored our later physiologic concept that the uncooked egg must have, besides its caloric value, also a value due specifically to its organized structures for bone, nerve, tissue and blood making, for its pulmonary, digestive, excretory and reproductive systems, for its ductless and other glandular structures, its enzymes, proenzymes, activating and inter-activating, constructive and defensive mechanism, and for many potential qualities that are destroyed in cooked eggs. Bateman, without discussing these inherent qualities, would have us throw them away for the sake of saving a probable loss of 15 per cent. Even if the loss were 90 per cent., the raw egg would still in critical cases be worth many times the mere nutritional loss. Also other proteins can be added, and in many ways we can (Bateman admits as much) prevent the loss; but we have nothing in nutrition that can supply the perfect pabulum of the raw egg for the sick who may be

* This material, with much additional, appears in the new edition of the pamphlet "Convictions," price fifteen cents.

especially deficient in these vital selective elements. Lest repeated favorable comment on Bateman's views by medical journals, by public health writers and by the lay press in their desire to publish the latest apparently authentic knowledge might lay the foundation for irreparable harm, I give this early warning until a more complete refutation of Bateman's position which I hope soon will be ready for publication.

NATHAN ROSEWATER, M.D., Cleveland.

[COMMENT.—Our correspondent has not offered a refutation of the scientific observations on which Bateman's conclusions are based. He has not denied that egg white is digested less readily in the raw form than when it is heated to the "coddling" stage at 70 C. (158 F.); nor has he denied that the use of a large number of raw eggs may be attended with putrefactive changes in the bowel. So far as its gross nutritive properties are concerned, the egg can still supply them after it has been cooked. When our correspondent defends the *liberal* use of raw eggs—if that is what he intends to do—by reference to "vital selective elements" and a great diversity of "potential equalities" of undemonstrated potency, he appears to us to enter the domain of vague hypothesis which we are less able to follow than the alleged "flimsy semifacts" referred to in our editorial. What evidence there is for the existence, in the egg, of "organized structures for bone," etc., for "activating and interactivating constructive mechanisms," etc., we are unable to learn. It is true that enzymes are destroyed by heat; but the day for calling on the enzymes of raw food to sustain subtle virtues in them is passing. It is doubtless true that thousands of raw eggs have been fed without obvious untoward effects to patients; likewise dozens of quarts of raw chestnuts have been eaten without serious consequences. These observed facts by themselves do not constitute a brief for either of the raw foods mentioned.

That well known writers at the present time are by no means agreed with the attitude of our correspondent is further shown by the following quotation from the recent little manual "The Physiology of Food and Economy in Diet" by Dr. W. M. Bayliss, professor of general physiology in University College, London, a physiologist of international repute, who writes: "There are one or two erroneous impressions as to the value of some particular foods that need correction. The first of these is that raw eggs are more easily digested than cooked ones. The contrary has been shown by careful experiments to be the case. Of course, if the white is boiled hard, it must be finely divided by chewing, otherwise the gastric juice can only attack it slowly from the outside. Probably the best form is that of custard. The reason why raw egg-white is difficult of digestion is that it contains something, in small amount, which has a powerful retarding or inhibiting action on the digestive enzymes. This is destroyed by heat."—Ed.]

"LARREY, THE ORIGINATOR OF THE RAPID EVACUATION OF THE WOUNDED"

To the Editor:—Anent the interesting historical account of Larrey, the famous surgeon and patriot, by Dr. King of New Orleans, published in THE JOURNAL, September 29, and your editorial eulogizing the same surgeon, I would like to quote the following from "La Campagne de Russie, Mémoires du Général Comte de Ségur, Aide-de-Camp de Napoléon," an eye witness and participant in the ill-fated invasion of and retreat from Russia. "In the furious engagement at Borodine, 20,000 wounded were picked up and carried about two leagues to the rear to the great abbey of Kolotshoc." Then the historian continues:

"Le chirurgien en chef Larrey venait de prendre des aides dans tous les régiments. Les ambulances avaient rejoint; mais tout fut insuffisant. Il s'est plaint depuis, dans une relation imprimée, qu'aucune troupe ne lui eût été laissée pour requérir les choses de première nécessité dans les villages environnants."

"The chief surgeon, Larrey, had just gone for assistants from the regiments. The ambulances had rejoined, but were entirely insufficient. It has since been complained, in a printed account, that no soldiers had been left him for securing necessary things from the surrounding villages."

Larrey was probably the busiest surgeon that history has ever witnessed.

H. P. ASHE, M.D., Pittsburgh.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

"TREATMENT OF ANTHRAX WITH NORMAL SERUM"

To the Editor:—Since the publication of the abstracts of R. Kraus' article on the treatment of human anthrax with normal inactivated beef serum intravenously, I have been looking for rapid corroboration of this apparently important work. In THE JOURNAL, Sept. 15, 1917, p. 949, appears the abstract of an article by Lignières which is anything but corroborative of the beef serum treatment. Your editorial comment ("The Treatment of Anthrax with Normal Serum," THE JOURNAL, Sept. 29, 1917, p. 1085) ignores this objection and speaks of the treatment as resting on indisputable evidence.

Will you please state if Lignières has retreated from his position, and if Kraus' statements have been corroborated by other workers?

J. SEILIN, M.D., Chicago.

ANSWER.—We wish first to call the attention of our correspondent particularly to the fact that the beef serum used by Kraus was heated before injection, as stated in our editorial. Kraus' observations are based on definite experimental evidence, and his conclusions as to the clinical value of the treatment, in view of his high reputation as an investigator, seem worthy of all consideration. With regard to Lignières' criticisms, these seem to be founded largely on analogy and not on direct observational or experimental contradiction of Kraus' work. It is, of course, true that confirmation from other sources of the success obtained by Kraus in treatment of human anthrax with heated normal beef serum should be obtained before the method is generally advocated and introduced. We are not aware of any evidence that directly controverts or confirms Kraus' investigations.

INCOMPATIBILITY OF QUININ WITH ASPIRIN—SODIUM BICARBONATE AND ACETANILID

To the Editor:—1. Will you please tell me why capsules containing quinin and aspirin become soft? Do they develop a toxic composition?
2. What is the value of sodium bicarbonate in the compound acetanilid powder?

C. W. HEAD, M.D., Windsor, Mo.

ANSWER.—1. The conversion of quinin to the toxic substance quinotoxin by acids, with particular reference to acetylsalicylic acid (aspirin), was discussed in THE JOURNAL, Dec. 18, 1915, p. 2187.

2. Worth Hale has reported experiments which indicate that sodium bicarbonate lessens the toxicity of acetanilid both on the heart and on the intact animal (THE JOURNAL, Oct. 23, 1909, p. 1403). In view of his work he suggested that, to lessen its toxicity, 3 grains of sodium bicarbonate to 2 grains of acetanilid may be tried (THE JOURNAL, Sept. 2, 1911, p. 840).

BOOKS ON HEALTH OF WAR WORKERS

To the Editor:—Please inform me where I can obtain the following: Goldmark, "Fatigue and Efficiency"; Lee, "Fatigue"; Harvey Lectures, 1906-1907; Vernon, "Output in Relation to Hours of Work," British Health of Munitions Workers Committee. They are references mentioned in THE JOURNAL, Oct. 6, 1916, p. 1125.

CARL J. GADE, M.D., Bridgeport, Conn.

ANSWER.—These may be obtained from the publishers or through any bookseller.

Goldmark, Josephine: Fatigue and Efficiency, published by Russell Sage Foundation, 1 Madison Avenue, New York, \$2.

Lee, F. S.: Fatigue, Harvey Lectures, 1906-1907, p. 172, J. B. Lippincott Company, Philadelphia, \$2.50.

Vernon, H. M.: Output in Relation to Hours of Work, Memorandum 12, British Health of Munitions Workers Committee, 1916, Wyman & Sons, 29 Breems Building, Fetter Lane, E. C., London, 1½ d.

RANCH ACCOMMODATIONS FOR NERVOUS GIRL

To the Editor:—I wish to learn of a ranch in the Southwest where accommodation for a nervous girl, aged 11, and her mother could be found for the winter. The place should be one in which there would be an opportunity to live out of doors and ride.

M.D., New York.

ANSWER.—We submit this communication to our readers. Replies should be sent to THE JOURNAL office where they will be forwarded to the physician who asks the question. Those answering should give the price that would be charged for the service asked.

Medical Education and State Boards of
Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 13-14. Sec., Dr. T. J. Stout, Brinkley.
ARKANSAS: Eclectic: Little Rock, Nov. 13. Sec., Dr. C. E. Laws, 803½ Garrison Ave., Fort Smith.
CONNECTICUT: New Haven, Nov. 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.
CONNECTICUT: Homeopathic: New Haven, Nov. 13. Sec., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.
CONNECTICUT: Eclectic: New Haven, Nov. 13. Pres., Dr. J. W. Fyfe, Saugatuck.
FLORIDA: Jacksonville, Dec. 4-5. Sec., Dr. W. M. Rowlett, Citizens Bank Bldg., Tampa.
MAINE: Portland, Nov. 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.
NEVADA: Carson City, Nov. 5. Sec., Dr. S. L. Lee, Carson City.
OHIO: Columbus, Dec. 4-6. Sec. Pro-tem., Dr. Herbert M. Platter, 185 E. State St., Columbus.
SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.
TEXAS: Dallas, Nov. 20-22. Sec., Dr. M. F. Bettencourt, Mart.
WEST VIRGINIA: Clarksburg, Nov. 21-23. Chairman, Dr. S. L. Jepson, Capitol Bldg., Charleston.

Hawaii May Examination

Dr. R. W. Benz, chairman of the Board of Medical Examiners of Hawaii, reports that 3 candidates were licensed at the examination held at Honolulu, May 7-10, 1917. The following colleges were represented:

| College | PASSED | Year Grad. | Total No. Licensed |
|--|--------|------------|--------------------|
| University of California | | (1916) | 1 |
| Sendai Special Medical School, Japan | | (1908) | 1 |
| Osaka Prefectural College of Medicine, Japan | | (1905) | 1 |

Iowa June Examination

Dr. Guilford H. Sumner, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Iowa City, June 7-9, 1917. The examination covered 8 subjects and included 100 question. An average of 75 per cent. with not less than 60 per cent. in certain subjects, was required to pass. Twenty-nine candidates were examined, all of whom passed. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|--------|------------|---|
| Chicago College of Medicine and Surgery | | (1917) | 90 |
| Northwestern University | | (1916) | 82, 95 |
| Rush Medical College | | (1915) | 97 |
| University of Illinois | | (1916) | 92 |
| State University of Iowa College of Homeo. Medicine | | (1917) | 93 |
| State University of Iowa College of Medicine | | (1917) | 86, 89, 90, 91, 91, 91, 91, 92, 92, 93, 93, 94, 94, 95, 96. |
| St. Louis University | | (1917) | 82 |
| Eclectic Medical College | | (1917) | 92.5 |
| University of Pennsylvania | | (1917) | 94 |
| Lincoln Memorial University | | (1915) | 76 |

Minnesota June Examination

Dr. Thomas McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, June 5-7, 1917. The examination covered 18 subjects and included 80 questions. An average of 75 per cent. was required to pass. Thirty-five candidates were examined, all of whom passed. Five candidates were licensed through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|-------------------------|--------|---|-----------|
| Rush Medical College | (1917) | 90, 91, 92, 92. | |
| University of Illinois | ..... | (1917) | 85 |
| Harvard University | ..... | (1914) | 96 |
| University of Minnesota | (1917) | 86, 91; (1918*) 80, 82, 83, 84, 84, 85, 85, 85, 86, 86, 87, 87, 87, 87, 88, 88, 88, 89, 89, 89, 90, 91, 92, 93. | |
| Columbia University | ..... | (1915) | 87 |

LICENSED THROUGH RECIPROCITY

| College | Year Grad. | Reciprocity with |
|---|------------|------------------|
| Northwestern University | (1916) | Illinois |
| John A. Creighton Medical College | (1916) | Nebraska |
| Jefferson Medical College of Philadelphia | (1913) | Wisconsin |
| Medical College of Virginia | (1911) | Virginia |

* A year's internship in an approved hospital is required for graduation from the University of Minnesota Medical School, but only completion of a four-year medical course is required for licensure in Minnesota.

Book Notices

THE MODERN MILK PROBLEM IN SANITATION, ECONOMICS AND AGRICULTURE. By J. Scott MacNutt, Lecturer on Public Health Service in the Massachusetts Institute of Technology. Cloth. Price, \$2. Pp. 258, with illustrations. New York: The Macmillan Company, 1917.

A large number of interesting facts on the milk supply problem are brought together in this book. The discussion of the economic and administrative side of the question is particularly complete, and the author seems to appreciate the complexity of the whole question. He states emphatically (page 158) that sanitary milk need not cost much more than insanitary milk, but he also recognizes that in justice to the milk producer some increase in price is necessary on purely economic grounds. He calls attention, however, to the difference in local conditions and to the desirability of cooperation on the part of the different interests concerned in milk production and distribution. We note that the retail price of milk in Boston, which is in a section of the country where milk production is not especially cheap, is 11 cents a quart. At the present writing, in Chicago the consumer is requested to pay 13 cents a quart. The layman might suppose that conditions for cheap milk production are more favorable in Chicago than in Boston. It cannot be said that Mr. MacNutt has proposed any general solution for the milk problem, but he has gathered together a number of pertinent facts and has called attention to data and lines of argument often ignored in discussions of the question.

DIAGNOSIS FROM OCULAR SYMPTOMS. By Matthias Lanckton Foster, M.D., F.A.C.S., Ophthalmic Surgeon to the New Rochelle Hospital. Cloth. Price, \$6. Pp. 490. New York: Rebman Company, 1917.

This book is written from an entirely new point of view. The subject matter is arranged in the usual way—cornea, iris, optic nerve, etc.—and the various diseases and conditions are treated seriatim; but only their symptoms, objective and subjective, and “as such,” are considered. There is nothing on history, course, morbid anatomy, pathogenesis, complications, sequelae, prognosis or treatment, and therefore no real differential diagnosis, which must concern all these things. It is obviously no book for the beginner; it will mislead the general practitioner, and it is not encyclopedic enough on symptoms to be a final reference book. Yet the author frankly meets these criticisms in his preface. He does not pretend to write a textbook. He just treats of symptoms, and has thereby done us a definite service; for we cannot get away from symptoms: they are and should be with us morning, noon and night. We have our works on pathology alone, on treatment alone, medical and surgical; why not on symptoms alone? The author's style is easy and fluent, and one reads on and on with interest and profit, surprised and often a little disconcerted that so true a picture of things is called up by symptoms alone.

SLOVAK (SLAVISH) SELF-TAUGHT. By S. Morávek. Cloth. Price, \$1. Pp. 126. Monessen, Pa.: The Author, 1917.

Slovak is the language spoken by the people of northern Hungary and Moravia. It is closely allied to all the Slavic languages, so that a smattering of Slovak helps the physician in dealing with Slavs in general. With a little further study he can deal with Polish, Croatian, Bohemian, Serbian and Russian patients. It is an advantage that the Slavic languages resemble each other more as spoken than as written. “Slovak Self-Taught” is not a pocket manual, but has a stout cover about 9 by 6 inches. It contains thirty-six pages of classified phrases in common use, with the pronunciation, a vocabulary of thirty pages, and fifty-four pages of grammar. The print is unusually large and clear. A page and a half are devoted to “With the Doctor.” This section is fairly complete, but it does not contain the terms of command: “Sleep” and “Wake up,” which may be needed in case hypnotic suggestion is being used. The author has supplied these additionally, on request, as follows:

| | | |
|---------|--------|-----------------|
| Sleep | Spi | (spi) |
| Wake up | Prebud | sa (prebudY sa) |

Applicable in War Time.—The great business of life is to be, to do, to do without and to depart.—John Morley.

Medicolegal

Valid Provisions for Dealing with Tuberculosis

(Sacramento County vs. Chambers (Calif.), 164 Pac. R. 613)

The District Court of Appeal of California, Third District holds valid the act of 1915 which provides for the establishment and maintenance of a bureau of tuberculosis under the direction of the state board of health, defining its powers and duties, and provides for the granting of state aid to cities, counties, cities and counties, and groups of counties for the support and care of persons afflicted with tuberculosis. The court says that the fundamental proposition on which the argument against the constitutional propriety of the provision of the act authorizing the payment of certain sums to the counties was that the state has made it the duty of counties to maintain hospitals for the care, support and treatment of the indigent sick, and therefore the burden of supporting such hospitals is on the counties, and not on the state. There is no doubt the legislature intended to and did transfer from its own shoulders, and so placed on the counties, the duty and burden of caring for, supporting and treating the classes of persons mentioned. But this does not mean that the state has thus forever surrendered all control over those matters or the right itself to exercise full and complete and exclusive jurisdiction and control over hospitals for the indigent sick and helpless paupers. The constitution does not require this burden to be borne by the counties. The state may so transfer it to counties, however, in the exercise of its sovereignty. On the other hand, the state may take back and itself resume the exercise of certain functions which it has delegated to those local agencies; and, in some cases, particularly those having reference to the state's police power, the court knows of no reason, constitutional or otherwise, why the state and the counties may not act conjointly and synchronously in carrying out the policies of the former.

By health statistics and data gathered and published by the public health department of the state government, it has been shown that over one seventh of all the deaths in California, prior to the passage and enforcement of the law here under attack, were caused by this dread and justly dreaded disease, tuberculosis, and that, down to the time mentioned, the ratio of deaths from it was constantly increasing. Since then there has been a marked decrease in deaths from this cause. Still there are in the state large numbers of persons suffering from this deadly disease, mostly in the form of attacks on the pulmonary organs, very many of which persons are without financial means to pay for their own support and medical treatment, and without relatives legally liable or financially able to give them support and the care and treatment indispensable in such cases. The existence of such conditions is obviously a positive menace to the health of the inhabitants of the state.

The state undoubtedly has the right, under its police power, to adopt sanitary or other appropriate regulations, applicable to the whole state and to private as well as to public tuberculosis sanatoriums, looking to the stamping out of the disease and the prevention of its increase, and thus to the protection of the public health. With respect to county tuberculosis wards or hospitals, it proposes by the law in question to do no more than this. In authorizing the payment by the state of the sum named in the act to counties maintaining such wards or hospitals according to regulations formulated and promulgated by its health department, the legislature did not intend, nor was it the object of the act, to appropriate the state's money to or for the benefit of counties, but only to facilitate the proper execution of its scheme to control in part or itself supervise the matter of the treatment of indigent tuberculous patients, legally entitled to be taken care of at public expense. Obviously, the counties to which these moneys are authorized to be paid are, as to such money, mere trustees of an express trust, with absolutely no authority or right to divert the use of it to any other than the purpose or object for which it has been expressly appropriated by the state.

Society Proceedings

COMING MEETINGS

Amer. Acad. of Ophthal. and Oto-Laryng., Pittsburgh, Oct. 29-30.
Amer. Public Health Association, Washington, D. C., Dec. 4-7.
Clinical Congress of Surgeons, Chicago, Oct. 22-26.
Kentucky State Medical Association, Louisville, Nov. 6-9.
Southern Medical Association, Memphis, November 12-15.
Virginia State Medical Society, Roanoke, Oct. 23-26.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

Thirtieth Annual Meeting, held at Newark, N. J., Sept. 17-19, 1917

(Continued from page 1294)

Acute Dilatation of the Uterus

DR. N. STONE SCOTT, Cleveland: A review of the literature gives the impression that acute dilatation of the uterus is of infrequent occurrence. A study of six cases has brought me to the conclusion that acute dilatation is not rare and has furnished an explanation of this apparent scarcity. Acute dilatation during the early months of pregnancy presents a marked difference from acute dilatation at term, in that it has no appreciable influence on the bleeding. The more or less complete hemostasis occurring after the complete separation of the placenta after an ordinary miscarriage depends on the hemostatic properties of the blood and the blood vessels, and this is not materially modified by an acute dilatation. A uterus at full term, which has been emptied of its contents, will cause an alarming hemorrhage if it does not contract and control the bleeding by muscular action. This is due to the changes which have taken place in the blood vessels during the pregnancy. Should a contracted uterus lose its muscular tone and again dilate, the same alarming hemorrhage will supervene. Some authors believe that acute dilatation is a phenomenon of sepsis. Maier thinks acute dilatation will occur only when there has been a prior disease of the muscle wall. My cases support the theory that the disease must be in the uterine cornua, where interference with the uterine innervation will be most marked. Three of my patients had a placental implantation in one or the other horn, and the fourth had a small fibroid in the same place. Great dilatation occurred only in those who had been recently pregnant.

DISCUSSION

DR. HUGO O. PANTZER, Indianapolis: A case occurred in my practice within the last seven weeks. The woman, aged 38, was operated on for appendicitis. She had had continuous bleeding for six weeks. She had been married many years, but was never before pregnant. The breast changes were indifferent; a diagnosis of pregnancy was doubtful. A fibroid tumor as a possibility was entertained. On dilating the uterus I found the phenomenon described by the essayist. For a moment I was in doubt as to whether or not I had perforated the uterus. I opened the abdomen from above and found the uterus relatively small and not perforated. I removed the fetus through an opening made in the uterus.

DR. EDWARD J. ILL, Newark, N. J.: I have heard of these cases, but I have never seen one. What I have seen, when we thought we had such a case, was that the curet or sound was passed through the posterior wall of the uterus into the peritoneal cavity below the os internum. I think that in Dr. Pantzer's case there was a perforation of the uterus low down behind or at either side. I have seen a crochet needle go into the cellular tissue behind the uterus.

DR. WILLIAM H. HUMISTON, Cleveland: A woman who had had several attacks of appendicitis aborted. I introduced a dull curet, and it went on in without any effort. I had perforated the uterus. I removed the placental tissue and opened the abdomen. There was a puncture in the posterior uterine wall. I removed the appendix, sewed up the hole in the uterus, cleaned out a few clots in the pelvis, and the woman recovered.

DR. JAMES E. DAVIS, Detroit: When a muscle is stimulated with the electric current, the muscle bellies out. If we con-

tinue the application of the electric current until extreme irritation is reached, the muscle will lengthen. According to Young, the epithelium of the chorionic villi, during the first three or four months of pregnancy, throws out an enzyme which has the effect of producing, first, edema, and later on marked dilatation of the blood vessels. This edema may be so marked as to extend throughout the entire body, a condition which has been regarded as an error in the kidney condition.

DR. J. HENRY CARSTENS, Detroit: As the result of profound anesthesia there is relaxation of the uterine muscles, a dilatation. The muscles become flabby, and when a sound is introduced into the uterus, provided the muscles have not undergone fatty degeneration, the uterus is shoved away up and it seems ballooned when it is not. The uterus is of normal size, but its walls are thin.

DR. VAN AMBER BROWN, Detroit: Was there in any of your cases a marked anemia that antedated the pregnancy?

DR. N. STONE SCOTT, Cleveland: I would not say that none of them had anemia, but some of them did not have sufficient bleeding to produce anemia. Some of the patients were healthy young women who were not anemic.

Mixed Cell Tumor of the Kidney

DR. WILLIAM E. DARNALL, Atlantic City, N. J.: These tumors are considered malignant, but may be benign. Whether they are to be classed with carcinomas or sarcomas seems to be a question pathologists have never definitely decided. Metastases occur late. The suprarenal tumor may arise from suprarenal rests in ectopic portions of kidney, ovary, testicle, liver, mesentery, lungs or bones. These tumors are always made up of mixed cells. The term "hypernephroma" has been applied to them, but hypernephroma may mean almost anything that is a kidney tumor. The immediate mortality from operation is high. Recurrences are said to take place in from 70 to 80 per cent. of the cases. Early diagnosis and operation are the only hope of saving more of these patients. A large percentage of them develop metastases and die. Some, however, have remained well after the removal of the tumor. More favorable results might be obtained if the patients could be discovered and operated on earlier.

DISCUSSION

DR. E. GUSTAV ZINKE, Cincinnati: I am reminded of a theory of the occurrence of cancer that has been more or less abandoned: that all cancers are really of embryonal origin. Some of these embryonal cells become shut off from the rest; they go to sleep, as it were; they remain inactive and inert for years, and sometimes, as the result of an accident, a fall or a blow, or in consequence of some irritation, they are reawakened, they become active, and the result is a malignant growth.

DR. GORDON K. DICKINSON, Jersey City, N. J.: Dr. Carstens brought out at the meeting of this association a year or two ago the fact that there may be many severe continued irritations without producing carcinoma. The theory of Cohnheim that cancer is of embryonal origin appeals very strongly to me.

The Left Fallopian Tube and Intestinal Stasis

DR. DOUGLAS H. STEWART, New York: A concealed gonococcus infection may set up a salpingitis and an ileus. In two patients whose fallopian tubes showed no change, except such as might be expected to occur from an excess of nutrition, a portion of such tubes adhered to the anterior wall of the rectum, formed a band there, obstructed the fecal flow, and at the same time derived a new and an additional source of blood supply. Such an obstruction may be differentiated from a Houston's valve because it is rigid and unyielding and because it is so plainly not within the lumen, but on the outside of the rectal wall. As a result of fatigue and muscular exhaustion due to the constant if partial resistance of the obstacle, the bowel balloons both above and below the band. The condition is not a rare one. Any surgeon coming across it during his exploration of an abdomen would simply term it a band, would cut it and relieve all the symptoms without troubling himself to determine the nature and origin

of that band. Both my patients were well past the menopause, yet the new blood supply prevented atrophy of that portion of the tube that had become adherent. Removal of the hypertrophied section relieved all adverse symptoms by freeing the intestine and allowing it to resume its functions unhampered.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Boston

September, VII, No. 9

- 1 Illegal Practitioners, Fakers and Charlatans. G. A. Jordan, St. Louis.—p. 725.
- 2 Council of National Defense. F. Martin, Washington, D. C.—p. 733.
- 3 Menace of Dusty Trades. W. G. Thompson, New York.—p. 737.
- 4 Uses of Morbidity Reports by Minnesota State Department of Health. A. J. Chesley, Minneapolis.—p. 744.
- 5 Recent Developments in Design of Municipal Waste Disposal Plants. G. R. Tuska, New York.—p. 754.
- 6 Diagnostic Laboratories in Public Health Work. W. D. Stovall, Madison, Wis.—p. 759.
- 7 Check for Registration of Births. W. H. Davis, Washington, D. C.—p. 762.
- 8 Visceral Changes in Wood Alcohol Poisoning by Inhalation. A. A. Eisenberg, Cleveland.—p. 765.
- 9 Relation of Public Health Service to Problems of Industrial Hygiene. J. W. Kerr.—p. 776.
- 10 Eye Conditions Shown in Medical Inspection of Schools. W. H. Peters and R. B. Irwin.—p. 782.
- 11 Some Differential Reactions of Coli-Like Bacteria. M. Levine, Ames, Iowa.—p. 784.
- 12 Fallacies in Investigation of Water Supplies. H. A. Whittaker.—p. 785.
- 13 Necessity of Graphic Illustration of Sanitary Conditions in Community. M. R. Mobley, Florence, S. C.—p. 787.

Boston Medical and Surgical Journal

September 27, CLXXVII, No. 13

- 14 Foreign Bodies in Eye. J. F. Curran, Worcester.—p. 435
- 15 Chinese Barber and His Use of Aural Instruments. A. M. Dunlap, Shanghai, China.—p. 438.
- 16 Results of Further Study in Leg Rotation. C. L. Lowman, Los Angeles.—p. 440.
- 17 Case of Carcinoma of Umbilicus. Secondary to Intestine Cancer. M. G. Wohl, Omaha.—p. 442.
- 18 *Radium Treatment of Bladder and Prostatic Carcinoma. B. S. Barringer, New York.—p. 444.

18. **Radium Treatment of Carcinoma of Bladder and Prostate.**—Two of twenty-five cases of carcinoma of the bladder treated by Barringer would, he says, have been considered good operative risks; the other twenty-three cases, because of the extent of the tumors, were all impossible operative risks. In four of the twenty-five cases (three confirmed microscopically as carcinoma) radium has locally removed the growth. One of these has been cystoscopically cured for ten and one-half months, one for five months, and one recently. One has what is probably a slight local recurrence, although pathologic examination of a piece removed does not confirm this view. From results in these four cases it appears that radium can do as much as surgery for cases of bladder carcinoma without subjecting the patient to the danger and discomfort of a major operation. From thirty cases of carcinoma of the prostate treated by radium since October, 1915, the following conclusions are drawn: Radium-treatment has caused with surprising regularity the reduction or disappearance of carcinomatous nodules of the prostate, in both early and advanced cases. The reduction which occurs in carcinomatous lobes is, so far as has been observed, permanent. The symptoms in those cases in which the carcinoma had been reduced show striking improvement. The primary effect of the radium may be to increase the amount of residual urine (if there be any). The ultimate effect of the radium application on residual urine is probably negative, the amount neither increasing nor decreasing. No sloughs have resulted from the radium needles. Radium apparently has a selective action on carcinoma. In one case in which the prostate was removed because of urinary retention, a moderate dose of radium was given five months before the prostatectomy. The prostate had been considerably reduced

in size following the radium treatment. At operation the prostate shelled out like a nonmalignant adenoma. Very large carcinomas with cachexia and loss of weight are beyond radium or any other treatment.

Georgia Medical Association Journal, Augusta

September, VII, No. 5

- 19 Subparietal Injuries of Intestines and Kidney; Report of Cases. C. W. Roberts, Atlanta.—p. 81.
- 20 Acidosis. W. L. Funkhouser, Rome.—p. 86.
- 21 Gastric and Duodenal Ulcer. G. P. Huguley and G. C. Mizell, Atlanta.—p. 88.
- 22 *Modification of Noguchi's Complement Fixation Test for Syphilis. L. Howard, Savannah.—p. 95.
- 23 Preparation of Substances for Intraspinal Injection in Syphilis of Central Nervous System. A. H. Bunce, Atlanta.—p. 97.
- 24 Intraspinal Therapy in Syphilitic Disease of Nervous System. L. M. Gaines, Atlanta.—p. 100.

22. Modification of Noguchi Test for Syphilis.—In using the Noguchi system Howard has found it of great advantage to sensitize the corpuscles with amboceptor before adding them to tubes containing patient's serum, complement and antigen. He snips strips of amboceptor paper into short lengths, enough to give a certain excess of amboceptor for the tubes needed. If, for example, ten tubes requiring two units each of amboceptor are desired, paper estimated to contain twenty-four units is used. These small bits of paper are placed in a centrifuge tube with 5 or 6 c.c. of normal saline solution and agitated every few minutes for thirty minutes to dissolve out all the amboceptor. The tube is then centrifuged for a short time to clear the solution of particles of paper, and the amboceptor solution is poured off into another tube. To this is added the corpuscles to be used in the tests at hand. If ten tubes, as for above example, 1 c.c. of a 10 per cent. suspension of washed human corpuscles is added and mixed thoroughly with a pipet. The mixture of amboceptor and corpuscles is next incubated for one hour. At the same time the rack of tubes containing the other components of the test is placed in the incubator for the same length of time, to allow fixation of complement if syphilitic antibody be present. At the end of the hour, or in less time, it is noted that the corpuscles in the amboceptor corpuscle mixture have dropped to the bottom of the tube and a few revolutions of the centrifuge packs them so tightly that the tube can be inverted in pouring off the saline without loss of a corpuscle. These sensitized corpuscles do not behave like normal ones, but are heavier and will begin to settle in a few seconds after being uniformly emulsified in saline. After pouring off saline which contains excess of amboceptor, sufficient saline is added to make exactly as many cubic centimeters of corpuscle suspension as there are tubes. The corpuscles are now thoroughly emulsified with a pipet and 1 c.c. added to each tube. Hemolysis is noted almost immediately in negative tubes and those containing no antigen. The most obvious advantage in the above procedure is exact control of amboceptor. By using an excess every corpuscle is certain to be completely sensitized while the excess is discarded.

Interstate Medical Journal, St. Louis

September, XXIV, No. 9

- 25 Social Misfit—Study of Miss X. F. C. Studley, Milwaukee, Wis.—p. 819.
- 26 Study of Chemical Blood Findings in Various Surgical Conditions, with Special Reference to Prognosis and Comparison with Phenolsulphonephthalein Output. H. J. Scherck and R. B. H. Gradwohl, St. Louis.—p. 831.
- 27 Group Diagnosis for Clinic Patient. R. Pollock, San Diego, Calif.—p. 840.
- 28 Management of Pregnancy Complicated by Severe Cardiac Lesions. G. Gellhorn, St. Louis.—p. 842.
- 29 Case of Pregnancy Complicated by Uncompensated Heart Disease. H. Meyers, Sedalia.—p. 848.
- 30 Interstitial Tuberculosis of Lungs. M. E. Lapham, Highlands, N. C.—p. 851.
- 31 Use of Tartar Emetic in Treatment of Malaria—Preliminary Report. M. D. Levy and D. P. Wall, Galveston, Texas.—p. 858.
- 32 Headaches Due to Ear, Nose and Throat Conditions. W. T. Patton, New Orleans.—p. 861.
- 33 Aviation and Otology. L. K. Guggenheim, St. Louis.—p. 865.
- 34 Contagiousness vs. Communicability. D. M. Lewis, New Haven, Conn.—p. 868.

- 35 Easy and Satisfactory Method of Making and Indexing Surgical Case Records. G. P. LaRoque, Richmond, Va.—p. 875.
- 36 Hospital for Contagious Diseases in Residential Quarter. C. F. Lynch, Lansing, Mich.—p. 880.
- 37 Rationale of Pollen Extract Therapeutics of Hay Fever; Report of One Hundred and Twenty-seven Cases. N. S. Ferry, Detroit.—p. 884.

Journal of Experimental Medicine, Baltimore

October, XXVI, No. 4

- 38 *Neutralization of Antipneumococcus Immune Bodies by Infected Exudates and Serums. R. Cole, New York.—p. 453.
- 39 *Elaboration of Specific Soluble Substance by Pneumococcus During Growth. A. R. Dochez and O. T. Avery, New York.—p. 477.
- 40 *Acidosis and Acid Excretion in Pneumonia. W. W. Palmer, New York.—p. 495.
- 41 *Epidemiology of Lobar Pneumonia. E. G. Stillman, New York.—p. 513.
- 42 *Production of Antipneumococcic Serum. R. Cole and H. F. Moore, New York.—p. 537.
- 43 *Studies on Antiblastic Immunity. F. G. Blake, New York.—p. 563.
- 44 Experimental Atherosclerosis. I. Adler, New York.—p. 581.
- 45 *Prophylactic and Therapeutic Properties of Antitoxin for Bacillus Welchii. C. G. Bull, New York.—p. 603.

38. Neutralization of Antipneumococcus Immune Bodies.—In empyema fluids resulting from infection with pneumococci, there are present large amounts of soluble substances which have the property of neutralizing pneumococcus antibodies. Similar substances are found in the blood of infected rabbits. When immune serum is injected into infected rabbits the immune substances disappear very quickly, and therefore are prevented from activity in overcoming the infection. When immune serum is administered to patients severely infected with pneumococci, the immune bodies may also disappear very rapidly, and this disappearance is probably associated with the presence of such soluble substances in the blood. The serum only becomes effective when these substances are neutralized. The study of agglutination curves is of value in showing why in certain instances favorable results have not followed the use of immune serum. Cole says that it is important that in severely infected patients the serum be administered early in the disease and that the initial dosage be large.

39. Elaboration of Specific Soluble Substance by Pneumococcus.—A specifically reacting substance of bacterial origin is present in the cell-free fluids of young cultures of pneumococcus. This substance is present when the organisms are growing at their maximum rate and undergoing little or no cell death, and consequently its presence is not dependent on cell disintegration but represents the extrusion of bacterial substance by the living organism. The blood and urine of rabbits experimentally infected with pneumococcus contain a similar specific soluble substance during the early hours of the infectious process. Human beings suffering from lobar pneumonia have in their blood, and more frequently in their urine, a specific soluble substance of pneumococcus origin. The amount of this substance present in the urine varies in different individuals, and the presence of a large amount is of unfavorable prognostic import. This specific precipitin reaction in the urine is of diagnostic value. Rabbits injected with soluble pneumococcus material continue to excrete this substance for a considerable period of time. The specifically soluble substance obtained from bacterial cultures and from the urine during infection is not destroyed by boiling, by precipitation with alcohol, acetone, or ether, or by trypsin digestion.

40. Acidosis and Acid Excretion in Pneumonia.—There is excreted in the urine of persons ill with acute lobar pneumonia a large amount of organic acid which is free at a hydrogen ion concentration of 5.0. Acidosis as determined by the combined carbon dioxide in the plasma, Palmer says, is seldom, if ever, severe.

41. Epidemiology of Lobar Pneumonia.—According to Stillman, pneumonia of Type I and Type II are responsible for the majority of the cases of lobar pneumonia. Among the pneumococci found in the mouths of healthy individuals Type IV predominates, Type III is frequent, and atypical organisms of Type II are occasionally found. Healthy persons intimately associated with cases of lobar pneumonia

may harbor in their mouth secretions the highly parasitic pneumococcus of Types I and II. Occasionally a carrier of Type I or Type II pneumococcus is encountered in whom it is impossible to trace any contact with an infected patient. From the dust of homes where cases of pneumonia due to Types I and II have occurred, pneumococci of the same type may be recovered.

42. Production of Antipneumococcic Serum.—In the production of immune serum for therapeutic purposes Cole and Moore say that strict attention must be paid to the immunologic specificity of the bacteria used for immunization. At present the only serum of which the therapeutic value has been proved is that effective against Type I pneumococcus infection. This serum should have agglutinating power for Type I pneumococcus and should have the power of protecting mice against large amounts of virulent culture. Experiments have shown that for producing the primary immunity most rapidly several series of small doses of dead cultures should be given, the injections being made daily for six to seven days, followed by a week in which no injections are made. To produce the highest type of immunity, probably, living organisms are required. These should be given in moderate doses daily for three days, with an interval of a week between each series of injections. By following accurately the methods described, horses may be made to produce rapidly a high grade of specific serum. The observations so far made indicate the importance of employing small doses of culture frequently repeated in this form of immunization.

43. Antiblastic Immunity.—Antipneumococcus serum under certain conditions apparently inhibits or retards the metabolic activities of the homologous pneumococcus. Antipneumococcus serum exhausted of its agglutinin content possesses no inhibitory properties. The degree of inhibitory action of antipneumococcus serum parallels its agglutinating power. No evidence has been found to indicate that the inhibition of the metabolic activities of the pneumococcus by antipneumococcus serum is due to a specific anti-enzymotic property of the serum. The evidence which has been obtained indicates that the apparent inhibition of metabolic activity that occurs under certain conditions is due to agglutination of the pneumococci by the antipneumococcus serum and their consequent inability to grow in intimate contact with the whole medium. Antistaphylococcus serum inhibits the liquefaction of gelatin and the formation of a pigment by *Staphylococcus pyogenes-aureus*. Further experimentation is necessary to determine the mechanism of this inhibitory action. Antistaphylococcus serum does not inhibit those metabolic activities of *Staphylococcus pyogenes-aureus* essential to the growth and multiplication of the organisms.

45. Antitoxin for Bacillus Welchii.—Bull has been able to confer on guinea-pigs a passive immunity of about two weeks' duration to *B. welchii* toxin through a protective administration of the antitoxin. Guinea-pigs which had received a prophylactic dose of *B. welchii* antitoxin exhibited pronounced resistance to infection with the virulent bacillus for a period of twelve days. Established infections in guinea-pigs with *B. welchii* have been arrested and controlled by treatment with the antitoxin. Bull expresses the opinion that it will be possible to prevent *B. welchii* infection in man through the prophylactic use of the antitoxin, and developed cases of the infection may be controlled by therapeutic injections of the same agent.

Journal of Infectious Diseases, Chicago

October, XXI, No. 4

- 46 Surface Sterilization of Tissues for Bacterial Studies. D. M. Davis and R. Rosen, Baltimore.—p. 327.
- 47 *Coccobacillus (Foetidus) Ozenae of Perez. H. C. Ward, Detroit.—p. 338.
- 48 *Yeast-Like Fungi of Human Intestinal Tract. H. W. Anderson, Urbana, Ill.—p. 341.
- 49 *Stable Pollen Antigen. R. O. Clock, Pearl River, N. Y.—p. 387.
- 50 Food Accessory Factors (Vitamins) in Bacterial Culture with Especial Reference to Hemophilic Bacilli I. D. J. Davis, Chicago.—p. 392.
- 51 *Preservation of Antisheep Hemolytic Amboceptor in Glycerol. R. O. Clock and S. D. Beard, Pearl River, N. Y.—p. 404.
- 52 *Studies on Pneumococci and Streptococci. P. W. Aschner, New York.—p. 409.

47. Coccobacillus Ozenae of Perez.—The characteristics of the bacillus of Perez are summarized by Ward as follows: It is gram-negative, grows well in mixed broth cultures, causes a slow fermentation of glucose, decomposes proteins with the formation of mercaptan, produces a characteristic pigment in gelatin, and evokes specific agglutinins in rabbits. These characteristics are adequate to distinguish it from other bacilli, with which it may be associated, such as *B. pyocyaneus*, *B. coli*, *B. mucosus*, *B. proteus*, and *B. bronchisepticus*. The bacillus is readily cultivated from the exudate in ozena, with which condition it is closely associated.

48. Yeast-Like Fungi of Human Intestinal Tract.—Anderson says that yeast-like fungi are commonly found in the intestinal tract of man. They are of many species and, for the most part, such types as are commonly present in nature and known as "wild yeasts." It is probable that these yeasts are ingested with the food. The feces of persons suffering from gastro-intestinal disorders of various types do not yield a larger number of yeasts than those from healthy persons. There is no one species commonly present in the intestinal tract of either healthy persons or those suffering from gastro-intestinal troubles.

49. Stable Pollen Antigen.—Aqueous pollen extracts are unstable and rapidly deteriorate, losing their potency after about three weeks. Clock has prepared stable pollen antigens which he has subjected to rigid tests for stability. A mixture was made of equal parts by weight of the pollens of timothy, red top, June grass, orchard grass, rye, sorrel, dock, daisy, maize, ragweed, and goldenrod—these being the pollens which are known to cause the greatest number of cases of the vernal and the autumnal type of hay-fever. Pollen extracted in 9 per cent. salt solution gave an antigen that deteriorated quite rapidly. Pollen extracted in 66% per cent. glycerol and 33½ per cent. saturated sodium chlorid solution gave an antigen that has proved to be remarkable, stable and potent and which remains sterile.

51. Preservation of Antisheep Hemolytic Amboceptor.—Fresh antisheep hemolytic amboceptors that were heated to 55 C. for one-half hour, and then mixed with an equal volume of glycerol did not deteriorate, but retained their original titer for three years. During that period anticomplementary properties did not develop. The glycerol in the glycerolated antisheep hemolytic amboceptor did not influence the complement fixation reaction. Fresh antisheep hemolytic amboceptors that were inactivated and then preserved in glycerol, as herein described, were not only remarkably stable but were also protected from bacterial growth for a period of three years.

52. Pneumococci and Streptococci.—For the differentiation of the organisms of the pneumococcus-streptococcus group for clinical diagnostic purposes, a morphologic and cultural method which has yielded good results is presented by Aschner. Based on a study of many organisms according to this method, a classification has been adopted which seems to be as definite as can be attained in the present state of knowledge. There is much evidence that the classification is artificial from a biologic point of view, as shown by the variations within the classes, and by the existence of intermediate and transitional forms, as well as by the mutations described. The following mutations have been observed: (1) encapsulated hemolytic streptococcus converted into a pneumococcus; (2) encapsulated anhemolytic streptococcus converted into a pneumococcus; (3) pneumococcus changed into anhemolytic streptococcus; (4) anhemolytic streptococcus converted into a hemolytic streptococcus; (5) *Streptococcus mucosus* changed into an anhemolytic streptococcus.

Journal-Lancet, Minneapolis

October 1, XXXVII, No. 19

- 53 Intraperitoneal Emergencies. R. L. Murdy, Aberdeen, S. D.—p. 629.
- 54 Tonsillectomy; Some Indications for, and Some Observations on Operation. R. A. Campbell, Minneapolis.—p. 634.
- 55 Syphilitic Pseudoparalysis (Parrot's Diseases). T. F. Riggs, Pierre, S. D.—p. 636.
- 56 Preparation of Material for Laboratory Examination. M. Herzberg, Vermillion, S. D.—p. 638.
- 57 Scientific Babies. H. B. Wentz, Verona, N. D.—p. 641.

Laryngoscope, St. Louis

September, XXVII, No. 9

- 58 Society of Progressive Oral Advocates; Its Origin and Purpose. M. A. Goldstein, St. Louis.—p. 661.
- 59 Two Hundred Consecutive Tonsillectomies under Local Anesthesia. O. Wilkinson, Washington, D. C.—p. 667.
- 60 Operative Technic in Circumcision of Tonsil. F. G. Murphy, Mason City, Iowa.—p. 672.
- 61 Ozena Among Various Races of Earth. J. N. Roy, Montreal, Canada.—p. 679.
- 62 Unusually Large Polypus of Ethmoid. H. B. Orton, Newark, N. J.—p. 684.
- 63 Case of Traumatic Aphonia. T. A. Cheatham, Birmingham, Ala.—p. 686.
- 64 Control of Bleeding in Tonsillectomy. W. Dwyer, Hartford, Conn.—p. 688.
- 65 Lingual Tonsil; General Consideration and Its Neglect. H. B. Cohen, Philadelphia.—p. 691.
- 66 More Accurate Method of Recording Tracings on Glatzel Mirror. W. O. Bonser, Toledo, Ohio.—p. 701.
- 67 Ear, Nose and Throat Instrument Box. A. G. Bryant, Boston.—p. 703.
- 68 Bone Gripping Forceps. A. G. Bryant, Boston.—p. 704.
- 69 Glass Screen with Adjustable Standard. A. G. Bryant, Boston.—p. 706.

Maine Medical Association Journal, Portland

March, VII, No. 8

- 70 Fracture Treatment from Standpoint of Orthopedic Surgeon. W. R. MacAusland, Boston.—p. 247.
- 71 Treatment of Alcoholism and Drug Addiction. C. Scheffel, Brookline, Mass.—p. 256.

April, No. 9

- 72 Surgical Syphilis. W. P. Coues, Boston.—p. 273.

June, No. 11

- 73 Acute Unilateral Kidney Infections of Hematogenous Origin. C. N. Peters, Portland.—p. 338.

July, No. 12

- 74 Medical Defense against Malpractice Suits. J. A. Spalding, Portland.—p. 375.

Medical Record, New York

September 29, XCII, No. 13

- 75 Certain Technical Refinements in Methods of Intravenous Injection. J. H. Stokes, Rochester, Minn.—p. 529.
- 76 Adenomyoma of Rectum. F. C. Yeomans, New York.—p. 535.
- 77 Nonspecific Protein Treatment of Psoriasis. E. Van Ness Van Alstyne, New York.—p. 538.
- 78 Epidermoid Carcinoma of Large Bronchus with Cavity Formation and Metastasis in Radius. E. Scott and J. W. Leist, Columbus.—p. 541.
- 79 Physical Attitude and Vital Efficiency. S. W. Geis, New York.—p. 545.

Nebraska State Medical Journal, Norfolk

September, II, No. 9

- 80 Symptom Complex and Treatment of Anterior Poliomyelitis. B. W. Christie, Omaha.—p. 413.
- 81 Cholecystostomy. B. R. McGrath, Grand Island.—p. 416.
- 82 Cholecystectomy. A. F. Jones, Omaha.—p. 419.
- 83 Diagnosis. C. C. Allison, Omaha.—p. 427.
- 84 Résumé of Present Views of Kidney Infections. C. C. Johnson, Creighton.—p. 421.
- 85 Blood Transfusion in Surgical Conditions. A. P. Condon, Omaha.—p. 437.

New York Medical Journal

September 1, CVI, No. 9

- 86 Internal Secretions as Related to Tuberculosis in Civil and Military Practice. C. E. de M. Sajous, Philadelphia.—p. 389.
 - 87 Diagnosis of Surgical Lesions of Kidney and Ureter. A. R. Stevens, New York.—p. 395.
 - 88 Deviation of Septum and Submucous Resection. H. M. Goddard, Philadelphia.—p. 398.
 - 89 Intussusception in Children; Report of Three Operations. G. Torrance, Birmingham, Ala.—p. 400.
 - 90 Tabes Dorsalis. M. Grossman, New York.—p. 402.
 - 91 Studies in Acute Anterior Poliomyelitis. G. D. Heist, M. S. Cohen and J. A. Kolmer, Philadelphia.—p. 404.
 - 92 Stethoscopic Electrovibratory Percussion. J. P. Hickey, San Francisco.—p. 405.
 - 93 Nonfaceted Gallstone; Diagnosis and Medicosurgical Treatment. A. Peskind, Cleveland.—p. 406.
- September 29, No. 13*
- 94 Eye and Ear Surgeon in General Hospital. F. Allport, Chicago.—p. 581.
 - 95 Vegetative Nervous System. T. J. Orbison, Los Angeles.—p. 584.
 - 96 Physician and Patient. J. H. Marcus, Atlantic City, N. J.—p. 589.
 - 97 Anesthetics in Orthopedic Surgery. W. G. Elmer, Philadelphia.—p. 591.
 - 98 Serum and Blood Therapy. A. D. Kaiser, Rochester.—p. 595.

- 99 Syringomyelia and Leprous Neuritis. H. Climenko, New York.—p. 596.
- 100 Treatment of Sclerotic Middle Ear Diseases with Radium. Z. von Dworzak, Denver.—p. 598.
- 101 Dermoid Cyst. W. R. Jackson, Mobile, Ala.—p. 602.
- 102 Surgical Post on Firing Line. C. G. Cumston, Geneva, Switzerland.—p. 604.

New Orleans Medical and Surgical Journal

October, LXX, No. 4

- 103 Ureteral Stricture. H. W. E. Walther, New Orleans.—p. 309.
- 104 *Carbuncle of Upper Lip. M. Bradburn, New Orleans.—p. 314.
- 105 Lingual Tonsil—Frequently Overlooked Structure. J. B. Larose, New Orleans.—p. 319.
- 106 Hematemesis and Melena Due to Latent Aneurysm of Aorta. I. I. Lemann, New Orleans.—p. 322.
- 107 *Are Moving Pictures Injurious to Eyes? C. A. Bahn, New Orleans.—p. 328.
- 108 *Treatment of Pellagra. A. A. Herold, Shreveport.—p. 333.
- 109 Frequency and Early Diagnosis of Pulmonary Tuberculosis in Childhood. J. Signorelli, New Orleans.—p. 338.
- 110 Feeble-minded. J. A. O'Hara, New Orleans.—p. 346.
- 111 Tolerance of Scrotum for Foreign Bodies. P. J. Gelpi, New Orleans.—p. 355.
- 112 Why Gastro-Enterostomy Fails to Relieve. W. R. Jackson, Mobile, Ala.—p. 361.
- 113 Diagnosis of Leprosy from Public Health Standpoint. G. W. McCoy.—p. 364.
- 114 Granuloma Venereum. H. de B. Aragao, Rio Janeiro.—p. 369.
- 115 Dysenteric Endamebae. H. de B. Aragao, Rio Janeiro.—p. 374.

104. **Carbuncle of Upper Lip.**—In considering the treatment of carbuncle of the upper lip Bradburn urges early incision with injection of 5 per cent. phenol solution into the infiltrated tissue. He cites four cases with 50 per cent. mortality.

107. **Moving Pictures and Eyes.**—Bahn believes that moving pictures under favorable conditions do not cause as much fatigue as the same period of concentrated reading. Under unfavorable conditions, moving pictures cause increased fatigue which, if continued, produces symptoms that are unpleasant and may be harmful. Most persons who complain that moving pictures cause ocular discomfort have some ocular defect. A review of the literature to date records no permanent harm to the eyes from moving pictures.

108. **Treatment of Pellagra.**—Cases of five patients are reported by Herold treated by his original method, normal horse serum administered intravenously. He claims for this treatment only that it does in a few days what proper feeding takes weeks to do, and that it will tide over and markedly improve that very troublesome class of patients whose mouths are in such condition that feeding is almost, if not quite, impossible.

New York State Journal of Medicine

September, XVII, No. 9

- 116 *Treatment of Heart Disease by Drugs. W. D. Alsever, Syracuse.—p. 396.
- 117 *Treatment of Heart Disease by More and Longer Supervision. R. H. Halsey, New York.—p. 399.
- 118 *Hydrotherapy of Heart Disease. H. Schoonmaker, Clifton Springs.—p. 401.
- 119 Testing of Heart's Functional Capacity and Its Relation to Graduated Exercises in Cardiac Insufficiency. T. B. Barringer, Jr., New York.—p. 403.
- 120 *Whooping Cough is Prevented by Vaccination. G. W. Goler, Rochester.—p. 411.
- 121 Epidemic of Bacillary Dysentery. J. A. Smith, Albany.—p. 413.
- 122 Role of Food Idiosyncrasies in Practice. F. B. Talbot, Boston.—p. 419.
- 123 *Treatment of Dysthyroidism by Roentgen Rays. M. B. Palmer, Rochester.—p. 425.

116. **Drugs in Treatment of Heart Disease.**—The drugs which have been used in the symptomatic or palliative treatment of heart disease are legion, which proves their inefficiency. The majority are not worth naming, but a few of them have definite and even life-saving value. These few are discussed by Alsever. The digitalis group, consisting of digitalis, strophanthus, squills, apocynum, etc., stimulates directly all forms of muscle tissues, notably the heart and the vasomotors, and also the medullary centers, notably the pneumogastric and vasoconstrictor centers. As a result of these actions, the heart beats more powerfully and more slowly, the vasomotors contract and often diuresis ensues. These effects are of most importance clinically in auricular fibrillation and auricular flutter, and the results obtained in these disorders have been so marked and so valuable as to

give digitalis its justly great reputation in heart disease. Other types of irregular hearts and hearts with normal mechanism also respond to digitalis but in less degree. Tincture of strophanthus has sometimes been substituted for digitalis with advantage, but in the average case it is less dependable. Its action is practically the same as digitalis. Strophanthin, the active glucoside of strophanthus, is of inestimable value, because by giving $\frac{1}{400}$ grain intravenously one may develop digitalis effects in fifteen minutes. It is safer, however, to give $\frac{1}{250}$ grain and repeat every two hours for three doses, if needed. If a patient has been taking digitalis the administration of strophanthin intravenously is unsafe, because the combined effect may be overwhelming. Squills and apocynum are usually avoided because of their tendency to upset the digestive tract, but apocynum sometimes relieves cardiac dropsy when digitalis fails.

Strychnin should not be used in the belief or hope that it will stimulate the heart any more than other tissues. The caffein group is of considerable value in heart disease. Caffein, theobromin and theophyllin are the members of interest. Sodiosalicylate of theobromin is a powerful diuretic, and oftentimes of great value in cardiac dropsy. It increases the urine through direct stimulation of the kidneys rather than through action on the heart. In doses of from 10 to 15 grains, three or four times daily, it commonly produces marked diuresis in one or two days. When diuresis is established it is well to omit the drug, administering it again later in case of need. Theophyllin is more powerfully diuretic, but it is more nauseating and more expensive, so that theobromin is usually to be preferred. Caffein has been and still is used very largely as a heart stimulant or so-called tonic. Its effect is manifested almost entirely on the central nervous system, particularly on the brain itself. It has a little power to stimulate muscle fibers, but the heart responds no more than all the skeletal muscles. Alcohol is a local stimulant, but after absorption its action is purely depressing, affecting especially the central nervous system and beginning with the highest functions of the mind. Epinephrin is decomposed so quickly in the body that its effect must always be transient, and it is absorbed so slowly from hypodermatic injection that it is difficult to say just what action should be expected. Intravenous injections are followed by slower and stronger heart action and vasoconstriction, but when given by other methods these effects are very uncertain and fleeting.

The nitrites paralyze the vasoconstrictor mechanism and the vagus center, almost reversing the action of digitalis. Inhalations of amyl nitrite produce this effect in a few seconds, and the effect terminates in two or three minutes. Nitroglycerin and sodium nitrite by mouth produce this effect in two or three minutes, and the effect ends in one-half hour to three hours. Erythrol tetranitrate produces the same effect in one hour, and the action may continue for five hours. The nitrites are of great value in relieving the pain of angina pectoris and in obtaining relief from dangerous high blood pressure. It is usually unwise to attempt to beat down high blood pressure, except in an emergency. If a sustained depression of blood pressure is desired it may be obtained by repeating nitroglycerin every two hours or by giving erythrol tetranitrate four to six times a day. Aconite slows the heart by stimulating the vagus center but does not affect the vasomotors, consequently it lowers blood pressure. It may be useful in overacting hearts, as in fevers and in dangerous sustained high pressure.

117. General Treatment of Heart Disease.—Halsey emphasizes the importance of constant supervision, frequent rest periods or preventive convalescence and attention to the condition of the teeth and tonsils of children. He says that prevention of the occurrence of heart disease demands annual physical examinations of every individual.

118. Hydrotherapy of Heart Disease.—Schoonmaker summarizes his article as follows: First, hydrotherapy in heart disease is based on physiologic response to stimuli and is therefore scientific. Second, in hydrotherapy there are more possibilities for good in the treatment of heart disease than in any other single agent except rest. Third, the saline car-

bonated bath is especially helpful in the treatment of heart disease, because it makes possible the giving of cold tub baths without undue shock and provides a wide limitation in temperature, time and strength of bath. Fourth, as a therapeutic agent hydrotherapy is not incompatible with any other.

120. Whooping Cough and Vaccination.—More than 10,000 children have been vaccinated against whooping cough in Rochester. Less than 5 per cent. of the vaccinated children came down with the disease. They administer four doses four days apart, 500, 1,000 and 3,000 million. Two children exposed to whooping cough just after being vaccinated did not contract whooping cough until a year afterward. One of these patients had whooping cough in such a mild form that it was somewhat difficult to make a diagnosis; the other had whooping cough severely. In thirty-five patients who came down with the disease after whooping cough vaccinations, about half of them seem to have had the disease in modified form.

123. Abstracted in THE JOURNAL, June 9, 1917, p. 1777.

Philippine Journal of Science, Manila

November, 1916, XI, Sec. B, No. 6

- 124 Cultivation of Pathogenic Fungus which Exhibits Botryoid and Leukocytelike Parasitic Forms. H. W. Wade, Manila.—p. 267.
- 125 Fatal Parasitic Infection in Herd of Cattle and Goats in Ambos Camarines Province. W. H. Boynton and L. D. Wharton, Manila.—p. 285.

West Virginia Medical Journal, Huntington

August, XIII, No. 2

- 126 Pellagra. C. A. Barlow, Spencer.—p. 41.
 - 127 Erysipelas. O. H. Hoffman, Thomas.—p. 45.
 - 128 Sins of Father. W. C. Slusher, Bluefield.—p. 49.
- September, No. 3
- 129 Back to Pharmacopoeia. T. Nunemaker, Williamson.—p. 85.
 - 130 Acute Acquired Diverticulitis. W. H. St. Clair, Bluefield.—p. 88.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal

July, XXXV, No. 133

- 1 Fatigue Induced by Labor. A. F. S. Kent.—p. 47.
- 2 Gunshot Wounds of Peripheral Nerves. J. M. Clarke.—p. 61.
- 3 Prevention of Sepsis in War Wounds, with Special Reference to Carrel-Dakin Method. J. Swain.—p. 68.
- 4 *Acute Pancreatitis; Its Treatment, Record of Three Cases. C. A. Morton.—p. 80.
- 5 Rectal Diverticula as Causative Factor in Pelvic Inflammation in Women; Report of Two Cases. W. C. Swayne.—p. 91.

4. Acute Pancreatitis.—The first case reported by Morton is of special interest from the fact that, although when the abdomen was opened the presence of fat necrosis called attention to the condition of the pancreas, yet when the lesser sac of the peritoneum had been opened by division of the gastrocolic omentum, no definitely abnormal condition of the pancreas could be discovered, nor was the pancreas found to be diseased postmortem until it had been removed from the body, and then some lymph and hemorrhage was seen on its posterior aspect only; and on cutting into it some areas of slight hemorrhage and yellow infiltration were found. The morbid condition was almost confined to the middle of the organ, and although this was the part examined at the operation, none of these morbid changes could have been made out on inspection or palpation of the presenting aspect of the organ, for they were only discoverable on its posterior aspect. The second case is interesting and instructive from the fact that the vomit was fecal. The great interest of the third case was the apparent recovery of the patient after the acute stage. Serious symptoms, however, recurred and led to a fatal termination. The patient had so far recovered from the acute stage (which seemed probably due to the passage of gallstones or their retention in the common duct), that Morton discussed with the patient the desirability of having an operation for removal of gallstones before another attack came on, and yet at that time the acute pancreatitis must have been passing into the sloughing stage. In all three

of the cases there was a history of recurrent attacks of pain in the upper abdomen, not followed by jaundice. In one of the cases the gallbladder contained a large stone, and in another many small stones, and in the third no stones were found in it or in the common duct. It is unlikely that if the attacks in the third case, in which no stones were found in the gallbladder, had been due to the passage of gallstones, that every stone should have been passed before the onset of the fatal illness. Therefore, in this case at any rate, the recurrent attacks were probably not of the nature of gall-stone colic, and it is doubtful if they were in the other two.

Indian Medical Gazette, Calcutta

August, LII, No. 8

- 6 *Experience in Tartar Emetic Treatment of Kala-Azar Including Its Use in Young Children. L. Rogers.—p. 265.
- 7 Ascaris Lumbricoides and Coprophagia. C. Lane.—p. 269.
- 8 Ascaris Infection in Man, Pig, Rat and Mouse. F. H. Stewart.—p. 272.
- 9 Hydatid Disease in Kathiawar. P. T. Kothary.—p. 273.
- 10 New Operation for Cataract. L. D. Green.—p. 275.
- 11 Ophthalmic Work in Madras. H. Kirkpatrick.—p. 276.
- 12 Irrigation After Extra-Capsular Extraction of Cataract; Report of Five Hundred Cases. E. A. R. Newman.—p. 280.
- 13 Divergent Views on Suppuration After Cataract Operation. P. H. Shanker.—p. 281.
- 14 Medicolegal Case. N. K. Kallianwalla.—p. 284.

6. **Tartar Emetic Treatment in Kala-Azar.**—In no case in which the tartar emetic treatment has been persevered with has tartar emetic proved unsuccessful in thirty-five consecutive cases of kala-azar in Europeans, who can be kept under observation much longer than Indian patients, the only death having taken place from complicating phthisis several weeks after the kala-azar parasites had been proved to have disappeared from the spleen.

Lancet, London

September 15, II, No. 4907

- 15 *Cases of Tetanus Treated in Home Military Hospitals. D. Bruce.—p. 411.
- 16 War Nephritis. C. E. Sundell and A. T. Tankivell.—p. 414.
- 17 *Treatment of Entameba Histolytica Carriers with Emetin Bismuth Iodid. D. G. Lillie and S. Shephard.—p. 418.
- 18 Treatment of Functional Contracture by Fatigue. E. F. Reeve.—p. 419.
- 19 Active Treatment in Established Eclampsia. G. I. Strachan.—p. 421.
- 20 Two Cases of Gunshot Fractures of Mandible with Loss of Substance. R. J. Green.—p. 422.
- 21 *Effect of Roentgen Rays on Diseases of Bacterial Origin. C. Kempster.—p. 423.
- 22 Reflexes in Tetanus. A. G. Gibson.—p. 424.
- 23 Unusual Form of Hypospadias. T. J. Thomas.—p. 425.
- 24 Biologic Aspects of Warfare. H. Campbell.—p. 433.

15. **Tetanus Treated in Home Military Hospitals.**—In the 100 cases of tetanus analyzed by Bruce the mortality was 31 per cent. The ratio of the number of cases of tetanus to the wounded has fallen greatly since the beginning of the war, due in all probability to a great extent to the introduction of prophylactic injections of antitetanic serum. The incubation period tends to become longer, hence there are only twelve cases reported with an incubation of ten days or under. Only ten patients are reported to have received secondary prophylactic injections of antitetanic serum in home hospitals. In regard to the therapeutic effect of antitoxic serum the evidence is still inconclusive. The rate of mortality in generalized tetanus is 34.4 per cent., in localized tetanus, 0.0 per cent.

17. **Entameba Histolytica Carriers Treated with Emetin Bismuth Iodid.**—The treatment of the 104 cases dealt with in this report was carried out in a special ward set apart for the purpose. The patients were under the care of one medical officer in order to keep the conditions of treatment as uniform as possible. The keratin-coated tabloids and salol-coated pills were given in doses of 3 grains per day for twelve consecutive days without any additional treatment. The tabloids and pills were given entire as a full dose during breakfast. A patient was considered to be cured when at least six or seven negative tests were obtained over a period of not less than seven weeks from the termination of the course of treatment. It appeared (a) that carriers of *E. histolytica* who had not had any injections of emetin hydrochlorid were cured to

the extent of 78 per cent. by two courses of the salol-coated emetin bismuth iodid pills. (b) In the case of men who had had emetin injections, 72.8 per cent. were cured by two courses of the salol-coated pills. (c) In the case of men who had not had emetin injections, 70 per cent. were cured by two courses of the keratin-coated tabloids. (d) In the case of men who had had emetin injections, 45.4 per cent. were cured by two courses of the keratin-coated tabloids.

For comparison with the above percentages of cures by a maximum of 72 grains of emetin bismuth iodid carried out in the special ward, Lillie and Shephard give the number and percentage of cures in the other wards of this hospital. The number of grains of emetin bismuth iodid which these patients received varied from 36 to 200. A patient was regarded as cured after not less than five negative examinations over a period of not less than five weeks after the end of treatment. Out of 160 patients treated 142 were cured, namely, 88.7 per cent. There is no evidence that the length of time between the dates of onset of dysentery symptoms and the treatment has any effect on the chances of cure by emetin bismuth iodid. There is no ground for the belief that the vomiting diminishes the chance of cure by the emetin bismuth iodid treatment. There is nearly as much vomiting among the patients cured as among those cases in which there is relapse. The age of the patient has no effect on the chance of cure by the drug. But there is evidence to show that men over 40 years of age vomit less while undergoing treatment. The salol-coated pills are a distinct improvement on the keratin-coated tabloids from a curative point of view. They also cause less vomiting and loss of weight.

21. **Roentgen Rays and Diseases of Bacterial Origin.**—Kempster says that the effect of roentgen rays on diseases of bacterial origin is that they have not any germicidal powers, but that they have a decided inhibitory effect on the reproduction and increase of the germs, and that they produce stimulation of the living tissues leading to an increased phagocytosis, which is capable of destroying an unproductive colony of micro-organisms.

Practitioner, London

September, XCIX, No. 3

- 25 War Injuries of Jaws. N. G. Bennett.—p. 201.
- 26 Influence of Gonococcus on Female Pelvic Organs. R. A. Gibbons.—p. 217.
- 27 Recent Progress in Gynecology. F. McCann.—p. 238.
- 28 Six Months' Anesthetic Experience at Casualty Clearing Stations on the Somme. C. Corfield.—p. 251.
- 29 Bearer Work on the Somme. W. B. Jepson.—p. 255.
- 30 Compensatory Hypertrophy of Renal Secreting Tubules in Cases of Granular Contracted Kidneys. F. P. Weber.—p. 260.
- 31 Recent Public Health Work. J. Priestley.—p. 262.
- 32 Recollections of Surgical Work in Serbia. L. M. Chesney.—p. 274.
- 33 *Bronchopneumonia Following Pulmonary Hemorrhage. C. G. Reinhardt-Goodwin.—p. 288.
- 34 Case of Retention of Urine from Bullet in Urethra. A. Robin.—p. 291.
- 35 *Chronic Aspirinism. W. F. Stiell.—p. 293.

33. **Bronchopneumonia Following Pulmonary Hemorrhage.**—Among 1,000 odd cases admitted to the sanatorium of which Reinhardt-Goodwin is resident medical officer in the last ten years, only one case of bronchopneumonia following hemoptysis has been recorded, while there have been many hundreds of cases of pulmonary hemorrhage. A woman, aged 27, was admitted, Sept. 30, 1916. There were signs of active disease in the right apex in front, and at the right base behind. The patient appeared to improve and was doing walks of 2 miles daily with satisfactory temperatures. Toward the end of January, 1917, however, there were a few small hemorrhages. Despite prolonged rest in bed there was further bleeding from the lungs. Many times her condition seemed incompatible with life, but each time she improved again. Between May 1 and 14 the patient seemed better, the color had improved, and she was able to take nourishment more freely. May 14, the temperature began to swing more during the twenty-four hours, cough returned, and there was much tenacious expectoration, which was expelled with difficulty. Sweating was profuse. The patient died quite suddenly on April 23. She became more cyanosed, later unconscious, and

died with signs of asphyxia. At the commencement of the rise of temperature a hasty examination showed signs of consolidation over the back of the right lung, where there was bronchial breathing, and the same condition was present in the left apical region. Later in the course of the case the bronchial breathing over the right back gave place to loud tubular breathing and coarse crepitations, and these extended around to the base in front. Treatment throughout the case was symptomatic. The points of interest about the case seem to be: (1) the length of time, thirty-four days, the patient survived the onset of the bronchopneumonia; (2) the fact that morphin was not given to check the hemorrhage that apparently caused the complication, and could not, therefore, have been a factor. It was thought unwise to administer morphin on account of the violent vomiting caused on a previous occasion; (3) the three stages into which the course of the illness can be divided: (a) the first eleven days when the case conformed to the textbook description of a case of aspiration pneumonia, with continuous temperature, cyanosis, rapid respirations and pulse, absence of cough and sputum and no return of hemorrhage; (b) the next twelve days, during which the patient felt much better; (c) the last eleven days, when cough and sputum returned, sweating was profuse, the temperature became remittent in type, and the signs and symptoms suggested rapidly breaking down lung with cavity formation.

35. Chronic Aspirinism.—A woman, aged 50, suffering with typical rheumatoid arthritis, was in the habit of taking 10 grains of aspirin twice daily for seven years. During the first six years of the treatment the patient did not exhibit a single untoward sign of aspirin poisoning. There were no signs of gastro-intestinal irritation or of cardiac or mental depression. The first untoward sign of aspirin poisoning ensued in January, 1917, in the form of an intractable simple conjunctivitis, the patient complaining of "sand in the eyes." Examination showed a well marked hyperemia of both the palpebral and ocular conjunctiva; there was a slight degree of chemosis and considerable lacrimation. A week later the patient gradually became troubled with an urticaria which was not relieved by either dietetic or by the usual local or internal remedies. In a few days the patient was entirely covered by a typical urticaria major. The rash, which was present both day and night, assumed in parts the characters of an acute circumscribed edema, and elsewhere a severe urticaria bullosa. The symptoms rapidly became somewhat alarming, the patient was weak from insomnia, there were obvious signs of intestinal irritation in the form of diarrhea and vomiting, there was massive edema of the tongue and fauces, so that dysphagia became a marked symptom, and even an urgent tracheotomy was only averted by a prolonged administration of ice and ice water combined with astringent gargles. Vision was entirely obscured by an extreme palpebral edema. The urine gave an intense bluish violet reaction when tested with liquor ferri perchloridi, but the exact percentage of salicylic acid was not estimated. A diagnosis of chronic aspirinism was made, and the drug rigidly withheld. Medicinal treatment consisted of 5 grains of ichthyol and a mixture containing liquor arsenicalis, tincture of belladonna and calcium lactate, three times a day. Bromids were administered in large doses every night. At the end of the seventh week all trace of the urticaria had vanished and the urine was again normal. An interesting feature of the case is the fact that since the onset of the urticaria, although all aspirin had been discontinued, beyond the bony deformities all traces of the rheumatism have been entirely absent.

Quarterly Journal of Medicine, Oxford

July, X, No. 40

- 36 *Gunshot Wounds of Chest as Seen at Base Hospital in France. A. B. Soltau and J. B. Alexander.—p. 259.
37 *Effect of Digitalis in Heart Disease with Pulsus Alternans. J. D. Windle.—p. 274.
38 Critical Review of Treatment of Syphilis. L. W. Harrison.—p. 291.
39 Purpura in Meningococcal Infections; Report of Cases. T. R. Elliott and H. W. Kaye.—p. 361.

36. Gunshot Wounds of Chest.—Among the 139 cases reported by Soltau and Alexander there were 80 cases of

hemothorax, 13 of pneumothorax, 31 of collapse alone, 11 cases of nonpenetrating wounds with hemoptysis, 5 cases of penetration with no physical sign, 1 case of concussion pneumonia. Sepsis occurred in 13 cases as follows: following hemothorax (of which 4 were characterized by sudden gas formation, 10 cases; following pneumothorax, 2 cases; with gangrene of lung, 1 case. Mortality: total 10, or 7.1 per cent., as follows: from secondary peritonitis (probably pneumococcal), 1; from pneumothorax and associated tuberculosis, 2; from hemothorax and bronchopneumonia, 1; from gangrene of the lung, 1; from hemothorax and tetanus, 1; from hemothorax with pneumonia and pericarditis, 1; from pneumothorax (1 a few hours after arrival), 2; from pyohemothorax with subphrenic abscess, 1; contralateral collapse was noted in 24 cases.

37. Effect of Digitalis in Heart Disease.—Windle's experience of the clinical use of digitalis indicates that the drug has little, if any, power to bring about pulsus alternans in healthy or diseased conditions of the heart; and that in cases of heart disease in which this form of pulse is present there is no evidence that digitalis increases the irregularity; on the other hand, it frequently has the opposite effect, that is to say, the pulses become more equal in force and not uncommonly disparity in strength of the beats is temporarily abolished under the use of the drug, and the patients' symptoms for the time being are improved in all respects; moreover these good results not seldom ensue coincidently with a considerable rise in the blood pressure. Windle has given digitalis for various reasons to persons with healthy hearts, and out of a number of such cases in which the drug was pushed until its full physiologic effect on the stomach was produced, cardiac irregularity, namely, sinus arrhythmia and extrasystoles, ensued in several, but pulsus alternans occurred in one instance only. Windle suggests that it is probable that the beneficial effects of digitalis in heart disease with pulsus alternans are largely due to its action in restoring the tonicity of the heart and slowing its rate, although comparison of the tracings taken before and after the use of the drug suggest that it may exert an improving effect on the essential cause which gives rise to the pulsus alternans; that this supposition is improbable is evidenced by the fact that under certain circumstances the alternation is readily reinduced.

Bulletin de l'Académie de Médecine, Paris

August 28, LXXVIII, No. 33, pp. 151-161

- 40 Rice to Supplement Wheat Supply. E. Maurel.—p. 152.
41 *Disturbance in the Pupil Reactions after Shell Shock. G. Guillaumin and A. Barré.—p. 158.
42 Aluminum Shell Cover for Skull Defect. E. Monod-Herzen.—p. 159.

41. The Pupil Reactions After Shell Shock.—This report is summarized in the Paris Letter.

Journal d'Urologie, Paris

August, VII, No. 1, pp. 1-102

- 43 *War Wounds of the Bladder. F. Legueu.—p. 1.
44 *Bilharziosis. Diamantis.—p. 9; Diamantis.—p. 17; L. Morel and I. Maldonado.—p. 27; Diamantis and Lotsy.—p. 59.
45 *Objective Symptoms of Essential Incontinence. P. Noguès.—p. 39.
46 *Rupture of Hydrocele in the Vaginalis. C. Ramos.—p. 45.
47 Blood Cyst in the Prostate in Elderly Diabetic. A. Castano.—p. 65.
48 Urethra with Five Openings. Girard.—p. 67.

43. Wounds of the Bladder.—Legueu has encountered 43 cases of gunshot wounds involving the bladder predominantly, and has been surprised at the immediate and remote mildness of the clinical picture therefrom. In some cases the bladder had been perforated or the projectile had passed entirely through it, and yet there were no serious symptoms from this at any time. In 6 cases of this kind, no operation and no special treatment was given. In 15 of the total 43 cases, an opening into the rectum or colon had been created by the projectile; in two cases the opening could be felt with the finger in the rectum. Even with these fistulas the evolution of the bladder wound was benign in 12 of the 15, the fistula healing spontaneously in the course of a few weeks or months. A vesicorectal fistula consequently does not call for operative

treatment as a matter of course. Before the projectile reached the bladder it had fractured the bone in 25 of the total 43 cases; the bone involved was the pubis in 17 cases, the sacrum, ilium and hip joint in 2 each. The fracture being compound and bathed in urine leads inevitably to infection unless the hole bored by the missile is given a prompt surgical clearing out, and the urine diverted by suprapubic cystostomy. In the 11 cases in which this was done at once, the wound healed smoothly, and in the 15 cases in which it was done at a later stage, it materially improved conditions. Even although this may not divert all the urine, it answers the purpose sufficiently. Otherwise there is liable to be a persisting fistula between the bladder and the site of the fracture after the skin wound has healed. Pus and sequesters from the suppurating process thus kept up in the bone, find their way into the bladder and start the production of calculi. Calculi may also develop from foreign bodies carried into the bladder with the projectiles. He found calculi in 10 of the 43 cases. In some the nucleus was a scrap of shell. Foreign bodies were removed from the bladder in 12 cases, including bullets in 3, scraps of shell in 5 and sequesters of bone in 4; this group does not include the foreign bodies removed at the first operation. He emphasizes that an extensive bladder wound from which urine escapes at once through the skin should be treated on the same principles as any other war wound, immediate clearing out of the passage made by the projectile, removing all foreign particles even down into the bladder, and sterilizing the whole passage.

44. Emetin in Treatment of Bilharzia Hematuria.—Diamantis discusses the clinical picture of bilharziosis with and without infectious complications, and reports striking results from emetin in treatment of noninfected cases. He administered the emetin intravenously, at two or three day intervals, commencing with 0.02 c.c. and increasing rapidly to 0.10, which dose he never surpassed. From fifteen to twenty injections generally answered the purpose. One patient was cured with eight, the largest dose 0.07. Vomiting and nausea are rare, but dizziness is constant, and there is always more or less pronounced asthenia, resembling the weakness liable to follow influenza. He expatiates on the mildness of bilharziosis, saying that the presence of the parasite in the veins does not cause any disturbance, only the passage of the eggs laid in enormous numbers, and passed off in the excreta. In the infected cases no benefit from the emetin was perceptible and the emetin asthenia tended to debilitate further.

44. Bilharziosis.—Morel discusses the wide distribution of the *Schistosomum hematobium*. All Africa, the eastern shore of the Mediterranean, the Asiatic shore of the Indian Ocean, and parts of Australia are known to be infested, and the war is bringing it to Europe. He describes four imported cases recently encountered at Paris. From his experience and review of the literature he concludes that there is no specific treatment; emetin and salvarsan seem ineffectual. The only local measure that has shown any efficacy is iodine vapor treatment, and even this acts only on the bladder itself, not killing the parasite or its eggs.

Diamantis and Lotsy report from Cairo a case in which the passage of a kidney stone apparently injured the ureter on its way, thus affording a predisposition so that casual infection with the bilharzia soon afterward caused the parasite to locate in the ureter. The resulting ureterovesical bilharziosis was revealed by radiography, the diagnosis confirmed by finding ova.

45. The Objective Symptoms of Essential Incontinence of Urine.—Noguès comments on the frequency of incontinence under the physical and emotional stress of the war. In civil practice the sphincters persist continent under ether or chloroform, but when given to the wounded within eight or ten hours of their wound, involuntary emission of stool and urine is frequent. He has found that with men inclined to incontinence, the Ambard uremic constant may show abnormal conditions. Utteau has noted further a higher proportion of waste contents in urine voided involuntarily. Microscopic examination of the urine may thus suggest an objective basis for the incontinence. This is evidenced further by changes in

the contracting power of the vessel. A simple test for this is the injection of from 60 to 100 c.c. of tepid medicated water. With exaggerated contractility, the water is expelled abruptly and it is impossible to introduce more. Or the fluid may enter readily and not be expelled at all notwithstanding tenesmus. The response to these tests of the contractility cannot be controlled by the will. Cystoscopy often shows trabeculae in the bladder with incontinence, and the lumbar puncture fluid showed abnormally high pressure in eight of fifteen cases tested while the albumin content was abnormally high in 94 per cent., namely, above 0.10 gm. Even accepting 0.25 as the extreme physiologic limit, the albumin content was much above this in 27 per cent. This high albumin content may act on the predisposed nerves and thus bring on the incontinence. When one or more of these tests and signs are positive in a case of incontinence, the presumption is against simulation.

46. Rupture of Hydrocele.—Besides eight traumatic cases and seven cases of rupture from muscular effort, Ramos has collected a number of cases in which the rupture occurred without effort or traumatism. He reports a personal case in both the first and the last groups, and urges resection of the serosa as it is always more or less pathologic. Otherwise, after absorption of the effusion and obliteration of the perforation, the tumor rapidly returns.

Paris Médical

September 1, VII, No. 35, pp. 177-208

- 49 *Recent Progress in Otorhinolaryngology. L. Dufourmentel.—p. 177.
- 50 Calcium Hypochlorite plus Boric Acid as Dressing Powder after Mastoid and Sinus Operations. (La poudre de Vincent dans les évidements.) Guisez.—p. 184.
- 51 Primary, Latent Mastoiditis Setting Up Distant Extradural Abscess. R. Moreaux.—p. 187.
- 52 Stomatology During the War. L. Frison.—p. 190.
- 53 Drainage with Operations on the Mouth. H. Chaput.—p. 200.
- 54 Treatment of War Fracture of the Jaw. L. Dufourmentel, L. Frison, F. Bonnet-Roy and C. Brunet.—p. 202.

September 8, No. 36, pp. 209-224

- 55 *Associated Injury of Last Four Cranial Nerves. (Syndrome condylo-déchiré postérieur d'origine endocranienne.) J. A. Sicard and L. Rimbaud.—p. 209.
- 56 *Mercurial Anuria. G. Milian and M. de Saint-Avid.—p. 212.
- 57 Paralysis of Recurrent Nerve after War Wound at Base of Neck. Guyot and A. d'Auriac.—p. 217.
- 58 Extraction of Projectiles under Screen Control and Protection of the Radiologist. L. Bouchacourt.—p. 219.

49. Progress in Otorhinolaryngology in 1917.—Among the recent advances cited is mentioned the method of maintaining respiration and giving the anesthetic through a fine cannula introduced directly into the larynx by puncturing the cricothyroid membrane. Operations on the face and neck can be done then as tranquilly as if remote from the respiratory apparatus. Intratracheal intubation answers the same purpose but this requires more complicated instruments and irritates the vocal cords. Deafness is now classed as exempting from military service when loud speaking is heard only close to the ear. When loud speaking can be heard no farther than one meter, this compels acceptance only for the auxiliary military service; heard at four or five meters is the limit requirement for active service. Eleven different styles of tests for the hearing may be used. They include what is known as the cochleopalpebral reflex, that is, the involuntary winking when a sudden loud sound is heard close to the ear. This reveals simulation of deafness. The double tuning fork test is also instructive. Two tuning forks giving the same tone but with different intensity are placed at the same distance from each ear. With normal hearing the resulting unison is heard only on the side of the loudest tone. One tuning fork can be silenced to test the hearing. The simulator does not learn lip reading like the truly deaf. After a month of training he cannot read from the lips if a noise drowns what is being said. Another trick test is to tell the subject, speaking from some little distance, to raise his hand when he hears the spoken word. Then the examiner, speaking some syllable over and over again, walks toward the subject. The simulator raises his hand as the examiner comes quite close, thus showing that he had heard the command at a distance. Lip reading seems to be the only means of relief for the truly deaf.

55. Associated Paralysis of Last Four Cranial Nerves With and Without Sensory Symptoms.—Sicard and Rimbaud describe the clinical picture presented when a projectile has entered the region immediately below the anterior condylar foramen and the jugular foramen, inducing paralysis of the last four cranial nerves, and of these alone, with this exocranial type of injury. There is also an intracranial set of symptoms of the same type, but this can be induced only by an intracranial affection. In a typical case described, the trouble was of syphilitic origin and materially improved under specific treatment. In this case there were also sensory-motor disturbances in the limbs on that side. There was evidently some process involving the meninges and nerve roots in the left half of the cervicobulbar region. In the projectile cases, the paralysis involved the velum and larynx, the sternocleidomastoid and trapezium, the pharynx and heart nerves (evidenced by extreme tachycardia), and there was also atrophy of that side of the tongue. The young man had been shot with a revolver, the bullet entering back of the left mastoid region. At necropsy after pneumonia two years later the bullet was found in contact with the last four cranial nerves.

56. Mercurial Anuria.—The mercurial poisoning in the young man was manifested mainly by gastro-intestinal uremia, vomiting, diarrhea and Cheyne-Stokes dyspnea with a sensation of oppression in the chest, and anuria complete for two days and almost absolute during the three following days. While the anuria lasted, the young man complained of incessant chilliness, but there was no edema, headache, myosis nor gallop sound. During the polyuria reaction period, symptoms developed suggesting severe peritonitis except that the pulse was regular and slow and the temperature normal. Milian explains this as the result of the loss of fluids, the man having vomited more or less constantly for nine days, and the polyuria following the anuria having drained the body of too much fluid, causing a condition of dehydration like that of cholera. Milian did not venture to make a saline infusion, fearing to bring on edema, but he gave an intravenous injection of a hypertonic glucose solution, 60 gm. of glucose in 200 c.c. of distilled water. The result, he says, was *réellement miraculeux*.

Presse Médicale, Paris

August 16, XXV, No. 46, pp. 473-480

59 *Mixed Vaccination against Typhoid and Paratyphoid. F. Widal and A. T. Salimbeni.—p. 473.

60 *Oriental Malaria as seen at Marseilles. P. Ravaut and others.—p. 473.

61 *The Arterial Tension with Aortic Insufficiency. L. A. Amblard.—p. 476.

62 *Experimental Shell Shock. A. Mairet and G. Durante.—p. 478.

59. Single Mixed Vaccination Against Typhoid and Paratyphoid.—Widal and Salimbeni state that they have now a record of 12,000 men inoculated with a single dose of a vaccine consisting of equal numbers of typhoid, paratyphoid A and paratyphoid B bacilli. The dose was 1.5 c.c., containing six thousand million germs, heated, but without antiseptic. This method of vaccination has been in use for over a year, but sufficient time has not yet elapsed for the majority of the men for a decisive judgment as to its efficacy. They made a point of inoculating the men with this single dose, and repeating it in part of the men, hoping to establish thus the relative value of the single and double vaccination. For the present, they counsel the usual double method as being safer, but the outlook for the single, larger dose is growing brighter with every day that passes. It should certainly, they say, be given the preference when there is no time to give the usual two doses, and also in times when these diseases are epidemic. As vaccination is not compulsory for the civilian population, this single inoculation is often preferable for them as they do not take readily to this precautionary measure and often absolutely refuse a second inoculation.

60. Malaria in French Troops.—Ravaut and his co-workers at Marseilles comment on the peculiar persistency of malaria in the troops returning from Macedonia. They reiterate that the malarial parasite is the same old plasmodium and

that quinin will kill it. The reasons for its inefficiency in these cases is because the men merely pretend to take the quinin given them. The hospital personnel are deceived and not until the urine was examined and no trace of quinin found in it, was the mystery of the peculiar tenacity of Macedonian malaria solved. They found one soldier who had an accumulation of 304 quinin tablets in his kit, and piles of quinin powders have been found in the mattresses in different hospitals. They describe the various tricks employed to avoid taking the quinin while deceiving the nurse to the effect that the drug is being taken regularly. Treatment of malaria thus assumes a psychologic aspect. A few drops of Tanret's reagent added to 2 c.c. of urine, voided in the presence of the physician, will turn the urine turbid and opalescent if it contains quinin. The reaction is stronger in proportion to the quinin content. The precipitate dissolves in alcohol and with heat, and reappears on cooling, while the albuminoid substances present are not modified and form a lumpy precipitate. This reaction persists positive for twenty-four hours with a dose of 0.5 gm. quinin, and for thirty-six and sometimes forty-eight hours with a dose over 1 gm.

The method of treatment best adapted to obviate deception was found to be the giving of the quinin in water at the two principal meals of the day, using a solution of 33 gm. quinin to the liter. The dose of 30 gm. of the solution corresponds to 1 gm. of the drug. Being taken with a meal and followed with an alkaline or acid drink, the drug is almost always borne without signs of intolerance. Ravaut makes a practice of alternating two days of the quinin with two days of arsenic treatment, and gives epinephrin in addition when there are signs of suprarenal insufficiency. [Tanret's reagent is a mixture of mercuric chlorid, 1.35 gm.; potassium iodid, 3.32 gm.; acetic acid, 20 c.c. and distilled water to make 60 c.c.. It gives a white precipitate with albumin in urine.]

61. The Blood Pressure Reveals Aortic Insufficiency.—Amblard analyzes the various factors which influence the blood pressure with aortic insufficiency, and declares that with a minimal pressure of 65 mm. mercury and maximal of 165 mm. we can be certain there is aortic insufficiency even when the lesion is not evident to the ear, and the pulse rate is normal. He estimates the normal range in health as from 80 to 140 mm. With aortitis and with kidney trouble the minimal pressure drops in the same way as with simple aortic insufficiency but it is only a relative drop, the differential pressure keeping about the same in all phases of aortic incompetency. This allows oversight of conditions as the case progresses, and, in connection with the pulse, estimation of the functional capacity of the heart.

62. Experimental Shell Shock.—Mairet and Durante reproduced with rabbits the violent shock from explosion of a large shell in the close vicinity without direct contact with particles of the shell. Five of the twelve animals died in the course of five minutes, one hour, or one to thirteen days. The others after a brief stunned condition, with acceleration of the respiration and transient agitation, rapidly recovered and were slaughtered later. Minute hemorrhages were found numerous in the lungs, spinal cord and nerve roots, and a number of small vessels in the gray substance of the cortex had ruptured into the sheaths of lymphatics. The smallness of these hemorrhages and the fact that they did not diffuse testify that they occurred instantaneously in consequence of the depression which followed the compression. These histologic hemorrhages entail anemia of the small territories beyond them, which explains the areas of softening to which Jumentié and Claude have called attention. These very numerous but very restricted lesions correspond to the symptomatology of men suffering from shell shock, especially the amnesia which may result from the anemia in certain small areas, the neuralgias, and the pains at the emerging points of the nerves. The latter correspond to the intraradicular hemorrhages found in the rabbits. This may also be the explanation of certain cases that have been published in which the clinical picture of tabes came on suddenly after shell shock, with negative Wassermann reaction and a rapid course. It may also explain the galloping course of general paralysis after concussion from an exploding large shell.

Progrès Médical, Paris*August 25, XXXII, No. 34, pp. 279-286*

- 63 Electrically Induced Vertigo with Disease of the Internal Ear. (Epreuve de Babinski.) H. Bourgeois.—p. 279.
64 Orthopedic Apparatus for Paralysis or Mutilation of the Hand. J. Regnault.—p. 280.
65 Present Status of Our Knowledge of Spirochetes. A. Bernard.—p. 283.

Correspondenz-Blatt für Schweizer Aerzte, Basel*September 1, XLVII, No. 35, pp. 1121-1152*

- 66 Frequency of Miliary Tuberculosis in the Elderly. E. Braun.—p. 1121.
67 *Tuning-Fork Test for Disease of the Nasal Sinuses. E. Oppikofer.—p. 1130.
68 *Frothy Secretion in the Pyriform Sinus as Sign of Diverticulum in the Esophagus. E. Oppikofer.—p. 1133.

67. **Tuning-Fork Test for Disease of Nasal Sinus.**—Oppikofer states that he was unable to confirm Glas' statements in regard to the diagnostic importance of the Weber tuning-fork test applied in the diagnosis of disease in the nasal sinuses. He applied the test to sixty-nine adults with certain sinusitis, and obtained a positive response only in four, that is, in 5.8 per cent., and the response was not decided in these.

68. **Frothy Sputum in Pyriform Sinus as Sign of Esophagus Diverticulum.**—Oppikofer refers to Wagener's assertion in 1911 that the finding of frothy mucus in the fossa on the side of the larynx, external to the aryepiglottis fold, is presumptive evidence of a diverticulum in the esophagus, just below the pharynx. Von Eicken confirmed his statements in five cases, and Oppikofer reports the same finding in six cases of unmistakable hypopharynx diverticulum. The accumulation of frothy sputum at this point is therefore a simple and reliable sign which can scarcely fail to be present with a diverticulum in this region. At the same time, he warns, the frothy sputum in the hypopharynx may be encountered with any acute or chronic inflammatory affection of the esophagus, although it is not constantly found; also with laryngeal tuberculosis, cancer in the sinus, etc. He has further found the frothy sputum in the pyriform sinus in nineteen out of 200 healthy persons examined, that is, in nearly 10 per cent., but in these cases the sinus was not completely filled, and the frothy sputum was not found constantly in the same individual. It is therefore evident that pronounced frothiness in the hypopharynx is strongly suspicious of a diverticulum in the esophagus but it does not occur exclusively with this.

Gazzetta degli Ospedali e delle Cliniche, Milan*August 16, XXXVIII, No. 65, pp. 897-904*

- 69 Official List of Physical Causes for Exemption from Military Service. Giardino. Titlepage.
70 Freezing Injuries and their Treatment with Thermal Mineral Water. S. Salvatore.—p. 897.
August 19, No. 66, pp. 905-919
71 *Treatment of Epidemic Meningitis. A. Indelli.—p. 907.
72 Hernia and Military Service. E. Villa.—p. 918.

71. **Epidemic Meningitis.**—Indelli comments on the disturbances liable to follow excessive dosage in serotherapy of cerebrospinal meningitis. He reports the details of three typical cases to illustrate the advantages of giving small fractionated daily doses of the antiserum, testing the patient's tolerance for it, and supplementing this direct local treatment by giving the antiserum intravenously or subcutaneously. This mixed treatment seems more logical and has proved more successful in his experience. The patients whose cases are described were a child of 7 and two girls of 17 and 19. Two left the hospital quite cured; the third is still being treated for a residual paresis of one leg. In this case the intraspinal serotherapy had been supplemented by intraspinal injection of a silver salt. This was followed by extreme general prostration, rise of temperature and purpura, evidently from the toxic action of the silver salt. The patient was left in peace for a few days after this except for stimulants to the heart and morphin to relieve pains in the legs and headache. Then the symptoms seemed to be growing worse, but no fluid could be obtained with lumbar puncture. Intramuscular injection of the silver salt was followed by

some improvement. The disease thus progressed in waves, gradually growing less pronounced, and the fortieth day the condition was no longer regarded as grave, and the patient is now well on the way to health. It seems evident that the intraspinal silver salt was a factor in the transformation of this "open" into a "closed" form of meningitis.

Policlinico, Rome*September 2, XXIV, No. 36, pp. 1089-1120*

- 73 *Tuberculosis from the Standpoint of Military Medicine. E. Maragliano.—p. 1089.
74 *Syphilitic Arthritis, Gastritis and Febrile Splenomegaly. C. Verdizzi.—p. 1095. Conclusion.
75 Iodized Benzene in Surgical Work. G. Zanetti.—p. 1099.
September, Medical Section No. 9, pp. 349-388
76 *The So-Called Nervous Reflex Phenomena in War Neurology. I. Valobra.—p. 349.
77 *Biologic and Curative Action of White and Colored Light. E. Milani and L. Cappelli.—p. 370.
78 Hyperindicanemia. A Fara.—p. 385. To be continued.
August, Surgical Section No. 8, pp. 313-352
79 *Technic for Amputations for Traumatic Lesions. G. Lerda.—p. 313. Continuation.
80 *Suture of Tendon Stumps over a Gap by Mobilizing their Attachment to the Bone. R. Mosti.—p. 332.
81 *Bone Production in the Kidney. (Ossificazione intrarenale.) E. Pirondini.—p. 339.
82 *Chronic Abscesses. (Neoformazioni flogistiche a decorso lentissimo.) G. Filardi.—p. 345.

73. **Tuberculosis from the Military Standpoint.**—Maragliano remarks that there seems to be a good deal of uncertainty among the army medical officers as to tuberculosis in relation to the military service. He declares that the only question should be, Has the man any kind of a tuberculous affection? If the answer is affirmative, then there is only one thing to do, the man should be eliminated from the army. Even when the man is well nourished, he is liable to have his precarious balance upset at any moment. Hence he cannot be utilized in any way in military service which is liable to be or become eventually harmful for him. No gradations are possible, he insists. No physician can authorize the retention of a tuberculous man; no one can guarantee that he has sufficient resisting powers to bear the depressing influence of military life either in the active zone or back of the firing line. The state and military authorities demand that no person with tuberculosis detectable by the diagnostic measures at our command shall be admitted to the military service. A circular issued by the minister of war, April 15, 1917, deplors the fact that men have been passed for the service with tuberculous lesions so serious and advanced that ordinary clinical examination should have revealed them. Certain physicians in examining the recruits are misled by their zeal to swell the army ranks, and they pass candidates who, they think, are capable of rendering good service even although they know that the men are tuberculous. But the nation and the government do not want this at all. Physicians should follow the lines laid down for those who are responsible for the make-up of the army. They should not restrict their search for tuberculosis to pulmonary lesions alone, as is too often done, but should seek for tuberculous affections of all kinds, however slight they may appear. This is a service which physicians can render now to the army. The benefit from it will be felt in the near future by the whole country. [Maragliano speaks with authority as he is not only one of the leading experts on tuberculosis but is also a senator of the realm, in close touch with the government.] He emphasizes that any focus of tubercle bacilli may and does remain circumscribed and occult as long as the resisting forces of the organism are able to oppose to them an adequate defense. But once the resisting powers are weakened by any cause, the bacilli throw down the barriers, and sally forth to conquer. Among the instructive diagnostic findings in case of a pulmonary lesion, he cites elastic fibers in the sputum and detection of antibodies in the blood and of tubercle bacilli in the urine. Latent tuberculosis of the kidneys is much more common than is generally believed. In dubious cases, roentgen examination is imperative, and subcutaneous injection of tuberculin, not less than 2 or 3 mg. if there are no broncho-alveolar foci. With an existing focus, 1 mg. or less is enough. The focal reaction should never be overlooked;

this may be as marked after taking 1 gm. of potassium iodid at one dose as after the tuberculin test. It should never be forgotten that tuberculosis proceeds in stages, now advancing, now stopping, as the defences grow stronger. The "clinical cure" means merely that the defence is stronger than the invading host and is holding it in check. If physicians at large appreciated this, they could surround the tuberculous with precautionary measures so that many of them could live on indefinitely. They should never be exposed to the vicissitudes of army life.

74. Unusual Manifestations of Syphilis.—Among the cases described by Verdozzi is that of a woman of 41 with an indolent tumefaction of the right knee. The bones showed erosions and deformity on roentgenoscopy, and a bloody fluid escaped on puncturing. No benefit was derived from a plaster cast or from administration of neosalvarsan and mercury. In two other cases the clinical picture of a gastric ulcer or cancer was accompanied by a strongly positive Wassermann reaction, and, under neosalvarsan, recovery from the syphilitic gastritis was soon complete. The last case described was that of a woman of 52 with great enlargement of the spleen, chills and intermittent fever, headache and general malaise, all continuing more or less constantly for two years. Then the spleen was removed, but the fever persisted unmodified until conditions were restored to practically normal by a course of neosalvarsan.

76. Reflex Nervous Disturbances after War Wounds.—Valobra summarizes the opinions of the different writers on this subject of disturbances observed in a limb after a wound that did not injure directly any of the nerves or vessels. He has had a number of such cases in his care and was impressed by the element suggesting a psychoneurosis and also an element for which the hospital care was responsible, namely, overlong immobilization. This not only helped to fasten the psychoneurosis element but it induced local changes, fastening the tendency to voluntary immobilization in the form of spasmodic contracture or voluntary inactivity. The clinical picture, as he has seen it, conforms in every detail to Babinski and Froment's description of reflex nervous trouble, but he does not agree with them in their explanation of it as something independent of external circumstances. He has found that it can be cured by physical measures associated with psychotherapy. Proper surveillance of the immobilization in these cases of minor wounds, not allowing the limb to be immobilized too long, will ward off all such disturbances in the majority of cases.

77. Associated Phototherapy and Radiotherapy.—Milani and Capelli review the results obtained during the last four years at the institute for electrotherapy and radiology connected with the University of Rome. They also describe considerable research on the biologic, bactericidal and curative action of white and different colored lights. In lupus, by far the best results were obtained with white light (including the greater part of the ultraviolet rays and all the light part of the spectrum), especially when supplemented by radium and the roentgen rays. For torpid war wounds, red light stimulated the granulations, while exuberant granulations seemed to be favorably modified with blue light.

79. Technic for Amputation.—This instalment of Lerda's long article has twenty-one illustrations showing the different technics required for different kinds of wounds of the limbs.

80. Suture of Tendons and Ligaments Over a Gap.—Mosti analyzes the various methods in vogue for bridging a gap between tendon and ligament stumps. In a case of which an illustrated description is given, there was an unbridgeable space between the stumps of the patellar ligament. The upper stump was mobilized by slitting the patella lengthwise and slipping the anterior half downward until it could be sutured to the lower stump. This technic proved completely successful. The halves of the patella were fastened together with a screw.

81. Ossification in the Kidney.—Pirondini does not know of any case on record similar to the one he describes in which a woman of 37 had been having occasional hematuria and pains in the right kidney region for a year and later in the

left kidney, with pyuria. Roentgenoscopy confirmed the assumption of bilateral kidney disease, but the intensity of the pains on the left side compelled nephrotomy and a large calculus was extracted. The patient collapsed a few hours afterward and necropsy revealed in the right kidney a triangular bone, measuring 3 by 5 mm., protruding into a cavity filled with pus. The bone was complete, that is, it had periosteum and bone marrow, but no features of a tumor. It was evidently of embryonal origin or the result of the irritation from the inflammation.

82. Chronic Abscesses.—Filardi describes two cases of inflammatory new growths of extremely slow development which had led to the mistaken diagnosis of cancer. The tumors were mostly hard, with purulent fusion only at one small part. The tumor was in the abdomen in both cases; the patients were men of 26 and 72. The tumors had attracted attention for four years and three months, respectively, and both were permanently cured by clearing out the focus. There was a history of operative treatment for inguinal hernia not long before in each case, but in the younger man unsuspected appendicitis was probably the main factor. In both cases only the ordinary pyogenic germs were found, and they were of slight virulence.

Revista Critica di Clinica Medica, Florence

September 1, XVIII, No. 35, pp. 341-348

- 83 The Psychology and Responsibility of the Tuberculous. M. Maurizi.—p. 341. Commenced in No. 34, p. 333.

Prensa Medica Argentina, Buenos Aires

August 20, IV, No. 8, pp. 89-104

- 84 *Normal Beef Serum in Treatment of Anthrax. III. J. Penna, J. B. Cuenca and R. Kraus.—p. 91.
85 *Syphilitic Articular Rheumatism. P. M. Barlaro.—p. 93.
86 *Acute Anterior Poliomyelitis. (Enfermedad de Heine Medin.) G. A. Alfaro.—p. 98.

84. Treatment of Anthrax with Normal Beef Serum.—Penna, Cruenca and Kraus give illustrated descriptions of several cases out of their extensive experience with normal beef serum in treatment of human anthrax. [It was recently commented on editorially in THE JOURNAL, Sept. 29, 1917, p. 1085.] They now have a record of 140 patients thus treated, with the loss of only one, that is, a mortality of 0.71 per cent. Their latest series of ninety cases, justifies, they say, the exclusion of all doubt as to the efficacy of this treatment. At first they gave the injection intravenously, but found that the subcutaneous route is equally effectual except for the gravest cases. The dose ranged from 10 to 30 c.c. as the average, up to 40 and 50 in the most intense cases. The dose is repeated on the next and the following day at need. The serum is heated twice, and nothing has been observed to indicate production of serum sickness or allergy in any form such as is comparatively common with horse serum. In the nine severe cases described in detail, the desired result was attained with a single injection of from 20 to 30 c.c., with the exception of one case in which the anthrax pustule was on the neck. The first dose here was 50 c.c., and 30 c.c. was given later the same day on account of the alarming general symptoms.

85. Syphilitic Articular Rheumatism.—Barlaro says that in his experience he has found articular rheumatism of syphilitic origin more prevalent than that from tuberculosis and gonorrhea combined, and much more frequent than true acute febrile polyarticular rheumatism. In some cases there is merely pain in the joints and functional weakness, the pains growing worse at night. As a rule the arthralgia comes on without preceding trouble, but sometimes there is a history of an acute infectious sore throat not long before. The temperature fluctuates irregularly and one or more joints may swell. In two cases described the pains developed acutely in throat, abdomen and knees in one, and in the right knee and left hand in the other, involving later the other knee and the ankles. The pain in this case was increased by movement of the joint, but there was no swelling or redness of any joint. In both cases mercurial treatment proved successful in gradually abolishing all disturbances and the general health improved. In another group of cases, of which the tempera-

ture charts are given, the joint trouble resembled deceptively ordinary febrile acute articular rheumatism. In these cases mercurial treatment only slowly conquered the joint trouble and fever, fully two months passing before the temperature was normal. In other cases the trouble was subacute and restricted to one or two joints, with brief acute exacerbations. He has also encountered chronic cases, and remarks that these are the cases of rheumatism which used to be cured empirically by mercury. Modern science has demonstrated that many forms of chronic rheumatism, from the monoarticular to deforming arthritis and rhizomelic spondylitis may yield to thorough treatment as for syphilis. In one such case the woman had a history of syphilis contracted a year or two before. The "rheumatism" developed with chills, fever and swelling and redness of the joints, especially the small joints of the hands. Under mercurial treatment the fever was aggravated at first but then declined. The clinical picture of chronic deforming rheumatism then developed with deformity of the fingers and contracture, rheumatism of the neurotrophic type, and she grew weaker and weaker. By the end of the month the dose of mercury was doubled, after which the gravest symptoms gradually subsided. The first and gravest phase lasted for seven months, comprising two severe and two minor attacks. Then under continuous mercurial treatment the woman recuperated and is now free from pain and in good condition except for the deformed fingers and feet. He cites some other cases of this tenacious form with its waves of acute exacerbation. A special feature of nearly all the cases was the greater intensity of the pains at night. There is a possibility that the peculiar tenacity of some of these cases is due to the fact that it is ordinary rheumatism occurring in a syphilitic.

86. **Poliomyelitis.**—Alfaro relates that up to 1909 acute anterior poliomyelitis at Buenos Aires had occurred only sporadically, but in that year and since the cases have been more frequent, without ever assuming actual epidemic form or special gravity. In Montevideo and vicinity last year there were about sixty cases but all were mild. He has himself encountered at Buenos Aires sixty cases during these recent years but has never seen or known directly of a case of contagion, nor been able to trace the cases through a carrier to the source. Hence he does not approve of the excessively severe prophylactic measures which some have wished to introduce in Argentina. In one instance the three children of a family developed the disease all together, with only a few hours' interval, the clinical picture suggesting influenza. One child had merely fever, prostration and mild catarrhal symptoms, soon subsiding, but in the others intense meningeal symptoms followed, to which one child of 2 rapidly succumbed while the other, a boy of 6, lay comatose for several days and then the paralysis permitted a retrospective diagnosis of the familial epidemic. The lumbar puncture fluid in both cases showed merely slight albumin content and lymphocytosis, with no bacteria. In one other case this meningeal form proved fatal from ascending paralysis. In all his other cases the patients recovered. The differential diagnosis was by exclusion and the leukopeny. The paralysis during the disease affected the legs in 75 per cent. but in some cases the muscles of the neck and trunk were involved and in one case there was eventration from the paralytic atrophy of the rectus muscle. In another there was acute incoordination of the movements of the trunk and limbs for a time. He noted the painful type in several cases, and Morquio of Montevideo reports that this type formed 70 per cent. of his cases; Marie denies the existence of this type. In one of Alfaro's cases the pain was so intense in one thigh and the contracture so severe that acute coxalgia was suspected at first, until the consecutive paralysis, pronounced atrophy and loss of the reflexes indicated its true nature. The incomplete and abortive cases must be watched for with care as they spread the disease. He had only two deaths in his sixty cases but almost all the patients, with one exception, were left with persisting paralysis. In four cases he gave intraspinal injections of serum from convalescents; the results seemed brilliant in one case but were disappointing in the others.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

July 21, 11, No. 3, pp. 205-268

- 87 Modern Spiritualism. (Het hedendaagsch spiritisme.) G. van Rijnberk.—p. 205.
88 *Diathermy in Treatment of Gonorrheal Ophthalmia. J. E. L. Kraft and G. ten Doesschate.—p. 214.
89 *Pathogenesis of Tetany. G. C. Boltzen.—p. 218.
90 Cooperation Between Physician and Dentist. C. van der Hoeven. p. 236.
91 Meningococcus Meningitis in a Child. W. A. Weisfelt.—p. 240.

88. **Diathermy for Gonorrheal Ophthalmia.**—Kraft and ten Doesschate relate that excellent results have been reported in various quarters from the use of diathermy, electric thermo-penetration, in treatment of various eye affections, including traumatic iridocyclitis, rheumatic scleritis, chronic uveitis, trachoma, vernal conjunctivitis and above all in parenchymatous keratitis. They have tried it themselves in chronic iridocyclitis, tuberculous keratitis and gonococcus eye affections. No benefit was apparent in the two first named, but in the gonorrheal ophthalmia the results were gratifying. The action of the diathermy seems to be exclusively that of heat. The heat being generated within the tissues reaches a higher degree than is possible to attain with compresses, cataplasms, etc., the benefit from which has long been an established fact. With high temperatures we attack the gonococcus on its weakest side, as it is well known that it is killed off by comparatively low temperatures. Bumm found that at 38 C., long kept up, the gonococci lost the power of reproduction. Cases are on record in which gonorrheal ophthalmia was promptly cured by application of steam. Experiments on rabbits have apparently shown that their eyes can stand the application of direct heat to 45 C. without harm.

With diathermy it is possible to reach a temperature of 42.5 C. in the conjunctiva, as can be measured by a mercury thermometer made to fit into the culdesac, the scale projecting between the lids. The temperature can also be determined from a needle introduced into the conjunctival fold, but these measures are liable to do harm. The patient's sensation as to the heat is enough of a guide. The electrode was made to fit over the eyeball; the other electrode was placed at the back of the neck. The fat and bone around the eyeball are bad conductors, so that the heat generated is retained in the eyeball, and it is retained most in the tissues which offer the most resistance to the electric current, namely, the cornea and sclerotic. The success in the first case in which they tried the diathermy was so striking that they looked eagerly for another case of gonorrheal ophthalmia, but two years passed before they encountered one among the usual run of gonococcus urethritis cases. Two hours after the first application of the diathermy for fifteen minutes, no further gonococci could be found in the secretions in the eye recently involved in the ophthalmia. Some were still found in the older process in the other eye, but they gradually disappeared and vanished completely by the tenth day. The third and last case in their experience was less satisfactory; there was already an ulcer on the cornea when first seen, and the skin of the eyelids was macerated by preceding local application of potassium permanganate and silver salt solutions. It had been rendered so sensitive that effectual diathermy could not be systematically applied, but even under its partial use the gonococci finally vanished.

89. **Pathogenesis of Tetany.**—Boltzen describes the case of a young man with tetany, and then devotes the rest of his long article to discussion of the pathogenesis of tetany, as he does not believe that the parathyroids are directly responsible for more than a certain proportion of the cases. He further disagrees with those who take tetany in children lightly; he cites figures showing that complete recovery followed in only about 20 per cent. He ascribes tetany to a "spinal intoxication." When this is the work of toxic action from the parathyroids, the outlook may be grave. The tetany following removal of the parathyroids, he reiterates, is seldom or never overcome, but when the parathyroid insufficiency is only partial or transient, then the tetany may subside. In the nonparathyroid cases the toxic action on the spinal cord is usually transient, and the resulting tetany is benign, as in workman's tetany, tetany with various infectious diseases,

and with stomach or bowel trouble. The fact that workman's tetany is liable to recurrence is due to the action of the cause inducing it in the first place, especially the eating of bread made from grain containing ergot. He does not believe that there is any specific tetany poison; any poison casually acting on the spinal cord is liable to bring on tetany. In the case described in detail, the young man seemed to have a chronic, latent tetany which flared up under autointoxication from constipation, and subsided again as the bowel functioning became regular again. There was a tendency to cataract in one eye from childhood and to infantilism and defects in the enamel of the teeth—all of which Bolten regards as manifestations of the tetany of parathyroid toxin origin. They have never been observed with tetany following complete removal of the parathyroids. He explains the case, therefore, as an old chronic parathyroid tetany which keeps constantly latent until fanned into a flame by some occasional other factor, and which subsides into latency again as this factor is eliminated. He quotes from most of the recent literature on tetany but gives no bibliographic references.

Hospitalstidende, Copenhagen

August 1, LX, No. 31, pp 741-764

92 *Thyroidism after Roentgen Treatment; Two Cases. P. Verning.—p. 741.

92. **Death After Roentgen Treatment of Exophthalmic Goiter.**—Verning reports two cases, with only a few weeks' interval, in which the vascular, recently developed goiter was given Roentgen treatment, and fatal thyroidism followed. One patient was a woman of 26; the symptoms of the exophthalmic goiter became manifest two months after delivery of her first child. She had always been nervous, and two years before had had febrile articular rheumatism, with complications on the part of the heart. The thyroid was exposed to the roentgen ray, the dose 5 H, filtered, and the exposure was repeated the next day. The circumference of the neck subsided from 36½ to 34½ in a few days, but the tremor and agitation increased to actual delirium, and the woman died fifteen days after the last exposure, a little over two months after the first signs of the exophthalmic goiter. The other patient was a housemaid of 18 with no pathologic antecedents except one slight attack of gastric catarrh and chlorosis. For the last year she had been easily tired and nervous, with a tendency to occasional palpitations and shortness of breath. She entered the hospital a month after she noticed that her neck had begun to enlarge a little. Two roentgen exposures were given with the same dose as in the other case, only with a two-day interval. Symptoms of mild thyroidism developed as the circumference of the neck became reduced from 34 to 30.5. Later the thyroid symptoms became aggravated, and the girl died about six weeks after the exposures. A mild intercurrent infectious sore throat may have been a factor in the fatal outcome. The dosage of the rays was not above the average, but must have been excessive for such recently developed cases. Verning summarizes in conclusion the cases he has found on record in which, under roentgen treatment, the symptoms became aggravated. As a rule, however, this aggravation was transient, and the result on the whole was improvement.

Hygiea, Stockholm

July 31, LXXIX, No. 14, pp. 689-736

93 *Prolapse of the Umbilical Cord. A. Nordlund.—p. 689.

94 *Circumscribed Phlegmonous Gastritis Simulating a Tumor. Sten von Stapelmohr.—p. 708.

93. **Prolapse of the Umbilical Cord.**—Nordlund's statistics emphasize the danger from attempts to reduce the prolapsed cord. The mortality in the reduction cases was 30.2 per cent., but in reality it was still higher, as reduction had been attempted first in some of the version cases. So the version alone was not responsible for all of the mortality of 27.4 per cent. in the version with extraction cases. The total number of cases of prolapse of the umbilical cord was 5.3 per cent. of the 62,316 deliveries at the Stockholm maternity since 1850. In these prolapse cases, 38 per cent. of the infants were much below and 32 per cent. much above the average weight. The mortality in the total 333 cases was about 30.9 per cent. He gives tables of the different data as com-

pared with those from other maternities. In not less than 52 of the 333 cases, the prolapse followed some operative intervention, and in 9 it was increased by the intervention. Attempts to reduce the prolapsed cord were made in 104 cases, but failed in 67, and 32 of the children in the latter group died. His conclusion is that in case of prolapse of the umbilical cord, extraction should follow at once, with or without version. The risk from attempted reposition of the cord is shown plainly by the data presented. While waiting for the os to dilate, the woman should be kept in the Trendelenburg position.

94. **Circumscribed Phlegmonous Gastritis.**—Stapelmohr published last year three cases of diffuse phlegmonous gastritis, and he now reports two cases in which the trouble was limited to the pylorus region. This area was resected, but instead of the supposed cancer the microscope showed merely phlegmonous gastritis. One patient was a man of 59, and the trouble began with fever and vomiting, the laparotomy following in less than three weeks. The other patient was a woman of 33, and there had been symptoms from the stomach for three years. The Wassermann test gave a positive response. Both patients were apparently cured by the operation. There were evidences of a chronic hyperplastic gastritis in the second case and in both cases there was pronounced leukocytosis. This latter might aid in differentiation.

Ugeskrift for Læger, Copenhagen

July 26, LXXIX, No. 30, pp. 1233-1286

95 *Diagnosis of Pregnancy. J. Kaarsberg.—p. 1233.

96 *The Coarse Bread Question. M. Hindhede.—p. 1248.

95. **Diagnosis of Pregnancy.**—Kaarsberg declares that he has been unable to find on record a single authentic case of actual menstruation during a pregnancy, not even in cases of double uterus. The changes in consistency in certain areas are instructive signs of pregnancy, even in the early stages. He has sought regularly for Lobhardt's "livid stripe," running from the mouth of the urethra past the relics of the hymen, but has found it in only three cases. The Abderhalden test seems to exclude pregnancy when the response is negative, but a positive reaction is not conclusive. Hegar's sign is the softer consistency of the uterus, so that it can be pressed in with the fingers above the cervix until the fingers almost meet. But Kaarsberg has never encountered this but once in his experience. A softer consistency of the uterus in the cornua is comparatively common, and very instructive, even early in the pregnancy. Veterinarians count on this in examining cows to learn if they are gravid. The cornu is easily palpated through the rectum. He regards this as more instructive than changes in the size and shape of the uterus in the first three months. In a case of pregnancy in the cornu with an eccentric growth, he operated for assumed tubal pregnancy but found the three months' ovum normally embedded. Such a mistake can be avoided by finding on palpation both cornua equally well defined. Interstitial pregnancy is often accompanied with attacks of severe pain.

In discussing the complications of pregnancy, he remarks that he has never seen but one instance of incarceration of the gravid, retroflexed uterus. The fear of incarceration therefore need not be great; the patient can be warned to apply for help if there is difficulty in voiding urine. Restoration of the uterus to place is liable to entail abortion. There can be no incarceration of the fully retroflexed gravid uterus without the cervix being drawn up and back of the symphysis. This usually squeezes the lower walls of the bladder together and impedes its emptying, but this is not always the case. Conditions are often misleading with a double uterus, the palpation findings suggesting a tumor or extra-uterine pregnancy. In conclusion he presents evidence that the condition called "supravaginal hypertrophy of the cervix" of the gravid uterus is in reality torsion of the uterus with an ovum embedded in a cornu.

96. **White or Whole Grain Bread.**—Hindhede replies to recent criticism of his research on foods and dietaries. It has been objected that the two men, the subjects of his experiments, had such unusually good digestion that conclusions from them, particularly in respect to digestion of bran, cannot apply to average persons.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 17

CHICAGO, ILLINOIS

OCTOBER 27, 1917

THE NEW PUBLIC HEALTH*

W. S. RANKIN, M.D.

Secretary, North Carolina State Board of Health

RALEIGH, N. C.

My ambitious subject, the new public health, is not of my own choosing. A recent book has been devoted to a discussion of this subject. In attempting to deal with a subject of such vast proportions in the short period of time at my disposal, I shall be compelled to limit myself to brief references to those recent changes in point of view, new interests, and new proposals which seem to offer the biggest rewards for any attention that may be given to them.

GROSS AND ANALYTIC CONCEPTIONS OF THE HEALTH PROBLEM

Our former rather gross conception of the health problem is becoming more exact, more analytic. We are learning that the health problem has an anatomy; it can be cut up, dissected into a number of independent, smaller health problems or health units. The treatment one prescribes is profoundly influenced by one's point of view. It depends, namely, on whether one has the gross or the anatomic conception of the health problem. With the gross conception one prescribes general treatment and uses the shotgun prescription. His treatment is like the treatment of one who prescribes a physician for the sick, for he prescribes a health office or health officer for the health problem; as, for example, a national department of health for the national health problem, and a whole-time county health officer for the county health problem. With the anatomic conception one prescribes specific treatment, a definite plan for each separate health unit. The health officer with an exact conception of the health problem in treating a sick social organism does not put all of the treatment in one prescription, realizing that in aiming at everything he may hit nothing, and incidentally turn his patient's stomach. Today is the day of specific therapeutics, both for the individual and for the public. Specific therapeutics demands exact knowledge.

FEDERAL, STATE AND COUNTY COOPERATION IN FINANCING AND PLANNING RURAL HEALTH WORK

Two departments of the national government, those of agriculture and of commerce, have established a plan of financial and supervisory participation with state and county governments in local or county work in which all three participating governments have a common interest. Under this plan the federal govern-

ment makes an initial appropriation of from \$4,000,000 to \$25,000,000 annually. This appropriation is apportioned to the states on the basis of population and square mile area, and each state apportionment becomes available when the state appropriates an equal sum. The state, in its turn, apportions the combined federal and state funds to those counties that will appropriate a supplementary fund, the amount of which the state determines. Note that all the appropriations, federal, state and county, are conditioned and are available for use only when two other appropriations are made. Such appropriations are comparatively easy to secure, one of the three contributors inducing the other two to contribute. In addition to providing funds for local work in which all three governments have a common interest, this plan offers another great advantage: before any county can receive state or federal aid, its plan of work must be approved by both state and federal participants. In this way the federal government and the state government become clearing houses of experience in formulating and directing local work.

This principle of governmental cooperation which the Department of Agriculture and the Department of Commerce have established for county agricultural work and county highway construction should be quickly extended to include county health work. A federal appropriation of a million dollars annually for rural health work, to be apportioned among the states on a basis of rural population and square mile area, and made available to the state appropriating a like sum, would give the average state \$40,000 annually for rural health work. Then if the state apportioned the \$40,000 to those counties that would match the combined federal and state fund dollar for dollar, the total fund in the state for rural health work would amount to \$80,000 annually. Moreover, the conditions of the apportionments, in requiring the plan of rural health work to be approved by all three participating governments, would insure the highest degree of efficiency. In a recent conference of secretaries of state and provincial boards of health, appropriate steps were taken to secure from Congress the extension of the plan of financial and supervisory cooperation of governments to include, in addition to agriculture and good roads, rural health work.

INDUSTRIAL HYGIENE

Countries epitomize the course of civilization in being first agricultural and then, with an accumulation of raw products, becoming industrial. Our country is rapidly becoming an industrial nation. Multiplication of industries means that competition is sharpened by every new wheel that turns. Competition demands the elimination of waste.

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

Waste in industry results (1) from defective machinery, and (2) from defective manipulation of machinery. The successful industrial captain demands that only the best machinery be installed, that it be kept clean, polished, well lubricated, screws and bolts tight, belts well adjusted, and in every way physically fit. He does more. He looks beyond the machine and finds that a physically efficient machine in the hands of a physically inefficient operator means waste. He finds that from 40 to 50 per cent. of employees are sick or abnormal some time during the year. He finds that each abnormality, total incapacitation, is preceded and followed by subnormality, partial incapacitation, of from two to three weeks' duration; in short, he finds that the average worker is partially and completely incapacitated for about one twelfth of his time. He finds that accidents to both men and machines occur usually to those men and machines that are physically either subnormal or abnormal. He finds that the product of a machine suffers quantitatively and qualitatively when the machine stands idle as a result of an abnormal operator, or when the machine is under the manipulation of a subnormal operator, and so the need, the demand for industrial hygiene gains new strength almost daily. In supplying this demand, the great need is a carefully devised, detailed plan of industrial hygiene built up in units and made thereby adaptable to the more important industries of varying capitalization.

IMPROVEMENT IN PUBLIC HEALTH THROUGH ADVANCES IN PRACTICE OF MEDICINE

The medical profession conceived public health, fed the embryo from its own blood, brought forth the mature infant, which, though vigorous and promising, is even yet dependent on its mother's breast. Anything that strengthens the mother helps the child. In this country recently three proposals, health insurance, group practice, and a plan for more generally available postgraduate courses for physicians, have been put forward for the purpose of advancing public health by improving the practice of medicine. The first two of these proposals, health insurance and group practice, are being well cared for by able men.

Organized medicine has taken a deep interest in medical education, as medical education applies to the physicians of tomorrow; but in its solicitude for the undergraduate it has apparently forgotten the postgraduate, the present field force of something like a hundred thousand physicians. Modern governments do not appropriate money for road construction without providing in the act for the maintenance of the roads constructed. The solidarity of the medical profession depends on two conditions: (1) its construction, and (2) its repairs. The repair shops of medicine are sorely inadequate, and with a very few exceptions those that exist are not organized with proper consideration for the convenience of the men who should use them.

Eighty per cent. of the general practitioners get little or no postgraduate work. Their income is small, around \$1,500 to \$1,800 a year. They have family responsibilities, current expenses and insurance. The present cost of postgraduate work is in excess of what the general practitioner can pay. To make postgraduate work more generally available, one of two things must be done: either the income of the profession must be increased or the cost of postgraduate work must be decreased. In order to decrease the

cost of postgraduate work, let us analyze its budget. Let us suppose, for illustration, that seventy-five physicians take a postgraduate course of six weeks in diseases of children under a capable assistant professor in one of our larger medical schools. The teacher has graduated three or four years previously, is an exceptionally well qualified man, and is one of the best of the younger men in the active teaching force. Let us assume that the physicians taking this course collect \$150 a month from their practices. The individual expense account then will be:

| | |
|--|-------|
| Absence from practice six weeks | \$225 |
| Tuition six weeks postgraduate | 100 |
| Traveling, board and incidentals | 75 |
| | <hr/> |
| | \$400 |

For the entire class of seventy-five men, the cost will be seventy-five times \$400, or \$30,000.

Now let us suppose that we reverse the transportation process: Instead of moving seventy-five men away from their practice to one man, the teacher, let us move the teacher to the seventy-five men, leaving the men at work in their practices during their postgraduate courses. The seventy-five doctors can be grouped into six sections of from twelve to thirteen men. The sections can be so located with reference to each other that the teacher can meet Section 1 on Monday for an hour's lecture and two hours' clinic, travel a distance of from 20 to 30 miles, meet Section 2 on Tuesday for three hours' work, and so on, Section 3 on Wednesday, Section 4 on Thursday, Section 5 on Friday, and Section 6 on Saturday; and with the sections arranged on a circuit the teacher would be, on completing his week's work on Saturday with Section 6, within one hour of Section 1, with which on Monday he would begin again his weekly cycle. In a three months' course each section and each member of the class would receive twelve hours of lectures and twenty-four hours of clinics; or in a four months' course, sixteen hours of lectures and thirty-two hours of clinics. If we pay the teacher \$600 a month for a four months' course, the teacher will receive \$2,400; if we pay the teacher \$800 a month for a three months' course, the teacher will receive \$2,400, which is not bad pay, at least from the point of view of the general practitioner. If we allow an additional \$600 for other costs, such as laboratory material, stenographic reports of lectures, etc., the total cost of the course to the entire class will be \$3,000, which will be agreed on in advance and raised by assessments of \$40 for each member of the class. The amount of clinical material needed can be prorated among the members of the class, who can furnish this material from their practices. The state university, the state board of health, or some other state agency of standing should assume responsibility and direction of the course. If the university should assume direction of the course, academic credits could be issued to those who satisfactorily complete the course.

There are only four elements that enter into postgraduate work: (1) a class room, (2) a class of from eight to fifteen physicians, (3) a qualified teacher, and (4) clinical material. In times past this combination could be effected in only a few large cities; but times change, conditions and environment change, and men, except the aged that have lost their adaptability, change. Improved railway facilities, excellent highways, the automobile, denser populations with more abundant clinical material, increase in number of physicians and decrease in space separating them, are fac-

tors that could be and should be utilized in the repair of the medical profession, in bringing mental sustenance to the men in the trenches, instead of sending them far back to a few base kitchens.

THE NEW IDEAL: VITAL QUALITY

In health work the old ideal was quantitative—more life, lower death rates, greater longevity. The new ideal will be qualitative—greater human efficiency, a better quality of being.

There was a time when mere quantity of service counted for more than it does today. Then we had a work day of twelve hours and a school day of eight or nine hours. Now we know that a man's ability to produce and a child's ability to learn is greater with an eight hour work day and a five hour school day than with the former longer hours. The time may come when we shall find that a life adjusted to a fifty year time table makes greater mileage on the energy consumed than does a life adjusted to a seventy year time table.

Quantity of life and quality of life are related, but are not identical. If we provide for quantity we do not necessarily insure quality. If, on the other hand, we provide for quality of being, we take care of quantity so far as it deserves to be cared for. With the old ideal of vital quantity, those diseases that have large mortalities and high degrees of preventability tended to absorb our thought and energy. With the new ideal of vital quality, we shall be not less mindful of those diseases that directly affect vital quantity, but we shall be more mindful of those diseases that play havoc with vital quality. The light hookworm infection; twenty to fifty parasites; the neutral malarial infection; the chronic suppurating gums; the chronic constipation; the grumbling gallstones; the nagging piles; the old, slightly lacerated cervix; the improperly balanced ration; the excess of nicotin; the improperly ordered schedule of rest and play and work; these, and their like, gage the severity of their attack on vitality by what the vital forces will tolerate without striking back. These, like the small tax gradually increased over long years, take from a careless people a total of efficiency, of vital quality, of life, that, could we but compare it with our account against tuberculosis, typhoid fever, and their like, would make the last named diseases appear of far less relative importance. Our vital losses, like our financial losses, are in dribblets, pennies, nickles, dimes, an occasional quarter. If these little drafts on efficiency, on vital quality, the individual items too small to add from day to day, were totaled at will-making time, our conception of the relative importance of diseases would undergo a rather remarkable revision. Periodic examination of adults, as carried out by the Life Extension Institute; medical inspection of schoolchildren; school lunches; the accentuation of the fight on diseases that cripple rather than kill, hookworm and malaria; the oral hygiene movement; the mental hygiene movement; the propaganda of the eugenist; the increased interest in the regulation of working hours, in dietetics, are all aimed not primarily at death rate reduction and longevity extension, quantity, but at the new ideal, a finer quality of being. For

We live in deeds, not years; in thoughts, not breaths;
In feelings, not in figures on a dial;
We should count time by heart throbs. He most lives
Who thinks most, feels the noblest, acts the best.

ABSTRACT OF DISCUSSION

DR. H. M. BRACKEN, Minneapolis: Dr. Rankin has given us a most interesting paper, illustrating the work that is already being done in North Carolina relative to (1) organization of county boards of health, and (2) postgraduate teaching. Both of these are of the greatest importance. Dr. Rankin is to be congratulated on what he has been able to do, as well as on the able way in which he has presented his subject. It is to be hoped that others may follow his example. The plan which he has developed for postgraduate work is unique, but seems to be efficient.

DR. W. C. RUCKER, Washington, D. C.: Last year at Cincinnati I defined health as the physiologic function of the community. This caused a little smile to ripple over the face of things; but, after hearing this paper, I am convinced more than ever that this definition is correct, and that health is the physiologic functioning of the community. In our health teaching heretofore we have taken the wrong course, the illogical way, of going about it. We have reasoned from the pathologic to the physiologic instead of taking the point of view that the normal is the physiologic.

Judged in that way, we get far away from the idea that the whole problem is a communicable disease problem, and realize that it is a community problem. In this problem we must recognize two sets of workers: the general practitioner and the group of people whose practice is limited to public health work, or sanitation.

This gives us an opportunity to give different sorts of training. We should give the same basic training to all; but to the man whose practice is to be limited to sanitation, we should give intensive training along certain definite lines, developing each man according to his special capabilities for special lines of work. With regard to the school curriculum, to the postgraduate course, it seems to me that there is one psychologic factor that should be borne in mind, and that is that when men gather together in a new environment for the purpose of accomplishing something, they can do that something better than they could in their normal environment.

DR. HAVEN EMERSON, New York: In paying tribute to Dr. Rankin's admirable conception of the opportunities that await postgraduate education in public health matters, I wish to emphasize the fact that failure of the practitioner at present is due to the failure of medical schools to appreciate that the teaching of diagnosis and care of the individual is not the sum of their responsibility to their students. Rarely is a student's attention called to his responsibilities to the community in fulfilling his obligations to patients. There is no reason why the local health officer should not play a part in the postgraduate teaching of clinicians and physicians just graduated from hospitals.

We are now in the presence of the phase of public health work which recognizes that the habits of the community, and the education in personal hygiene of the individual will be the determining factor in further improvement of public health. Health officers must become teachers, so that the people will know how, when they are healthy, to keep healthy. They must spread the newer knowledge of physiology; the knowledge that alcohol is not a stimulant but a depressant; the knowledge that the best preventive against venereal disease is personal continence, and the knowledge that continence is compatible with health. I believe that we could proceed in this matter without waiting for governmental appropriation, and that it needs merely cooperative organization between existing medical schools and the health officers, in order to put into effect a program for postgraduate public health instruction of clinicians.

Ultimately, this teaching work should be paid for by government subsidy or by the medical school; but volunteers could doubtless be obtained to put the plan into operation, with confidence that support would come as its value was recognized.

DR. ARTHUR T. MCCORMACK, Bowling Green, Ky.: Dr. Rankin has put into practice plans and thoughts which have suggested themselves in part to many of his fellow workers. He has actually done what others have dreamed of. Congress

at its last session made an appropriation of \$150,000 to be used for cooperative work with the states, on the dollar for dollar basis, in rural sanitation. To my mind this really activates the United States Public Health Service; and, regardless of whether we have a cabinet officer now or later, it gives us a federal health service that will be enabled to standardize county health departments so far as this is possible. A county which expends \$5,000 annually on its health department will now be able to secure a sanitary survey of every home and individual in its borders by trained medical officers. Such a health inventory will enable the health officer and his corps to know what problems should be solved first and to adopt a comprehensive, economical plan for such solution. Such a survey will do more for the education of all the people of a county than can be accomplished in a generation by other means. The careful sanitarian, made practical by experience, who goes to the home and takes up the details of ordinary life, answers questions, and tactfully points out defects and at the same time demonstrates the remedies for these defects, is the real apostle of health.

Dr. Rankin emphasizes the evolution going on in all of us, and Dr. Emerson well says that the local health department must concern itself with every single thing that goes to make a better citizen for that community. It was but recently that we all felt that an all-time health officer was the "ultima Thule" of our desires. Before we have secured him, we know that, alone, the most devoted all-time health officer will, in many counties, be wholly inadequate. What we must have is an all-time county health department, with such force and such allies as are necessary to prevent sickness and restore those who are inefficient.

EXPERIMENTAL SHOCK*

C. C. GUTHRIE, M.D., PH.D.
PITTSBURGH

In view of the desirability of prompt publication of results in this field, as indicated recently by Pike,¹ a summary of work conducted by the staff members of this department and extending over a number of years² is deemed timely.

The general plan was to devise a reliable and comparatively simple method of producing shock; to establish definite criteria for recognizing the condition and to observe and study (quantitatively when possible), at frequent intervals throughout the experiment, as many phenomena simultaneously as was feasible, for we were proceeding on the assumption that the grosser manifestations of shock are to be considered effects rather than causes. Accordingly, if the causative mechanism was to be observed, it would be most desirable to study minutely the phenomena immediately preceding, during and following the application of the means used for producing shock, and to observe the effects of such therapeutic measures as might be indicated by the results.

Such experiments were made on twenty-two dogs. The studies comprised blood pressure; pulse rate and character; vasomotor reflex response; vasomotor tone; respiration rate, amplitude and regularity; volume and composition of expired air; blood hydrogen-ion concentration, reserve alkalinity, hematocrit and hemoglobin tests, red cell count and specific gravity deter-

minations (from which alterations in the composition of the blood, as regards relative volumes of plasma and corpuscles, as well as estimations of relative changes in total volume of blood, were made); estimation of the total blood contained in the vessels of the alimentary canal and in the vessels of the liver; viscosity and depression of the freezing point of blood, and temperature and condition of the general reflexes (eye, knee, etc.). Comparative studies were made on conditions observed in shock, and conditions following induction of cerebral anemia. The effects of remedial measures were observed, as mechanical increase of cerebral pressure, by occluding the aorta; elevation of the posterior portion of the animal to facilitate return of blood to the heart, and administration of drugs, including epinephrin, tyramin, atropin, sodium bicarbonate, lactic acid, and inhalation of carbon dioxide.

METHOD OF EXPERIMENTATION

After such observations had been made as were possible on the unanesthetized animal (condition, general behavior, pulse and respiration), it was quickly reduced with ether to a state of surgical anesthesia, and operated on. A trachea tube was inserted and connected with an ether bottle provided with valves. Connections were provided for collecting expired air samples for analysis. A mercury manometer was connected with one carotid artery for recording blood pressure. Blood samples were obtained by means of a cannula inserted into a carotid or a femoral artery.

After the taking of observations, including tracings and samples of air and blood to establish the condition under ether only, the brachial plexus on one or both sides was exposed, ligated and cut peripheral to the ligature and further stimulated by traction, or crushing with forceps, and by tetanizing electric currents. One or both sciatic nerves were prepared for stimulation chiefly to observe vasomotor reflex response. Unless pronounced symptoms of shock were soon induced, one or both of the fore limbs were about three fourths amputated, or the abdominal cavity was opened by a median incision and the intestines exposed and manipulated. The rectal temperature was taken at intervals. Ether was discontinued as early as possible, but was readministered, if indicated, to prevent return of conscious sensibility. Cerebral anemia was induced by the occlusion of appropriate arteries.³

RESULTS

Circulation.—Blood Pressure: This showed marked variations under experimental procedures. With pronounced evidences of shock, there was always low blood pressure. Usually, when below 70 to 50 mm. under ether, a tendency to recover was absent, but on removal of the ether, recovery was prone to take place, while from levels between 50 and 40 mm., the tendency to recover on removal of ether was feeble or absent. From the 50 to 40 mm. level, in general, the tendency of the blood pressure was gradual decline, but the rate of decline varied in different animals.

In pronounced shock, tying the portal vein, or tying the vein and the arteries supplying the alimentary canal and liver, had small effect on the blood pressure. Elevating the posterior trunk in such conditions caused a marked rise in blood pressure, and the effect was not materially lessened if, prior to elevation, the portal vein was ligated.

* From the Laboratories of Physiology, Pharmacology and Physiological Chemistry, University of Pittsburgh School of Medicine.

1. Pike, F. H.: The Relation of Low Blood Pressure to a Fatal Termination in Traumatic Shock, *THE JOURNAL A. M. A.*, June 23, 1917, p. 1892. (Discussion of references does not come within the scope of this communication, but some are included for the convenience of the reader, who may desire to refer to other literature.)

2. Guthrie and Guthrie: *Proc. Soc. Exper. Biol. and Med.*, 1914, 11, 148.

3. Stewart, Guthrie, Burns and Pike: *Jour. Exper. Med.*, 1906, 8, 289.

Pulse, Rate and Character: The pulse in general varied with the blood pressure, and as pressure declined, the total effect on the pulse rate was a decrease as compared to the stage under ether only. There was no pronounced evidence of vagus inhibition.

As indicated by the manometer tracing, the character of the pulse showed variations associated, as a rule, with pressure changes and due, it is believed, to a large extent to mechanical alterations, as the blood supply to the heart, changes in peripheral resistance, and rate of heart. The pulse became weaker with lower pressures with a noticeable tendency, as compared to the stage under ether only, to become slower.

Vasomotor Reflexes: Reflex vasomotor augmentation varied in different experiments and also in the same experiment. In some instances it was diminished, and in others it was more pronounced in the lower stages of blood pressure. Its occasional absence may have been due to the ether factor. Under strong brachial nerve stimulation, augmentation was followed usually by diminution of blood pressure.⁴ The diminution, too, varied in different experiments, and in different stages of the same experiment.

Vasomotor Tone: The vasomotor tone results were pronounced. For example, in one experiment under ether only, division of the sciatic nerve increased the blood flow from the femoral vein 22 per cent., while after shock in the same animal, the increase amounted to 76 per cent. In another experiment, the increase in shock after division of the nerve was 77 per cent. Hence, it would seem that vasomotor tone was present in the limb in shock, which confirms again the findings of Seelig and Lyon.⁵

Blood.—Reaction: The hydrogen-ion concentration of the blood showed a tendency to increase. For example, in one experiment, before shock the hydrogen-ion concentration was 7.2, and after shock 7.1, and in the final stages 7.0. In another experiment, under light ether only, it was 7.2, and under deep ether only, 7.0, and after shocking the animal it remained at 7.0. It would seem, therefore, very important to consider the anesthetic factor in interpreting such results.

Reserve alkalinity seemed to bear a closer relation to shock than hydrogen-ion concentration. In one experiment, reserve alkalinity decreased from 8.0 to 7.8 in the early stage of pronounced shock, and as the degree of shock increased, reserve alkalinity decreased to 7.1. In this experiment, reserve alkalinity before shock was 8.0, in pronounced shock 7.3, and in the very late stages 7.1. The hydrogen-ion concentration in this experiment increased from 7.2 to 7.0.

Hydrogen-ion concentration determinations were made by the Levy, Rowntree and Marriott method,⁶ and reserve alkalinity by Marriott's method.⁷ The figures obtained are taken as showing relative rather than absolute values.

Hematocrit, Hemoglobin, Red Cell Count and Specific Gravity: The relative volume of corpuscles (by hematocrit and by gravity sedimentation) hemoglobin (by Duboscq colorimeter method), number of red blood corpuscles per cubic millimeter, and specific gravity (by weighing) all showed a moderate pro-

gressive decrease. In a typical experiment, the hematocrit reading decreased from 64 per cent. before shock to 56 in the later stages; the hemoglobin, from 100 per cent. to 80.9 per cent.; the red cell count showed a decrease of about 25 per cent.; the specific gravity, from 1.068 to 1.062.⁸

Relative Blood Volume: As estimated from hematocrit, hemoglobin, red cell count and specific gravity results, there was a progressive increase in relative blood volume.⁹ In the experiment quoted in the preceding paragraph, the following figures were obtained: volume of blood before shock, 100 per cent.; volume of blood in profound shock as estimated by hematocrit, 114 per cent.; by hemoglobin, 124 per cent., and by specific gravity, 119 per cent.

Distribution: In profound shock, the veins and the arteries of the alimentary canal, including those of the stomach and the small and large intestines, the pancreas and the spleen, were ligated, and after the removal of the vessels from the body, the blood was obtained by perfusing them with salt solution, and the total quantity was estimated (colorimetrically). Compared to the total blood (estimated by taking one fifteenth of the body weight), in two animals, the amount was found to be less than one seventh of the total. The amount of blood contained in the liver was less than one ninth of the total.¹⁰

Viscosity: Viscosity of the blood (defibrinated) showed a small progressive decrease.²

Depression of Freezing Point: The freezing point showed small and not significant changes.²

Respiration.—Rate, Amplitude, Regularity and Volume of Expired Air: In general, the total effect on the respiratory rate was a decrease from the rate under ether only. The decrease became more pronounced in the later stages of profound shock. Reflex augmentation was greater in the earlier than in the later stages. Under prolonged nerve stimulation, the reflex effects gradually diminished. The anesthetic factor renders it difficult to draw definite conclusions in all cases.

Amplitude varied in different stages of shock, and variations associated with reflex stimulation of the respiratory center introduced irregularities both of rate and of amplitude. In general, in the later stages of shock there was an increase in the amplitude, that is, depth of respiration.

With sudden onset of shock the respiratory sounds became softer. This may be associated with a change in the volume of tidal air, or with a change in inspiratory or expiratory time. In the later stages, irregularities became more pronounced, and not infrequently a type of irregularity consisting of alternate deep and shallow movements, often of group form, occurred. A type of respiration was observed in which there was a pronounced and prolonged inspiratory pause. In another type, inspiration was prolonged without much change in rate of expiration.

The volume of expired air of course varied with the rate and the amplitude. The total effect varied in different experiments, but in general, there was a decrease in the later stages.

Volume of Oxygen Retained and Carbon Dioxide Produced: The volume of oxygen retained varied greatly, not only with variations in anesthesia, nerve stimulation, etc., but also in shock, as compared to the

4. Porter: *Am. Jour. Physiol.*, 1907, **20**, 399.

5. Seelig, M. G., and Lyon, E. P.: *The Condition of the Peripheral Blood Vessels in Shock*, *THE JOURNAL A. M. A.*, Jan. 2, 1909, p. 45.

6. Levy, R. L.; Rowntree, L. G., and Marriott, W. M.: *A Simple Method for Determining Variations in the Hydrogen-Ion Concentration of the Blood*, *Arch. Int. Med.*, September, 1915, p. 389.

7. Marriott, W. M.: *A Method for the Determination of the Alkali Reserve of the Blood Plasma*, *Arch. Int. Med.*, June, 1916, p. 840.

8. Lockhart, Mummery and Symes: *Jour. Physiol.*, 1907, **36**, 15.

9. Henderson, Yandell: *Am. Jour. Physiol.*, 1910, **27**, 163.

10. Janeway and Jackson: *Proc. Soc. Exper. Biol. and Med.*, 1915, **12**, 193.

stage under ether only. In different animals, under ether only, it varied greatly. This was true also in shocked animals. In general, in deep ether anesthesia, there was a decrease in oxygen retained. It seems that such variations are incidental rather than causal.

Carbon dioxid production varied greatly but not quantitatively with oxygen. Remarks on oxygen in general apply to carbon dioxid, including decreased production under deep anesthesia.

In harmony with the statements concerning oxygen and carbon dioxid, the respiratory quotient showed great variations.

Temperature.—There was gradual decrease in temperature, in some cases amounting to from 3 to 5 degrees, but there was no evidence of a direct relationship to shock.¹¹ Good recovery from shock was obtained after the temperature had decreased more than 3 degrees.

General Reflexes.—The chief somatic reflex observed was the eyelid to touch of the conjunctiva. In profound shock, after the discontinuance of ether, this reflex was maintained even at very low blood pressure levels. Other reflexes were rarely permitted to appear.

Cerebral Anemia.—Studies of cerebral anemia in relation to shock were made indirectly by comparing the condition in shocked animals with the condition induced through decreasing the circulation to the brain and upper cord; by comparing the effect of restoring or accelerating the cerebral circulation, on the manifestations in the two conditions, and by comparing the results obtained by administering drugs. We are not able to differentiate sharply between the ultimate condition induced through nerve stimulation and general tissue trauma, on the one hand, and the condition induced through interruption of cerebral circulation, on the other. Likewise, restorative measures led to very similar changes in the two conditions, for example, reestablishment or acceleration of cerebral circulation led to recovery of, or improvement in, cerebral function if instituted not too late. Such results followed restoration of cerebral circulation either by mechanical means, as aortic occlusion, or raising the general blood pressure, as by intravenous administration of epinephrin solution. In either case, drugs exhibiting potency only through action on the higher nervous tissues are inefficacious.

In two instances showing profound symptoms, one induced through nerve stimulation and trauma only, and the other associated with cerebral anemia produced by arterial occlusion, the pons, medulla and upper spinal region were kindly examined by Professor Klotz for fat emboli, with negative results.¹²

Remedial Procedures.—In shock of moderate degree under ether, prompt recovery was obtained on discontinuance of ether; but in severer grades this did not suffice. Elevation of the posterior portion of the animal to facilitate the return of blood to the heart led to recovery, but it was more efficacious when coupled with temporary aortic occlusion.

In profound shock, epinephrin in salt solution administered intravenously has promptly increased the general blood pressure, accompanied by improved action of the bulbar centers, particularly that of respiration. Gradual and prolonged administration of

the drug would seem to offer advantages over intermittent injections in that recovery of cerebral function is more successful with a more evenly maintained arterial pressure than is the case with intermittent injections. Intra-abdominal administration had but slight effect.

Tyramin, intravenously, gave results that were disappointing. In magnitude, the effects were less than in unshocked animals.

With atropin only a mild stimulating effect on respiration was obtained, which was due presumably to direct action, as there was scarcely any effect on blood pressure. Such action, however, is not considered beneficial, as the center rapidly became exhausted.

A beneficial influence was obtained with sodium bicarbonate intravenously in that there was some rise of blood pressure,¹³ but this was not of sufficient magnitude to establish an adequate cerebral circulation.

With lactic acid intravenously, contrary to expectation, slight beneficial effects were obtained, similar in character to those observed with sodium bicarbonate.

Administration of carbon dioxid by inhalation in profound shock was without beneficial action. Theoretically, in much earlier stages it is possible that it might be of benefit, that is, if administered at a time when the centers were capable of response to stimulation without immediate exhaustion.

Though observations with some of the drugs are too limited in number for final conclusions, we are strongly impressed with the greater promise of epinephrin than with any of the other drugs studied. Preventive studies were not undertaken, owing to the great variations in susceptibility of different animals.

COMMENT

Shock in man may be classified as (1) psychic, (2) traumatic, (3) psychotraumatic and (4) surgical. The fourth type is merely the first, second or third plus the anesthetic factor. In the dog the psychic factor is small or nil, the second and fourth being the predominant types, that is, traumatic or, as in these experiments, ether plus trauma.

Susceptibility varied greatly in different dogs. Some animals readily succumbed to brachial nerve stimulation alone; others only when nerve stimulation was combined with opening of the abdominal cavity and visceral manipulation; while others were highly resistant under both methods. Corresponding with this, the tendency to recovery on discontinuance of the stimulation was very different in different animals. In general, the more vigorous animals have been most refractory.

The anesthetic factor was most difficult to evaluate in interpreting the results. Since full surgical anesthesia was maintained until the condition of shock was pronounced (as judged by low blood pressure, etc.) the interpretation of all results up to this point involves consideration of this factor; and, since in no instance an animal was knowingly permitted to regain consciousness to pain, experiments in which recovery tendencies were pronounced and it was necessary to readminister ether were complicated even further by this factor. It is most important to maintain a uniform anesthesia, and in some of the animals this was not realized to the same degree as in others, owing to individual differences.

11. Kinnaman: Internat. Jour. Surg., 1904, p. 378.

12. W. T. Porter (Boston Medical and Surgical Journal, 1917, 176, 248, 699) has studied the relation of fat embolism to traumatic shock, particularly when associated with fracture of bones.

13. Seelig, Tierney and Rodenbaugh: Am. Jour. Med. Sc., 1913, 146, 195.

Not all of the animals exhibited unequivocally the condition of surgical shock. This question is difficult to discuss owing to the variety of views as to the picture of such experimental shock.

Surgical shock in man, typically at least, is an easily recognized entity. In the dog, as it occurs in regular surgical work, it is also very definite, though the impressions one receives are more intense in certain cases than in others. This is probably due to the suddenness with which it develops, sometimes it being very acute and pronounced, and again of slow onset. In the acute type, which has been observed to develop with great suddenness and intensity in operations involving one brachial plexus, death may occur within a very short time, that is, less than an hour; while in the type of slow onset, the first intimation may be what appears as undue prolongation of recovery from the anesthetic. An animal in this condition may live for some hours. After being once observed, both types are readily recognized. It was the acute type we tried to induce, and in some instances succeeded beyond question. As it was not feasible to prolong the experiments, the animal, if it did not succumb within a few hours, was killed with ether; in the case of refractory animals, therefore, we cannot say that a fatal type of shock was produced.

We are inclined to consider two grades of shock as having occurred in these experiments, one associated with the characteristic clinical manifestations, particularly a marked and persistent lowering of blood pressure, but with a pronounced tendency to recover on discontinuance of the anesthetic; and the other characterized by more profound symptoms, including a persistently lower blood pressure level with no tendency to recover on removal of the anesthetic. As previously indicated, it would perhaps be better to speak of this condition, at least its later stages, as collapse.¹⁴

Results indicate that both reflex augmentation and diminution of blood pressure may be greater or less either actually, or in terms of per cent. of blood pressure, after the pressure has been lowered by means applied with the view of inducing shock. Even when the blood pressure has reached a comparatively low level, augmentation or diminution may be obtained by sensory nerve stimulation. But it is well to note that the data do not permit differentiation between effect due to action on bulbar centers, and possible effect due to action on peripheral or accessory centers.

Neither is it possible to analyze closely the factor of "automatic" vasomotor center activity or tone; but direct inspection of the splanchnic vessels clearly revealed at least a moderate state of engorgement in shock, which would indicate lack of vascular tone in this region. The engorgement was not maximal, as was shown by increased redness on handling the intestines; therefore some vascular tonicity must have been present; or an active process of dilatation, or paralysis, was induced through handling. We have confirmed Seelig and Lyon's⁵ observation that an increased venous blood flow from a limb of an animal in shock follows section of the sciatic nerve. But this fact, as pointed out by Bartlett,¹⁵ does not prove that the degree of activity of the vasomotor center is greater in shock.

It is known from studies in cerebral anemia that the resistance and recuperative powers of the respira-

tory and vasomotor centers are quite similar.¹⁶ And even though not identical in these respects, it is perhaps permissible in the absence of more direct observation approximately to judge of central vasomotor activity by the state of the respiratory center. From this standpoint, it would seem that in profound shock probably the vasomotor center is in a state of deranged functional activity, grossly comparable to the derangement of the respiratory center. In this connection certain other considerations should receive mention, as the similarity of sensitiveness of the respiratory and vasomotor centers to sensory nerve stimulation and their similar susceptibility or resistance to fatigue under such conditions. A point of particular interest is the gradual disappearance of augmentation under prolonged sensory nerve stimulation. Whether this is due to fatigue or other form of interference with conduction, or to other form or forms of mechanism, is not clear; but it is an interesting fact that under such conditions, stimulation of another afferent nerve may affect activity of both respiratory and vasomotor centers. These observations, we believe, furnish additional support for the view that, grossly speaking, under such experimental conditions, activity of the respiratory center may be taken as an approximate index of vasomotor activity. The greater functional development of peripheral vasomotor regulating mechanisms is another possibility to be taken into account.

Though reserve alkalinity in certain cases showed a marked decrease, it is by no means certain that in all cases there was a material decrease prior to the onset of pronounced manifestations of shock. The results indicate that much of the decrease observed occurs after pronounced symptoms have become manifest. For example, in one experiment, in the early stage of pronounced symptoms of shock, there was a decrease from 8.0 to 7.8, while in a late stage the decrease had continued to 7.1. That good recovery of cerebral function was obtained (by aortic occlusion) without changing the values for hydrogen-ion concentration or reserve alkalinity is strongly indicative that the cerebral manifestations of shock are not due to change in blood reaction.

Physical measurements of blood, including viscosity and depression of the freezing point, did not reveal alterations of a kind or magnitude considered sufficient to account for shock phenomena. The alterations observed were probably associated with hemorrhage due to withdrawal of blood samples; for example, entrance of lymph, and other experimental conditions, such as decreased renal activity.

The basis of calculating blood volume changes was the relative proportion of corpuscles to plasma, and the results are expressed in terms of per cent. of the volume at the time of taking the first sample. The figures when corrected for the blood lost through hemorrhage indicate, as a rule, an actual increase in total blood volume.

The recovery of less than one fourth of the estimated total blood from the engorged vessels of the alimentary tract and of the liver does not indicate that serious pooling of blood occurred in these areas. Also, the fact that with low blood pressure, marked improvement was obtained in return of blood to heart on elevation of the posterior portion of the animal after the portal vein had been ligated, supports this

14. Guthrie, C. C.: *Blood Vessel Surgery*, 1912, p. 344.

15. Bartlett: *Jour. Exper. Med.*, 1912, **15**, 427.

16. Stewart, Guthrie, Burns and Pike: *Jour. Exper. Med.*, 1906, **8**, 289. Guthrie, C. C.: *Blood Vessel Surgery*, 1912, p. 318.

view. The inadequacy of cardiac massage alone in raising pressure in such conditions, and the efficacy of aortic occlusion only, indicate that low pressure is not due to cardiac muscular inefficiency; while the prompt and marked increase in pressure following elevation of the animal's hind quarters with the portal vein ligated indicates that low pressure is associated with decreased cardiac output, and that pooling of blood is not due necessarily to portal stagnation.

Respiration studies showed such variations and irregularities that it is not possible to make satisfactory generalizations. Attempts to determine the carbon dioxid tension in alveolar air were abandoned owing to lack of a satisfactory method of obtaining samples.

Temperature did not appear to be a causative factor. In all cases the total effect was a gradual decline. Pronounced shock was obtained when the decline was but a fraction of a degree. On the other hand, good recovery was observed after the temperature had decreased several degrees. Probably temperature change was incidental largely to experimental procedures (exposure of animal, etc.) rather than causative of shock. Good tendency to recovery exhibited with lowered temperature substantiates the correctness of this view.

As pointed out by Pike,¹ it is improbable that levels of blood pressure observed in shock would in all cases alone account for the condition apparently due to cerebral anemia. But in such experiments, activities of the central nervous tissues and hence their circulatory demands are increased, as by sensory nerve stimulation.¹⁷ Therefore, it is difficult or even impossible in a given case to state that the tissue circulatory demands are being met even with only comparatively low blood pressure. From this standpoint, the evidence indicates fatigue of the nervous tissues as a causative factor of considerable magnitude.

One experiment was particularly interesting as illustrating this view. Although one carotid artery was not occluded, the symptoms were induced quickly, and simulated those of profound and fatal shock, including the late presence of eye reflex. This is interpreted as due to relatively greater anemia of bulb than of higher brain, which would explain the longer persistence of the eye reflex as compared to the results obtained by a more uniform decrease of cerebral circulation. Indirectly, it substantiates the view that the interpretation of the persistence of the eye reflex in shock at a time when bulbar centers show marked derangement, in comparison with its rapid disappearance on sudden occlusion of all cerebral arteries, is probably due to lessened resistance of the bulbar centers to anemia through stimulation resulting in their greater fatigue.¹⁸

SUMMARY AND CONCLUSION

We are inclined to attribute the earlier stages of the condition termed shock, observed in these experiments, largely to degradation and fatigue of the bulbar centers due to ether poisoning, and to sensory nerve stimulation; and the more profound stages, to inadequate circulation to meet the bulbar tissue demands.

Though all of the blood circulatory phenomena are closely related and interdependent, perhaps the lowered capillary pressure and hence the sluggish return flow of blood to the heart, rather than chiefly venous

dilatation, is a more comprehensive standpoint from which to picture the condition in shock. Among probable early derangements augmenting the condition are vasomotor changes affecting venous tone.

Treatment when instituted in the earlier stages yielded good results; in later stages, results were less satisfactory, owing presumably to irreparable injury to the central nervous system.

Therapeutic measures capable of restoring an adequate cerebral circulation, instituted before irreparable tissue injury had occurred, led to recovery. Such measures should be preferably of a mechanical nature, as elevation of the posterior parts of the body, with the view of increasing a return of blood to the heart and adding a hydrostatic factor to the cerebral blood pressure; increase of peripheral resistance as by aortic compression; and particularly when associated with severe hemorrhage, increase of blood volume by transfusion of blood or the intravenous injection of isotonic nontoxic solution, as sodium chlorid.

Theoretically, and from the standpoint of increase in blood volume only, injection of hypertonic solutions would be indicated. The recent observations of Sansum¹⁹ on the marked increase in arterial blood pressure associated with and following intravenous injection of strongly hypertonic glucose solutions are suggestive.

Temperature, if low, should receive attention. The main indication, however, is promptly to institute and to maintain an adequate cerebral circulation.

In the case of drugs, the best results have been obtained with epinephrin solution intravenously. Drugs should be selected with the view of increasing the peripheral resistance and augmenting the return of blood to the heart by direct action on the blood vessels.

We believe that these considerations of treatment, with added considerations to meet the psychic factor, apply to shock in man. For example, as previously discussed,²⁰ in acute psychic shock, inhibition probably plays a leading rôle. In the series of experiments herein reported, there was little evidence that inhibition was a factor.

19. Sansum, W. D.: Rapid Reduction of Intra-Ocular Tension in Glaucoma, *THE JOURNAL A. M. A.*, June 23, 1917, p. 1885.

20. Guthrie, C. C.: Blood Vessel Surgery, 1912, p. 345.

Free Dispensaries and the War.—At the annual meeting of the American Hospital Association at Cleveland, September 14-18, in discussing the effect of the entry of hospital and dispensary interns into the military medical service, a number of hospital superintendents intimated that the work of their institutions would have to be curtailed. It was indicated that this matter is being brought to the serious attention of hospital authorities. The idea was combated by authoritative speakers who argued that the special needs of war times called rather for an extension of their work in the communities. The discussions revealed that the idea of pay clinics for people of moderate means is making gradual headway in the hospital world. A new development of the dispensary idea is the establishment of special clinics for treating accidents under the state workmen's compensation laws. Under these laws, with the liability of the employers for the medical care of the injured workmen, the hospital will transfer to the new self-supporting clinic, in which the medical staff is paid, a large amount of work which was formerly done free in the hospitals. It was said that the largest clinic, that at the New York Hospital, last year had a gross income of \$35,000, and that of the Pennsylvania Hospital in Philadelphia, \$10,000. It was the sentiment that these pay clinics for general surgical work will spring up rapidly in all states having workmen's compensation laws.

17. Ryan and Guthrie: *Quar. Bull. Med. Dept. Washington Univ.*, 1908, 7, 58; *Am. Jour. Physiol.*, 1910, 26, 343; Guthrie, C. C.: *Blood Vessel Surgery*, 1912, pp. 104, 135.

18. Since this was written (July 6, 1917), additional experiments afford evidence supporting this view.

THE VALUE OF EYE-GROUND OBSERVATIONS IN RECENT CASES OF FRACTURE OF THE SKULL

J. A. KEARNEY, M.D.

Adjunct Professor of Ophthalmology, New York Polyclinic
Medical School and Hospital

NEW YORK

A rise in the intracranial pressure above normal as the result of cerebral hemorrhage or edema is usually one of the most damaging factors in cases of recent fracture of the skull.

While it is interesting to know the nature and extent of the fracture revealed by the roentgenograms, it is not as important from the standpoint of immediate treatment as the determination of an increased intracranial pressure, and this is frequently foreshadowed quite early by edematous changes noted in the fundus of the eye.

In three patients of the series studied, roentgenoscopy revealed a distinct fracture of the base of the skull with no signs or symptoms developing other than those following an ordinary concussion. Some of the cases of basal fracture, in which an extensive hemorrhage occurred from the ear at the time of injury (virtually a "natural" decompression), developed none of the signs or symptoms of an increased intracranial pressure.

Observations were made in 212 cases that were diagnosed as fracture of the skull in the service of Prof. William Sharpe, at the New York Polyclinic, with whom I have studied the eye-grounds in these cases for the past two and one half years.

When the recent cases are examined for the first time, that is, within twenty-four hours after admission to the hospital, there is usually found a general edema blurring equally all the details in the fundus of the eye, and this blurring may be slight, or sufficient to obscure greatly the usual landmarks. The venous twigs when visible are usually dilated out of proportion to the size of the accompanying arteries.

Frequent and careful observations are made while these patients are in bed. In cases uncomplicated by an increase in the intracranial tension, the retinal edema gradually subsides. Occasionally, in some of the routine examinations after the first twenty-four hours following the accident, we note either an increase in the general edema that previously existed, or, to the edema that heretofore blurred equally all details, there is a decided added edematous obscuration of the nasal half of the disk and its margins.

These observations are most valuable, because they are usually some of the earliest indications of a rise in the intracranial pressure, and just as soon as possible after their detection the measurement of the pressure of the cerebrospinal fluid at lumbar puncture by the spinal mercurial manometer is done to determine its extent. In nearly every such instance an increase in the pressure of the cerebrospinal fluid above normal was recorded.

Infrequently there is seen in some of the cases an edema occupying the entire disk the height of which is measurable with the ophthalmoscope (papilledema). In all of these cases the cerebrospinal fluid was found to be under higher tension than normal.

The degree of pressure of the cerebrospinal fluid at lumbar puncture recorded in a given case, and its

pressure effect on the cerebral cortex, are prime factors which must be taken into account in deciding the character of the treatment the condition requires.

Dr. Sharpe advises that all patients with fracture of the skull be placed in bed, kept absolutely quiet, free catharsis maintained, given a liquid diet, and an ice helmet applied to the head. If no signs of intracranial pressure develop, the foregoing treatment is all that is given; but if the intracranial pressure is slightly increased and up to nearly double the normal, then in selected cases repeated lumbar puncture may be performed, and the condition relieved. If, however, the cerebrospinal fluid is found both with the ophthalmoscope and at lumbar puncture to be double the normal and even more than double, and the pulse rate may or may not be greatly lowered from medullary compression, then he advises a simple cranial decompression to be performed for the relief of pressure and for drainage before a possible collapse of the medulla occurs.

An examination of the fundus of the eye twenty-four hours after a lumbar puncture or cranial decompression has been done usually reveals a reduction in the amount of the edema that had existed previous to these operations.

127 West Fifty-Eighth Street.

SYPHILIS OF BLADDER *

H. A. FOWLER, M.D.

WASHINGTON, D. C.

Syphilitic disease of the bladder has been considered a rare affection. In the older textbooks it is sometimes not mentioned at all or it is dismissed briefly or its existence is even denied. In the most recent works the disease is considered so rare as to merit only the briefest mention. Within the past sixteen years, however, a considerable number of carefully studied cases have been recorded in widely scattered reports. These furnish sufficient data for a fairly comprehensive clinical study.

The history of this affection falls naturally into three periods. The first comprises those rare observations on syphilitics coming to necropsy in whom ulcers, tumors, or perforations of the bladder were discovered and were considered syphilitic in origin. This period extends to 1879, when Proksch critically reviewed all the published cases up to that time. He found only six cases which could be considered definitely proved (Morgagni, Ricord [two cases], Virchow, Vidal di Cassis, Tarnowsky).

To the second period belongs a small number of cases observed clinically in which the diagnosis was confirmed by the disappearance of all symptoms following antisyphilitic treatment (Morris, Grivtsoff [two cases], Chezelitser, Margoulies, Towbien). No direct examination of the bladder lesion was made.

The third period begins in 1900, when Matzenauer published the report of his case and described for the first time the cystoscopic appearance of tertiary syphilis of the bladder. During the past sixteen years the number of observations has rapidly increased, so that up to the present time about forty cases have been reported. In 1909 it was shown that the bladder is

* Read before the Section on Genito-Urinary Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

involved in the secondary stage. According to Levy Bing, a systematic examination of the bladder during the secondary stage of the disease will reveal that a more or less characteristic erythema, resembling the roseolar rash on the skin, and also superficial ulcerations are not rare. As these produce few or no symptoms they may be easily overlooked without a routine cystoscopic examination.

REPORT OF CASE

History.—N. G., boy, aged 19 years, came to the clinic complaining of frequent and painful urination, and passing bloody urine. His past history was unimportant. There was no history of syphilis or gonorrhea. For the previous three months the patient had had to pass urine frequently, night and day. On an average he got up eight times at night to void, and he urinated every ten minutes during the day. Marked pain in the perineum and along the urethra accompanied each urination, and the pain persisted several minutes after the act. At times the urine was quite bloody; at other times it was only slightly tinged with blood.

Examination.—The patient was a healthy looking young colored farmer boy presenting the facies characteristic of a painful urinary disorder. The chest and abdomen were negative. The external genitalia were normal. The urine was uniformly turbid, owing to the presence of pus, bacteria and red cells. It was slightly acid in reaction, and the specific gravity was normal. There was a slight cloud of albumin, but there were no casts. There were no scars on the penis or other evidences of healed cutaneous lesions. The inguinal axillary and epitrochlear glands were definitely enlarged. This glandular enlargement without apparent cause aroused suspicions of syphilis, and suggested the possibility of a syphilitic infection of the bladder. A Wassermann test was made and reported as strongly positive.

Cystoscopic Examination.—This was painful despite the free use of cocain. There was a marked general cystitis. All markings of the vesical mucosa were completely obscured. The mucous membrane was of a uniform rose color and had the appearance of a curtain of uniform color spread out over the inner wall of the bladder. It was difficult to locate the ureteral openings. Just to the outer side of the right ureteral opening was a single small ulcer, which was bleeding. It was about 1 cm. in diameter, with an irregular outline and an inflamed base. No other ulcers could be seen. The appearance of the ulcer suggested tuberculosis, but no tubercles could be found in the bladder, and the urine was negative for tubercle bacilli on repeated search.

Treatment and Result.—It was decided to apply the therapeutic test without any other form of treatment whatever, either local or general. Salvarsan, 0.6 gm., was given intravenously. The following day the patient noticed a definite decrease in frequency of urination. The improvement was continuous and rapid, and in a week's time the patient was able to retain the urine for three hours with little or no pain on urinating. A second injection of salvarsan was given, followed by mercury by mouth. Cystoscopy three weeks later revealed a remarkable change in the bladder. No trace of the ulcer could now be found. The ureteral openings appeared normal. The peculiar appearance of the mucosa had entirely changed. Normal markings of the mucous membrane were now clearly distinguished, with here and there discrete patches of inflammation such as one sees in an ordinary cystitis of a mild degree. No local treatment had been given previous to this examination. The urine was still turbid, owing to the presence of bacteria, pus cells and an occasional red cell. The improvement in the patient's condition was most striking. He was now able to retain his urine for three or four hours without discomfort, and voided without the marked pain and tenesmus of which he complained when he came under observation. His condition was so satisfactory that he insisted on going home to work, as he declared he was perfectly well.

COMMENT

There are several points of interest in the foregoing case report. The symptoms were those of a severe cystitis coming on without apparent cause. The urine showed an acid total pyuria, together with red cells and bacteria. The condition suggested tuberculosis of the urinary tract with a secondary infection, probably colon bacillus. Repeated search for tubercle bacilli, however, was negative. There were no changes to be made out in the epididymides, vesicles or prostate.

It so happened that I was looking for a case of syphilis of the bladder at the time. The general glandular enlargement aroused my suspicions of syphilis, and these were strengthened by a strongly positive Wassermann test. Cystoscopy revealed, in addition to a solitary ulcer about the right ureteral opening, a peculiar appearance of the mucous membrane such as I had never seen before. But there was nothing about the cystoscopic findings which I could consider characteristic of syphilis. Certainly the ulcer might easily have been mistaken for tuberculosis. I could not, as a result of my examination, say that the bladder lesion was syphilitic. It was determined, therefore, to put the patient on antisyphilitic treatment and to watch the effect of this on the symptoms and the vesical lesion. I was careful to avoid any local treatment whatever, or any internal medicine to relieve the symptoms. The marked and prompt improvement in the symptoms and the ultimate disappearance of the vesical lesion following salvarsan alone seems to justify the diagnosis of syphilis. It is of interest to note that no history of syphilis was obtained in my patient. This only serves to emphasize the point to which attention has so often been called, namely, that the history in many of these cases is thoroughly unreliable.

ETIOLOGY

Lesions of the bladder occur during the secondary and tertiary periods of the disease. In the parasymphilitic diseases the bladder is commonly involved, notably in tabes. Age and sex have no influence on the development of the bladder lesions. As tabes occurs more frequently in males, however, the associated bladder disturbance is more often observed in this sex. Although more common in middle life, cases occurring at the two extremes have been observed: at 4 years (Tarnowsky) and at 66 years (Gayet and Favre¹).

The secondary lesions usually appear within a few months after infection, and are generally accompanied by lesions of the skin and other organs. Tertiary lesions, on the contrary, appear after a much longer period, up to twenty-five years. The bladder lesion may be the only evidence of the disease. In other cases the active syphilitic lesions of other organs or healed scars may be found. The majority of cases so far recorded belong to the tertiary period. It is quite probable that involvement of the bladder during the secondary stage would be observed more frequently if a routine cystoscopic examination were made. The occurrence of mild symptoms of cystitis during this stage is easily overlooked. These are attributed to the usual causes and their relation to a specific infection is not considered, particularly as they disappear under salvarsan and mercury.

1. Gayet and Favre: Jour. de Urol., 1915, 6, 152, three illustrations in color.

SECONDARY SYPHILIS

Nine cases of secondary syphilis of the bladder have been reported—six males and three females. The youngest was a child, aged 4 years, having been infected by its nurse. At necropsy extensive ulcerations of the mucous membranes, including bladder and urethra, were found. The liver was syphilitic. In all cases the bladder lesions were accompanied by secondary syphilis elsewhere—skin, mucous membranes, etc. Macules, papules and ulcerations have been described. Duroeux has described a macular eruption resembling roseola of the skin. In Fenwick's case (postmortem), papules were disseminated over the bladder mucosa resembling condylomas. The ulcers are usually multiple, from two to twelve, rounded or oval, superficial, with a slightly elevated edge and a necrotic base. They occur more frequently about the ureteral orifices, but may be found in other parts of the bladder. The adjacent mucosa is edematous, hyperemic, and the vessels are injected and prominent. The remainder of the bladder appears normal.

The symptoms of the secondary stage vary with the location and character of the lesion. In the case of Levy Bing there were absolutely no symptoms referable to the bladder, and the vesical lesions were discovered during routine cystoscopy. With ulceration at or near the vesical neck, symptoms of cystitis more or less acute are observed. Frequency, urgency, and tenesmus may be marked day and night, and are not influenced by rest. Pain is then a constant symptom referred to the suprapubic area or perineum, and radiating along the urethra, to the rectum and to the lumbar region. Hematuria when present is never profuse and is always terminal. The bladder capacity is reduced, and varies with the intensity of the symptoms.

The urine is often clear. In the presence of infection it is turbid, owing to the presence of pus and organisms. It may be bloody from the presence of red blood cells. The presence in the urine of the spirochete has been reported, but this observation has not been confirmed.

TERTIARY SYPHILIS

By far the greater number of cases of bladder syphilis so far observed belong to the tertiary stage of the disease. This may be due to the more pronounced symptoms associated with tertiary vesical lesions. Attention is thus directed to the bladder, and examination reveals the specific nature of the trouble.

Gummas of the bladder develop insidiously like all new growths, and in the early stages produce little or no disturbance. Urination is slightly more frequent and associated with mild discomfort in the region of the bladder, in the perineum, or in the urethra. Hemorrhage, sudden in onset and profuse, may be the first and only symptom noted. More often symptoms of cystitis develop and increase rapidly in intensity.

Hematuria is the most constant and most striking symptom of tertiary bladder syphilis. It closely resembles the hemorrhage of new growth of the bladder. It appears suddenly without pain, and is uninfluenced by rest or posture. It may continue for days or weeks and gradually subside, only to recur after a longer or shorter period. Complete retention may result from the formation of clots within the bladder. As a rule, hematuria increases with the duration and progress of the disease. Exceptionally it may be absent altogether.²

Pain is an inconstant symptom, and varies with the location of the lesion and the presence or absence of infection as a complication. In Simons's³ case the patient complained of a dull dragging pain in the hypogastrium which had existed for two years. At first intermittent, it became constant day and night, and increased as the bladder filled. In some cases, pain is a marked feature of the clinical picture. It is likely to be more severe at the end of urination if the ulceration is located at the bladder outlet, and it is accompanied by violent tenesmus. Frequency of urination is a disturbing symptom in most cases. Slight at first, it rapidly increases until the patient voids every few minutes with pain and tenesmus. While the symptoms in advanced, long standing cases are very severe and distressing, the absence of marked symptoms in the presence of severe bladder lesions in the earlier stages is noteworthy. The development of the more acute symptoms probably coincides with the degenerative changes in the gummas, and ulcer formation. Often the bladder lesion is the only evidence of syphilis to be discovered. In the absence of a definite history, the specific nature of the disease is not suspected.

CYSTOSCOPIC APPEARANCES

As viewed by the cystoscope, two varieties of lesions occur: gummatous ulcerations and papillomatous growths. The former are more common; the latter are rare. They occur separately, but may exist together.

Such ulcers are formed by the breaking down of a gumma of the bladder at its center. They are usually multiple, there being one to three which are rounded or oval, and which vary in size, the largest being from 1.5 to 2 cm. in diameter. They are elevated above the bladder wall, projecting into the bladder cavity. They present a punched-out appearance with irregular borders and a grayish necrotic base. On the base of the ulcer one sometimes observes the necrotic material detached in places, leaving a red, nodular surface which bleeds freely. The surrounding mucous membrane is edematous, hyperemic and dark red or livid in color. The vessels are markedly injected and prominent.

The papillomatous lesions are very rare. In Margoulies' case (Case 1) there were three small growths the size of a small bean situated close together and located on the base of the bladder just outside the ureteral orifice. The appearance of these growths suggested cancer of the bladder, and an operation was advised. It was by mere accident that the operation was not performed, and iodid was administered. Prompt disappearance of the lesions followed.

Gayet and Favre¹ report a case (Obs. 2) of sclerogumma of the bladder and prostatic urethra. The bas-fond was elevated, thickened and reddened, and indurated. The fiery red surface presented a few small ulcers and numerous fissures giving the appearance of cerebral convolutions. The general appearance resembled that seen in cancer of the cervix which has involved the bladder wall. The same character of lesion is described by Picot.⁴

Syphilitic lesions of the bladder, both secondary and tertiary, develop slowly and show no tendency to heal spontaneously. The long duration of symptoms in the reported cases is a striking feature of the clinical his-

3. Simons, Irving: Case of (Syphilitic?) Ulcer of the Bladder, *THE JOURNAL A. M. A.*, June 21, 1913, p. 1943.

4. Picot: *Jour. de Urol.*, 1912, 2, No. 5.

2. Picker, R.: *Ztschr. f. Urol.*, 1913, 7, 192.

tory. The secondary lesions are superficial. The tertiary involve the deeper layers of the bladder wall, and unless arrested may result in perforation. Such perforation, developing rapidly and involving the peritoneal surface; may terminate in fatal peritonitis. If the process develops more slowly, a loop of bowel may become adherent to the bladder, and perforation into the bowel occurs. Thus syphilis is one of the etiologic factors in the production of vesico-intestinal fistula. Vesicorectal or vesicovaginal fistula may result from the perforation of the bladder base.

TREATMENT

A striking feature of bladder syphilis is its prompt response to specific treatment. This is characterized by the immediate subsidence of all symptoms and the gradual disappearance of the vesical lesions. On the other hand, the measures usually employed in the treatment of ordinary cystitis have no influence whatever on either the symptoms or the lesions.

Profuse and persistent hematuria, which is often the presenting and predominant symptom, quickly subsides and disappears completely in a few days after the beginning of treatment with mercury or after the administration of salvarsan. No less striking is the prompt subsidence of all signs of vesical irritation, frequency, urgency, tenesmus, and a gradual return of the vesical capacity to normal.

The gradual healing of syphilitic lesions of the bladder may be followed by repeated cystoscopy. At the second congress of German urologists, Ernst Frank presented a series of cystoscopic photographs demonstrating the gradual healing and final disappearance of these lesions under treatment. Similar demonstrations have been made since by other observers.

It is the strikingly rapid subsidence of symptoms under specific treatment that makes the therapeutic test so valuable in differentiating syphilitic from non-syphilitic vesical lesions.

The bladder changes occurring in certain diseases of the nervous system which we now designate as parasymphilitic are too well known to demand discussion at this time. They have been considered in another place.⁵

1621 Connecticut Avenue.

ABSTRACT OF DISCUSSION

DR. MARTIN KROTOSZYNER, San Francisco: I have seen one case that, judging from the therapeutic result, I feel justified in classing among the cases that are considered syphilis of the bladder. A baker of 60 entered the hospital on account of sudden, painless and abundant hematuria, as the cause of which a small papillomatous growth, situated near the trigon and midway between the ureters, was ascertained cystoscopically. The patient admitted previous syphilitic infection. He had married late in life and was the father of two half-grown, healthy girls. Suspicious scars and other skin manifestations were the only other objective findings. The Wassermann was strongly positive. All bladder symptoms, including hematuria, quickly disappeared under combined antisymphilitic treatment. At a second cystoscopy, six months after the patient's discharge, the papillomatous

excrescence was still visible, though apparently less prominent and reduced in size.

While I have observed a great many bladder lesions due to central or spinal syphilis, I have never seen a bladder ulcer the syphilitic nature of which, as in the case reported by Dr. Fowler, became obvious through its prompt reaction to specific treatment. My own observation, therefore, does not constitute a classical case of bladder syphilis. Such cases must be very rare indeed, and I recall in this connection the statement of Casper, who doubts the occurrence of bladder syphilis, of which he, like other authorities, has never been able to obtain authenticated cystoscopic evidence.

DR. CHARLES J. WATTERSTON, Birmingham, Ala.: I can add one more case to Dr. Fowler's series. It is the case of a negro girl in whom we made a cystoscopic examination on account of hematuria. There was a small, raised ulcer about 1 cm. in diameter just below the right ureter and several smaller erosions running down toward the trigon. The patient had a strongly positive Wassermann, there were other evidences of syphilis, and the lesions healed completely under antisymphilitic treatment; that is, salvarsan intravenously, followed by mercury.

DR. H. A. FOWLER, Washington, D. C.: Formerly we were led to believe that syphilis of the bladder did not occur, or, if it did exist, was rare. The experience of competent observers during the past few years compels us to change this view, and we now believe that this disease is not so rare as it was thought to be. This is in line with our knowledge concerning syphilitic infection of other mucous membranes. It is probably our failure in diagnosis rather than the rarity of the lesion that is responsible for the prevailing opinion.

There are one or two points to emphasize. There are no characteristic cystoscopic appearances by which syphilitic lesions of the bladder can be recognized. The diagnosis cannot be made by cystoscopy alone. The lesion cannot be differentiated in all cases by its cystoscopic appearances from tuberculosis or new growths. There are a number of cases reported in which syphilis was mistaken for cancer. In the secondary stage the lesions are superficial and may produce no symptoms whatever. Hence they are easily overlooked.

After all, the essential point is to have in mind the possibility of syphilis of the bladder if we are to avoid errors in diagnosis. The mistake has been made of advising operation for a supposed new growth, then to see the lesion clear up rapidly under antisymphilitic treatment.

NINETEEN CASES OF TYPHOID FEVER DUE TO EATING TURKEY SALAD

POWHATAN S. SCHENCK, M.D.

Health Commissioner

NORFOLK, VA.

A reception was held at a local club by a number of women of Norfolk, June 26, 1917, about fifty guests being present. Among other articles of food served, there were several bowls of turkey salad. The turkeys were supplied from a cold storage plant, the celery came from Baltimore, the lettuce was bought in the open market, and the mayonnaise dressing was mixed at the club. The salad was prepared by a colored woman who has a local reputation as a cateress; she cooked the turkeys at home, carried them to the club, and prepared the salad there. Her assistants were three colored women and a colored man.

Mrs. W. and Mrs. R., two of the guests, assisted in serving the salad, ate portions of it, and both came down with typhoid fever fourteen days later.

Mrs. D., Mr. C., and Mr. T., also guests at the reception, ate salad and in sixteen days developed typhoid fever.

5. Besides the citations in the text, these additional recent cases will be of interest:

A critical review of the literature is given by Paul Asch in connection with his paper in the *Zeitschrift für Urologie*, 1911, 5, 504.

Pereshivkin: *Ztschr. f. Urol.*, 1911, 5, 732.

Mikhailoff: *Ztschr. f. Urol.*, 1912, 6, 215, two colored plates.

Mucharinsky: *Ztschr. f. Urol.*, 6, 376.

Pedersen, James: *Med. Rec.*, New York, 1916, 90, 235.

Baker, Theodore: *Surg., Gynec. and Obst.*, 24, 187.

Mr. W., who had typhoid fever ten years before, stated that he ate the salad that night and two weeks later he noticed an elevation of his temperature with symptoms of mild typhoid. He had a fever, lassitude, weakness, and the usual symptoms of typhoid, which continued for three weeks. He thought he had a mild form of the disease. He reported it himself and said that he was quite certain he had typhoid, as he recognized all the symptoms of his former attack. We did not enter the case, however, in our records.

After the reception, the women sent a bowl of the salad to an orphan asylum. At that time there were eight little girls in the institution. One, aged 6 years, having a delicate stomach, the matron did not give her any of the salad; another, aged 12, refused it; the other six girls, aged 8, 5, 14, 14, 15 and 6, respectively, ate more or less freely of the salad, and in from thirteen to sixteen days all came down with typhoid fever and are now, August 4, in the hospital.

E., one of the colored women who assisted in preparing the salad, ate some of it and gave portions to her two children. All three came down with typhoid; E. three days after the reception, and the children two weeks later. E. complained of being sick for two weeks prior to the reception. A brother of E. visited his sister the day after the reception. He was given a dish of the salad, and developed typhoid, July 10. Another colored woman, who assisted in preparing the salad, carried a portion home, gave some to her two children and also to two nephews; all four came down with typhoid.

We find that all of these persons came down with fever in from twelve to sixteen days after eating the salad, except E., who assisted the cateress in preparing and serving the salad. No other common factor figured in these cases; practically all the patients took milk from different dairies; 50 per cent. of them did not drink milk at all. We eliminated water, in view of the few cases, together with the fact that the Norfolk public water supply is analyzed and examined daily and is constantly treated with liquid chlorin. Moreover, investigation shows that there is no case of typhoid fever on the watershed.

Each of these persons ate the salad and came down at the expiration of the usual period of incubation, except E. Now, we find that E. was sick for two weeks prior to the night on which the salad was served, although she did not take to her bed, but did go to bed three days later, namely, June 30, with high fever and the usual symptoms of typhoid. Of course, if she had been infected from the salad, June 26, she would not have developed typhoid at this early period. It would appear that E. had typhoid for two weeks prior to June 26, the night of the reception, and may have infected that portion of the salad which she handled.

It would appear further, as a logical deduction, that that portion of the salad handled by E. was the last served at the table, and only a small number of the guests partook of it, and it was this portion that was left over and distributed to the asylum and carried home by the assistants, since it is obvious that if this portion had been served early on the table it would not have been left over for distribution. On the other hand, if this portion had been served freely to the guests and was infected, the personnel of the cases would of course have been entirely different and no doubt larger.

PSYCHOSES OTHER THAN PARETIC DEMENTIA IN SYPHILITIC INDIVIDUALS *

ALFRED GORDON, M.D.

PHILADELPHIA

The great multiplicity and variability of manifestations in syphilis of the nervous system is a well established fact, but the rôle of syphilis in mental affections, with the exception of paretic dementia, has been suspected only since 1879, when Fournier¹ expressed the following view: "While syphilitic insanity has not yet a distinct place in nosology, nevertheless, personally, I feel that syphilis is apt to create cerebral disorders which may be considered as undisputable forms of insanity." Since then the relationship of syphilis to psychoses as cause and effect has been studied by a few observers, but as yet no definite opinion can be formed. The importance of this problem cannot be overestimated. The present contribution, which concerns twenty-three cases kept under observation for a long time, will perhaps enable one to elucidate some features of this difficult problem. Before entering into a discussion of the causal relationship between syphilis and the mental manifestations, let us consider the entire series of cases in two separate groups. In the first group there were five cases associated with secondary manifestations of syphilitic infection. The second group consisted of eighteen cases of mental disorders in the tertiary period of syphilis.

REPORT OF CASES—GROUP I

CASES 1 and 2.—Two patients developed a slight fever, with the appearance of mucous patches in the mouth, and a delirious state. Although the fever was brought down to normal, the delirium continued for a period of ten days in one case and seven days in the other. The delirium in both cases was accompanied by visual hallucinations. Complete recovery followed in both cases. Two months later in one, and three months later in the other, a similar attack occurred and again it was preceded by fever, also by a gastro-intestinal disorder, insomnia and headache. The delirium developed rapidly in both cases, and complete recovery followed after vigorous mercurial treatment. Both patients were free from alcoholic or other intoxications.

CASES 3, 4 and 5.—The other three patients of the same group presented mental phenomena of a more prolonged character. Mental confusion was the predominant feature. Defects of orientation in space and time and amnesia were the other manifestations. One patient, for example, presented enlarged cervical and inguinal glands, muscular pain and persistent headache, four months after the initial infection. He began then to complain of pain in the throat. Several mucous patches were seen in the pharynx and on the tonsils. The temperature rose to 101 F. He became somewhat stuporous, replied to questions with considerable delay, placed his hand frequently on the head as if in pain, ceased to ask for food, and was decidedly confused. He had great difficulty in recognizing his own relatives, and succeeded only after looking at them for some time. He made errors in dates and places. He could not recall the names of his friends. He mistook one of his children for another. He did not know the number of his children, the date of his marriage, and a number of other important events in his life. Being a teacher of languages, and speaking French quite well, he now could not recall the meaning of ordinary words. Asked in

* Read before the Section on Nervous and Mental Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

1. Fournier: La syphilis cérébrale, Paris, 1879.

French how he felt or if he had headache, he was unable to grasp the meaning of the word "tête." He kept on repeating this word without understanding it, and when insisted on, he finally said that he did not understand it. At night he was sometimes slightly delirious and would attempt to get out of bed. During the day he was found several times as if conversing with some one. He then looked around him, and, after saying a few words, he would pause and then lower or raise the tone of his voice. He evidently had hallucinations. This condition continued for two weeks, during which time he received an intraspinal injection of neosalvarsanized serum followed by mercurial inunctions. Improvement was soon evident. Two weeks later he received another similar treatment, and the man made a gradual recovery at the end of eight weeks. Memory, orientation and mental attitude have all returned to normal. The enlargement of the glands remained unaltered, but the mucous patches healed promptly. The headache disappeared entirely.

In another case a man of 29, piano teacher, five months after the initial infection presented an acute pharyngitis accompanied by a slight elevation of temperature (99.3 F.). He rapidly developed mental hebetude. He was confused and disoriented, and his memory became cloudy. The entire condition lasted about two weeks, during which time he had one intraspinal injection of 0.9 gm. of neosalvarsanized serum. With the disappearance of the pharyngeal condition, the mental disorder also became normal.

To sum up, the five cases of the first group presented a symptomatology which we ordinarily find in toxi-infectious psychoses. A delirious or stuporous state is the chief manifestation. A confusional condition is almost always present. Hallucinations may or may not be present. What is particularly interesting and quite characteristic is the occurrence of the mental phenomena apropos of acute secondary manifestations. When the latter disappear, the former commence to improve, but they usually last longer than the somatic manifestations. Finally, it is noteworthy to observe that the specific treatment has a rapid and efficacious effect on the psychic and physical manifestations which, as already mentioned, run usually parallel. The entire picture of the mental status in the secondary period of syphilis is quite analogous to that frequently observed in infectious diseases and especially in alcoholic intoxication.

GROUP II

The second group comprises cases in which the mental disorder developed many years after the initial infection. Without entering at present into the possible relationship between the old syphilitic infection and the present psychic manifestations, let us first register the occurrence of these manifestations in individuals with a former history of syphilis. We have in this group eighteen cases, three of which developed in connection with a traumatism, subacute confusional states with all the characteristic features met with in the first group of cases, except for the fact that those phenomena were of a milder character. There were no hallucinations, but merely a state of mild confusion and incoherence; also a mild delirium in the evening. A slight degree of amnesia was present throughout the entire duration of the affection. One case presented the mental manifestations of Korsakoff's syndrome, except the polyneuritis. We find here antero-posterograde amnesia, confusion, disorientation and confabulation.

CASE 6.—M. H., a laborer, aged 45, contracted syphilis at the age of 20. He is married and has two children. His wife has had three miscarriages. The Wassermann test is positive on the blood serum. There is no history of alcohol-

ism. After a few days of very hard labor he began to complain of headache, which became very persistent. Soon somnolence made its appearance. The patient would fall asleep several times a day. A confusional element was associated with the amnesia. The patient was at first unable to recall acts or thoughts of his own, or of others, which occurred on the same day, but soon the amnesia concerned also past events. He was unable to realize the situation. He could not tell how long he was ill. At times he would not recognize surroundings. He could not tell the time of the week or of the year. At other times he would clear up and answer questions correctly. Pseudoreminiscences were striking. He would speak of persons whom he never met. He would speak of events that never occurred; as for example, one evening he told his nurse of participating in a ball given by the mayor of the city, saying that he danced the entire evening with a beautiful lady. A few days later he spoke of having crossed a bridge at moonlight and of having met "a very strange man who led him to a castle and then disappeared." This fantastic confabulation, together with the amnesia, was quite conspicuous, and if we add the periodic somnolence, the mental clinical picture of my patient will be complete. As to the somatic symptoms, the patellar tendon reflexes were exaggerated. The patient complained of headache. The disorder lasted six weeks, after which a mild degree of mental hebetude remained for two weeks. The recovery was complete. Thirteen months later a similar attack occurred which was milder in its individual symptoms and which lasted but three weeks. At no time was there any evidence of polyneuritis.

This observation is interesting for two reasons. First, it speaks against the exclusivism of the discoverer of this syndrome, Korsakoff, who believed that it can exist only in association with polyneuritis and only in cases of alcoholism. Some authors have already called attention to the existence of Korsakoff's syndrome without polyneuritis. Suffice it to mention the observation of Stransky² on tabes, in which Korsakoff's syndrome disappeared when the patient was placed on antisiphilitic treatment. Chaslin and Portocalis³ reported a case of Korsakoff's psychosis, without polyneuritis, which came to necropsy. Stepanoff,⁴ Raymond,⁵ and Roemheld⁶ speak of the occurrence of incomplete Korsakoff's psychosis, namely, without polyneuritis, in syphilis of the central nervous system. They all appear to be unanimous in the opinion that the psychosis is due to a syphilitic intoxication, although Roemheld believes that the increase of intracranial pressure in cerebral syphilis may be a contributory factor. The foregoing observation of my series seems to corroborate the view that the polyneuritic psychosis of Korsakoff is characteristic not only of alcoholic, but also of other toxi-infectious conditions, such as syphilis.

The other important fact brought out in my case, a fact which may be considered of some diagnostic value, is the association of somnolence with the other mental manifestations. Raymond, quoting Jolly, and Stepanoff, from his observations in Ziehen's clinic, both call special attention to the symptom "somnolence" which was present in their cases of cerebral syphilis with Korsakoff's syndrome. It appears, therefore, that this occurrence is frequent enough to be taken into consideration in differential diagnosis.

The remaining fourteen cases are distributed as follows: Six cases presented the clinical picture of manic-depressive psychosis; three cases were of the paranoid

2. Stransky, Erwin: *Jahrb. f. Psychiat.*, 1905, **26**, 422.

3. Chaslin and Portocalis: *Jour. de psychol.*, 1908, p. 303.

4. Stepanoff: *Berlin thesis*, 1910-1911.

5. Raymond: *Pathologie nerveuse*, 1910, p. 279.

6. Roemheld: *Arch. f. Psychiat.*, 1906, **41**, 703.

type; two cases were with involutional melancholia, and three cases presented cerebral syphilis of long standing with progressive dementia.

The six cases of manic-depressive psychosis present two distinct groups. In three of them auditory hallucinations were present through every one of the maniacal phases of the condition. In the other three cases there were no hallucinations. It is also interesting to observe that the specific treatment had a beneficial effect on the first group, but no effect whatever on the last group. All the six cases presented a positive Wassermann reaction on the blood serum. The fact that in all the six cases there were morbid hereditary elements, such as insanity, psychasthenia and epilepsy, deserves special mention. In the first three cases there were also personal morbid antecedents, such as an attack of chorea in childhood, irritable disposition, and prolonged periods of insomnia. It is also interesting to call attention to the fact that in the three hallucinatory cases there was a marked meningeal reaction during the maniacal phases revealed by a cytologic examination of the spinal fluid. The number of cells ranged between thirty-five and ninety, and were mostly of lymphocytic type. One of these cases is particularly interesting:

CASE 7.—A man, aged 40, a watchmaker, contracted syphilis at the age of 22. He is married and has three children. One child has Little's disease, one is epileptic and the third is apparently normal, but pale and frail. His wife had three miscarriages. The patient had three attacks of chorea when a child. He was always considered peculiar and eccentric, and frequently suffered from insomnia. His father was alcoholic, and his mother, before her marriage, was confined to an institution for the insane for a period of eighteen months for some mental disorder. At the time of examination he presented no special neurologic symptoms, except exaggerated tendon reflexes with occasional disturbance in the power of controlling the sphincter of the bladder. The Wassermann test was strongly positive on the blood serum and spinal fluid. Up to the present illness, nothing abnormal was observed in the patient's behavior. He made a comfortable living, led a regular life, and did not use alcoholic beverages. His third child suddenly took sick and died from pneumonia. As this was the only normal child, its death threw the patient into such a state of despair that for forty-eight hours he could not sleep and did not partake of any food. He became depressed, and ceased to speak. When questioned, he answered after considerable delay. He was found frequently with tears in his eyes, and would moan, and complain of his fate. The condition lasted six days, after which the patient entered a state of great excitement. He was restless and impatient. He would discuss matters in a loud voice and disagree on any subject. He became quarrelsome, and would break and tear things that fell into his hands. Two days later he commenced to complain of annoying and disturbing sights, especially in the evening. He saw faces of a threatening character. He saw his child being tortured by other children. He saw women jumping into a river for the purpose of drowning. The patient showed no confusion, and answered questions clearly, but persisted in seeing vividly the sights which, he said, threw him into a state of uncontrollable restlessness. Soon he developed expansive ideas of himself. He assumed an air of importance. He asserted his ability to accomplish acts that others could not. He considered himself well known to personages of note. He expected to become very wealthy. Gradually the period of excitement began to subside, the patient commenced to sleep at night, and the hallucinations disappeared. For two weeks the patient appeared to be free from any disorder and to take an interest in his surrounding, but he began to return gradually to his depressive state, which was of the same character as the first attack. With this attack, however, there was present a delusion of self-blame. He conceived the idea that his child died

through his neglect. He worried intensely, and was frequently seen in profuse tears. This phase lasted longer than the phase of depression in the first attack. He finally recovered, but soon entered into a hypomaniacal state. He became talkative, restless and irritable, but the state of exaltation was decidedly less pronounced than in the first attack of the psychosis. The state of mind concerning his own importance did not exist this time. There was no more talk about his riches, his abilities, etc. He had also some visual hallucinations of a transient character, which occurred only at night. He would see for a few moments images of faces of dead relatives or of his child. The patient was treated intraspinaly with neosalvarsanized serum. He had two injections during the two attacks and only during the maniacal phases. A marked reduction of the lymphocytosis in the spinal fluid followed the treatment, and this ran parallel with the decrease in the excitement and with the shortening of the maniacal phase. In the depressive phase no increase of the reduced lymphocytosis was observed, and there was no further decrease in the already obtained cytologic formula. The spinal fluid was found normal when examined several weeks after his last attack.

At first glance one is inclined to admit a certain relationship between the lymphocytosis and the manifestations of the psychosis. On the other hand, there is no proof that the lymphocytosis did not exist before the outbreak of the psychosis. The disappearance of the lymphocytes may have been due entirely to the treatment. The irritation of the spinal meninges which was evident here because of the lymphocytosis was evidently of syphilitic nature. In view of the parallel development of the psychosis and the meningeal reaction it is difficult to reject all relationship between the two. It is equally difficult to admit that the syphilitic toxins are liable to create such a typical psychosis as is also encountered in cases without a syphilitic infection. One must not forget that we are dealing here with an individual whose personal and hereditary antecedents were of a pathologic nature. We have here important predisposing elements which are so frequently observed in the psychosis under discussion. We have here also a powerful exciting factor, namely, the death of the patient's beloved child, and of the only normal child, while the other two defective children were a source of constant worry and anxiety to the patient. We have here, consequently, sufficient causative agents to influence the domain of affectivity, as well as that of intelligence. The latent psychopathic tendencies were evidently awakened here not only by the direct emotional incident (death of the beloved child), but also by an outbreak of syphilitic meningitis which, to a certain extent, brought in some modifications in the clinical picture of the manic-depressive psychosis. The modifications apparently consisted of the hallucinatory phenomena, which were present exclusively during the maniacal phases. The occurrence of lymphocytosis only during the phase of exaltation, but not of depression, finds its *raison d'être* when we attempt to connect the attack of syphilitic meningitis with the simultaneous onset of excitement accompanied by visual hallucinations. It is quite logical to assume that parallel with a spinal meningitis there exists a cortical meningeal irritation. The presence of hallucinations, and only during the manic phase, may serve perhaps as an important diagnostic element in considering manic-depressive psychosis in an averred syphilitic individual.

The three patients who presented hallucinatory elements are still under observation. Their Wassermann reaction still remains positive in spite of free-

dom from distinct outbreaks of manic and depressive states.

The other three cases of the same group presented no hallucinations. The individual phases of the psychosis were similar to those of the first group. In all the Wassermann tests on the blood were positive, but on the spinal fluid they were negative. There was a lymphocytosis, but of an exceedingly moderate degree. The number of cells ranged from ten to eighteen. In all three patients the only objective neurologic symptom was a more or less increased patellar tendon reflex. The first outbreak of the psychosis was precipitated in all three cases by some strong emotional event. They all received between two and three intraspinal treatments. Two improved and one was uninfluenced by the treatment. The improvement in the two was temporary, as shortly after the last injection the condition returned. It was apparent that in this subgroup of three cases there was less relationship between the potential syphilis and the psychosis than in the first subgroup.

The occurrence of manic-depressive psychosis in the tertiary period of syphilis is certainly a possibility, but as to their relationship definite conclusions cannot as yet be drawn. In the literature there are some records pointing to the coexistence of this psychosis with cerebral syphilis, but so far none of them, including those of Kraepelin, can, with any degree of certainty, solve the causal relationship between the two. Finckh⁷ was among the first to describe periods of expansion alternating with periods of depression accompanied by hypochondriacal delusions of a more or less systematized nature. Westphal⁸ describes three such cases. The most extensive study of syphilitic mental disorders which may resemble phases of manic-depressive psychosis was made by Plaut.⁹ He saw maniacal states with intense agitation and expansive ideas, so that he acknowledged the great difficulty in differentiating them from genuine mania. Other authors saw similar conditions in syphilitic individuals. Mosny and Barat¹⁰ report a case of acute psychosis of the manic-depressive type with a meningeal reaction of syphilitic origin.

The diagnosis of the psychosis during the maniacal state sometimes presents great difficulty. Kraepelin lays special stress on this difficulty in differentiation from paresis. Ziehen¹¹ reports cases in which the diagnosis of paresis of the circular form was made, but which turned out to be in reality cases of cerebral syphilis. In his work he refers to a case of Hitzig in which, in addition to the alternative phases, the delusive ideas were of the dementia type as in paresis, but the evolution of the disease compelled him to abandon the diagnosis of paresis. In the differential diagnosis the physical signs of paresis, as well as the state of the spinal fluid, and the Wassermann test on the blood and on the spinal fluid will be of great assistance.

Another difficulty in differentiating paresis from other psychoses is encountered when the morbid condition is stationary. Gaupp¹² is of the opinion that when a case of suspected paresis remains stationary it is invariably not paresis, but cerebral syphilis. In the diagnosis of manic-depressive insanity in syphilitic individuals it is important to lay special emphasis

on the occurrence of hallucinations. Kraepelin and Finckh⁷ believe that the latter are pathognomonic of syphilis and that the alternating psychosis is syphilitic in nature. Saiz¹³ is firmly of the opinion that syphilis per se is capable of causing a manic-depressive psychosis. Raymond and Janet¹⁴ report a case of manic-depressive psychosis in a case of hereditary syphilis. The six cases reported by me can also be placed among those recorded by authors mentioned. Particularly interesting are the three cases in which hallucinations were present, and especially instructive is the parallelism between the latter and the cytologic formula of the spinal fluid.

As previously discussed, although the subject of the direct relationship of syphilis to the alternating psychosis is not definitely established, nevertheless there are strong presumptions in favor of such relationship, particularly in cases which present hallucinations.

An association of syphilis with mental manifestations of the paranoid type was observed in three cases of my series. They were all in young individuals. The onset, the histories of the patients prior to the final outbreak, the evolution of the manifestations and their character were all analogous to the dementia praecox group of the paranoid variety. Kraepelin and Plaut⁹ observed a number of cases in which many years after the initial syphilitic infection symptoms developed which are frequently found in dementia paranoides. In spite of their efforts to trace symptoms which could be attached to syphilis, but not to dementia praecox, they apparently have not fully succeeded. In reading their records one fails to find pathognomonic features on the basis of which a special clinical picture could be constructed. In Plaut's cases, physical symptoms were present, and this circumstance according to him should enable one to differentiate from the dementia praecox with a constitutional basis. But in Kraepelin's cases, which in general presented clinical pictures similar to those of Plaut's cases, physical symptoms were totally absent. Both authors, however, observed a few manifestations which, in their onset, mode of development and course, present a picture somewhat different from that of the classical dementia paranoides. They call attention to the absence of gross disturbances of the personality of the will and of the attitude and demeanor. The delusions develop rapidly and they are poor in their contents. The hallucinations are chiefly of the auditory type. Orientation is good except for a few brief episodes of cloudy consciousness. There is present a certain amount of realization of the disease alongside of a pathologic indifference to surroundings. Sometimes in the course of the disease there may occur apoplectiform attacks such as we observe in cerebral syphilis. The condition runs a very slow course and gradually dementia sets in. Then catatonic manifestations appear.

Among all these symptoms Kraepelin lays special stress on the hallucinations, which, in the syphilitic cases are, according to him, unusually intense. One of his patients, a girl of 21, having all the symptoms of hereditary syphilis with a positive Wassermann reaction, presented a persecutory delusion with multiple hallucinations, especially of auditory character. A superficial glance at this description will lead one to

7. Finckh: *Centralbl. f. Nervenh. u. Psychiat.*, Nov. 15, 1906, p. 865.

8. Westphal: *Allg. Ztschr. f. Psychiat.*, 1908, p. 829.

9. Plaut: *Centralbl. f. Nervenh. u. Psychiat.*, September, 1909, p. 659.

10. Mosny and Barat: *Encéphale*, 1910; T. I., p. 720.

11. Ziehen: *Centralbl. f. Nervenh. u. Psychiat.*, 1906, p. 653.

12. Gaupp: *Centralbl. f. Nervenh. u. Psychiat.*, 1907, p. 696.

13. Saiz: *Untersuchungen über die Etiologie der Manie*, Berlin, 1907.

14. Raymond and Janet: *Arch. de neurol.*, October, 1903, p. 355.

believe that all the elements of genuine dementia praecox are present, but a more careful analysis will reveal that the resemblance is not profound.

In dementia praecox, with a constitutional basis, the delusional phenomena are frankly absurd and are not the result of cerebral effort. There is no desire on the part of the patient to know exactly the causes of the persecutory ideas, which appear usually as a result of sudden, extravagant and incoherent ideas subservient frequently to various hallucinations. The loss of intellectual activity, the negativism, the impairment of affectivity, the loss of orientation, the loss of the will which is manifested in rigid movements, are all the fundamental features of the classical form. Finally the delusional ideas do not, in the least, alter the attitude of the patient, so that some of them forget entirely their delusions. They all terminate in a state of brutishness and total indifference to surroundings.

If a comparison is drawn between this picture and that occurring in cases with syphilis, the contrast is striking. One must admit from the records so far published that syphilis is capable of developing a syndrome resembling dementia praecox, but not actually identical with it, and that we are dealing here with a special form of cerebral syphilis. The three cases observed by me presented many features in common. The resemblance to the classical dementia praecox was merely a resemblance, but not an identity. Delusions of a persecutory character were present in all, but they were not of a persistent character. Hallucinations were auditory, visual and hypochondriacal in the same patient. They were conspicuous and persistent. Orientation was fair. The attitude and demeanor were in general fair. The patients took at times a certain amount of interest in the surroundings. It was evident that no gross disturbance of personality was present for a long time until three and four years later, when signs of dementia commenced to make their appearance. Moreover, two patients had on several occasions attacks of aphasia, which were all of a transient character. In only one case were physical symptoms present, namely, irregular and unequal pupils and difficult micturition. In all three patients the tendon reflexes were increased. Finally two of the patients showed improvement after several intraspinal injections of salvarsanized serum. The third case remained uninfluenced by the treatment. The history of the latter presents some interesting features.

CASE 8.—J. B., a man, aged 29 years, had a chancre at the age of 18. He was a mechanic by trade and had always been energetic, but about a year ago he commenced to neglect his work, would sleep late and complained of feeling tired. He was very irritable. Soon he became somewhat indifferent as to whether he lost his position or not, and no amount of reasoning could arouse him to his obligations toward his family. Soon he was found suffering from insomnia. He would pace his room or would go out on the street and wander aimlessly in the middle of the night. On several occasions he disappeared for a few days. Questioned as to his whereabouts and as to the reason of his conduct, he could not give an adequate explanation. He was observed very frequently to burst out laughing without the least provocation. His mother happened to fall down the stairs and sustained a concussion of the brain. She was unconscious for many hours. The patient witnessed the accident, but manifested no grief. He remained impassive and indifferent. The next day, however, he inquired about his mother's condition and became quite solicitous. He advised keeping her warm and having a physician to treat her. This awakening of sympathy was

not deep enough and lasted but a couple of hours. The condition of indolence and apathy to his surroundings and to himself soon returned. Rapidly he developed hallucinations. He was found frequently at night and sometimes during the day with his ear close to the wall listening attentively and frequently becoming agitated while listening. Suddenly he would jump away from his position and run to the other wall and assume a hostile and threatening attitude as if ready to meet an attack of an enemy. Sometimes he would speak loudly, using profane language, swearing and cursing, keeping up his aggressive position. Two weeks later he apparently developed visual, in addition to the auditory, hallucinations, as he was seen to run aggressively from one part of the house to the other. He soon developed delusive ideas. He accused his mother and sister, also the attendant, of conspiring against him, of sending some persons to torture him and to threaten him. All this was true, he said, because otherwise he would not have heard so persistently those voices day and night. In spite of his apparent preoccupation and concern about the voices, as soon as strangers would call and approach him he would fall again into a state of apathy and would hardly reply to questions asked. If at times he would answer, the replies would be utterly absurd. He would frequently be unable to recognize his own people or old friends. Soon he developed a great desire for writing. He remained in his room for hours and would write incessantly. While his papers showed considerable confusion, nevertheless some expressions denoted a tendency to think of things and events in an expansive manner. He frequently mentioned "hundreds of banks"; "rows of houses"; "the great personages of England"; "like Napoleon I," "to conquer a hemisphere"; "to convert the whole world." Frequently were found such expressions as: "I have just heard them say they will come again tonight and pull all the wires out of me." For many months the hallucinations predominated in the entire morbid picture. He was given two intraspinal treatments with neosalvarsanized serum at an interval of two weeks. His condition as regards the hallucinations had, at first, improved, in that these occurred less frequently and with less intensity. The general intelligence showed some amelioration. He commenced to show less disinterestedness when being addressed, and began to take the initiative in asking questions. However, the improvement did not continue long. The patient soon returned to his former mental condition. Moreover, from this time on, the enfeeblement became gradually deeper, and catatonic phenomena became manifest. Negativism, stereotyped acts and expressions, resistiveness, were all present. The delusive ideas were no more in existence. The hallucinations, however, persisted, but with less conspicuousness than formerly, probably because of the accentuation of the dementia.

In this, as well as in the two other cases of the group, we observe an improvement in the hallucinatory phenomena following the antisypilitic treatment, also a prolonged improvement in the general mentality in two cases and only a brief amelioration in one case.

The problem before us is whether it is justifiable to consider as a nosologic entity a dementia praecox type of syphilitic origin, or can syphilis per se create such a syndrome? In my three cases I found some of the features emphasized by Kraepelin. I found the lack of depth in the delusional ideas. The latter were not obstinately persistent. The hallucinations were unusually persistent and most conspicuous. There was not a complete loss of affectivity throughout the entire course of the disease. The catatonic manifestations became manifest only toward the end in the last case and were totally absent in the other two cases. It seems, therefore, reasonable to contend that syphilis is capable of creating a syndrome resembling that of dementia praecox. On the other hand, the deviation in the typical manifestations, and in the course of the affection, leads one logically to admit another

presumption, namely, that the persons thus affected are potential praecox men, who would have developed the disease in spite of syphilis but in whom the syphilitic infection introduced certain modifications such as emphasized by Kraepelin and observed in my cases. The latter contention appears to be most plausible by virtue of the fact that the clinical picture in such cases is not sufficiently typical of the classical dementia praecox on a constitutional basis.

Another type of cases in my series is seen in the group of involution melancholia. In both cases we find a number of symptoms characteristic of the disease under this title. The patients were middle-aged women and married. One had had five children, all of whom died while young of diseases difficult to determine from the histories given by relatives. The other patient had had four miscarriages and had one living child. Both gave positive Wassermann reactions on blood serum on two different occasions. The clinical pictures in both cases consisted of the usual depression with a state of anxiety, insomnia and anorexia. A state of self-blame in one case for not being sufficiently religious, in the other for masturbation in younger life, were the only delusional ideas. Both presented also marked auditory hallucinations; both heard the voice of the Lord saying they would pay severely for their sins and their families would suffer for the same reasons. The peculiar feature of the hallucinations lies in their transient but frequently repeated occurrence. For days at a time the hallucinations would be totally absent, and then would suddenly reappear, especially at night. They would then be accompanied by severe headache and a slight rise of temperature. A lumbar puncture during the hallucinatory periods would reveal a lymphocytosis of the spinal fluid, namely, twenty-five and forty cells in the respective cases. It was evident that the periodic hallucinatory condition with the headache was due to an acute meningeal reaction. Both patients had, respectively, two and three intraspinal injections of neosalvarsanized serum, and improved considerably. As the treatment could not be continued, the former condition returned in both cases. One patient eventually committed suicide, the other is at present in a state of dementia. At the onset of the disease both patients presented a mild state of depression, which, together with a positive Wassermann reaction, naturally led to the diagnosis of an oncoming paresis. Such was the opinion on one of the two cases as expressed by a competent neurologist. Subsequent events showed that at no time were there physical signs, neither was there present the mental deficit characteristic of paresis. The characteristic delusional ideas, together with the state of depression, which grew progressively deeper with the absence of dementia for a very long time, all spoke in favor of melancholia. As to the influence of syphilis, it seems to me highly plausible to assume the same position which was taken by me in discussing the paranoid group of cases, namely, that while the two syphilitic middle-aged women suffered from melancholia, nevertheless, it is difficult to associate the mental affection with syphilis as effect and cause. In all probability, syphilis acted here merely as a modifier of the typical course of melancholia. One cannot assert with any degree of definiteness that syphilis per se is capable of creating such a characteristic clinical picture as melancholia.

The last group of my series consists of three cases in which no characteristic symptom of the classical

psychoses could be found. If we exclude the paranoid and manic-depressive cases which may or may not present forms of cerebral syphilis, the latter will embrace those cases in which there will be present a great variety of mental manifestations directly connected with and dependable on syphilitic infection. In spite of this multiplicity of symptoms, there are, however, certain special elements which are constantly present and which may be considered almost pathognomonic of cerebral syphilis during its tertiary period. They are a confusional state and a pseudo-demented state. The latter is the most frequent of all. It is characterized either by a mental hebetude, stuporous attitude, amnesia, deficient orientation in time and space, or else by an expansive attitude, optimism, euphoria and a psychic overactivity, to such a degree that it may assume the appearance of absurdity and even childishness. Delusions may or may not be present in either of these states. Syphilis of the brain in its broadest form covers a number of affections in which there is an organic involvement of the cerebrum. Besides the mental disturbances there may be also attacks of hemiplegia or monoplegia, of aphasia, or of epileptiform convulsions. They all present no special difficulty of recognition, especially if the blood serum or the spinal fluid gives a positive Wassermann or Lange reaction. The therapeutic test is also of great value, as considerable improvement is obtained from antisyphilitic treatment. Some diagnostic difficulty is observed in cases which present some of the manifestations of paresis, so that for a long time considerable hesitation is experienced in formulating a diagnosis and giving a prognosis. The following three cases may be briefly presented as an illustration of such a difficulty.

CASE 9.—A woman of 39 who had three children living and had had four miscarriages was admitted with a very severe headache to the Douglass Hospital. The Wassermann test proved to be negative in the blood serum and positive in the spinal fluid. The cellular count was thirty-five. At first mentally clear, she gradually developed a depressive state, during which she spoke and acted in a very slow manner. Her replies to questions were much delayed and her memory, especially, became affected. She was unable to tell the number and names of her children, how long she had been in the hospital, or how long she had been married. She could not tell correctly the day of the week, the date or the year. She could, however, converse on the weather, could criticize correctly the food, the behavior of the nurses, etc. She was frequently seen muttering some words quietly as if she were conversing with some one. Evidently she had auditory hallucinations. While in the hospital she had two attacks of aphasia of brief duration, one lasting five and the other three days. Among the somatic symptoms the following may be mentioned: The pupils were unequal, but both reacted well to light; the patellar tendon reflexes were increased; the speech was somewhat hesitating. In the presence of such a symptomatology, paresis was the diagnosis first thought of. But the following essential elements spoke against paresis: While her affectivity was depressed, and in spite of the fact that she did not fully realize the gravity of her affection, she nevertheless appreciated the fact that she was ill, and frequently inquired about her discharge from the hospital. She obeyed all the orders of the nurse, and was quiet and undisturbing. There were no delusive ideas at any time. The speech disorder was not distinctly paretic, although it was somewhat hesitating. There was no tremor, and no ataxia was evident at any time. The intraspinal treatment with neosalvarsanized serum proved to be most beneficial. The improvement was very noticeable in the psychic sphere. Amnesia and orientation have greatly improved. She is still under observation, and at this date she has had five injec-

tions. The few somatic symptoms have entirely disappeared, namely, speech, pupils and increase of reflexes.

CASE 10.—A man, aged 41, with a history of syphilis contracted twenty years ago, was admitted to the Douglass Hospital. The Wassermann reaction was positive in the spinal fluid and in the blood serum. On admission he complained of insomnia and frontal headache, but had a smile on his face and a very cheerful countenance. In talking to him over his past life, one is struck by a slight confusion in his sentences. His memory is defective. He cannot recall the name of his last employer, for whom he worked several years; nor could he converse on important topics of the day. In giving dates he made gross mistakes. Asked how long he had been in the hospital, again he answered very inaccurately. What was particularly interesting was the ability of self-criticism. He realized that he was wrong, that he made mistakes, that there was something "wrong with him," to use his own expression. He often laughed at his answers, saying that he felt he was making errors, but he could not help it. At times he was unusually jovial, and spoke of great undertakings, of being on friendly terms with important personages, of being very happy and of wishing for nothing. At the same time he mentioned seeing spirits at night when he said his prayers, but those hallucinations occurred only occasionally. A somatic examination revealed increased knee-jerks, unequal pupils, but responding well to light and accommodation. At times there was nocturnal incontinence of urine. Treatment with neosalvarsanized serum gave prompt relief. After the second injection the confusional element disappeared, the amnesia improved greatly and the euphoria became less pronounced. He is still under observation at his home in another state, whence he sends me communications about his death. They are all free from incoherence and the ideas are expressed in a coordinate and logical manner.

In this case the entire picture of the affection suggested at first paresis, but the evolution of the symptoms, the absence for a long time of characteristic physical symptoms, the rapid improvement and especially the nature of the mental manifestations all were against the diagnosis of paretic dementia.

CONCLUSIONS

An analysis of the cases described in this study tends to show that while the mental disturbances, during the secondary stage of a syphilitic infection, could be considered with a great degree of certainty, as directly dependable on syphilitic toxins, the same degree of certainty cannot be entertained with regard to a direct relationship of psychosis developed during the tertiary period of syphilis. In the former, the mental manifestations are in all analogous to those which we observe in toxi-infectious states from any origin. The confusional and delirious conditions, as well as the hallucinations, ran parallel with secondary manifestations and with fever. When the latter disappeared the former commenced to improve. Besides, the antisypilitic treatment had a very manifest and favorable effect on the mental phenomena. In the other series of cases we find various psychoses which developed many years after the initial infection and which in all respects presented the typical pictures of classical psychosis, such as Korsakoff's syndrome, manic-depressive insanity, melancholia and dementia paranoides. Great difficulty is encountered and no definite opinion can be formed with regard to a direct relationship between the psychoses and the infection which occurred many years previously. On the other hand, it has been observed that those psychoses in syphilitic individuals presented some modifications which could justly be attributed to the influence of syphilitic toxins. In the light of our present knowl-

edge we are not warranted as yet to claim for syphilis the ability to create per se the well established forms of insanity which we observe without a syphilitic infection. The literature on the subject is very meager, and a considerably larger number of carefully collected records will be necessary to enable us to establish in a more definite way a causal relationship of syphilis to psychoses. For the present, no final claim can be made as to a type of mental disease characteristic of syphilis. On the other hand, from the observations which we possess we are not authorized to reject entirely the possibility of psychoses being the result of syphilis.

1812 Spruce Street.

ABSTRACT OF DISCUSSION

DR. E. E. MAYER, Pittsburgh: Does any one doubt that the same psychotic symptoms may be due to different causes, toxic, psychogenetic or inflammatory? Does any one doubt that a patient with paresis may have another type of psychosis also? Perhaps I did not follow Dr. Gordon's reasoning closely; however, it is always a mistake to establish a diagnosis if by doing so we ignore the possibility of another syndrome being present which is not directly due to the same causal agency. It is this faulty judgment which I gather Dr. Gordon is speaking against. But again, what psychiatrist does not know that his argument is true without it being necessary to cite a multiplicity of cases to prove it.

DR. C. R. WOODSON, St. Joseph, Mo.: There is a syphilitic condition unlike that of paresis in which patients who do not recover live many years. I remember cases twenty-five years ago, before the Wassermann reaction or salvarsan treatment were known. A man came under my observation confused and depressed, with symptoms of cerebral syphilis. I placed him on mercury and mercury inunctions, with 1,000 grains of potassium iodid daily for two or three months. He made a satisfactory recovery and remained well. I have seen him twice yearly for twenty-five years. One of our surgeons had a syphilitic patient who had not been treated vigorously. He came to the hospital with pronounced insomnia and in a maniacal condition. Large doses of iodids, 1,000 grains daily, with mercury were given, and he made a splendid recovery. Many patients come into the hospital with a positive Wassermann test, monoplegia and other symptoms of cerebral syphilis. In some atypical cases it is hard to diagnose a case of paresis from syphilis of the central nervous system. I do not believe paresis is curable. I have seen marked temporary improvement, followed by death from some intercurrent affection, or relapse and death from paresis.

DR. CHARLES R. BALL, St. Paul: It is difficult for the physician in dealing with syphilis to differentiate between symptoms due to syphilis and symptoms caused by other diseases which they may have and which have no connection with their syphilis. Because a patient has had syphilis is no reason for regarding him as immune to other diseases. A syphilitic is just as susceptible to a psychosis or neurosis, after having had syphilis, as he was before he had it, and perhaps more so, because the syphilis itself tends to make him more introspective. Dr. Gordon brings this point out clearly in his paper. We must be quick to distinguish in syphilitics those mental disturbances which are caused by syphilis and those which occur incidentally in connection with it. In making this distinction the serobiologic reaction will be found invaluable.

Recently I had a patient with a typical simple melancholia; fifteen years before he had suffered a similar attack; twelve years previously—three years after his melancholia—he contracted syphilis. The serobiologic reactions were all negative. In spite of this the patient insisted on connecting his syphilis with his present trouble. He would take no medicine whatever except mercury in some form. He finally left me to place himself under the care of some one who would administer mercury to him in heroic doses.

DR. ALFRED GORDON, Philadelphia: Syphilitic individuals, in spite of the syphilis, and not on account of it, may present symptoms resembling ordinary psychoses. They may present a picture of manic depressive psychosis, dementia praecox and others. The syphilitic patient may have all sorts of diseases, and when we do investigate for syphilis and the tests are positive we can improve the patient's condition. One often finds, on close observation, modifications of classical symptoms, and this is due to some modifying factor such as syphilis. I have no illusions as to the cure of syphilis of the central nervous system. I am not optimistic to that degree, but I am far from convinced that the last word has been spoken. I think we can often improve the condition. While my paper is largely technical, there is a practical side, namely, the findings of modifications in the typical clinical pictures and thereby a possibility for improvement by anti-syphilitic remedies.

INTRAVENOUS GLUCOSE INJECTIONS IN SHOCK*

JOSEPH ERLANGER, M.D.

ST. LOUIS

AND

R. T. WOODYATT, M.D.

CHICAGO

In accordance with a prevailing opinion, the low blood pressure in "shock" is associated with a diminished effective volume of blood in the vessels, and the two factors constitute in themselves essential parts of the shock mechanism. On this assumption, benefits should result from procedures having the effect of holding water within the vessels. In normal individuals it is possible to accomplish this by effecting an entrance of glucose into the blood at appropriate rates sustained for sufficient lengths of time. Marked hydremic plethora and striking increases of the systolic blood pressure may thus be produced, and the present study has shown that the mean arterial pressure may also be elevated in this way. Glucose is, moreover, a food; it is capable of increasing the power of involuntary muscle contractions, elevating the total metabolism, combating at least one type of acidosis, and restoring depleted glycogen reserves. Has it a value in the treatment of cases of shock?

During the past two years, Woodyatt, with Sansum and Wilder, has studied the physiologic effects of sustained intravenous glucose injections at known rates, and applied the method to several clinical conditions, including two cases having features of shock. Favorable results in these cases made it appear desirable to study a longer series under conditions permitting more exact observations. This was not possible with the available clinical material, and it was decided to test the principles in cases of experimental shock in animals. Erlanger and his associates have during the summer performed some sixty experiments on shock in animals with special reference to the circulatory phenomena and the vasomotor mechanism. A large number of records for control purposes and a perfected technic were thus available. The primary purpose of the work here reported was to ascertain how the symptoms of experimental shock in dogs might be influenced by intravenous glucose therapy. Incidental observations were made on the effects of salt solutions,

salt and carbonate solutions, and epinephrin. The work was done in eight days, and no attempt is made to give this report the character of a completed study. The possible differences between the conditions induced in dogs and that of shock in human cases is appreciated, as also the fact that the slow intravenous injection of glucose in postoperative conditions is not a new procedure.¹

PHYSIOLOGIC PRINCIPLES

When a single dose of glucose is injected into a peripheral vein, there is a temporary increase of the total quantity of sugar in circulation. The injected sugar passes rapidly out of the blood into the tissues. During its stay in the vessels, the blood volume rises and a state of hydremic plethora develops, owing doubtless to the binding of water by the extra glucose in the vessels. This is shown by a fall in the hemoglobin percentage, and a coincident fall in the blood sugar percentage following an initial rise. These facts were demonstrated by Brasol² in 1884, and confirmed and amplified by Biedl and Kraus,³ Starling,⁴ Kleiner and Meltzer, and others. Similarly during the period of absorption following the alimentary administration of glucose there is at first a rise but later a return to the normal of the blood sugar percentage, and simultaneously with the latter a fall in the hemoglobin percentage.⁵ In shock cases it is frequently impracticable to secure the entrance of glucose into the blood through the alimentary tract, nor is the subcutaneous injection of glucose a harmless clinical procedure. If glucose is injected into the peripheral venous blood of a normal resting (unanesthetized) individual at or below the rate of 0.8 to 0.9 gm. per kilogram of body weight per hour, the injection may be sustained in most cases for hours without causing glycosuria.⁶ With injections of 0.9 gm. or more of glucose per kilogram per hour, glycosuria develops, and the rates of sugar excretion then bear definite relationships to the rates of injection. The higher the absolute injection rates, the higher the absolute rates of glycosuria.

During sustained intravenous injections at or below the tolerance rate, glucose passes from the blood into the tissues and there undergoes chemical change (polymerizations, oxidations, etc.) at the same rate as that of injection. There is no material accumulation of glucose itself in the tissues. Injections at subtolerant rates therefore have the effect of increasing the quantity of glucose in the blood without producing any considerable increase of the glucose in the tissues. The result is a disproportionate increase of the power of the blood to hold water, and a state of hydremic plethora develops and presumably persists as long as the injection is sustained. The water held by the blood must come from the tissues or from the injection site or both. If the water injected with the glucose is not sufficient to satisfy the glucose in the blood, some water will flow into the blood from the tissues. When the glucose injection is stopped and the last of the injected glucose passes into the tissues, the water pre-

1. Kausch: Deutsch. med. Wchnschr., 1911, **37**, 8.

2. Brasol: Arch. f. Physiol., 1884, p. 211.

3. Biedl and Kraus: Wien. klin. Wchnschr., 1896, **9**, 55.

4. Starling: Jour. Physiol., 1899, **24**, 317.

5. Compare Gilbert and Baudouin: Comp. rend. Soc. de biol., 1908, **65**, 710. Fisher and Wishart: Jour. Biol. Chem., 1912, **13**, 49.

6. Woodyatt, R. T.; Sansum, W. D., and Wilder, R. M.: Prolonged and Accurately Timed Intravenous Injections of Sugar, THE JOURNAL A. M. A., Dec. 11, 1915, p. 2967. Wilder, R. M., and Sansum, W. D.: d-Glucose Tolerance in Health and Disease, Arch. Int. Med., February, 1917, p. 311. Sansum and Woodyatt: Jour. Biol. Chem., 1917, **30**, 155.

* From the Physiological Laboratory of Washington University Medical School, St. Louis, and the Otho S. A. Sprague Memorial Institute Laboratory for Clinical Research, Rush Medical College, Chicago.

viously held in the blood is to a large extent discharged suddenly into the urine. This whole phenomenon differs essentially from that obtainable with inorganic salt solutions, because such salts when injected also pass into the tissues, but when once there are not destroyed. There is therefore the possibility of salt accumulations in the tissues holding water there, and in part counteracting the effects of the salt in the blood stream.

With sustained intravenous glucose injections at rates higher than 0.8 to 0.9 gm. per kilogram per hour, the glucose utilization fails to keep pace with that of injection and the tendency is toward some accumulation of unchanged glucose. If the kidneys are functioning actively this glucose appears on the urinary side of the renal membrane and tends to collect water in this locality, probably for the same reason that glucose in the blood produces hydremia.⁷ This tendency is expressed as polyuria. Now if the diuresis exceeds the rate of water administration, water will flow from the tissues to the blood and thence to the urine, and hydremia will be sustained, as long as the water supply is adequate. But if the kidneys do not function in this way, most of the unchanged fraction of the glucose injected remains in the body and tends to behave like a salt, causing accumulations of water in the tissues and body spaces wherever it may go. In shock cases the secretion of urine is likely to be impaired. Accordingly the most rational application of intravenous glucose injections in shock would appear *a priori* and on theoretical grounds to consist in long sustained uniform injections at subtolerant rates. Just what the tolerance limit will be in any pathologic condition cannot be stated. When the kidney function is impaired the rate of injection necessary to produce glycosuria cannot be used as a criterion. The most appropriate injection rate might be expected to lie within the normal tolerance limit at possibly 0.3 to 0.6 gm. of glucose per kilogram of body weight per hour. For a man weighing 50 kg. this would imply the injection of from 15 to 30 gm. of glucose per hour, corresponding to from 84 to 168 c.c. of 36 per cent. solution hourly, or twice these quantities of 18 per cent. solution. Although moderate accumulations of unchanged glucose in the body might do no harm or perhaps even prove desirable, it has been noted in the experiments on shock in dogs, produced by occluding the inferior cava, that a general hemorrhagic tendency supervenes when the administrations are excessive.

EXPERIMENTAL

The solutions injected consisted of chemically pure glucose in strengths of from 18 and 36 per cent., to which on occasions epinephrin was added, of 0.9 per cent. sodium chlorid, and of an alkaline saline solution, 0.3 per cent. anhydrous sodium carbonate in 1.4 per cent. sodium chlorid solution (Fischer's solution). Whenever possible the physiologic sodium chlorid solution was injected either just before or just after the glucose as a control to the direct volume effects of the latter. The injections were made centrally into the vena saphena at a practically constant rate by means of an apparatus devised by Woodyatt.⁸ Continuous records were made of the pressure in the carotid artery by means of a mercury manometer. Dogs were used exclusively. They were anesthetized with ether. In some experiments the rate of secretion of urine was

followed, a catheter being passed into the bladder for this purpose.

Only one experiment has been done on a normal animal. The glucose solution (36 per cent.) was injected for a period of thirty minutes at the rate of 0.8 c.c. per minute (1.78 gm. of glucose per kilogram per hour). The injection raised the arterial pressure, but not more than from 5 to 7 mm. of mercury. The pulse amplitude, however, increased quite appreciably, indicating the development of some plethora. The maximum effect seems to have been attained during the first five to ten minutes of the injection, and was maintained for ten or more minutes after completion of the injection. The slightness of the rise of the pressure in comparison with the considerableness of the increase in blood volume, indicated by the change in pulse amplitude, probably is to be attributed in part to a diminution in the viscosity of the blood, due to hydremia, and in part to vasomotor accommodation.

The animal was then bled to the extent of 150 c.c., and after the pressure had become constant, well below the normal level, glucose was again injected at the same rate, but for a period of twenty minutes. During the injection period the pressure rose from 107 to 120 mm. of mercury, and during the succeeding ten minutes it continued to rise, finally reaching 125 mm. of mercury. It then declined to 111 mm. of mercury in the course of the next thirty minutes. The pulse amplitude was increased. Salt solution injected at the same rate raised the pressure only 5 mm. of mercury, without appreciably changing the pulse amplitude.

It is inferred from this experiment that in normal animals the compensatory mechanism tends to hold the arterial pressure close to the normal level during the plethora determined by the glucose solution; but that when, as after hemorrhage, the efforts of a normal compensatory mechanism fail to hold the pressure up, the same hydremia results in a more marked rise of pressure.

The rate of injection employed in this experiment would lead in the unanesthetized dog to a glycosuria of some 0.5 gm. per 10 kg. per hour, and this would cease within fifteen minutes after the discontinuance of the injection. In this anesthetized animal, however, the injection caused a heavy long lasting glycosuria and a coincident hyperdiuresis of such a grade that in the course of the experiment more water was excreted by way of the kidneys than was injected into the circulation.

In six experiments the effect of the injection of glucose in different doses was followed after shock had been produced by temporary partial occlusion of the inferior vena cava.⁹ Our previous experience with this method of inducing shock justifies the statement that when, after deocclusion of the cava, the arterial pressure eventually begins consistently to decline, this decline proceeds, almost invariably, without break until the animal dies, though the pressure at which the decline begins may be only 20 mm. of mercury below the normal level. Despite the fact that the arterial pressure rises quite appreciably with deocclusion, we are inclined to believe that the damage that has been done to the tissues during the period of occlusion is irreversible. That is to say, despite whatever may be done, the cells of the body eventually will fail to carry on the functions necessary to the life of the organism.

7. Sansum and Woodyatt (Footnote 6).

8. Woodyatt: Jour. Biol. Chem., 1917, 29, 355.

9. Janeway and Jackson: Proc. Soc. Exper. Biol. and Med., 1915, 12, 193.

In such an event, the only result that could be anticipated from any form of treatment would be but a temporary improvement of certain of the functions.

Our tests of the action of glucose were begun in that stage of the experiment in which the pressure begins consistently to fall. The persistence of heavy glycosuria in the normal but anesthetized dog for hours after a twenty minute injection at the rate of 1.8 gm. of glucose per kilogram per hour indicates that such a rate of infection in shocked animals which pass no urine must result in an accumulation of free sugar in the organism. The first intravenous dose at super-tolerant rates must therefore give the clearest indications of what the injection of sugar is capable of accomplishing. In the table are collected the results of the first injections with the animals in shock. In evaluating the effect of the injections on the blood

time after the cessation of injection; and whereas in some of the other cases the maximum pressure is attained during the period of injection, the pressure curves are of such a form as to indicate that the effect is manifesting itself not alone during the whole of the injection period, but for some time subsequently.

The table also shows the effect of the sugar injection on the pulse amplitude. This is invariably increased by the injections, and the persistence of the sugar effect is brought out more clearly by the changes in pulse amplitude than by the changes in pressure. Thus in Experiment 6, whereas the mean pressure begins to fall five minutes after the cessation of injection, and in thirty minutes has returned to its previous level, the pulse amplitude at that time has not nearly declined to its previous value. This greater persistence of the effect on the pulse amplitude than that on the arterial

RESULTS OF THE FIRST INJECTION WITH THE ANIMALS IN SHOCK

| Ex-periment Num-ber | Normal Mean Caro-tid Pres-sure | Pres-sure at Time of Injec-tion* | Injec-tion Period, Min. | Pressure Rise | | Pulse Amplitude Increases | | Dosage | | | | Action Subsequent to Injection | Remarks |
|---------------------|--------------------------------|----------------------------------|-------------------------|---------------|---------|---------------------------|--------|-----------------------|-----------------------|-----------------------------------|-------------------------|---|--|
| | | | | To Mm. Hg | In Min. | From Mm. | To Mm. | Per Kg. per Hour, Gm. | Percen-tage Solu-tion | Rate of Injec-tion, C.c. per Min. | Injec-tion Period, Min. | | |
| 1 | 159 | 51 and falling | 73 | 69 | 45 | 1.5 | 3.0 | 0.57 | 18 | 1.0 | 73 | The pressure is falling during the last 20 minutes of injection | Sugar injected immediately after salt solution, which had kept the pressure constant |
| 2 | 140 | 64 and falling | 68 | 96 | 68 | 3.5 | 4.5 | 3.7 | 36 | 1.85 | 68 | Pressure immediately falls slowly, and, after 10 minutes, rapidly | Sugar injected immediately after salt solution, which had failed to maintain the pressure |
| 3 | 117 | 55 and station-ary | 25 | 100++ | 45++ | 4.0 | 5.5 | 3.6 | 36 | 2.0 | 25 | It would appear as though this animal was coming out of shock; the rise of pressure stopped only when the cava was again occluded | Immediately after 20 minutes salt injection which raised pressure 4 mm. |
| 4 | 195 | 61 and falling | 25 | 70 | † | 5.0 | 8.0+ | 2.2 | 36 | 1.0 | 25 | ..... | A previous salt injection had temporarily raised the arterial pressure 4 mm. Hg. Pressure can be raised only by epinephrin despite the considerable increase in pulse amplitude by subsequent sugar injections |
| 5 | 142 | 72 and falling quite rapidly | 23 | 76 | 14 | 6.0 | 6.5 | 3.0 | 36 | 2.0 | 23 | ..... |  |
| 6 | 110 | 66 and falling | 30 | 88 | 35 | 4.0 | 7.0+ | 4.0 | 36 | 2.0 | 30 | Pressure falls rapidly after 5 minutes elapse | |
| 8 | 122 | 78 and falling rapidly | 25 | 86 | 45 | 5.0 | 8.0+ | 3.7 | 36 | 2.0 | 25 | Pressure falls rapidly | |

* The pressure usually is uninfluenced by the sugar injection until from five to ten minutes have elapsed. This is the pressure at the moment the injection begins to cause the arterial pressure to rise.
† This was immediately followed with a stronger solution of sugar for seventeen minutes by which the pressure was raised only to 62 mm. Hg. Then epinephrin was added to the sugar. This raised the arterial pressure to 97 mm. Hg; but when the epinephrin was withdrawn, while the sugar injection was continued, the pressure fell in the course of twenty-nine minutes from 97 to 49 mm. Hg.
‡ Salt solution for twenty-five minutes did not appreciably modify the pressure curve. Ten minutes later, while the pressure was rapidly falling, sugar injection was begun. The pressure continued to fall but at a decreasing rate, and had just begun to rise at the end of the twenty-five minute period of sugar injection. As indicated, it continued to rise for twenty minutes.

pressure, account must be taken of the fact that such changes as occur are built up on a pressure curve whose general tendency is to decline with time. In the construction of this table an attempt has been made to indicate this fact. For example, it is seen in the table that in Experiment 3, in which the greatest rise of pressure was recorded (from 55 to 100 mm. of mercury), the pressure at the start of the injection was practically stationary, presumably as a result of the action of salt solution injected immediately preceding the sugar injection; while Experiment 5, in which the smallest rise was recorded (from 72 to 76), was one in which the arterial pressure was falling quite rapidly at the time the glucose injection was started. The other pressure increases ranged between these extremes. On account of the difficulties just mentioned, the determination of the duration of the sugar effect on the pressure is not a simple matter. In at least two cases the maximum pressure is attained some

pressure is seen best, however, after the second and third injections.
The dosage of glucose has ranged between the extremes of 0.57 gm. per kilogram per hour and 4 gm. per kilogram per hour, that is to say, between a so-called subtolerant dose and one five times exceeding the tolerant dose. All injections resulted in a rise of pressure, which invariably was much greater than that caused by the control injection of salt solution, which often, indeed, gave an inappreciable response. Owing, however, to the difficulties mentioned, it would take a much larger series of experiments than we have performed to determine the optimum dose of glucose.
After a beginning has been made in the induction of shock by occlusion of the cava, urine secretion ceases despite the injection of sugar in doses which, in the normal animal, cause a marked diuresis. Urine was not secreted even when the alkaline hypertonic salt solution was injected.

A few tests have been made, but usually quite late in the course of the experiments, of the effect on the arterial pressure of injecting an alkaline saline solution. These tests were made only casually, and no hard and fast conclusions can be drawn from them. So far as we have gone, however, at the rate of injection employed, no obvious effects could be discerned.

We also have occasionally combined epinephrin, in concentrations ranging from 1:100,000 up to 1:25,000, with the glucose solutions. These injections also have been made late in shock. While they raised the pressure further, and possibly increased the pulse amplitude more, than the injection of simple glucose solutions, their effect was very transient and they seemed to leave the pressure at a lower level than it would have reached in the same time if nothing had been injected.

In only one case have we succeeded by the injection of sugar in turning a falling pressure into a rising pressure tending to attain the normal level. The animal in which this occurred was particularly resistant to the effects of occlusion of the cava. Whereas a two-hour partial occlusion of the cava in our experience ordinarily suffices on deocclusion to leave the arterial pressure well below the normal level, and to start the pressure on a downward course within forty or fifty minutes, in this case the arterial pressure returned to the normal level after deocclusion within twenty-five minutes. After a second period of occlusion lasting forty-five minutes, the arterial pressure was still rising fifty-five minutes after deocclusion. The same was true after a third period of occlusion. It was only after the fourth period of occlusion, which lasted one and three-quarter hours, that the arterial pressure after deocclusion started on a downward course. It was then, after a preliminary test injection of saline which held the pressure practically level, that the sugar was injected. The pressure rose from 55 to 90 mm. of mercury during the injection period of twenty-five minutes, and continued to rise in the after-period, finally reaching 100 mm. of mercury, and it was still rising when, as it was believed that the animal had recovered from shock, the cava was again clamped in order again to reduce the animal to shock.

Previous experience in the production of shock indicates that when it is induced by temporary partial occlusion of the inferior vena cava, vasomotor tone, in the stage in which we have made the first sugar injections, is either below normal or at the lower limit of normal. In order to determine whether or not the difficulty in obtaining lasting improvement as a result of the injection of sugar is attributable to the damaged state of the vasomotor mechanism, in one experiment the effect of sugar injection has been tested in shock produced by temporary partial occlusion of the descending aorta. In shock thus produced, we judge from experience that the vasomotor tone, at the stage with which we are now concerned, is either normal or above normal. The experiment ran quite smoothly; but here again the action of the sugar, while quite distinct, was as ephemeral as in the majority of our experiments.

In this experiment, urine secretion stopped shortly after the aorta had been clamped, and none was formed until about two hours had elapsed after deocclusion, when, apparently under the stimulus of the sugar injection, 1 c.c. was passed. This is the only instance in which urine was formed after the produc-

tion of shock in this series of experiments. Macroscopically the urine did not contain blood.

One of the most interesting phenomena brought to light by this series of experiments, and seen best after several injections have been made, is a decline of the pressure, subsequent to the injection, to a level well below that obtained previous to the injection, despite a pulse amplitude which is higher under the low pressure after the injection than it was under the higher pressure preceding the injection. The increased pulse amplitude undoubtedly is a measure of the increase in blood volume. Presumably, therefore, the pressure is lower after than before the injection, despite an increase in blood volume. This condition probably is made possible through a diminution in the vasomotor tone and a decrease in the viscosity of the blood, which together defeat the tendency of the plethora to increase the arterial pressure. It suggests that a relatively inactive vasomotor mechanism responds in the same way to its adequate stimuli as does the normal mechanism. The normal center is, so to speak, keyed to hold the arterial pressure at the normal level. The damaged center is keyed to hold the pressure at a level below the normal. And if the activity of the damaged center is constantly diminishing, the level at which it tends to hold the pressure will also constantly diminish. The reactions of the center, therefore, to increased blood volume, no matter what the new pressure normal may be, will always be such as to return the disturbed pressure to that normal. If this is the case, the combination in the late stages of shock of an increased blood volume with a lower pressure would be accounted for.

Attention should be called to the tendency exhibited by overdoses of glucose solutions to diminish the coagulability of the blood. As a result of this action, wounds which have ceased bleeding may become covered with an ooze of blood, sometimes quite considerable in amount, which remains fluid for some time. In none of our experiments was this secondary hemorrhage serious, but it is a danger which should be kept in mind when sugar injections are employed in the treatment of shock in the wounded.

SUMMARY

1. Glucose injected intravenously at rates varying between 0.57 and 4 gm. per kilogram per hour for from twenty to sixty minutes into anesthetized dogs reduced to a state of "shock" (by partial temporary occlusions of the inferior cava or aorta) has been observed uniformly to increase the mean arterial pressure.

2. The injections have uniformly produced a marked increase in the pulse amplitude, indicating a condition of plethora.

3. The increase in pulse amplitude has usually been more striking than the increase in arterial pressure.

4. In one case the increase in pressure determined by the injection of glucose continued after the cessation of the injection until the pressure was approximating the normal.

5. A subtolerant dose has raised the arterial pressure and increased the pulse amplitude as effectively as many of the injections made at more rapid rates.

6. With the more rapid injections, a marked hemorrhagic tendency may develop in animals in this condition.

7. No other palpable deleterious effects were observed.

CONCLUSION

On theoretical and experimental grounds supported by some clinical evidence, it would appear that intravenous injections of glucose at appropriate rates are of distinct benefit in certain phases of shock.

SYMPTOMATOLOGY OF THE NERVOUS SYSTEM

IN CHRONIC INTESTINAL TOXEMIA *

G. REESE SATTERLEE, M.D.

AND

WATSON W. ELDRIDGE, M.D.

NEW YORK

Present medical progress tends toward diminishing the number of disease entities rather than toward their multiplication. In no field is this more strikingly apparent than in the newly found and rapidly developing relationship between mental and nervous conditions and disturbances of the gastro-intestinal tract.

The symptomatology referring directly to the intestinal tract is not within the scope of this paper. However, it is difficult to find any case in which, on close investigation, symptoms referring directly to the intestinal tract are absent. The error in diagnosis as to the fundamental condition can frequently be explained by the fact that the gastro-intestinal disturbances are so often considered secondary to a disturbed nervous system, when in reality the opposite is true.

As an example of one of the commonest misapplications of diagnosis we mention neurasthenia. It is perfectly true that we may have a neurasthenia brought on by causes not connected directly with the intestinal tract, and in these a functional disturbance of the stomach and intestine may follow. Church and Peterson mention that neurasthenia may be caused by organic conditions such as phthisis, Bright's disease, diabetes, gout, rheumatism, and uremic and toxic states generally. The fact that chronic gastro-intestinal conditions are almost invariably followed by neurasthenia of differing intensities is not mentioned.

For purposes of simplification we have separated the symptomatology of the nervous system in connection with chronic intestinal toxemia into four classes, namely, cases involving (1) the mental system, (2) the sensory system, (3) the motor system, and (4) the sympathetic system. These classes of symptoms may occur separately or in combination, usually the latter, so that we can designate them only according to the predominant symptoms. It would be impossible to say why the toxin resulting from these intestinal conditions should have a selective affinity for any one part of the nervous system, just as it is impossible to ascribe reasons for the localization in other toxic states resulting from tuberculosis, diabetes, gout and syphilis.

It is a significant fact that in practically all of the cases considered in this article the nervous manifestations have either cleared up or have been markedly improved by treatment directed toward the intestinal toxemia. A great many of these patients have been treated by the usual therapy for disorders of the nervous system, without result. This is not in the

nature of positive proof, but is very strong evidence as to the etiology of the disturbances of the nervous system in these cases.

In considering the cases exhibiting mental symptoms, we have divided them into two groups, intellectual and psychic. Under the intellectual group we find sluggishness of mentality, dulness and stupidity, loss of concentration, loss of memory and mental incoordination. In the psychic group are included irritability, lack of confidence, excessive and useless worry, exaggerated introspection, hypochondriasis, phobias, depression, melancholic states, obsessions, delusions, hallucinations, suicidal tendencies, delirium and stupor. Of 518 cases studied for this paper, 201 exhibited irritability, 317 depression, 4 obsessions, 1 dual personality, 5 hallucinations, 4 delusions, 12 hysterical coma, 74 deep melancholia, etc.

There is no group of mental symptoms that can be said to be diagnostic of intestinal toxemia. The mental symptomatology is rather complex and may assume any one or more of the symptoms of a primary mental condition, or of syphilis. These must necessarily be excluded. As an example of mental disturbance illustrating both intellectual and psychic symptoms, the following case history is of interest:

REPORT OF CASES

CASE 1.—History.—Miss L. E., aged 46, a schoolteacher, had been constipated sixteen years following an attack of nervous prostration. The symptoms, which began at this time and had become progressively worse up to the time when she was first seen, were intense headaches, hemicranial in type; she felt as if she had two brains, one side normal and the other side abnormal. Severe melancholia, with violent outbreaks, which was progressive, kept the patient from teaching. Twelve years ago curettage was done. Eight years ago, after a diagnosis of uterine fibroids, a hysterectomy and appendectomy were performed with no improvement. For five years she took morphin, in increasing dosage, for relief from pain in the head. She always felt uncomfortable in the abdomen, especially when standing. Ability of mental concentration was partially lost. She was much depressed.

Examination.—The roentgen ray revealed a water-trap stomach with one third retention at seven hours. The small intestine was intensely rapid. Meal was in the colon in one and three-fourths hours. Both flexures and transverse colon were very low. The urine was constantly normal except for a large excess of indican. Blood pressure for many years was around 240. The Wassermann reaction was negative. Blood analysis, chemically, showed low urea nitrogen, uric acid and blood sugar. Slightly high freezing point of serum. Subsequent chemical blood analysis showed a similar picture with the exception of a high uric acid retention. Examination of the optic fundus revealed a normal picture. This patient was in a deplorable condition, mentally and physically, and life had become a burden to her. She could work only with frequent long periods of rest.

Treatment.—She was operated on by Drs. Draper and Lynch in August, 1914. The pylorus and duodenum were normal except for some slight thickening. The gallbladder was thickened and contained one stone, the size of a marble. The stone was removed. The transverse colon showed many diverticula, one of which was solidified. This was removed. The sigmoid found bound down in a scar from a previous operation was freed. A partial colectomy (developmental reconstruction) was done. End-lateral anastomosis was effected. A partial Coffey operation was limited to three suspensory sutures to the left. There was no postoperative shock.

After an initial improvement in all symptoms the patient relapsed and came to see Dr. Satterlee four months later. She had returned to work at school against all advice. She was incapacitated again. She was sent to a sanatorium for

* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

rest, and given autogenous colon bacillus vaccine. Doses were given weekly, gradually increasing in amount. There was rapid improvement. After a short time she returned to work and remained there while receiving weekly doses of vaccine and general supervision regarding diet and hygiene. One year later the patient said that "although formerly a burden to do a pleasure, it is now a pleasure to do a burden." She was feeling much better and treatment was stopped. Six weeks later she relapsed again and returned for treatment. This caused improvement once more. She continued to alternately improve, stop treatment and relapse until January, 1916, when she had a severe relapse and again went to the sanatorium. She became very melancholic and threatened suicide. She had intense pain in the left side of the head and was very nervous and hysterical. Vaccine gave intense and severe reactions. In March, 1916, she felt so well, and had for the last month or two, that she thought she should be again dismissed from treatment. At the present time the patient is still teaching and feels well unless tired, when she has a rise in blood pressure and a moderate amount of depression.

COMMENT

The interesting features in this case are the excellent results, especially in the mental condition, after removal of the cecocolon, the subsequent diseased condition of the remainder of the colon, and the good results from the administration of the autogenous colon bacillus vaccine. These three things point very strongly to a diseased colon, and the colon bacillus as the causative factors in this patient's condition. The high blood pressure seemed to be partially dependent on the intestinal toxemia. The former was always increased after prolonged fatigue, and at the same time the toxemia increased. The chemical blood analysis and the examination of the optic fundus showed a probability of lack of any advanced renal changes.

The following case history is an example of the predominance of psychic phenomena:

CASE 2.—History.—Mrs. S., aged 34, with negative family history, had had three children. There was a history of typhoid and erysipelas. For five years previous to being seen she had been much troubled with gas, pain in the epigastrium and constipation, with extreme tenderness at times to the left of the umbilicus. While on her feet she is comparatively comfortable, but pain begins when lying down. She has the sensation in the early morning hours of being tightly gripped in the left side as in a vise. There is no nausea or vomiting. The patient has lost 40 pounds in the last five years. She has extremely nervous spells and wants to laugh and cry. The desire is hardly controllable at times. She is very sleepless at intervals and when so keeps the whole family awake. Her husband is sometimes at his wit's end to know how to control and keep the patient calm. When very nervous she becomes hysterical and disturbs the neighbors. She screams, laughs loudly, and one time ran down stairs and into the street in her night dress. A roentgen-ray examination revealed a water-trap stomach, and ptosed, sluggish colon. Lavage at one time showed eight hour residue in the stomach.

Diagnosis.—Chronic intestinal toxemia, water-trap stomach and ptosed sluggish colon. After treatment by diet, hydrochloric acid, massage, etc., the patient was operated on. The pylorus was high, fundus low. A long adhesive appendix with constriction was removed. Colon and stomach suspension was done. Seven months later constipation had disappeared and the patient had gained 35 pounds. Nervousness was much improved. There was occasional gas, nausea and eructations. One year later, however, the nervousness returned in marked degree and there was troublesome constipation. The patient was not sufficiently careful in diet and habits. She was again put on rigid anticonstipation diet. The foot of the bed was elevated, and exercise and fresh air ordered, with very little improvement. She was then given a

course of treatment with autogenous colon bacillus vaccine. At the present time, one year later, reports show the patient to be in good physical and mental condition.

Some cases show a marked predominance of sensory symptoms. These may be classified as paresthesias, hyperesthesias, anesthetics, hyperalgesias, analgesias, myalgia, neuralgia, neuritis, perversions of taste and smell, hyphedonia, and hyperhedonia. In 518 tabulated cases, 421 patients complained of headache, 302 of vertigo, 397 of paresthesias, 387 of myalgia, 379 of "nervousness" and "nervous sensations." We have observed that as a general rule the mental symptoms were more likely to occur in patients who are highly temperamental, and the sensory symptoms in those of a phlegmatic disposition.

The following case history is illustrative of the latter type of individual:

CASE 3.—History.—Mrs. C. M., aged 50, was of nonenter-optotic type. She had been strong as a child but subject to "bilious attacks." She was naturally a hearty eater, including meats, and always had more or less trouble with her digestion. The trouble began after the birth of her first child, twenty-one years ago. After the second child, two years later, she had a perineorrhaphy, and five years later an appendectomy and ventral fixation was done. Five years ago she had a bad attack of indigestion. A diagnosis of carcinoma of the stomach was made by the attending physician. The patient lost 18 pounds. She complained that her digestion is never right and that she has always much flatulence and sleeps poorly. There was no apparent constipation until two months before examination, when she had a fecal impaction in her right side. She wakes up at 4 a. m. with headache, pain in the back of the head and neck, nausea and marked eructations. She has pain, as she expressed it, "in every nerve of the body from head to foot." The left arm and shoulder are tender and sensitive and the teeth supersensitive. She has numbness in hands and legs. She is very nervous and has had some depression and loss of concentration. She has polyuria, urticaria, and there is an odor to the perspiration. Her chief complaint is pain in the whole body and soreness in the joints of the fingers and toes.

Physical Examination.—This revealed a muddy colored skin, dry brittle nails and hair, coated tongue, tenderness over the whole colon, splashing and crepitation over the cecum. Roentgenography revealed water-trap stomach, residual cecum and residual sigmoid. She had an enormously dilated rectum. There was no gastric retention.

Treatment.—This consisted of diet, autogenous colon bacillus vaccine, hygiene, local treatment of a rectal fissure and hemorrhoids. There were very severe reactions from vaccine, increasing pain and nervousness, lasting from twenty-four to forty-eight hours. Her symptoms, which have been chiefly neuralgic pains, nervousness, insomnia, and irritability, have been markedly relieved by treatment for chronic intestinal toxemia, which included forty doses of the vaccine. The strong reactions following vaccine administration, and the periods of marked improvement thereafter, were very remarkable and seemed to have a strong bearing on the etiology of the symptoms and on the toxemia.

The third class of cases considered, those showing symptoms of the motor system, are fewer in number than the cases with the mental conditions or those with affections of the sensory system, and form a small percentage of the total number of cases. Among these are the so-called cases of epilepsy, supposedly of intestinal origin. We are by no means able to state with certainty that these cases owe their symptomatology to the diseased condition of the intestinal tract and we are not able to cite any patient cured to date, but we do know that treatment of the diseased intestine itself

and treatment directed toward the resultant toxemia has cleared up the symptoms directly referable to the intestinal tract and has produced, or been coincident with, a vast improvement in the epileptic seizures. When a relapse in the intestinal symptoms has occurred there has almost invariably been a recurrence of the epileptic seizures. We are of the opinion that a surgical procedure, such as a developmental reconstruction of the colon, in our cases under observation, would correct the intestinal condition and cure the disease. This, however, is to be proved. This class of patients will require a large amount of future study before more definite conclusions can be drawn, but the results obtained in the cases to date are very suggestive of a close relationship between these epilepsies and intestinal toxemia. The case history which follows is interesting in this connection:

CASE 4.—History.—Miss S. K., aged 38, a milliner, brunette, was first seen five years ago. Her family history was negative for epilepsy or intestinal troubles. She had been constipated all her life, had had "indigestion" for twelve years, and was getting worse. At the age of 14 she began to have attacks of unconsciousness in which she would bite her tongue. She had premonitory auræ at times. These came on usually in the middle of the night and in the early morning hours, leaving her feeling weak and exhausted after waking. Appendectomy was performed one and one-half years ago. The left ovary was removed at the same time for unknown reasons. She always takes cathartics at night. She has frequent spells of nausea, vomiting and malaise, with much pain in the legs, knees and arms at times. A marked symptom in this, as well as in a similar case, has been a feeling of soreness, fulness and heaviness in the cecocolon previous to and during the periods of seizure, with accompanying headache.

Physical Examination.—This revealed a prominent abdomen, dilated stomach and large tender cecum. A blood analysis showed high aminonitrogen, with low uric acid, indicating loss of purin metabolism. Hepatic functional test with phenoltetrachlorophthalein intravenously showed a normal 45 per cent. recovery. The urine showed almost constantly high indican content, but few granular casts. Stool examinations revealed many unchanged muscle fibers and faint blood reaction.

The attacks were getting worse and more frequent; five or six every day. She is confined to bed altogether lately owing to these attacks.

Treatment.—The patient has been under close observation for the last five years. During this time the administration of autogenous colon bacillus vaccine has had a good effect in controlling the seizures, but the patient is still subject to relapses. At the time of these relapses the best results have been obtained by proper care of the intestinal tract and renewed injections of the vaccine. A developmental reconstruction of the colon has been constantly considered and frequently urged, but so far has been unobtainable.

The following case history is one in which marked motor nerve symptoms, resembling closely those of tetanus, was caused by strangulation, gangrene and perforation of the ileum.

CASE 5.—History.—Mrs. F. DeN., aged 30 years, had three weeks previous to examination an incised wound of the finger, which healed. Two weeks before examination she had an attack of severe vomiting lasting four or five days, with constipation. Two days before coming under observation she developed a stiffening and gradual inability to open the jaws. Her physician thought the condition to be one of tetanus and sent her to the hospital.

Examination.—This revealed a well developed and nourished woman in good mental condition, but the inferior maxilla was firmly fixed to the upper, and there was marked stiffness of the neck muscles. There was a small insignificant healed scar on the finger. There was no distention of the

abdomen, and no rigidity or tenderness there. The temperature was normal, the pulse 99. The heart and the lungs were normal. No symptoms occurred until twenty-four hours later, although the jaws did not relax. A convulsion then occurred with opisthotonus, complete muscular rigidity and cyanosis, and the jaws relaxed. She was given camphor and oxygen and the condition passed off in ten minutes. Three hours later she became suddenly completely rigid, cyanotic and died. The temperature had risen to 100.5 and the pulse to 110.

The postmortem examination revealed an omentum all curled up in an effort to wall off an infective process in the pelvis. The peritoneum over the whole intestinal tract showed an intense inflammatory condition. Newly formed adhesions matted together the entire tract. There was in the pelvis a gangrenous loop of ileum about 8 inches in length, which was perforated in several places and covered by omental tissue. No cause for this condition could be found, but the most likely thing seemed to be a preexisting volvulus. The brain and coverings were normal except for a mild edema and congestion. Postmortem cultures, aerobic and anaerobic, from the spinal fluid and blood failed to show the presence of any organism.

The conclusions drawn from this interesting case are that it was a toxemia resulting from the obstruction and gangrene of the intestine, and not a case of tetanus.

In 1908, Draper¹ called attention to a similarity between so-called tetany in human beings and the symptoms of duodenal obstruction in dogs, which is interesting in this connection.

The subject of the involvement of the sympathetic system is of such a broad scope that to go into it with any detail except in certain definite phases is impossible on account of its complexity. We have yet to find a case in which there was not present some involvement of the sympathetic system, but in some cases this is much more pronounced than in others. The symptoms that are most characteristic and directly attributable to irritation of the sympathetic system are: (1) the cardiac symptoms, including tachycardia and palpitation; (2) peripheral vasomotor symptoms, such as diminished blood supply to the skin, dry brittle hair and nails; (3) gastro-intestinal symptoms, including disturbances of taste and smell, appetite, nausea, vomiting, changes in the secretion of the digestive juices, constipation and diarrhea, and (4) disturbances in the endocrine system, with hypothyroidism, hyperthyroidism, alteration in the secretion of the suprarenals and other glands of internal secretion.

Direct connection between intestinal conditions and disturbances in the glands of internal secretion are often highly problematic. Of the symptoms mentioned, we find in the order of their frequency constipation, disturbances in skin nutrition, changes in the secretion of the digestive juices, loss of appetite, ageusia, nausea, changes in the rate and rhythm of the heart, with the subjective symptom described by the patient as "palpitation," and the syndrome of hyperthyroidism. The constipation may be the cause or the result of the toxemia. In the latter case this may be due to the disturbance of the sympathetic system.

It is in the disturbances of the nutrition of the skin that we see the first marked improvement from treatment. A dry dusky skin will often become moist and clear after the intestinal toxemia is controlled.

We have found that in all our cases of intestinal toxemia in which there has been a perverted ductless gland system, only occasional improvement has followed the administration of organotherapeutic prod-

1. Draper, J. W.: Observations Upon a Form of Death Resulting from Operations on the Duodenum, Surg., Gynec. and Obst., May, 1906.

ucts. On the contrary, the symptoms coming apparently from a perversion of these glands have been improved by the treatment directed toward the intestinal tract and the intestinal toxemia as the primary cause. As one instance of disturbed glandular system may be mentioned a patient apparently suffering from hyperthyroidism, to whom thyroid extract was administered. The result was a very marked hyperthyroidism. Following this some of the common antithyroid measures were adopted without result. Subsequently the patient made a slow but good recovery under treatment for intestinal toxemia. It is a common thing to see an enlarged thyroid with symptoms of hyperthyroidism subside under the treatment for intestinal toxemia.

CONCLUSIONS

The nervous system is almost invariably affected in whole or in part by chronic intestinal toxemia.

The nervous symptoms are often the most prominent in the symptomatology.

A thorough investigation of the gastro-intestinal tract is essential in cases exhibiting a chronic symptomatology of the nervous system provided the usual obvious factors of etiology of disturbances of the nervous system can be excluded.

Disturbances of the gastro-intestinal system are more often the cause of a nervous symptomatology than the result of a diseased nervous system.

In doubtful cases a proper hygiene and therapy of the intestinal tract will often be the deciding factor in differential diagnosis.

125 West Fifty-Eighth Street.

ABSTRACT OF DISCUSSION

DR. J. RUSSELL VERBRYCKE, JR., Washington, D. C.: It seems to me that the nervous system and the gastric system in autointoxication should be considered in the light of a vicious circle. Either system can start the trouble which can then be taken up by the other, and in my experience, considering either system by itself has not resulted in curing the condition. We have to treat the autointoxication by appropriate measures, and with that we have to employ a lot of suggestion to the patients to keep them encouraged. We really know hardly anything of the actual causative factors of intestinal intoxication. We have not been able to separate the individual poisons; we have, however, some idea of the degree of poisoning in the estimation of indican. There is some difference of opinion as to the importance of indican as an index of intestinal intoxication. Recently, I analyzed a series of several hundred cases in which indican was persistently present, and I found on tabulating these cases that 98 per cent. had two or more of the symptoms which we consider to be those of intestinal intoxications or other intoxications. We know several characteristics of the toxins generated in the bowel. We know they are rapid in action and rapid in excretion. A patient may come to us having marked symptoms of dizziness or headache and after one colonic washing the headache and dizziness may disappear; patients often go out of the office relieved. We know, furthermore, that in addition to the rapidity of elimination the patient builds up a resistance to the intoxication, and a patient who at one time shows constant indicanuria, if he has a recurrence, though it is much less in degree than the first attack, feels it a great deal more. The most common symptoms are referable to the nervous system, and I have found that in 67 per cent. of the cases in which there is inability to concentrate, the analysis will show indican. In my experience patients who do not show indican invariably show regurgitation through the ileocecal valve. These have been the most difficult to treat.

Dr. Satterlee mentioned that some of these cases frequently extended over a period of two years. I confess I would be discouraged before the two years were up, but the average case certainly does not take a very long time to improve. Once in a while, however, we do have a very resistant case.

DR. FENTON B. TURCK, New York: Twenty-five years ago when I took up research work on the alimentary tract two explanations were usually given of the causes of intoxication from the gastro-intestinal tract. One was mechanical obstruction of some form or degree, and where no mechanical obstruction could be shown it was concluded that these cases were of nervous origin. The nervous system was held to be the prime factor causing muscular contraction and rhythmic motion of the stomach and intestines. Physiologists later found, after removal of all nerve supply from the muscles, that rhythmic motion continued the same, the nervous system acting as a coordinating mechanism.

My experiments indicated that not only were the muscle cells the prime factors in physiologic function, but atony was closely associated with a bacteriologic problem, the intestinal flora. I found that the muscle cells which were involved undergo a degenerative change with loss of motor power *pari passu* with venous stasis of the splanchnic circulation. Recently (*Bulletin of the Medical and Surgical Faculty of Maryland*, December, 1916, and *Boston Medical and Surgical Journal*, May 10, 1917) I published some interesting experimental and clinical facts showing that the individual muscle cell is the first to be acted on by the factors which produce chronic atony and dilatation.

Fatigue, distention, venous stagnation, toxic absorption and bacterial permeation serve, each in its turn, to exhaust, stretch, stifle, poison and break down the structural units that make up in their sum the muscular wall. Tissues which have shown the atony of dilatation will demonstrate under the microscope the changes undergone by muscle plasma, and, in many cases, will give unmistakable evidence of the special action of vascular or bacterial factors.

The occurrence of colon bacilluria is often presumptive evidence of absorption in spite of the bactericidal function of the submucous tissue.

To sum up: (1) Muscular inefficiency of the gastro-intestinal tract is the basis of the greater part of chronic perversion of digestive function. (2) Experimental atony and dilatation are brought about chiefly through mechanical distention, fatigue and the multiplication of the intestinal flora. (3) Microscopic sections of atonic tissue show the factors of venous stagnation and the permeation of the intestinal wall by bacteria from the lumen; muscle cells of such tissue under the microscope are seen to be in an advanced degree of degeneration. We have here biologic principles to grapple with.

DR. E. E. SMITH, New York: In a paper on the "Etiology of Idiopathic Epilepsy" by Dr. Herter and myself, published in the *New York Medical Journal*, twenty-five years ago, we called attention to intestinal toxemia as a causative factor in epilepsy, reaching the conclusion that seizures were determined in certain cases by the absorption of toxins from the intestinal tract.

The present views in regard to this interesting subject are conveniently expressed by three types which we keep in mind: First, protein sensitization is the condition which first receives our attention with those patients in whom there are skin eruptions; the second type is the arthritic case, and in these cases attention is first directed to localized foci of bacteria; the third class of cases is the type before us today, the nervous cases, in which we direct our attention to toxemia from absorption of chemical substances from the intestines. These are not fixed types, and one condition may often be found with either of the others.

Relative to the intestinal toxemia, we now know of substances formed by putrefactive processes that are entirely capable of giving rise to symptoms in the nervous system, namely, the amines, and particularly the derivatives of ethylamine. There is an exaggeration of the action of particular glands through the formation of certain of these amines, since

they are similar in their pharmacologic action to the autocoids of the glandular secretions; and we have, as a result, this perversion of the functions of the nervous system.

If the process in the intestine goes on to a point where there is actual bacterial invasion of the tissues of the intestine, then we have a class of cases in which, in addition to chemical intoxication, we have bacterial infection. These are the cases in which the administration of autogenous vaccines, properly prepared, are giving good results; in other words, in those cases in which we have a mixed condition of chemical poisoning and bacterial infection. Thus, we may have in any of the conditions mixed processes that go on and give rise to and explain various symptoms.

DR. NATHAN ROSEWATER, Cleveland: It has been said, by Dr. Turck, I believe, that a mechanical cause is not sufficient to explain these cases. In cases of headache due to mechanical causes, particularly from constipation, the relief is almost immediate after taking a cathartic or enema, showing that there was a mechanical cause, not a toxemia. If it were toxic it would take twenty-four hours or more before we could remove enough of the toxic matter absorbed from the bowels into the circulating fluid; so that there is a large class of cases of this purely mechanical type. On the other hand, what is required is a differentiation between the intestinal and nonintestinal toxemias, particularly noting the time of day when the symptoms occur and whether mixed or simple in type.

In cases of simple indican, toxic fatigue occurs at any time of the day, lasts any length of time, but may be complicated. There may, however, be an entirely different type not clearly described heretofore. The patient wakes up in the morning after rest and sleep (fatigue antidotes) with a dry mouth, depressed in spirits, feeling tired and aching all over—muscular rheumatism, so called—and yet as a proof that it is not due to fatigue at all, such a patient, who may be a washerwoman, will, after waking up lame and exhausted, do a hard day's work, and will feel better and be entirely free from trouble in the afternoon and evening. Fatigue would not improve with exercise, nor would neurasthenia. We are dealing here with a type of case which resembles, but is entirely different from, indicanemia or neurasthenia, and which occurs in the early morning and passes off during the day, especially with exercise, massage, etc. There are generally, also, pains in these cases which occur in the early morning, and the pain is so severe at times that it must in some cases be distinguished from appendicitis. If the abdominal muscles are touched in the early morning they are very sensitive, but the oftener you press, the less sensitive they are. Such cases are numerous and are due to purin substances in the foods—purinemia—and not to intestinal toxemia. There is no indican excess in these cases. When the patients are taken off of purin foods they rapidly improve; even though subjected to harder work than ever they do not complain of the old feeling of fatigue, which should be called pseudo-fatigue.

DR. G. REESE SATTERLEE, New York: Our paper was not intended to be a discussion on the etiology or treatment of intestinal toxemia. There was an interesting point, however, brought out by Dr. Verbrycke, who spoke of suggestion or mental therapy in these cases. I will say that it is extremely important. I do not believe that any one could hold a patient for two years unless he used suggestion or mental therapy along with his treatment.

I called attention to the length of time it takes for a patient to get over an intestinal operation. It does take at least one or two years, and if we can cure them in two years without an intestinal operation, we are at least doing as well as the surgeons.

We find indican not at all diagnostic. It might be diagnostic of putrefaction. Dr. Verbrycke spoke about the difficult cases of regurgitation into the ileocecal valve. I think they may be associated with indicanuria. We found that patients in a large percentage of cases of chronic intestinal toxemia have no indicanuria. They may have intestinal putrefaction at one time or another, but a great many of the patients do not have ileocecal regurgitation. Every patient has a rectal

injection, so we are sure, as far as the technic can go, that we have no regurgitation. Without indicanuria and without regurgitation the patients are fairly easily taken care of.

Dr. Smith very aptly spoke of two kinds of intestinal conditions: toxemias with putrefactive substances, the amines, in the intestinal contents and those in which the wall of the intestine is involved, in which we are dealing with a bacterial infection. In the latter condition he considered vaccines useful. This is exactly what I have brought out. To sum up, intestinal putrefaction in simple cases may be cleared up by catharsis and starvation, and the other more difficult conditions, in which the wall of the intestine is infected, must be handled by diet, mental suggestion, hygiene and autogenous colon vaccines. In our experience the autogenous colon vaccines are most essential.

A NEW COMPLEMENT FIXATION REACTION AS APPLIED TO LEUKORRHEA

A COMPARATIVE STUDY OF FORTY-SEVEN CASES

LOUIS D. SMITH, B.S., M.D.

AND

F. LEE STONE, M.D.

CHICAGO

The difficulty of making an absolute diagnosis of gonorrhea in woman by a combination of clinical history, signs, symptoms and the usual laboratory methods has led us to undertake a comparative analysis of forty-seven cases of women suffering from leukorrhea, employing the usual methods and the complement fixation test devised by one of us (Smith). It is further desired to submit these records statistically, to form a basis of estimate of the value or accuracy of this reaction.

In entering on these experiments, we were immediately impressed with the insecurity and lack of value of all ordinary methods to serve as a criterion for diagnosis to substantiate our findings. For who, by the methods at our command, can with absolute assurance delegate a woman suffering from leukorrhea to the categorical diagnosis of gonorrhea?

In conducting the special test, it was deemed advisable, in order to eliminate bias, to do so without a knowledge of the nature of the case. Accordingly the specimens were submitted in serial numbers to one of us (Smith), and the other data were kept separately (Stone) until after the report of the test, when all ascertained facts were coordinated. In this manner the special test under trial was performed without any guiding influence, and the other laboratory examinations were made without knowledge of the outcome of this test.

The principle of the test involved is that of the Bordet-Gengou complement fixation reaction. In our test the antibody of the bacteriolytic system is supplied by commercial antigonococcic horse serum, and the antigen is the unknown element. This antigen is embodied in the suspension of the leukorrheal discharge which, although gonococci may be few, nevertheless contains the products of their interaction with the tissue and also their own autolytic products. In other words, the principle of the Wassermann test is reversed, in that in the latter the unknown element is the antibody in the patient's blood, and the known antigen is tissue extract, whereas in our test, the antibody is supplied, and the antigen (identical with

the gonococcus or its products) is the unknown factor. Thus employing its principle it is possible to determine at its very inception a gonorrheal infection in male or female, and similarly to determine the time of disappearance of the organism according to experiments we are now conducting.

TECHNIC OF TEST

A specimen of the discharge is collected from the cervix and vagina on a long cotton swab. The swab is immersed in about 2 c.c. of physiologic sodium chlorid solution. The discharge is freed from the swab and ground finely with the sodium chlorid solution in a glass mortar. The suspension thus prepared

of the third row are placed 7 minims of the suspension. In all the first row tubes and the single tube of the fourth row is now placed 1 minim of the properly standardized antigonococcic serum. In all tubes excepting the single third row tube is now placed guinea-pig serum (complement) as is done in the Wassermann test. The specimens are now incubated in the water bath for one-half hour at 37 C. (98.6 F.), when the antishoop amboceptor and sheep corpuscles are added and reincubated. Readings are then taken. The first row constitutes the test, the degree of inhibition of hemolysis indicating the degree of positiveness, if the corresponding second row, which is the control for the test row, has completely hemolyzed. The third row tube is a control on a possible hemolytic tendency of the specimen to be tested, whereas the fourth row tube is a control on the anticomplementary action of the antigonococcic serum.

The accompanying table indicates our findings. By the caption "history and evidence" is meant a combination of conditions such as known exposure, infection of others, pain and burning on urination, profuse leukorrheal and urethral discharge, etc.

An analysis of the table elicits the facts that in only two instances, Cases 6 and 9, was a negative test obtained when there was evidence of gonorrhea, Case 6 having presented a bartholinian abscess that had been cured. However, in these two instances slide examinations and blood complement fixation tests were negative. In seventeen cases with positive clinical evidence and negative slide examinations, our complement fixation reaction was positive. In four cases without clinical appearance of gonorrhea, the test was positive in two and doubtful in two. Five cases doubtful clinically yielded positive reactions. Three cases with positive clinical evidence and positive Smith test exhibited positive blood complement fixation reactions.

CONCLUSIONS

In view of the fact that we have no real basis for comparison of the test under discussion, time and additional work are necessary to establish its value. It is feasible theoretically because it involves the principle of the Bordet-Gengou complement fixation reaction. In our experience it has been of great value in confirmative diagnosis of gonorrheal infections. It has served, finally, as a guide in determining cures.

25 East Washington Street.

COMPARATIVE ANALYSIS OF FORTY-SEVEN CASES OF LEUKORRHEA *

| Case No. | History and Clinical Evidence of Gonococcus Infection | Gram Stained Slides | Smith Test | Blood Examination Wassermann | Gonococcus Fixation |
|----------|---|---------------------|------------|------------------------------|---------------------|
| 1 | — | — | — | 0 | 0 |
| 2 | — | — | — | 0 | 0 |
| 3 | + | + | + | 0 | 0 |
| 4 | + | — | + | 0 | 0 |
| 5 | + | — | + | + | + |
| 6 | + | — | — | — | — |
| 7 | + | — | + | — | — |
| 8 | — | — | — | — | — |
| 9 | + | — | — | — | — |
| 10 | + | — | + | — | — |
| 11 | + | — | + | + | — |
| 12 | — | — | — | — | — |
| 13 | — | — | — | — | — |
| 14 | + | + | + | ++++ | — |
| 15 | + | — | + | — | — |
| 16 | + | + | + | — | — |
| 17 | — | — | + | 0 | 0 |
| 18 | + | + | + | — | — |
| 19 | + | + | + | — | — |
| 20 | + | + | + | — | — |
| 21 | + | — | + | 0 | 0 |
| 22 | ? | — | + | — | — |
| 23 | + | — | + | + | — |
| 24 | + | + | + | 0 | 0 |
| 25 | — | — | — | — | — |
| 26 | + | — | + | — | — |
| 27 | — | — | — | — | — |
| 28 | — | — | — | — | — |
| 29 | + | — | + | — | — |
| 30 | + | — | + | — | — |
| 31 | + | — | + | 0 | 0 |
| 32 | ? | — | + | 0 | 0 |
| 33 | ? | — | + | — | — |
| 34 | + | + | + | + | — |
| 35 | — | — | + | — | — |
| 36 | — | — | — | 0 | 0 |
| 37 | + | — | + | — | — |
| 38 | — | — | — | — | — |
| 39 | + | — | + | — | — |
| 40 | — | — | — | — | — |
| 41 | + | + | + | + | — |
| 42 | + | — | + | 0 | 0 |
| 43 | + | — | + | + | + |
| 44 | + | — | + | — | + |
| 45 | ? | — | + | — | — |
| 46 | — | — | + | 0 | 0 |
| 47 | + | + | + | 0 | 0 |

* In this table, + denotes positive; — negative; ? question; 0 no examination made; 4+ four positive.

is permitted to stand over night and then heated at 56 C. (132.8 F.) for half an hour. In appearance a properly prepared suspension exhibits a faint turbidity, to obtain which it may be necessary to add more sodium chlorid solution. Practice will enable one to determine the proper dilution. Floating particles may be removed by a few seconds of centrifuging.

In the test a positive and negative control should be used, each specimen requiring ten tubes (as used in the Wassermann test), consisting of a first and second row of four tubes, and single tubes in the third and fourth rows. In all tubes are placed 2 c.c. of physiologic sodium chlorid solution. To the first tubes of the first and second rows is added 1 minim of the suspension, in the second tube 3 minims, in the third 5 minims, in the fourth 7 minims. In the single tube

Method to Determine Total Amount of Blood in the Body.—

The *Correspondenz-Blatt für Schweizer Aerzte* gives brief summaries of some of the German medical journals, and in a recent issue describes M. de Crinis' method of determining the total amount of blood in the body by refractometry. With a Pulfrich refractometer and Reiss' tables he estimates the proportional albumin content of the blood from a specimen of serum after centrifugation. Then the blood is artificially diluted by injection of 500 c.c. of physiologic saline, and after ten minutes another specimen of serum is centrifuged and the percentage content of albumin determined. To avoid error from loss of fluid by skin and kidneys during the interval, he actually injects 550 c.c. of the saline but computes only for the 500 c.c. The total amount of blood thus determined for healthy persons ranged from 3,300 to 5,600 c.c., equivalent to from 5.98 to 7.5 per cent. of the body weight. His research showed further a fairly constant figure for the total blood amount in individual cases for weeks at a time. The original article is credited to the *Zeitschrift für physiologische Chemie*, 99, 131.

Clinical Notes, Suggestions, and New Instruments

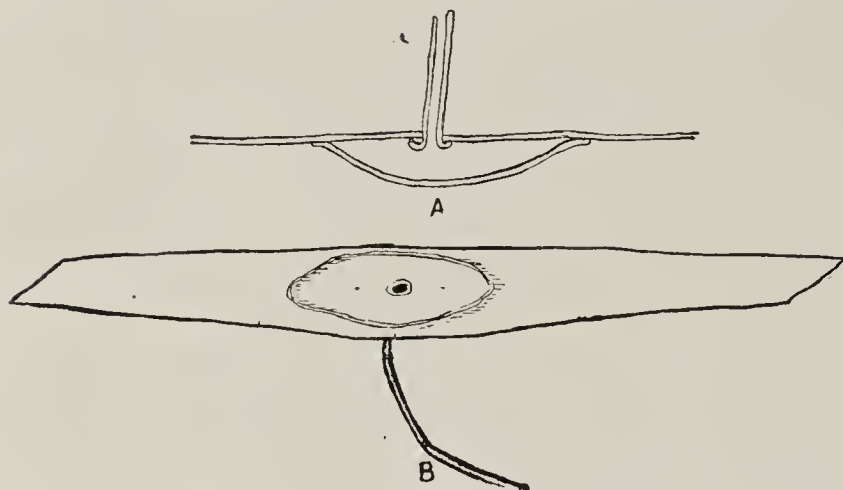
POSTOPERATIVE DRESSING FOR CHOLECYSTOTOMY

CHARLES H. BREUER, M.D., LINCOLN, NEB.

The dressing here described has been adopted in my work in gallbladder cases in which a rubber tube drain is left, for the purpose of eliminating the troublesome and messy pad. These cases, if they drain at all profusely, require changing of the pad from one to three times a day, and usually a large stack of dressings is found saturated with the discharge.

The dressing is made from the rubber umbilical belts made for the umbilical hernia of infants. This belt consists of a band of pure rubber, to extend around the abdomen, with a pneumatic pad in the middle. The pad is inflated by a rubber tube. A section is shown at *A* in the illustration. The rubber pouch which is cemented to the under side of the belt is trimmed away with a pair of scissors, leaving the belt with the tube attached, with the opening on the reverse side of the belt.

After the cholecystotomy case has progressed so far that all drainage can be withdrawn, and only a fistula is left, this belt is sterilized and fastened over the wound, so that the opening into the rubber tube comes just over the fistula. The band is held in place by straps of adhesive plaster. The



Postoperative dressing for cholecystotomy: *A*, diagram of air cushion on umbilical belt; *B*, umbilical belt trimmed for use.

discharge from the fistula is thus enabled to pass through the rubber tube, into a bottle, just as if the rubber drain were still in place.

This effects a great saving in time, trouble and dressings, as well as affording the patient a great deal of convenience over the old method.

THE TREATMENT OF URETHRAL CARUNCLES BY FULGURATION

EDGAR G. BALLENGER, M.D.

Fellow of the American College of Surgeons

AND

OMAR F. ELDER, M.D., ATLANTA, GA.

Not having seen a report of the employment of the high frequency current in the treatment of urethral caruncles, we desire to direct attention to the value of this method of destroying these troublesome growths. Our first experience with fulguration thus used was about two years ago when we fulgurated a large caruncle which had persistently returned over a period of several years after excision once, destruction by the actual cautery three times, and treatment with various cauterizing chemicals. We, as well as the patient, were much discouraged with the results obtained. We explained that fulguration treatment might succeed in preventing a return of this painful vascular tumor, and the patient readily consented to try this method. The surrounding tissue was infiltrated with a 1 per cent. solution of novocain, and the d'Arsonval current was applied until all of the red growth was whitened. Less pain followed the treatment

than had followed any of our previous treatments, and at the end of two years there is no return. Slight bleeding occurred at times as the fulgurated mass separated from the surrounding healthy tissues. There has not developed any narrowing of the urethral canal. Two others have been treated in this manner. One required only a single treatment, as the caruncle was small. The other required two fulgurations, as the growth was massive and so surrounded the urethral canal that we were afraid to attempt a total destruction, as we could not determine the limitations of the growth until it was reduced in size.

The patients have all remained well, though sufficient time has not elapsed to permit us to say they are absolutely cured. We can say, however, that they appear normal, one after two years, one after six months and one after two months. The technic of the procedure is much simpler and easier than excision, and the inconvenience to the patient vastly less, as the fulguration may be performed under local anesthesia.

INDIA INK INFILTRATION: A SIMPLE AND EFFECTIVE SUBSTITUTE FOR CORNEAL TATTOOING *

F. H. VERHOEFF, M.D., BOSTON

The method of tattooing corneal scars hitherto employed has consisted in making numerous needle pricks in the scar and then rubbing into them a paste of India ink. It is necessary to repeat this process many times with sufficiently long intervals to allow the inflammatory reactions to subside. This method has given such unsatisfactory results that corneal tattooing is now seldom attempted, either for cosmetic or for optical purposes. Moreover, it is open to the objection that it exposes the eye to serious danger of infection, and when the iris is caught in the scar, even to the danger of sympathetic uveitis.

Several years ago it occurred to me that a simpler, safe and generally more satisfactory method of darkening corneal scars would be to inject the pigment or coloring matter into the tissue by means of a hypodermic syringe. I therefore tried this method, but instead of making use of India ink, I employed a 20 per cent. solution of argyrol in the hope that permanent argyrosis would be produced. The result was most brilliant for about a week, at the end of which time the superficial layers of the scar were cast off, evidently because of necrosis from the toxic action of the argyrol. This made the scar thinner and much less noticeable, but of course was not the desired solution of the problem. It was noteworthy that the argyrol solution remained in the place it was injected and did not diffuse into the surrounding tissue to the slightest extent, thus proving that the penetrating power claimed for argyrol does not really exist.

Recently I have tried the method again in three cases, using India ink instead of argyrol, and the results have been entirely satisfactory. I made use of an ordinary small glass hypodermic syringe and a medium size needle (26 gage). A very small needle might tend to become plugged by the ink particles. The India ink, in stick form, was rubbed up in a small amount of physiologic sodium chlorid solution until a sufficiently black suspension was obtained. The fluid was then drawn up into the syringe through the needle, a piece of cork placed on the end of the needle, and the whole sterilized by boiling. The eye was then cocainized and held firmly by fixation forceps. After the syringe had been cooled and all air carefully forced out of it, the needle was introduced into the scar near the margin and the point pushed just beyond the center. The fluid was then slowly injected until only a narrow rim of the scar remained unblackened. In two of the cases it was necessary to insert the needle in two or three places to obtain this result, owing to the large sizes of the scars. The reason for not forcing the fluid quite to the margins of the scars was to avoid the possibility of its suddenly breaking its way into the normal corneal tissue. The uninjected margins of the scars, however, in none of the cases were sufficiently conspicuous to interfere with the cosmetic results.

* From the Massachusetts Charitable Eye and Ear Infirmary.

Great care was taken not to force the needle into the anterior chamber.

Following the operation, the eye in each case showed a slight reaction which subsided in about a week. In the course of a few weeks, the blackening became more uniform so that the ultimate results were superior to those immediately obtained. These results were far superior to those of any tattooing operations I have seen, and owing to the large amount of pigment injected and its depth in the tissues, there is every reason to believe that the improvement will be permanent.

DILUTING FLUID FOR COUNTING BLOOD CORPUSCLES

JACOB DINER, M.D., NEW YORK

The need of a good diluting fluid for the purpose of counting blood corpuscles has often been impressed on me while working in the laboratory and in hospitals. Those mentioned in textbooks have many drawbacks. Some form a precipitate on standing; others while remaining clear do not permit of the addition of staining solutions so that the white corpuscles may be differentiated from the red corpuscles while making the count; still others destroy the red corpuscles if the diluted blood is permitted to remain in the counting pipet for some hours.

With the object in view of securing a fluid which will do away with the objections mentioned, I have done some work along this line and have obtained what I believe to be an ideal diluting fluid. This fluid permits of the simultaneous counting of white and red corpuscles; it keeps indefinitely without precipitating; it retains the normal shape of the corpuscles, and the diluted blood kept in the diluting pipet for over a week was as perfect as when first drawn. The formula is as follows:

| | | |
|-------------------------------------|-------|-------|
| Sodium chlorid | 0.85 | gm. |
| Sodium citrate | 2.00 | gm. |
| Azure II | 0.001 | gm. |
| Formaldehyd solution, U. S. P. | 3 | drops |

Distilled water enough to make 100 c.c.

The sodium salts are dissolved in the water, the formaldehyd solution is added, the azure is added, and it is shaken well. It may be kept in any kind of a bottle.

The technic of using it is the same as with Toison's, Hayem's, or any other fluid. The findings are computed according to the degree of dilution.

FRACTURE OF ISCHIUM

ALBERT FRANKLIN TYLER, B.Sc., M.D., OMAHA

Fracture of the ischium is so rare that the following case is worthy of attention. The history of the accident as given by the patient is interesting.

W. S., a robust man, said that two days previously he had fallen in such a manner that he landed on the buttocks in the sitting position. A half buried brick protruded from the ground so that the force of the fall drove the brick against the right buttock. He tried to rise to his feet, and as he assumed the standing position there was a loud snap and he fell to the ground a second time. Thereafter he was unable to use the leg, and suffered intense pain when any effort was made to do so.

The man lay on the left side with the right leg flexed at the knee. Any attempt to extend the leg produced pain in the right buttock. Pressure over the region of the tuberosity of the ischium elicited severe pain.

Roentgen examination revealed a fracture through both rami of the ischium, the anterior being at about the junction of the ischium and pubic bone, the posterior extending through the acetabulum.

The patient was kept in bed on the left side with the right leg flexed at the knee. Recovery has been slow, but is good as far as function is concerned.

It would seem that when the patient's buttock struck the brick, only a partial fracture occurred, which was completed by the muscle strain incident to rising to the erect position.

Military Medicine and Surgery

PITCHING AND STRIKING THE UNITED STATES ARMY FIELD HOSPITAL

WILLIAM W. RENO, A.M., M.D.

Lieutenant-Colonel, Medical Corps, U. S. Army

FORT RILEY, KAN.

The ability to pitch or strike its field hospital in a very short time is a necessary accomplishment for every field hospital company. Speed in these two

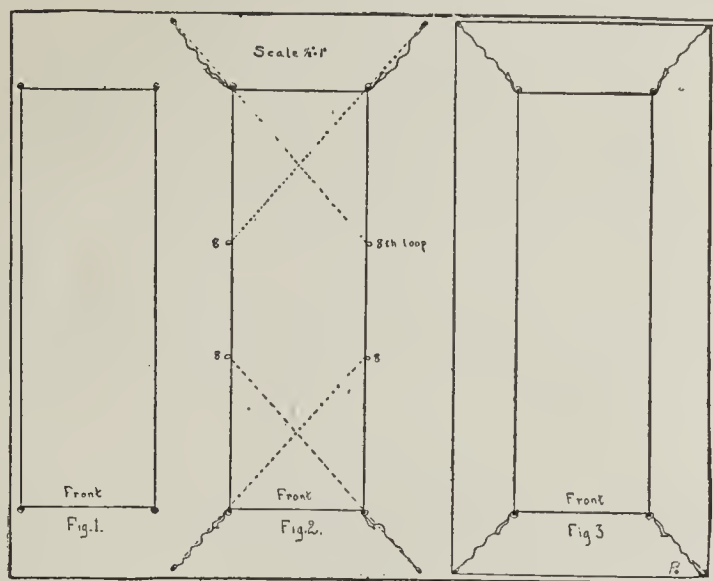


Fig. 1.—Pitching tentage, first step: Tent pinned to the ground by its four corners. Always draw wall taut and then slacken 4 inches before driving the corner pin.

Fig. 2.—Second step: The four corner guy pins added, and ropes placed over them.

Fig. 3.—Third step: Storm guys stretched for aligning guy pins.

operations will often spell success in the evacuation of the wounded in time of war. As every civilian physician who joins a field hospital company will be

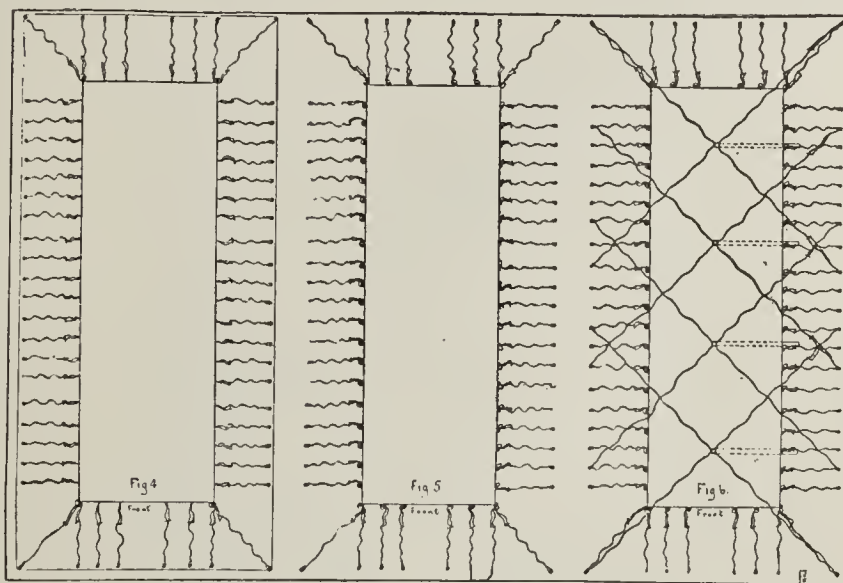


Fig. 4.—Pitching tentage, fourth step: Guy pins driven inside of ropes, opposite wall loops, and guy ropes, fully slackened, placed over pins.

Fig. 5.—Fifth step: Wall pins driven through wall loops on Sides 1, 2 and 3, and at (not through) wall loops on Side 4; wall loops removed at LECWP and LRCWP.

Fig. 6.—Sixth step: Uprights placed, hoods and storm guys adjusted; men creep under tent, raise, and then adjust uprights and ropes. Storm guy, a long rope over tent.

confronted with these necessary procedures, their anatomy will be presented in detail. The first essential is to learn how to pitch, strike and fold army tentage.

PITCHING

The field hospital company is divided into tent pitching squads, each of eight men and an NCO. Each

squad is divided into four minor squads of two men each, numbered Minor Squad 1, Minor Squad 2, Minor Squad 3 and Minor Squad 4. The four sides of a tent are numbered 1, 2, 3 and 4, Side 1 being the front side, and the others, 2, 3 and 4, numbered as the hands of a clock travel, that is, No. 2 to the right, No. 3 to the rear and No. 4 to the left. Each minor squad pitches and strikes on the side of its number, as Minor Squad 1 on Side 1, etc.

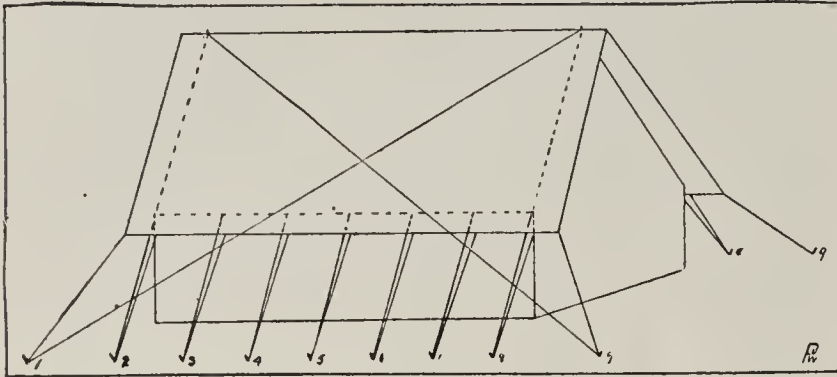


Fig. 7.—View of hospital tent and fly: Ropes go to pins as indicated; 1 and 9 are 8 feet from the corner wall pin; 2 and 8 are 2 feet from 1 and 9; corner guys of tent are on 2 and 8.

ABBREVIATIONS

RFCWP, right front corner wall pin
LFCWP, left front corner wall pin
RRCWP, right rear corner wall pin
LRCWP, left rear corner wall pin
NCO, noncommissioned officer

(a) The tents are unrolled. Squad 1 drives RFCWP, places RFCW loop over RFCWP, and ties the front door with a wall pin through the proper wall loop. (The proper wall loop is found as follows: For hospital and wall tents the two wall loops at the ends of the sod-cloth (the canvas apron below the walls) are used, one being slipped through the other and a wall pin being thrust through the free one. For ward

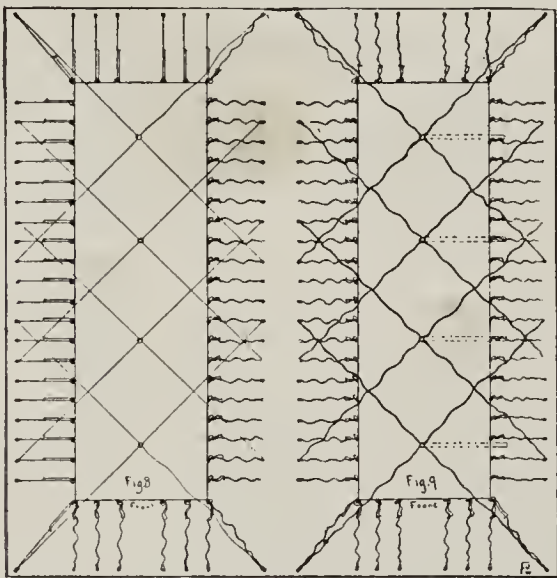


Fig. 8.—Striking Tentage, first step: Loosen guy ropes on Sides 1 and 4. (Do not remove from pins. Loosen on Side 4 only if no guy ropes on Side 1.) Also remove wall loops on Side 4, including corners.

Fig. 9.—Second step: At command "down," men carry bases of uprights through Side 4, then remove all pins except R and LRCWP for pyramidal tents or RF and RRCWP for all other tents.

and pyramidal tents, the wall loop at the end of the sod-cloth is slipped through the loop where a rope is tied to the end of the door, and the wall pin is thrust through the wall loop. The rear door, if there is one, is tied in the same manner.) At once Squad 4 places LFCW loop over LFCWP, and drives the pin after the NCO alines on the other tents. Squad 2 places

RRCW loop over RRCWP, and drives the pin. Squad 3 places LRCW loop over LRCWP, and drives the pin. The tent is now pinned to the ground by its four corners (Fig. 1).

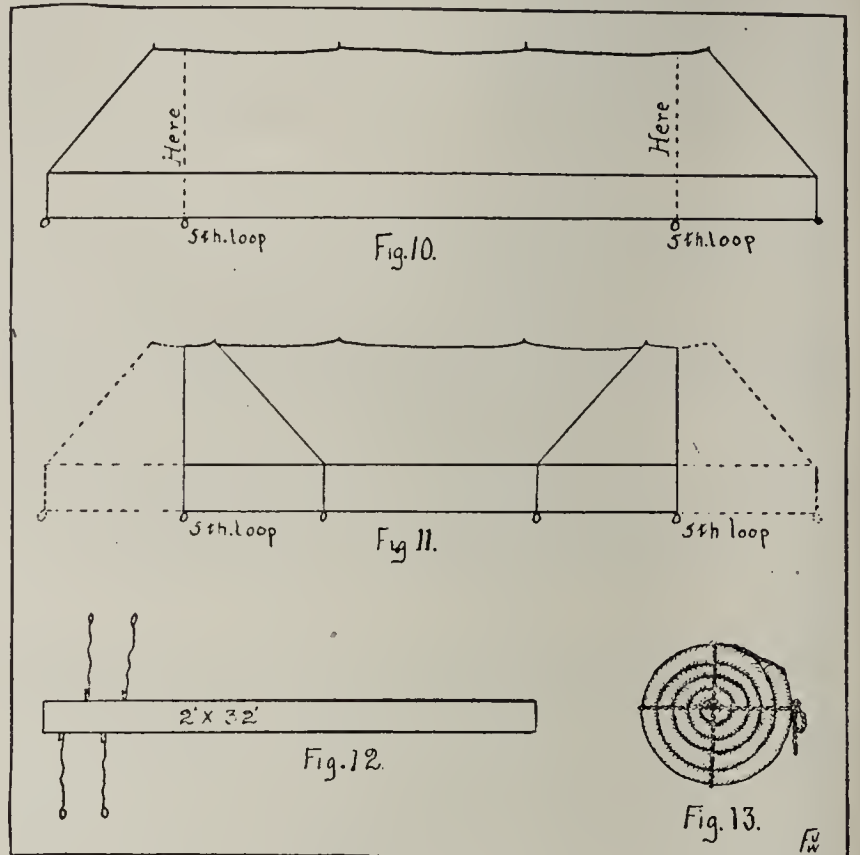


Fig. 10.—Folding, first step: Draw tent away from tent site until taut on two corner pins. Fold ends to lines marked "here."

Fig. 11.—Second step: Place all guy ropes and hoods on tent near apex. Fold from apex in 2 feet folds until in a long, slender rectangle about 2 by 30 feet.

Fig. 12.—Third step: Roll tightly from one end and tie at other with four guy ropes around circumference.

Fig. 13.—Fourth step: Tie this drum shaped package in a manta, if there is one.

(b) Each squad now drives its corner guy, using a guy pin, which is exactly 2 feet long, as a measuring stick. The guy pin is driven, for square or approximately square tents, in a line diagonal with the opposite corner. For the ward tent, which is a long tent,

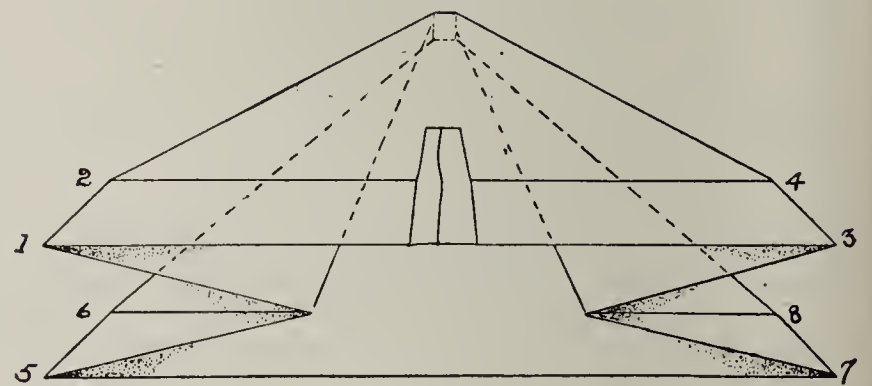


Fig. 14.—Folding pyramidal tent: Draw tent taut on two corner wall pins. Carry 1-2 over to 7-8. Return and cover 5-6, smoothing out folds. Now carry 3-4 to 5-6, return and cover 7-8, smoothing door and any folds. This makes the tent bellows-shaped. All this time the metal square at the apex is held taut and perpendicular on the ground. Now place hood in apex square and fold from top to bottom in apex-square-width folds. Then fold from each end and tie with two interior guys, fully slackened.

the diagonal crosses the tent at the eighth wall pin on the opposite side instead of at the corner (Fig. 2). The distance of the corner guy pin from the corner wall pin is as follows: 6 feet for the small wall tent and the small pyramidal tent; 7 feet for the pyramidal tent; 8 feet for the wall and the hospital tents, and 11 feet for the ward tent.

(c) Four wall pins and four guy pins are now in the ground for each tent. At once storm guy ropes

(braces) or hood guy ropes are stretched between the corner guy pins on every side where guy pins are to be inserted (Fig. 3). These mark the line for the guy pin sites. Just inside this rope a guy pin is driven to match every wall loop seen on the tent. All guy ropes, fully slackened, are placed over these pins in proper order (Fig. 4). Now, for the pyramidal tents, all wall

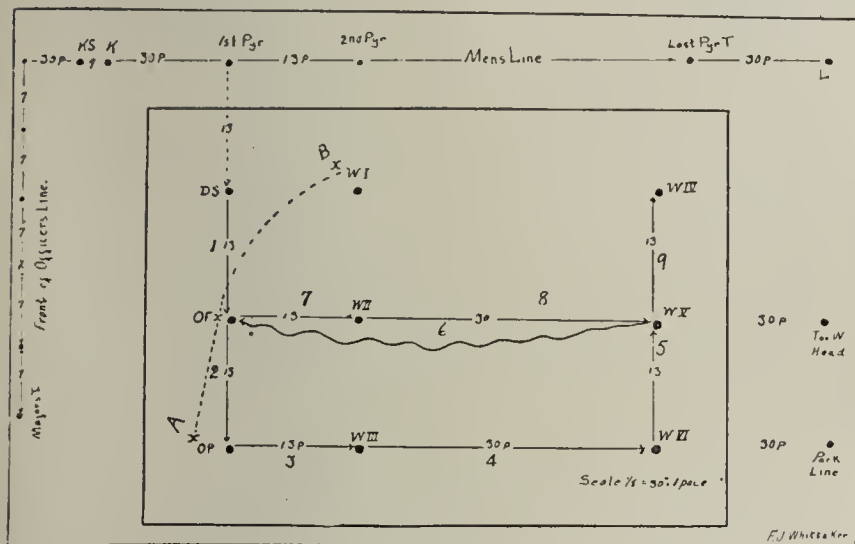


Fig. 15.—Laying out the hospital site: As soon as the officer has traveled over the route 1, 2, 3, 4, 5, 6, 7, 8, 9, the king pin sites for the hospital are located; the numbers 7, 13 and 30 refer to the number of paces; x, x, x, on the line A-B, the positions taken by the orderly; the dots, right front corner wall pins.

pins are driven through the wall loops, the bottom tent wall edge being first made perfectly straight. For all other tents on Side 4, wall pins are driven at wall loop site instead of through it, so that uprights can be inserted from Side 4. Also wall loops are removed from LFCWP and LRCWP for the same reason (Fig. 5).

(d) Now the upright or uprights, and the ridge, hood and storm guys, if there are any, are inserted (Fig. 6). (The upright for pyramidal tents is inserted from the front door; uprights for all other rectangular tents from Side 4.) For all tents the front upright, hood, apex ring or square is numbered 1; the second, 2; the next 3, and the rear one 4, if there are so many.

(e) *Raising the Tent.*—For pyramidal tents: Each No. 1 of the four minor squads goes to his corner guy, and all No. 2's enter the tent and at command "Raise"

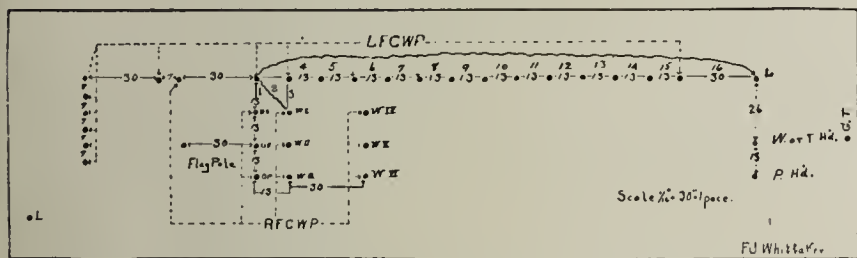


Fig. 16.—As soon as the officer has paced and meandered over the route 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, markers for officers, men's and kitchen tentage are in the ground. The numbers 7, 13 and 30 refer to the number of paces between pins; RFCWP, right front corner wall pin; LFCWP, left front corner wall pin; O, right or left front corner wall pin as shown above; A, men's and patients' latrines; B, wagon or truck park; C, picket line.

by the NCO, raise the tripod and the wooden upright. The NCO at the door alines the upright. He directs the proper No. 1 to tighten. When he says "All tighten," all 1's and 2's tighten all guys and hood ropes on their respective sides. For hospital or wall tents: Minor squads 1 and 2 go to the front upright, and No. 1 of Minor Squad 1 places the apex of the upright on his right knee and adjusts the necessary parts. Minor Squads 3 and 4 do the same at the rear upright,

No. 1 of Squad 3 assuming a left knee position. At the command "Raise" by the NCO, the tent is raised by the eight men. (Bases of uprights must always remain on the ground in the raising.) The same procedure is followed with the ward tent, except that Minor Squad 1 and No. 1 of Squad 2 raise Upright 1, No. 2 of Minor Squad 2 raises Upright 2, No. 2 of Minor Squad 3 raises Upright 3, and Minor Squad 4 and No. 1 of Minor Squad 3 raise Upright 4.

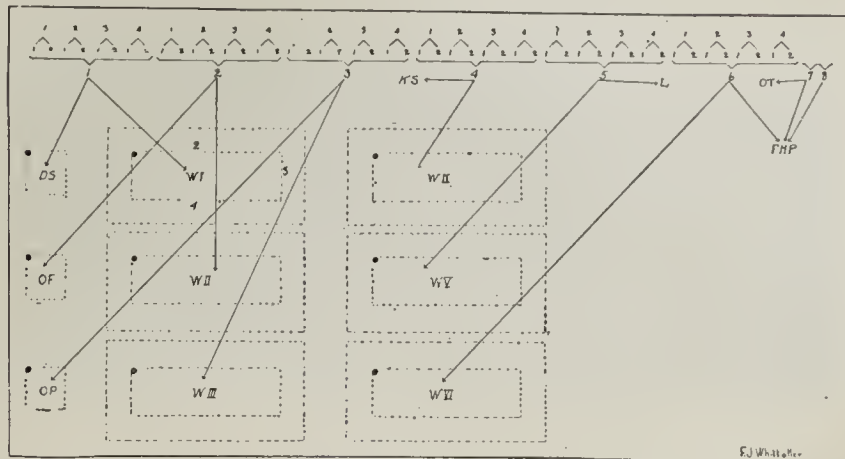


Fig. 17.—With an animal-drawn field hospital, the men form in line in the company street before pitching the field hospital.

(f) As soon as the tent is raised, the uprights are alined, all guys and other ropes are tightened, and all axes, extra pins and debris placed at the right front corner of the six ward tents (inside the ropes, axes chopped into ground in line, pins and debris in orderly piles). Figure 7 shows the method of placing tent, fly and storm guy ropes for the hospital tent.

STRIKING

Only four men strike a tent, as each squad usually strikes two tents. Minor Squads 1 and 2 strike their

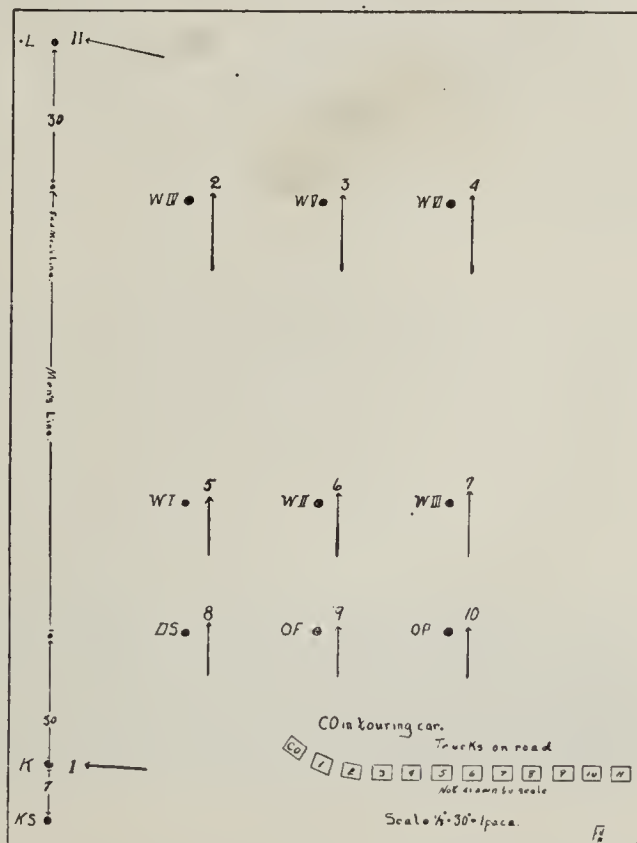


Fig. 18.—Route and stopping point of trucks: Each truck stops at the point on the hospital site where its number is placed. When unloaded, it goes at once to its proper place in the truck park, 7 feet apart. At truck park all drivers "eyes right" on office and Wards 2 and 5 markers for alinement.

tent nearest the front of the hospital; Minor Squads 3 and 4 the tent toward the rear. First step: The guy

ropes only on Sides 1 and 4 are loosened. (They are not taken off of the guy pins.) All wall loops are removed from the wall pins on Side 4 only (Fig. 8). Second step: The men go at once to the uprights (if

pins left in the ground. Pyramidal tents are folded bellows-shaped (Fig. 14), and are folded from the apex the width of the metal square until all folded. Then they are folded from each end and tied with two

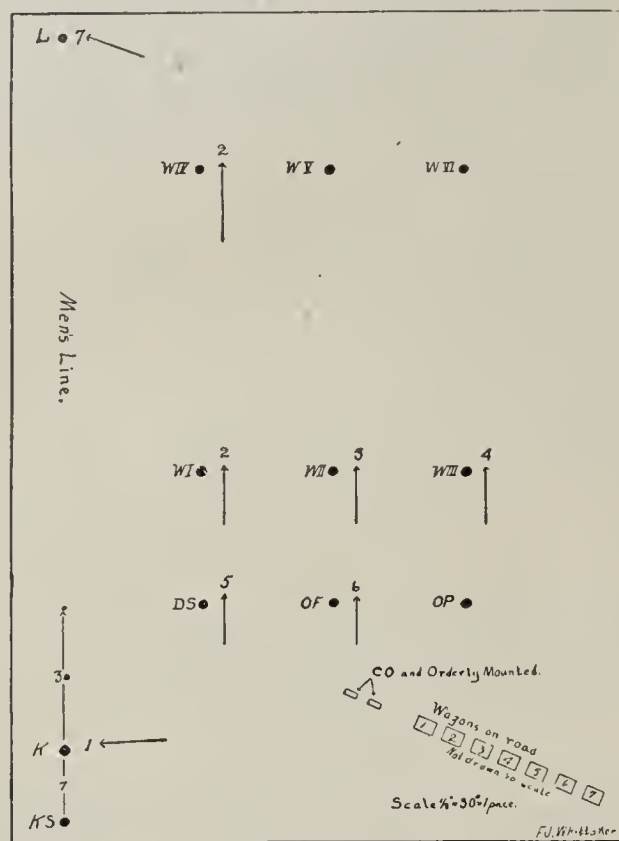


Fig. 19.—Route and stopping point of wagons: Each wagon stops at the point on the hospital site where its number is placed. When unloaded it goes at once to its proper place in the wagon park, 7 feet apart. At wagon park all drivers "eyes right" on office, and Wards 2 and 5 markers for alinement.

there are two uprights, two men per upright; if four, one man per upright, in order of squad number from front to rear) and at the command "Down" by the man at the front upright, the bases of all uprights are removed through Side 4 (for pyramidal tents, through

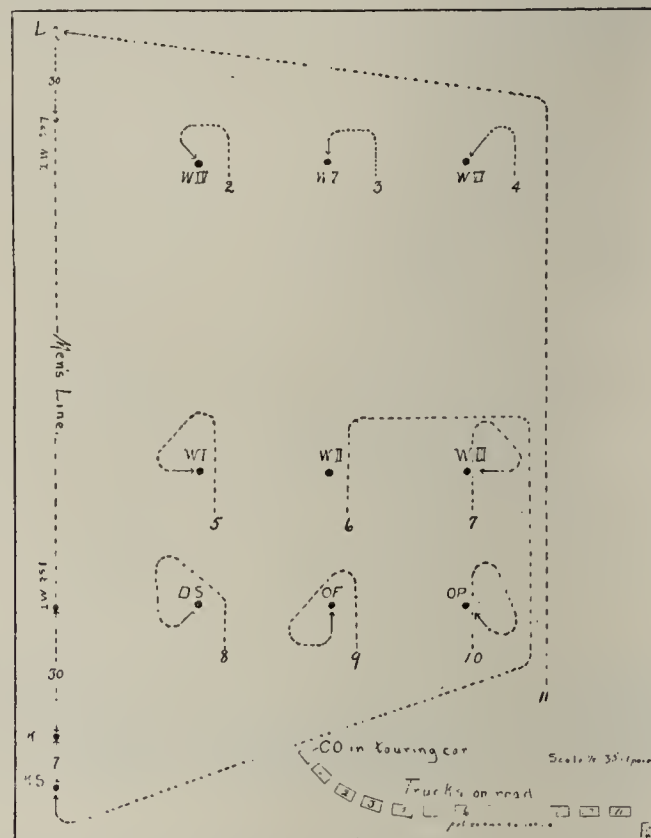


Fig. 20.—Pitching and striking at night. The commanding officer and orderly drive ahead of the column and place lighted lanterns at the marker site. Each truck stops at a lighted lantern as indicated in Figure 18. When unloaded it wheels and points headlights in direction of arrow. This gives a well illuminated field for pitching. These positions are assumed in striking also.

If the hospital is animal drawn the lanterns are placed as indicated, but the wagons stop as shown in Figure 19. The additional lanterns belonging to the field hospital are now lighted and placed wherever needed.

center guy ropes, fully slackened. Hospital or wall tents are folded in end triangles until the tent is rec-

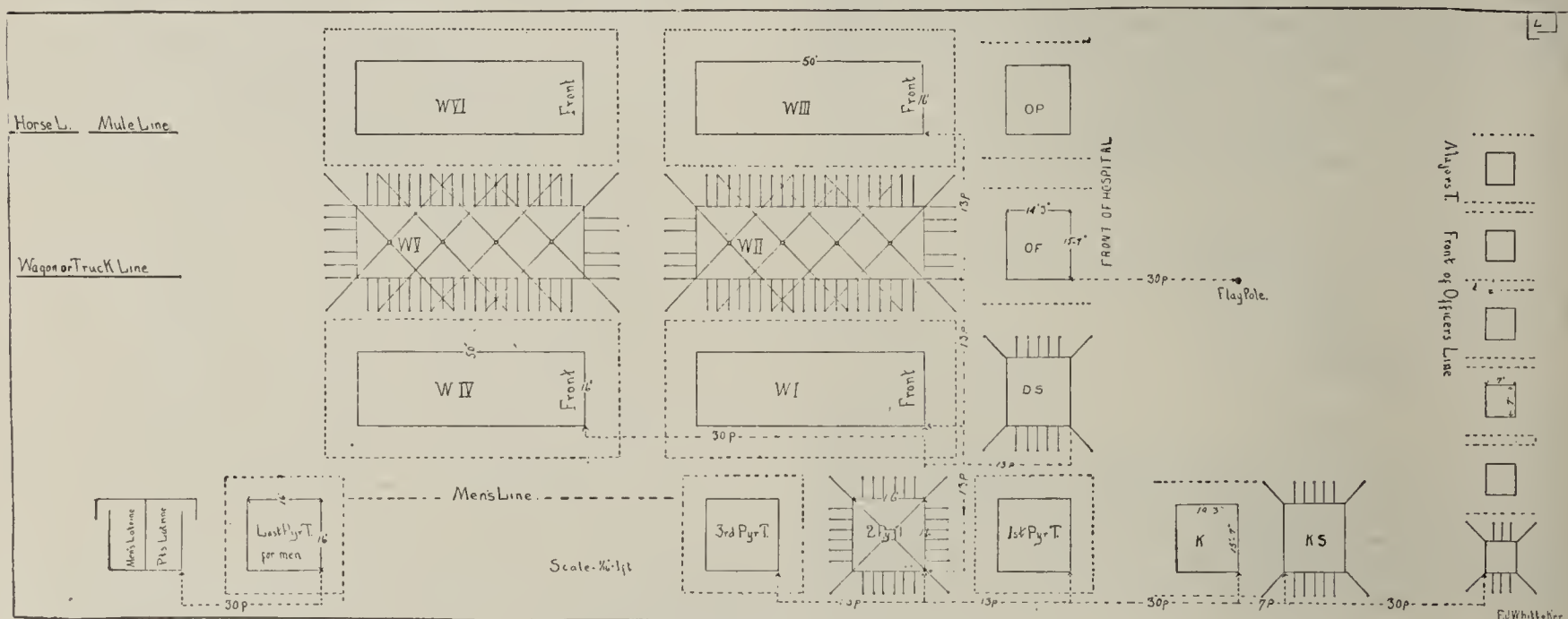


Fig. 21.—Ground plan of a field hospital.

the front door; also wall loops on Side 4 need not be removed; Fig. 9).

FOLDING

All pins except RFCWP and RRCWP for all tents except pyramidal are removed. For pyramidal tents, all are removed except RRCWP and LRCWP. The tent is pulled away from its site until taut on the two

tangular. They are folded from the apex in 2 foot folds until entirely folded. They are folded from each end and tied with two center guys, fully slackened. (If a fly is present, it is folded and the tent placed on it before final folding and tying. This ties both into one package.) With ward tents, the front of the tent, one panel beyond the first apex ring, is folded to the

fifth loop (Fig. 10). The same is done at the rear (Fig. 11). Now eight storm guys and four hoods are added. Now from apex it is folded in 2 foot folds until entirely folded (Fig. 12). Rolling is begun at one end, and four guy ropes are left out, fully slackened, two on each side, at the other end for tying. This gives a drum-shape package easily handled, with only the wall outside (Fig. 13). Now it is tied in a cover or manta, if there is one.

LAYING OUT THE HOSPITAL

As soon as the officer has traveled over the route 1, 2, 3, 4, 5, 6, 7, 8, 9 (Fig. 15), the sites for the store tent, office, operating tent and six ward tents are located. If pyramidal tents for the men are to be pitched, sites are marked as in Figure 16. If shelter tents, when he is ready to leave Ward 4 marker, the officer continues outward for 13 paces and places a marker to orient the rear end of the men's line. This marker is in line with Wards 4, 5 and 6 markers. He then goes to the stores marker, moves outward for 13 paces, and places a marker in line with stores, office and OP tent markers to mark the head of the men's line. At this marker he right angles to the left for 30 paces and places a marker for RFCWP of the



Fig. 22.—An animal-drawn field hospital on the march.

kitchen. This marker is in line with the front and the rear men's markers. At 7 paces farther in the same line, he places a marker for the LFCWP of the kitchen store tent. He then continues in the same line for 30 paces, and places a marker for the LFCWP of the junior officer's tent. He right angles to the left, goes 7 paces, and places a marker for the LFCWP of the next officer's tent, 7 paces more for the LFCWP of the next officer's tent, and so on until a marker for the major's tent is placed.

Route of Orderly (A-B, Fig. 15).—The orderly starts at OP tent by assisting the officer in turning a right angle and waving him into position at Ward 3. He then goes to a point in front of the office marker and alines the officer for Ward 2 marker. He then goes to a point near the site for Ward 1 marker and places a marker in the ground alined on Wards 2 and 3. The officer at Ward 4 also alines the orderly's marker on Ward 4 and stores, which locates the site of Ward 1 marker.

Waving into Position.—The waver extends both arms sideward, looking at the "marker or pin setter." "M or PS" moves the marker or the pin to the right or to the left as the right or the left arm of the waver moves up and down. Both arms of the waver quickly lowered means "position is correct."

Provisional Pin.—When the officer first reaches Ward 5 he places a marker slanting directly backward as a "sighting" or provisional marker. Its distance from Ward 6 marker is correct, but its distance from Ward 2 marker is uncertain. The orderly at the office



Fig. 23.—Raising the hospital tentage.

waves the officer into position at Ward 2 by sighting on a slanting marker, and the officer "ties in" this marker (places it in proper position perfectly upright) after pacing "8" (distance between Ward 2 and 5 markers) in the route of the officer.

TO FORM COMPANY ON LINE FOR PITCHING HOSPITAL

The company approaches in column of fours at double time with the leading element facing directly down CF line. The commands "On right into line," and "March" are given as the first set of fours reaches the head of the men's line, and "Company, Halt" as soon as on CF line; "Front," as soon as the company is in proper line 13 paces from hospital site; next, "Count Twos"; then "Count MS by fours" (this means count minor squads 1, 2, 3, 4; 1, 2, 3, 4; 1, 2, 3, 4, and so on, each No. 2 counting). Then the command "Count TP Squads." (Each No. 2 of each fourth minor squad counts numerically as 1, 2, 3, 4, 5, 6, etc.). As soon as this count is completed, the men rush to



Fig. 24.—The hospital complete, ready to accommodate 216 bed patients.

the wagons, unload and pitch the hospital. For the motorized field hospital, proper squads are already on trucks at the proper tent pitching sites. As soon as they have unloaded the trucks they rush to the men's line, unsling packs, return to tent sites, and begin pitching.

ABBREVIATIONS

| | |
|--------------------------------|---------------------------------|
| MS, minor squad | OP, operating tent |
| CF, company front | FHP, field hospital property |
| TPS, tent pitching squad | MS by fours, minor squads |
| L, latrine | by fours |
| DS, dispensary and stores tent | TP Squads, tent pitching squads |
| OF, office tent | |

LOADS OF WAGONS

| |
|---|
| Wagon 1 carries same as Truck 1. (Cooks and KP ride wherever convenient.) |
| Wagon 2 carries 6 Ward tents (no poles or pins). |
| Wagon 3 carries 3 HT—all poles, pins, axes. |
| Wagon 4 carries Bedding. |
| Wagon 5 carries Bedding, Disp. Office and other FHP. |
| Wagon 6 carries OP equip. and FHP. |
| Wagon 7 carries L and forage. |

SQUAD DUTY

Each squad always unloads, pitches, strikes and loads tentage and equipment as follows:

| | |
|--------------------|-----------------------------------|
| Sq. 1 = DS and W 1 | Sq. 5 = L and W 5 |
| Sq. 2 = OF and W 2 | Sq. 6 = W 6 and places FHP |
| Sq. 3 = OP and W 3 | Sq. 7 = Places FHP and pitches OT |
| Sq. 4 = KS and W 4 | Sq. 8 = Places FHP |

Cooks and KP pitch the kitchen fly, put up a stove, dig a garbage pit, and prepare a meal.

All police the camp site before leaving. The hospital should be laid out before the arrival of trucks or wagons in order to avoid delay.

PITCHING AND STRIKING A FIELD HOSPITAL

Time begins when wagons or trucks are 50 feet from the hospital site (the ground plan is given in Figure 21). If the equipment is animal drawn, the men double time to the men's line, remove packs, rush to the proper



Fig. 25.—Admitting patients to the hospital.

Two cooks and two kitchen police riding on Truck 1 pitch the kitchen fly.

ROUTINE

When an order to pitch hospital is received, an officer with an orderly seeks a suitable site and lays out the hospital as in Figure 15. If this order occurs at night, the procedure is outlined in Figure 20. Later the officers' line is added as in Figure 16. When trucks or wagons arrive, they go to sites as shown in Figures 18 or 19. Tentage is pitched as in the large ground plan.

ABBREVIATIONS

| | |
|------------------------------|-------------------------------|
| K, kitchen | SQ, squad |
| KS, kitchen stores | KP, kitchen police |
| OT, officers' tentage | DS, dispensary and store tent |
| W, ward | L, latrine tentage |
| OF, office tent | HT, hospital tent |
| OP, operating tent | |
| FHP, field hospital property | |



Fig. 27.—Striking the huge ward tent; each field hospital has six of these.

wagons (Fig. 17), unload, and pitch tents as indicated under "routine." If the equipment is motorized, when the trucks stop at the tent sites the men jump off, unload the trucks, rush to the men's line, remove equipment, rush back to the tentage sites, and pitch the proper tents. Time ends when every detail previously announced by the commanding officer is completed. (At first drills, only tent pitching is done. Later, latrine, wagon or truck park, kitchen, equipping one ward, office, operating tent, picket line, if there is one, are added. Finally, the hospital complete in every detail is required.)

Striking.—Men form in line in the company street. The whistle blows. Time begins. The men rush to work. Time ends when the equipment is properly loaded, and men and vehicles are 50 feet beyond the hospital site. (The site, of course, is to be policed perfectly.)

FOR SPEED IN PITCHING AND STRIKING HOSPITAL

All details should be so arranged that no commands are needed at the hospital site. With a well trained company no voices are heard during pitching or striking. If time is taken, a whistle blast starts and ends each operation.

LOADS OF TRUCKS

| |
|--|
| Truck 1 carries K. fly; KS; OT; KS tent; cooks and KP. |
| Truck 2 carries W 4 complete; FHP; Sq. 4. |
| Truck 3 carries W 5 complete; FHP; Sq. 5. |
| Truck 4 carries W 6 complete; FHP; Sq. 6. |
| Truck 5 carries W 1 complete; DS; FHP; Sq. 1. |
| Truck 6 carries W 2 complete; OF; FHP; Sq. 2. |
| Truck 7 carries W 3 complete; OP; FHP; Sq. 3. |
| Truck 8 carries Disp. equip.; FHP; Sq. 7. |
| Truck 9 carries Office equip.; FHP; Sq. 8. |
| Truck 10 carries Oper. tent equip.; FHP; any extra men. |
| Truck 11 carries FHP; L; gas; oil; water; any extra men. |



Fig. 26.—A view of the operating tent.

Although it has taken many words and illustrations to present the details of pitching and striking a field hospital, a trained field hospital company has pitched its field hospital, ready for work, in less than fifteen minutes. Also it has struck the hospital and been en route to some other field of endeavor in six minutes.

MEDICOMILITARY CONSIDERATIONS OF THE MODERN MILITARY BULLET

ROBERT BOOTH ACKER, M.D.

Assistant Surgeon, United States Public Health Service

FORT STANTON, N. M.

The modern military bullet is small of caliber, of comparatively light weight and is propelled at very high velocity by dense smokeless powder. It is sharp pointed and is cylindro-ogival in shape. The bullet consists, in most cases, of a central core of lead with an extremely hard jacket of nickel composition. The French bullet, however, is of solid copper.

From the short, heavy, large-calibered bullet of lead, propelled at low velocity by black powder, the military

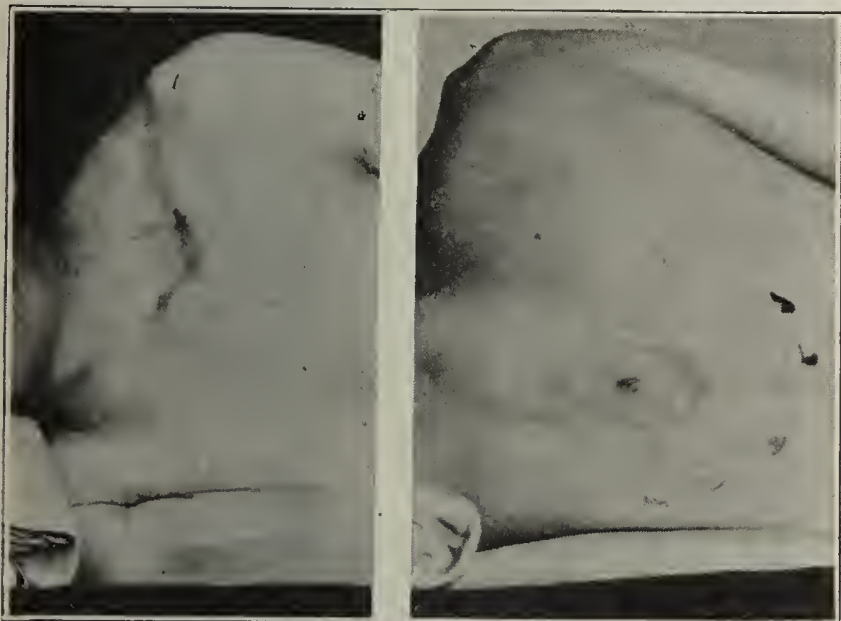


Fig. 1.—Simple perforation with minimum tissue injury. Result of a sniper's bullet at long range.

bullet has changed, through many gradations, to a long, light-weight, small-calibered jacketed bullet, propelled at very high velocity, with flat trajectory, by smokeless powder and with a striking force of tremendous energy.

It was originally believed that a bullet of this type, if it did not strike a vital part, would cause a simple perforating wound which would heal quickly and cleanly. Practical experience has shown that the modern military bullet commonly causes wounds of an extensive and mutilating character, especially at moderate ranges and on striking bone. This destructive action is popularly known as the "explosive effect," and indeed a penetrating bullet in the act of leaving the body may literally tear away the flesh or leave a mushroom-like mass of tissue at its point of exit.

As an instrument of death and as a means of producing wounds of a severe and disabling character, the modern bullet is very effective. It is at long ranges that the simple perforating effect is most often noted.

The German S bullet (*Spitzgeschoss*) weighs 154 grains and is propelled by approximately 50 grains of dense smokeless powder. The jacket is of ferronickel. The lead core is not completely covered by the jacket

but is exposed at the base of the bullet. The English bullet is similar in construction, with a jacket of cupronickel and an aluminum cone or so-called "jockey" at the point of the lead core. It is longer and heavier than the S bullet and weighs 174 grains. The French bullet is of solid copper, and is longer and heavier



Fig. 2.—Explosive wound of exit in muscles of the back, produced by a bullet at range of less than 500 yards.

than either the German or the English bullet, its weight being 197 grains. The 1906 United States government model Springfield cartridge has a bullet weighing 150 grains, with a lead core and a jacket of cupronickel.

The German cartridge is the most powerful in use among the belligerents at the present time. The bullet leaves the muzzle of the rifle with a velocity of 2,915 feet per second and has at the muzzle a striking energy of 3,018 foot-pounds, or two and one-half times that of the old 45-70 U. S. Springfield cartridge used in late Civil War days. The 1906 Springfield cartridge most nearly approaches this tremendous force, having an initial velocity of 2,700 foot-seconds and a muzzle energy of 2,445 foot-pounds. The velocity, and consequently the striking power of these high power bullets, rapidly falls after traversing the first few hundred



Fig. 3.—Extensive tissue destruction produced by a high energy, penetrating bullet striking the ulna and causing comminution. Range less than 500 yards. A roentgenogram of this wound is shown in Figure 4.

yards, so that at 500 yards the velocity of the German bullet is 1,714 foot-seconds and its striking energy but 1,001 foot-pounds, only one third of its muzzle energy, while the Springfield bullet is traveling at the rate of 1,668 foot-seconds and has only 932 foot-pounds energy. At 1,000 yards the velocity and energy of each is 1,068, 382 and 1,047, 370, respectively.

The velocity and striking force of these two bullets decreases much more rapidly, relatively, than is the

case with the French and English bullets, which have a lower initial velocity but higher sectional density and weight. Thus the English and French bullets, especially the French, are much more effective at



Fig. 4.—Comminution of the ulna in the wound shown in Figure 3.

extreme ranges, for, while they do not start with as much energy, their greater mass assists in its retention. It is obvious, however, that all of these bullets are at the height of their energy and destructiveness before the first 500 yards are passed in their flight.



Fig. 5.—Simple wound of entrance made by a bullet that lodged in the thigh. Range over 500 yards.

The construction of the German bullet, and others of like type, renders it liable to fragmentation on striking hard objects. This fragmentation is of varied form. The jacket is generally stripped off in one piece

and curled, although it may be broken into several pieces. The lead core may remain in one battered lump, may be divided into a few large pieces, or may be shattered into fine pellets, or even into a dustlike condition. The stripped jacket may be left behind in the tissues by a perforating bullet. The solid French bullet, while it may be deformed by striking a hard object, rarely if ever undergoes fragmentation. "Explosive bullets," as these are sometimes called, have, in many instances, had their velocity checked and their course altered by striking an intervening object. They ricochet, and the fragmentation begun by the first impact is completed by striking the body. They do not commonly produce the severe laceration of a penetrating, intact bullet at the height of its energy.

A jacketed bullet may, in traversing a barrel heated by repeated firing and aided by the friction of the particular bullet, become heated to the extent that the lead core assumes a semisolid state. Such a bullet when it strikes, flattens out like a well-rotted apple, and the



Fig. 6.—An unusual bullet wound. Sniper's shot at long range. Bullet entered at the bridge of the nose, penetrated the nasal fossa, hard palate and tongue and lodged in the tissues of the neck near the larynx. Patient recovered.

lead is distributed in the tissues in a finely powdered form. A bullet of this nature would have little penetration and its destructiveness would be thereby limited.

It has been repeatedly noted by medical officers that at moderate ranges the military bullet produces extensive and destructive wounds in its course of leaving the body. At longer ranges the bullet is more apt to lodge with less destructive effect, or simply to penetrate with little or none of the "explosive effect" noted at closer range.

In the matter of the bullet itself there are two factors concerned in the production of the maximum mutilation of tissue: the high velocity of the bullet, and its power of penetration. As previously shown, a light-weight bullet, such as the German bullet, must move with great velocity to develop such tremendous energy. Any factor reducing the velocity diminishes the energy. In flight the velocity decreases rapidly,

and the energy much more rapidly, so that at 500 yards the energy is only one third of the muzzle energy; hence, it is only in the first few hundred yards of its flight that penetration with great energy is produced.



Fig. 7.—Comminution of the metacarpal bones with explosive effect of the bullet in the palm of the hand.

It is this penetrating bullet of high energy that produces the maximum destruction of tissue. The large mutilating, explosive wounds are wounds of exit, the entrance wounds being uniformly small. The most extensive wounds of this character are produced when the shaft of a bone is shattered and the fragments are driven out in the bullet's path.

The wound shown in Figures 3 and 4 was produced in just this way. A high velocity bullet entered the arm on the dorsal surface. The ulna was badly comminuted and fragments of the bone were driven out, literally tearing away the flesh.

In general, it may be said that the closer the range the less likely the bullet is to remain in the tissues and the more likely it is to produce the "explosive effect." It is within the first 500 yards that the "explosive effect" is most often produced.

A bullet on leaving the rifle barrel has two motions: forward motion in the line of flight, and a twisting motion on its longitudinal axis, imparted to it by the rifling of the bore. It is traveling at its maximum velocity and with least air resistance when only these motions are retained. In its flight it may acquire a third motion, a revolving or tumbling on its transverse axis, which, if it comes to pass, markedly slows the bullet and lessens its striking energy.

The turning of a bullet base foremost in the cartridge case reduces the accuracy of its fire, and, as it would travel with greatly diminished velocity, it is much less dangerous and much less destructive to tis-

sue than a bullet in the proper position. The popular belief in the "dum-dum" action of a bullet of this nature is a fallacy.

SUMMARY

The modern military bullet is a projectile, composed in most cases of a lead core with a nickel jacket. It is of low weight, increased length, small caliber and is propelled at very high velocity by dense smokeless

COMPARATIVE BALLISTICS OF MILITARY CARTRIDGES IN USE BY THE BELLIGERENTS IN THE PRESENT WAR

| Country | Name of Arm | Caliber (inches) | Weight of Bullet (grains) | Jacket of Bullet | Core of Bullet | Muzzle Velocity, Feet per Second | Muzzle Energy, Foot-Pounds |
|------------------------------|----------------------------------|------------------|---------------------------|------------------|---------------------|----------------------------------|----------------------------|
| France..... | Lebel..... | .315 | 197 | None | Solid copper bullet | 2,296 | 2,305 |
| England..... | Lee-Enfield (mark VII cartridge) | .303 | 174 | Cupronickel | Lead | 2,450 | 2,320 |
| Germany..... | Mauser..... | .311 | 154 | Ferrounickel | Lead | 2,915 | 3,018 |
| Russia..... | Nagant, 3 line | .30 | 214 | Ferrounickel | Lead | 1,985 | 1,862 |
| Austria, Bulgaria and Greece | Mannlicher... | .315 | 244 | Ferrounickel | Lead | 2,034 | 2,246 |
| Belgium..... | Mauser..... | .301 | 219 | Ferrounickel | Lead | 2,034 | 2,010 |
| United States.... | Springfield, Model 1906 | .30 | 150 | Cupronickel | Lead | 2,700 | 2,415 |
| Italy..... | Paravincini-Carcano | .256 | 163 | Ferrounickel | Lead | 2,295 | 1,891 |
| Roumania..... | Mannlicher... | .256 | 162 | Ferrounickel | Lead | 2,400 | 2,070 |
| Turkey..... | Mauser..... | .301 | 211.3 | Ferrounickel | Lead | 2,066 | 2,003 |

powder. It has a flat trajectory and develops tremendous striking energy.

The velocity, and consequently the energy, of this projectile decreases rapidly after the first few hundred yards of its flight.

It is at its highest energy before passing the 500 yard mark; hence, destructive and mutilating wounds are most commonly produced inside this range.



Fig. 8.—Penetration of the os calcis by a high energy bullet at close range but with little comminution or tissue destruction.

These destructive or explosive wounds are wounds produced at the exit of a bullet of very high energy.

At longer ranges the tissue destruction is much less, and a simple perforation may result.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . "Medic, Chicago"

Subscription price Five dollars per annum in advance

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SATURDAY, OCTOBER 27, 1917

ACCLIMATIZATION TO THE TROPICAL SUN

Although our knowledge of the regulation of body temperature and its relation to metabolism has reached a stage at which an intelligent appreciation of many of the factors involved can be formulated, there are features of the heat-controlling mechanism that still demand elucidation. In several respects the climatic conditions that prevail in the tropics have furnished greater obstacles to the comfort of man than have the severe rigors of arctic surroundings. The problems of climatology in the tropics have become emphasized by the growing necessity of the white man's residing there and adjusting himself to the situations created by wind and weather. By some writers, tropical sunlight has been endowed with properties peculiarly detrimental to human health and comfort. The effect of the ultraviolet rays on the skin in the familiar production of the inflammation called sunburn, erythema solare, is not directly associated with heat. Indeed, it is often said to be more likely to occur in colder surroundings, owing, in part perhaps, to the fact that the heat of the sun's rays is not noticed, so that means are not taken to protect the skin to the same extent from their action.

Several years ago Aron, then professor of physiology in the College of Medicine and Surgery at Manila, reported an almost surprising series of observations on the susceptibility of the monkey, a tropical animal, to harm from direct exposure to the sun in the Philippines. Animals were reported to die in many cases in from seventy to eighty minutes when placed on the ground in the Manila sun, even in the coolest months of the year.¹ Shaklee,² pharmacologist at the University of the Philippines, has verified the observation that unclimatized Philippine monkeys exposed to the sun in Manila may die of heat stroke in the course of a very short time, depending on conditions.

Factors that must be taken into account in any attempt to determine the cause of a rise in body temperature or of death following exposure to the sun

are the energy of the solar rays, and the temperature, the movement and the humidity of the air. Shaklee finds by direct observations that the conditions making for a rapid death are a hot sun; proximity of a large hot surface, such as the ground or a roof; high relative humidity of the atmosphere, and a low wind velocity. Under such circumstances death is due to an accumulation of heat in the body.

The novelty in Shaklee's studies is the finding that monkeys can apparently be acclimatized to the conditions mentioned, if exposure to them is gradual. This is of signal importance in relation to the comparable possibilities in the case of man; for the human organism seems in many ways far better adapted than the monkey's to resist the tropical climate. Shaklee points out that the temperature-regulating mechanism in man is much more sensitive than that in the monkey, as shown by the smallness of the normal variation of the body temperature in man as compared with that in the monkey. The sweating mechanism in man has many times the capacity of that in the monkey, and as the temperature of the surrounding atmosphere approaches the temperature of the body, this becomes the most important means of eliminating heat from the body. The internal heat production of man on a light diet is smaller in proportion to body surface than that of the monkeys subjected to this experiment. Man stands higher above the hot surface on which he rests or moves; hence he would receive less heat from the ground and be subjected to a more rapid movement of air over the body surface than would the monkey. Man's body has much less hair than the monkey's; hence the escape of heat from his body by radiation, conduction or evaporation is less interfered with. Man can so select and arrange his clothing that it will interfere little with the escape of heat from his body, while at the same time it will shield the body from the heat rays coming from the sun. Moreover, man is acquainted with a larger variety of foods.

The acclimatization to the tropical climate as experimentally accomplished in the case of the monkey appears to be due essentially to an increase in the sensitiveness of the nervous mechanism that regulates body temperature. This results in an increase in the rate or efficiency of sweating, producing what has perhaps falsely been termed an immunity. The "immunity" is readily lost if the subjects are kept in the shade. In harmony with the explanation advanced above is the fact that a small dose of atropin, which diminishes the action of the sweat glands, as well as other secretory structures, suffices to nullify the effect of any acclimatization and to cause the death of an acclimatized animal by stopping perspiration. The inference is further supported by the fact that when the relative humidity of the atmosphere is great, even acclimatized animals exhibit a tendency to a markedly greater rise in body temperature. Finally, attempts

1. Aron, H.: Philippine Jour. Sc., (B), 1911, 6, 110, 130.

2. Shaklee, A. O.: Experimental Acclimatization to the Tropical Sun, Philippine Jour. Sc., (B), 1917, 12, 1.

to acclimatize rabbits—a species not known to perspire—have thus far entirely failed.

Evidence has begun to accumulate that healthy white men may be readily acclimatized to the tropical climate at its worst. Shaklee maintains that the amount of sweating necessary to keep the body temperature of a healthy white man from rising above normal is not excessive, even when the man is doing considerable physical work in the midday sun in such a tropical climate as that of Manila, provided the man has been sufficiently long on a suitable diet and introduces himself gradually into the work in the sun. In the acclimatization of the white man the most important factor is the proper regulation of the diet. The effects from the tropical sun seem to be exactly the same as the effects from the sun in the United States; that is, no effects were seen or felt in these experiments that were different from what would have been expected under like circumstances in the northern portion of the United States.

THE STRENGTH OF DIABETICS

Although a person in the diabetic condition may be excreting valuable sources of energy, in the form of sugar and ketone substances derived from incompletely burned nutrients, there is no decrease in the quantities of energy transformed in contrast with a comparably healthy individual. There is merely an alteration in the source of the energy; for when carbohydrates can no longer be satisfactorily metabolized, other food-stuffs must be drawn on to supply the body's inevitable needs. Few diabetics can tolerate as much food as their former needs indicate to be essential. The modern starvation treatment of diabetes in the form advised by Allen, which introduces a rigorous regimen of fasting until the diabetic patient becomes free from urinary glucose and from acidosis, meets the energy problem in a direct way. The resulting emaciation apparently decreases the amount of active tissue substance. Calorimetric observations have shown that if a person whose metabolism is normal has been reduced in weight by 30 per cent., his metabolism when he is fed on a low dietary may also be reduced far below his normal level measured by his original weight or body surface. In other words, a smaller body can suffice with a small total intake of food. Emaciation may reduce the body to a size at which it can develop tolerance for the smaller requisite food quota.

Since in ultimate analysis the energy for muscular work comes from energy in the form of ingested food, the question has repeatedly arisen, What effect does the persistent use of a low diet have on the physical vigor of the diabetic? Muscular weakness is characteristic of the diabetic. What bearing has underfeeding on this feature in the case of patients obliged to subsist on a small allowance of food? The answer

to this inquiry has been sought by Williams,¹ in a study of the influence of low diets, or the Allen method of treatment, on the physical vigor of diabetics. Strength tests were made by the use of the Collin dynamometer. It appears from the results, and in accord with common clinical observation, that diabetics, as a rule, are distinctly physically weaker than normal persons. Loss of body musculature may partly explain this, but it is probable that the lessened amount of food metabolized in these patients does not provide sufficient energy for the normal exercise requirements of the body. There appears to be a direct relationship between food tolerance and muscular vigor. As food tolerance increases, so does also muscular tone. Decline in food tolerance is accompanied by loss of physical vigor.

Williams further maintains that the continued use of a low diet for many months, even though it falls far short of the energy requirements of the body, provided it is within the physiologic limitations of the body to metabolize it, will cause an appreciable gain in muscular tone, although the amount of physical effort that such a person may be able to put forth may be considerably below the normal. This is in accord with clinical experience that nutrition within the tolerance of the patient gives the greatest comfort, strength and sense of well-being and, as Joslin has pointed out, the greatest expectation of life.

It is not long since the practice was common to urge the feeding of diabetics as freely as possible, in the hope of averting a loss of strength by promoting the greatest possible gain in weight. The new observations of Williams indicate that while diabetics living on a diet below normal physiologic requirements possess a diminished muscular vigor, feeding them beyond their metabolic limitations causes not only a further reduction in their tolerance for food, but also an even greater loss of strength. Thus the hope of improving a bad situation in such cases by overfeeding may well be abandoned.

THE ACTIVE PRINCIPLE OF THE HYPOPHYSIS

The physician who is not extremely well versed in the modern biochemistry of animal tissues might easily draw the conclusion from clinical literature, particularly of the advertising sort, that the "active principles" of various glands and secretions are definitely known and readily isolated. The fortunate circumstances of the separation and complete identification of such a substance in the case of the epinephrin of the suprarenals has given the impetus for further attempts of the same sort. Names have not been lacking for the anticipated "principles"; and occasionally a proposed designation has crept into print in advance of any bona

1. Williams, J. R.: The Effect of Undernutrition on Muscular Force: A Study of the Influence of Low Diets, or the Allen Method of Treatment on the Physical Vigor of Diabetics, *Arch. Int. Med.*, September, 1917, p. 399.

fide production of a truly corresponding active substance. It need not be denied that extracts and other preparations of glands have been prepared in a state of pronounced physiologic potency and corresponding therapeutic value. But this is something as remote from the production of a chemically defined compound of recognized composition as is the isolation of the crystalline alkaloid morphin from gum opium.

Attention has been called by Abel and Pincoffs¹ to misleading claims or beliefs of the sort just indicated, in relation to preparations of "active principles" of the pituitary gland. Thus one widely heralded product claimed by its sponsor to be a "solution of the isolated active substances of the pituitary gland," far from being a mixture of crystalline compounds of high physiologic activity which would justify a designation indicative of chemical unity, is shown to be at best a mixture of proteoses (and possibly peptones) with varying and unknown amounts of active and inactive constituents of the glands.

A study of various commercial pituitary preparations in the laboratory of the Baltimore investigators showed that secondary proteoses and possibly peptones (or polypeptids, if the term is preferred) were present in all of the therapeutically used extracts of the posterior lobe of the hypophysis cerebri that were examined. To what extent the proteose content of the gland may have been increased by autolysis or by processes incidental to the manufacture of the extracts it is impossible to state. It is believed, nevertheless, that the perfectly fresh, bloodless glands yield proteoses, since Abel and Pincoffs have actually isolated such substances from the thyroid gland and other organs when taken from the animal immediately after it has been bled to death.

It would be unfair to assert that every producer of pituitary commercial extracts claims to offer a product free from protein and containing absolutely nothing but potent gland constituents. As a matter of fact, however, those examined do contain adventitious substances. In answer to the inquiry naturally provoked by these findings, Abel and Pincoffs have found that the proteoses isolated from pituitary extracts are practically devoid of oxytocic or uterine contracting action. These protein substances do not constitute the "motiline"² that effects the well known activity of suitable pituitary extracts as uterine stimulants.

According to Abel and Pincoffs, and contrary to current teaching, proteoses are present in more than one tissue of the body. Proofs of their existence in gastric and intestinal extracts also has been obtained. The isolation of the hormones found in various active tissues will require a preliminary removal of the proteoses

— a task of considerable technical difficulty. Abel and Pincoffs have been able to prepare an extract of the gastric and intestinal mucosa which has a pressor action for the circulation and a marked oxytocic power in a concentration of 1:1,000,000. This powerful action points strongly to the conclusion that here also, as in the case of pituitary extracts, we are dealing with a motiline which, in a state of chemical purity, would be fully as active as beta-imidoazolyethylamin. And this again leads to the supposition that the oxytocic principle (or motiline) of the hypophysis is not a hormone or substance specific to this organ, but is rather a widely distributed substance, everywhere the same, which may have its origin in the various tissues, in the gastric or intestinal mucosa, or which may be absorbed as such from among the products of digestion. In any event, we may well agree with the Johns Hopkins pharmacologists that the active principles of the hypophysis cerebri have not yet been isolated as chemical individuals.

FRUIT ACIDS

Although fruits are held by some persons to be a luxury rather than a dietary necessity, they have recently come into a greater popularity than ever before in the ration of man. The typical American breakfast provides for fruits of some sort as a part of the menu. They enter likewise into the larger meals of the day, and thus secure prominence whether it be because they are regarded as stimulating to the appetite, as endowed with laxative properties, as sources of actual nutriment, or merely as adding a pleasing variety to the diet regardless of any unique dietary virtues. Almost all fruits contain sugar. Experts in nutrition at the present time are inclined to assert that fresh fruits and vegetables, although watery, are convenient sources of many of the substances which are needed by the body in small amounts. Quoting a government publication,¹ it is, in fact, generally believed that, unless these foods are used to some extent, the diet will be lacking in mineral materials and in other important growth and health promoting substances. They are, however, not important sources of fuel. They contain little protein and no fat. The evidence of the extent to which fruits are used lies in the fact that the crop is valued at considerably over 200 million dollars, of which the major share belongs to the orchard fruits. Nearly 200 million bushels of apples alone are produced in the United States each year.

All of the fruits contain noticeable amounts of organic acids, varying with the species involved. As a general rule the acidity tends to decrease with the progress of the ripening. The nature of the acids present has hitherto been anything but accurately determined. In a general way it has been the custom in some quar-

1. Abel, J. J., and Pincoffs, M. C.: On the Presence of Albumoses in Extracts of the Posterior Lobe of the Hypophysis Cerebri, *Proc. Nat. Acad. Sc.*, 1917, **3**, 507.

2. This word has been coined in evident analogy with "secretine," the hormone which promotes flow of secretions, to indicate a contraction-producing hormone.

1. Hunt, Caroline L.: Fresh Fruits and Vegetables as Conservers of Other Staple Foods, U. S. Dept. Agr., *Farmers' Bull.* 871, July, 1917.

ters to distinguish between highly acid and "subacid" varieties—distinctions of a quantitative rather than a qualitative character. The acidity of fruits is said to be largely due, not to free acids, but to acid salts, of which the acid potassium tartrate (cream of tartar) of grapes may serve as an example.² However, more than an incidental interest attaches to these questions. Not only may different acids have unlike rôles in promoting some of the effects, such as laxative action, now vaguely assigned to fruits; but there is reason to believe that some of the fruit acids, such as tartaric and benzoic, are oxidized with difficulty if at all in the body. The more readily burned fruit acids act to promote potential alkalinity; for when the organic radicals are oxidized to carbon dioxide and water, so much of any base as was combined with the organic acid remains as a carbonate. Thus, contrary to the popular belief, in metabolism most of the acid fruits actually function as base-forming foods. In accord with this the use of fruits tends to diminish the acidity of the urine, except in those cases in which, owing to incomplete oxidation of the fruit-acid in the system, the potential alkalinity is not fully realized. Blatherwick³ found, for example, that such foods as oranges, raisins, apples and bananas are very efficient in reducing the acid output. A further importance of the fruit acids is associated with the part they play in jelly making.

The Bureau of Chemistry of the United States Department of Agriculture has undertaken a critical investigation of the acid content of fruits. The chemists, Bigelow and Dunbar,⁴ state that the burden of evidence in the literature indicates that tartaric acid is not an ingredient of fruit juices except, of course, grape juice. Citric and malic acids are the characteristic acids found. Succinic acid may occur in small quantities, especially in unripe products. Salicylic, benzoic and formic acids have been reported now and then to occur in traces, the presence of benzoic acid in cranberries and plums being more conspicuous. The acids of some of the fruits like the apricot have not been positively identified. The behavior of citric, malic and tartaric acids in metabolism has recently been discussed in some detail in *THE JOURNAL*.⁵ The tentative conclusions reached by the government bureau indicate the following results:

| Fruit | Acids found |
|------------------|---|
| Apple | Malic only. |
| Banana | Probably malic only. |
| Cantaloupe | Malic none—probably all citric. |
| Cherry | Malic only. |
| Cranberry | Citric probably predominates—malic also present. |
| Currant | Citric probably predominates—malic sometimes present. |

| | |
|-----------------------|---|
| Gooseberry | Malic and citric. |
| Peach | Probably malic only. |
| Pear | Malic only in some varieties; citric probably predominates in others with small amounts of malic. |
| Persimmon | Probably malic only. |
| Plum | Malic only. |
| Pomegranate | Probably all citric—no malic or tartaric. |
| Quince | Malic only—no citric. |
| Raspberry (red) | Probably citric only—malic, if present, in traces only. |
| Watermelon | Malic, no citric. |

Bigelow and Dunbar say that these generalizations are not offered as final statements. It is possible that later work may modify them in some particulars. Undoubtedly traces of acids other than those here considered occur in many fruits, and it is possible that these may sometimes be found in important quantities. They add that the results obtained with pears emphasize the danger of drawing general conclusions as to the acid content of fruits from the analysis of a limited number of varieties or even of a limited number of samples. It is believed, however, that the general conclusions drawn from those cases in which a considerable number of samples were examined are correct.

THE TOXICITY OF ULTRAVIOLET LIGHT

Ultraviolet light can give rise to a large number of photochemical reactions. It is not surprising, therefore, to find that it is active also on protoplasmic systems. It has long been known that various small animals such as are found in fresh water flee from places illuminated by ultraviolet light. Under suitable conditions it has a lethal effect on micro-organisms; hence the plan of using ultraviolet radiation for the sterilization of water. To the physician the effect of this form of light waves is familiar through its manifestations on the skin. It is responsible for the inflammation called sunburn (erythema solare). The care taken to protect workmen in electric welding by having them wear spectacles impermeable to light of short wave lengths, and frequently to protect parts of the skin that are exposed, is due to the fact that the arc spectrum of iron is very rich in ultraviolet lines. Ultraviolet light has furthermore already found employment in therapy. It is a remarkable fact that the excitability to ultraviolet rays is independent of temperature—a fact which substantiates the view that they promote their effects by a photochemical reaction, the products of which may excite suitable receptive organs or structures in the skin or elsewhere.¹

The greater number of the constituents of living cells do not absorb rays of the wave length of visible light. Many of them, however, absorb ultraviolet light so that, as Bayliss remarks, it is not surprising to find that radiations of this kind have a very powerful effect on living cells as a rule. In a study of the

2. Sherman, H. C.: Food Products, New York, 1914, p. 352.

3. Blatherwick, N. R.: Specific Role of Foods in Relation to Composition of the Urine, Arch. Int. Med., September, 1914, p. 409.

4. Bigelow, W. D., and Dunbar, P. B.: The Acid Content of Fruits, Jour. Industrial and Engineering Chem., 1917, 9, 762.

5. The Behavior of Malic Acid in the Body, editorial, THE JOURNAL A. M. A., July 7, 1917, p. 44; The Behavior of Three Organic Acids in the Body, March 31, 1917, p. 984.

1. An interesting account of the behavior of ultraviolet light is found in W. M. Bayliss' Principles of General Physiology, London, 1915, p. 569, from which some of the facts given are cited.

possible origin of the toxicity of ultraviolet light, Harris and Hoyt² of the University of California point to the general law of photochemical action that only those rays are effective which are absorbed by the system in which the reaction occurs. Visible light rays are not, as a general rule, selectively absorbed by protoplasm, and hence their action is usually confined to specialized pigmented areas which constitute the receptive elements of optical sense organs. Ultraviolet light, on the contrary, is generally highly toxic, even for colorless organisms. Since this toxicity presumably depends on photochemical reactions and is attributable to them, the question presented itself to the California investigators as to the constituent of the protoplasm to which we are to attribute the selective absorption of these rays which is the necessary precedent of their photochemical activity. Various considerations that need not be rehearsed here point to the proteins as the participants in this phenomenon. Kober³ has confirmed the existence of an absorption band in the ultraviolet in solutions of the amino-acid tyrosin derived from proteins, and also finds that a similar band is exhibited by solutions of phenylalanin. The other amino-acid constituents of the protein molecule exhibit only general (that is nonselective) absorption in the ultraviolet spectrum.

The possibility is thus indicated, Harris and Hoyt further remark, that the tyrosin and phenylalanin radicals of the proteins constitute the optical sensitizers which render living cells susceptible to the toxic action of ultraviolet light. If this should prove to be the case, then, they say, passage of the light through solutions of proteins or the aromatic amino-acids should, by absorption of the toxic rays, to a greater or less extent deprive the light of its toxicity for protoplasm. An experimental study of the rate at which lower living organisms on exposure to ultraviolet rays are exterminated when living in water, in contrast with a medium containing various organic substances, showed a surprising protective action on the part of some of these. The results obtained by the California investigators are, as they express it, decidedly in harmony with the view that the susceptibility of protoplasm to ultraviolet light is conditioned by the selective absorption of the toxic rays by the aromatic amino-acid radicals of the proteins.

2. Harris, F. I., and Hoyt, H. S.: The Possible Origin of the Toxicity of Ultra-Violet Light, *Science*, 1917, **46**, 318.

3. Kober, P. A.: Spectrographic Study of Amino-Acids and Polypeptides, *Jour. Biol. Chem.*, 1915, **22**, 433.

Specialization in Military Hospitals.—According to the *Nederlandsch Tijdschrift*, Strauss of Berlin has been appealing to the authorities to distribute the sick and wounded in the hospitals by special groups, as this would materially facilitate the service. All with stomach affections and chronic dysentery, requiring a special diet, should be collected in one hospital. Men with trench nephritis should be separated into two groups, the mild and the severe cases. The idea is already realized to a certain extent in many quarters, but he insists that it should be carried much farther as a great aid to efficiency.

Current Comment

WAR SESSION OF THE CLINICAL CONGRESS

The Clinical Congress of Surgeons of North America, in its eighth annual session at Chicago, was a war session. The clinics of each day, held in the various hospitals, were in large part devoted to demonstrations of war methods, of the new antiseptics, of the new treatment for war burns, and of the handling of cases of shock. But the outstanding features were the afternoon and evening sessions. These brought home to the auditors the imminence of America's active participation in the war. Many of the audience were in uniform—on active duty—and on the speakers' rostrum at each session sat representatives of the medical departments of our Allies, France and Britain, and the Surgeons-General of our own governmental departments. At the opening session, Monday evening, the medical profession responded with repeated outbursts of the greatest enthusiasm to the patriotic utterances of the noted speakers. Even the most doubtful skeptic would have been convinced at that session that the American medical profession is in the war wholeheartedly, and resolved to do its "best" rather than merely its "bit." The greatest outburst of all occurred with the announcement that 18,000 physicians have offered their services, without conscription, to the government, and that special conscription of the medical profession would not be needed. Meetings of this character give to those who attend a perspective as to the stand which the medical profession is taking on problems of the day; at this time, particularly, they give a stimulus to all as to the need of complete and hearty cooperation with the government in the ordeal which it faces; above all, they stimulate in each individual a spirit of self-sacrifice and willingness to "do his bit." This is the greatest service which organizations may render to their members and to the public, and that this is recognized is evident from the statement of Surgeon-General Gorgas that organized medicine has given more aid than any other civilian agency to America's successful activities thus far in the war.

THE CHEMICAL STRUCTURE OF NUCLEIC ACID

The bustle of a busy world, particularly in war time, is likely to leave us oblivious to the beauty or the importance of happenings which do not show on the surface their direct application to everyday affairs. Yet even a brief consideration of the fundamentals of such modern necessities as the dynamo, the wireless, the coal tar dyes or the antiseptics, will carry us back to the little heralded research of some quiet investigator in a modest laboratory. In a spirit of dutiful recognition of important contributions of this sort we cannot refrain from reference to a series of investigations on the chemical structure of the nucleic acids, culminating in recent papers from the laboratory of physiologic chemistry at the Johns Hopkins University.¹ To the biologist the nucleic acids are familiar as integral com-

1. These have been published by Walter Jones and his collaborators in the *Journal of Biological Chemistry*, 1915 to 1917.

ponents of every nucleated cell in living beings; to the physician they further recall the purins, which play a part in the genesis of uric acid. Recent studies have definitely indicated that there are two distinct types of nucleic acids, one of which is found in animal tissues and the other in plants. Our knowledge of plant nucleic acids has been acquired from the study of products from two sources; the wheat embryo and yeast. It has now been ascertained that these plant nucleic acids are probably identical.² They are composed of the groups of four mononucleotids (compounds of a nitrogenous substance [either a purin or a pyrimidin], a carbohydrate and phosphoric acid) joined together through their carbohydrate groups. The details of such chemical structure would probably interest most of our readers as little as the intricacies of modern experimentation in the science of immunology on which much useful serum therapy has been based. No one will gainsay, however, that the unraveling of the structure of a compound represented by the empiric formula $C_{38}H_{55}N_{15}O_{29}P_4$ is no mean accomplishment. And to associate this splendid labor largely with the names of American investigators — Osborne, Wheeler, Johnson, Levene, Jacobs, Jones and others — lends a national pride to the accomplishment.

UNWISE ECONOMIES IN DIET

The desire to cooperate with the national Food Administration in its efforts at conservation, and above all the attempt to meet the high cost of living, are leading thoughtful persons throughout the country to scrutinize every phase of the food question. Women, says Miss MacKinnon³ in "A Lesson in Buying," have fought shy of the phrase "food values," and have preferred to "buy food"; but in these strenuous days the very best service many a woman can render is determined by her ability or inability to manage her food supply. Personal and national necessity is laid on many a woman to make of herself a wise buyer. In many respects—perhaps it should rather be stated, fundamentally—the food problem is one of supplying digestible stores of energy. There is some danger, however, that the calorie may sometimes assume an unwise domination in the selection of human food supplies. It is admitted that conservation should never mean undernourishment or malnutrition; but to avert possibility of these more remote dangers, wise buying of food must sometimes look beyond the energy measure in the selection of the dietary. We are impelled to this remark by reading the advertisement of a cereal food in a current journal addressed essentially to medical readers. The admonition is given to "Eat food that will give you the most energy for the least money." We may accept this advice and likewise admit the statement that "calories measure food energy the same as dollars measure money." But when it is further added that 35 cents' worth of the advertised product will furnish 3,000 calories, a day's need, the implication of the sufficiency of this exclusive product as the sole constituent

of the ration must be seriously questioned. It may be true, as the advertisement proudly proclaims, that more calories can be purchased in the form of the vaunted products for 10 cents than is the case in buying sirloin steak, lobsters, bananas or even milk. Such standards of dietary management and menu making are objectionable, however, if they lead to a tendency to "one-sided" regimens. To accept the advice, whether openly stated or implied, to live on a single dietary article, however inexpensive and digestible it may be, is to overlook the fundamental principles that are satisfied by variety in the diet. The fruits and green vegetables may be comparatively expensive when judged solely as sources of food fuel; but they furnish salts and vitamins and "roughage" or "ballast," adding suitable bulk to highly concentrated foods like the cereals, meats, fats and milk products. No cereal or meat offers any considerable supply of lime to the organism; nor are the cereal proteins taken as a whole and by themselves ideal combinations from the standpoint of the present day science of nutrition. The vegetables and fats are appropriate supplements to make a better balanced diet. In his aphorisms applicable to food conditions in war time, Bayliss⁴ has said, "Take care of the calories, and the protein will take care of itself." Yet this accomplished physiologist wisely guards against misunderstanding by adding that it is well to insure the presence of accessory factors by taking fresh fruit and salad. Let the novice be cautious in accepting the invitation of the food advertiser when the latter overlooks the advice of the student of nutrition. Without being limited to any single item of food, let us see whether, in the words of Lusk, "we have the intelligence to fitly utilize for the welfare of mankind the resources which God and nature have placed in our hands."

ISOLATION OF TETANUS TOXIN

Heretofore tetanus toxin and other toxins as well as ferments have defied the efforts to isolate them from the mixtures in which they naturally occur. For this reason we know little of the real nature and chemical structure of these remarkable substances; but a way to progress seems to have been found, as London and his co-workers in the Institute for Experimental Medicine in Petrograd⁵ now report that under certain conditions tetanus toxin and pancreatic ferments may be carried down on colloidal particles. They find that by the addition of 17 per cent. of ammonium sulphate to culture fluids in which tetanus bacilli have been growing; by centrifugation, the resulting sediment being thrown away; and then by the addition of from 1 to 3 per cent. more of ammonium sulphate, a sediment is obtained which contains the tetanus toxin. This sediment may be dried in vacuum and rinsed repeatedly with ammonium sulphate without thereby reducing the toxicity of the toxin, as minute a quantity as 0.00000002 gm. being fatal for white mice in two days after subcutaneous injection. They also report that

2. Read, B. E., and Tottingham, W. E.: Tritico Nucleic Acid, *Jour. Biol. Chem.*, 1917, **31**, 295.

3. MacKinnon: Experiments in Teaching Food Values, *Bull.* 49, University of Illinois, Aug. 6, 1917.

4. Bayliss, W. M.: *The Physiology of Food and Economy in Diet*, London, Longmans Green & Co., 1917.

5. London and Aristovsky: *Russk. Vrach*, 1917, **16**, 341. London and Pakhotina: *Ibid.*, p. 342.

by a similar treatment of pancreatic juice with 20 per cent. ammonium sulphate, the amylolytic ferment may be secured in what looks like a practically pure form, while with 30 per cent. the proteolytic ferment, and with 50 per cent. the lipolytic ferments are carried down. These remarkable results indicate that under certain conditions, which vary in each case, tetanus toxin and pancreatic ferments attach themselves to particles and thus become obtainable in nearly pure form. This discovery may mark a long step in advance in the study of toxins and ferments in general, the same principles no doubt being applicable to many other toxins and ferments than those mentioned.

THE CONTROL OF CHILD MORTALITY IN ENGLAND

The causes of high child mortality, particularly in the earliest years of life, are attributed to quite different circumstances by persons approaching the subject from somewhat different standpoints, traditions or experience. The fact is that the circumstances are undoubtedly both numerous and complex, varying with localities as well as with different strata of society. In any attack on a problem of great complexity, it is usually helpful to take into careful consideration the views of those who have had large experience and responsibility in the matter. Hence we are impelled, in connection with a topic that seems trite to some but is nevertheless always before us for earnest debate, to refer to a comparatively recent report of Sir Arthur Newsholme,¹ medical officer to the Local Government Board, London. He offers these comments: Maternal ignorance is sometimes regarded as a chief factor in the causation of excessive child mortality. It is a comfortable doctrine for the well-to-do person to adopt, and it goes far to relieve his conscience in the contemplation of excessive suffering and mortality among the poor. This doctrine has found favor in occasional official reports and in miscellaneous addresses. It embodies an aspect of truth, but it is mischievous when it implies, as it sometimes does, that what is chiefly required is the distribution of leaflets of advice, or the giving of theoretical instruction as to the matters of personal hygiene. Of course, carelessness (the detrimental effects of which the British authority places above ignorance), intemperance, poverty, overcrowding, defective sanitation, industrial employment of married women, the large size of the families of the poor, and other factors enter into consideration in any study of unnecessary child mortality. But in contrasting the wives of the wage-earners with the wives of men belonging to other classes, Newsholme has arrived at the conviction that the difference, apart from the handicap of the former in respect of housing, food supply and sanitation, in the main is one of ability to secure the assistance required in the various contingencies of maternity and early childhood. In England the chief means for rendering this assistance are furnished under the Midwives Act and the Notification of Births

Acts. The notification within thirty-six hours enables visits to be made on behalf of the public health authority as early after notification as is thought necessary. The Midwives Act regulates the practice of midwives who attend more than half of the total confinements in England and Wales, these being as a rule the cases in which the additional medical and nursing assistance already referred to are most needed.

THE GASTRIC SECRETION IN INFANCY

It seems to be well established at present that the glands which secrete gastric juice in adults are rarely idle. Even during starvation there is a detectable production of typical gastric secretion — of what Carlson has termed the hunger juice. In adult man the acidity of this fluid tends to be lowered by the regurgitation of alkaline pancreatic and intestinal secretion through the pylorus into the stomach. Taylor¹ has recently discovered that this formerly unsuspected secretion of gastric juice proceeds in the empty stomach of infants also. The acid thus poured out is often as concentrated as that found in the adult stomach during hunger. The secretion contains pepsin; and the more profuse it is, the higher its acidity appears to be. In contrast with what is believed to be the case in the adult, however, Taylor reports that this secretion in the infant is not neutralized in the stomach, but flows out into the small intestine. Regurgitation through the infant's pylorus does not occur. The stomach of a starving infant can apparently secrete from 50 to 200 c.c., or more, of highly acid juice daily. This equals, as Taylor remarks, the amount Engel obtained in his case of pyloric stenosis, which has served as the clinical basis for the theory that hyperacidity or hypersecretion of the gastric juice is an etiologic factor in that disease. In the light of the fact that active gastric juice seems to be available in unexpected quantity and potency, we can understand Taylor's contention that the theoretical objections to tube feeding in premature infants no longer are valid. Deprivation of food is frequently used as a remedial measure in certain digestive disturbances. Taylor suggests that therapeutic starvation in acute alimentary disorders and in summer diarrheas may owe its success in part to the heightened tonus of the alimentary tract, and in part to the pouring out of highly acid detoxicating and disinfecting gastric juice into the small intestine.

PRIMARY TUBERCULOSIS OF THE TONSILS

In recent years the tonsils have been regarded as the portal of entry for many diseases, but it does not appear that examination of tonsils after removal has yielded much information of value in regard to their supposed relationship to disease elsewhere. Mitchell,² however, has recently published some interesting observations from Edinburgh on primary tuberculosis of the faucial tonsils obtained from children with

1. Forty-Fifth Annual Report of Local Government Board, 1915-1916, supplement containing report on child mortality at ages from 0 to 5, in England and Wales, H. M. Stationery Office, London, 1916.

1. Taylor, Rood: Hunger and Appetite Secretion of Gastric Juice in Infants' Stomachs, *Am. Jour. Dis. Child.*, October, 1917, p. 258.

2. Mitchell, A. P.: Primary Tuberculosis of the Faucial Tonsils in Children, *Jour. Path. and Bacteriol.*, 1917, **21**, 248.

tuberculosis of the upper cervical lymph nodes, and from children with enlarged tonsils only and without evidence of tuberculosis of the cervical glands or elsewhere. In the first group were 100 children and six adults. In no case was it possible to establish the presence of tuberculosis prior to removal and examination of the tonsils. The tonsils were rarely painful, and there were no symptoms except swelling of the upper cervical nodes, which in about one fourth of the cases was slight and in the rest rather extensive. On microscopic examination forty-one, or 38 per cent., of the tonsils were definitely tuberculous. Animal inoculation in ninety-two cases gave twenty positive results, the bovine type of bacillus being isolated in sixteen. There were 100 cases, all in children, in the second group with enlarged tonsils only. The cervical glands were palpable in all. Microscopically nine of these tonsils were tuberculous also, all nine giving positive results on inoculation. The type of organism in four was bovine, in two human, and in three undetermined.

The tubercles in the tonsils were situated near the deeper portions of the crypts, and also directly beneath the surface mucosa as well as deep in the tonsil close to the capsule, the first two being the favorite locations. The position of the majority of the tuberculous foci in places within easy access of the oral cavity may be taken as suggesting infection by way of the mouth rather than by way of the blood or lymph by backward transport. The absence of any signs of pulmonary tuberculosis in such cases as these studied by Mitchell may be regarded as evidence that the lesions in the tonsils are primary and not the result of infection from the sputum, and also that the cervical lymph nodes are probably secondarily infected from the tonsils. The latter conclusion would point to the necessity of removal of the tonsils in operation for removal of tuberculous cervical lymph glands. The importance of the milk supply as a source of the infection in cases of tonsillar tuberculosis is emphasized by the fact that in many instances in the series under consideration the infecting organism was of the bovine type. Indeed, the results recorded by Mitchell, which are of special interest because of the large number of cases in which he found tuberculosis, should stimulate to other and even more extensive studies of tonsils, removed for whatever reason, in order that their relation to tuberculous infection and possibly also to other conditions may be determined still more precisely than is the case at the present time.

War and the Activation of Health Interests.—The problems of tuberculosis, venereal disease, insanity and recreation, which, even with all our highly intelligent and energetic propaganda, have hitherto interested only a handful of specialists, comparatively speaking, have suddenly become the common concern of all the branches of the federal and state governments which have anything to do with the fighting forces, and of everybody who has a son or brother or sweetheart, or even a mere acquaintance, in khaki or serge or linen. The prospects are that the American soldier will be the most "protected" and best cared for individual that the world has ever seen, and that there will be protection and care left over for at least a part of the civil population.—*The Survey*.

Medical Mobilization and the War

IN FLANDERS' FIELDS

In reproducing in these columns, October 6, the poem "In Flanders' Fields," by Dr. John McCrae, Montreal, now in France, it was stated that the poem had appeared in the *New York Times*, credited to Capt. John "McRae." In its issue for the same week—October 3—the *Outlook* published the poem under the caption "From His Note-Book," with the following note:

In a note-book found upon the body of Second Lieutenant A. H. W. Beatty, of the Manchester Regiment, says "Answers," the following verses were found. He had evidently jotted them down shortly before the action in which he met his death. There is something prophetic in them—as though the writer had some foreknowledge that his own time was coming.

The original publication of "In Flanders' Fields" was in *Punch* (London), Dec. 8, 1915, page 468. It appeared anonymously—the common practice of *Punch*—the name of the author being given only in the index of the volume. There it is credited to "McCree, Lt. Col. John"—evidently a typographical error. It is curious that in both *Punch* and the *New York Times* the author's name is spelled incorrectly, and in each differently.

Below is another poem by Lieut.-Col. John McCrae, from the *Spectator* (London), June 30, 1917:

THE ANXIOUS DEAD

*O guns, fall silent till the dead men hear
Above their heads the legions pressing on;
(These fought their fight in time of bitter fear
And died not knowing how the day had gone.)*

*O flashing muzzles, pause, and let them see
The coming dawn that streaks the sky afar:
Then let your mighty chorus witness be
To them, and Caesar, that we still make war.*

*Tell them, O guns, that we have heard their call,
That we have sworn, and will not turn aside,
That we will onward till we win or fall,
That we will keep the faith for which they died.*

*Bid them be patient, and some day, anon
They shall feel earth enwrapt in silence deep,
Shall greet, in wonderment, the quiet dawn,
And in content may turn them to their sleep.*

—John McCrae.

Physicians Recommended for Commission in the Medical Reserve Corps

During the week ending October 20, 224 physicians were recommended to the Adjutant-General of the Army for commission in the Medical Reserve Corps, the proportion being forty-two captains and 182 lieutenants.

New Red Cross Director-General

Jesse H. Jones, Houston, Texas, has been appointed director-general of military relief of the American Red Cross to succeed John D. Ryan, who was recently appointed to membership on the War Council.

Albany Competes

Dr. Henry L. H. Shaw, Madison Barracks, New York, enters the name of Albany in the competition of cities marked by patriotic physicians. In Albany there are 176 physicians, of whom 148 are members of the County Medical Society; forty-six have received commissions, and forty-one are now in active service; fourteen have been rejected on account of physical disability, age, etc. This gives a percentage of 26 for all physicians, and 31 for members of the County Society, not including those whose applications were rejected.

New Jersey State Society Contributes to Belgian Relief

THE JOURNAL is informed by the Belgian Relief Committee of the Emergency Aid of Pennsylvania that the Medical Society of New Jersey, through its treasurer, Dr. Alexander Mercer, Newark, has contributed \$1,000 for Belgian relief. This contribution has been forwarded to the Belgian Minister of State, Monsieur de Sadeleer, to be used to aid the Belgian children who are ill and destitute. In order to save the lives of these children it has been necessary to take them out of invaded Belgium for a little while, and a special arrangement has been made through the Dutch legation so that this work is systematically carried on like the "Country Week" plan. The children are taken to Holland, fed, nourished and brought back to health, and then returned to their parents.

Unit of Women for France

The first unit of women doctors and dentists for service in a base hospital in France has been equipped by the Women's Hospital, New York, under the direction of Dr. Rosalie Slaughter Morton, president of the Women's Hospital, and Dr. Elizabeth Johnson Van Slyke, superintendent. The members of the unit are: Drs. Dorothy Child and Florence C. Child, both of Philadelphia; Ethel Lyon Heard, Galveston, Texas; Esther L. Blair, Dixmont, Pa.; Esther E. Parker, Cornell, N. Y.; Marion L. Stevens, New York City; G. F. Nevins and Helen L. H. Woodroffe, San Francisco, and deLam Kinney, New York City, a dentist. Miss Martha Townsend, a graduate nurse of the Women's Hospital, who has served with the Fourth Canadian Contingent at Saloniki and has the rank of lieutenant in the Canadian Army, will accompany the unit, which is now fully equipped and will soon sail for France.

Government Control of War Risk Beneficiaries

In the Congressional Amendment to the Act of Sept. 2, 1914, establishing a Bureau of War Risk Insurance (H. R. 5723), there is ample provision for insuring the families of enlisted men who are war risks in the Army and Navy under present conditions. There is due compensation of widow and children for loss of support by death or disability, and paragraph 3 of section 302 (p. 10), states that the injured shall be provided, where necessary, with governmental medical, surgical and hospital service, and with artificial limbs, trusses and other appliances, "Provided, That nothing in this Act shall be construed to affect the necessary military control over any member of the Military or Naval establishments before he shall have been discharged from the Military or Naval service."

In other words it will not be possible to defraud the government through any of these channels, since all beneficiaries of the government through the European war will remain under military control until their relation with the government ceases.

Confers Degrees on Distinguished Foreign Medical Officers

On Convocation Day, October 12, the University of Michigan conferred the degree of Master of Arts on the following representatives of the medical profession among our allies: Capt. John Gilmour of the British Army: contributor to the epidemiology of the plague; decorated by his king for distinguished service in South Africa and in Flanders; Major Edouard Rist of the French Army: member of the Legion of Honor; at one time in charge of the quarantine station at Suez; well known authority on tropical diseases and on tuberculosis; Col. Thomas Herbert Goodwin of the British Army: distinguished scholar and soldier; possessor of the Order for Distinguished Service and commander of the Order of St. Michael and St. George; one of the few survivors of the first British force in France; gentle in word and in manner, resolute in action; Col. Charles Derclé of the French Army: member of the Legion of Honor; recognized student of Arabic, author of a French-Arabic dictionary; received ninety-seven separate wounds from a shell explosion at one time; distinguished scholar and soldier.

French Medical Students and the War

The *Presse médicale* of October 6 reproduces the decision recently voted at a conference of representatives of the medical department of the army and of the medical departments and deans of the various universities and the schools of pharmacy, with the undersecretary of state for the medical

department in the chair. It was arranged that for the first year students, who are to be summoned next April, the practical work for the whole year is to be crowded into the winter semester, thus enabling these students to pass before April their examination in this line for the whole year. For those already in army service, this instruction is to be given in the army zone so far as it does not interfere with military exigencies. The examinations are to be held by a university examining board, including also a regular army medical officer. This will enable the candidates to win, according to their status in the examination, military titles corresponding to corporal, sergeant, etc., in the other branches of the army. A new title, *sous-aide-major*, has been recently created for the purpose, and it has been decided that the title of *aide-major* can now be conferred on an advanced undergraduate. The university certificate to be given by the examining board will be the equivalent for the usual final examinations of the two semesters. The authorities are planning to organize practical courses at points where dissecting amphitheaters are available, and the students can be released to study there at intervals, as the airmen go back for courses in aviation. It is realized that if the instruction of the medical students is not allowed to go on within the normal range of time, at the end of the war the medical schools would be swamped with the number of students returning to complete their courses. It has been recognized further that the practical experiences at the front with the sick and wounded have a high educational value. The French authorities for years have accepted the medical course given by the Jesuits in their college at Beyrouth as entitling to practice not only in Syria but in France as well. The only restriction made was that members of medical faculties in France should conduct the examinations, and professors were sent out there for that purpose until the war broke out. The new arrangements just concluded plan a similar system of sending a university examining board to conduct the examinations of the medical students at the front.

CLINICAL CONGRESS OF SURGEONS OF NORTH AMERICA

"War Session"

The eighth annual session of this congress, a "War Session," convened in Chicago, October 22. As is customary, practically all of each day was devoted to special clinics in Chicago hospitals.

The first evening session was held in Orchestra Hall on October 22. John Philip Sousa, conducting the Great Lakes Band, entertained the audience before the arrival of the speakers of the evening. His patriotic marches prepared his auditors for the stirring addresses which followed.

The meeting was called to order by the retiring president, Dr. Fred B. Lund, Boston, who introduced Dr. A. J. Ochsner, chairman of the Committee on Arrangements. Dr. Ochsner welcomed "the distinguished collection of surgeons, especially of military surgeons," stating that they are the most useful members of the medical profession at this critical time. The work of the Committee on the Standardization of Hospitals, which had just closed its meeting, he felt sure would be an inspiration to every man to work toward the standardization of hospitals in his community. The great purpose of the meeting was to become thoroughly familiar with the wonderful work that the Surgeons-General of the Army and Navy and the Public Health Service were doing. "This body of men can help because it is composed of men who are clean in their work, in their mind and in their morals, and they can shorten the war and lessen by hundreds of thousands those who will be lost during the war."

Address of Dr. Lund

Dr. Frederick B. Lund said that there were about 14,000 medical men already enlisted and ready for service and that they needed about 8,000 more, but that medical conscription would not be necessary. He spoke of the wonderful service that had already been rendered by the men in charge of the units that were in France, and of the other men who had volunteered their services and attached themselves to the British Expeditionary Forces two or three years ago. He traced step by step the growth of America's participation in the war. "To the older men among us," he said, "the war has brought the priceless opportunity of doing something unselfish before we die. To the younger man the Army and Navy give abundant opportunity to be of service and to show his skill if he has any." He closed his address with a recitation in the form of a poem, indicting Germany for her

crimes against civilization, arousing his audience to a thunderous outburst of patriotic applause.

The President, Dr. John T. Clark

Dr. John T. Clark, Philadelphia, was inducted into office as the new president. "It is a pleasure," he said, "to sit as an auditor in this assemblage of military speakers who are devoting their time and attention to military affairs. They stand in the ranks who deal with salvage rather than destruction." He spoke of the wonderful progress that had been made in the matter of life saving devices that are already in use and of the many others which were promised which would revolutionize medicine and surgery. He was convinced that medicine would come out of this war far richer than when it entered it.

Address of Secretary Daniels

Secretary Daniels of the Navy said that it was to the physicians that the nation turned in time of war with supreme confidence in the belief that by preventive measures they could save the lives of the youths who are willing to rally to the standard, and he wished to express the thanks of America to the men who were making the great sacrifice of devoting their time and their skill to this purpose. He urged that the physicians use their great influence in stamping out the most destroying evil that touches American youth. The hour has struck when the prudery which has made us shut our eyes to this evil is at an end. We cannot win this war unless our soldiers and sailors have steady nerves and clear heads. Men do not have these unless they live straight lives. To put 10,000,000 men under arms and let a portion of them be diseased and make no check on the immoral surroundings that we place them in would be unjust to the nation and unfair to the men. For the first time in the history of the world our country has started on a new line. We have recognized the evil and no longer whisper about it in dark corners. The peril of today is not merely the German guns. In the English army 78,000 men are out of battle because of venereal disease. Congress has passed a law and put it in the hands of our officials to carry forward measures more drastic than were ever dreamed of before. During the last year because of these diseases 141,000 days were lost in the service of the Navy. One person out of every 112 in the Navy had to be treated and almost as many in the Army. We should quit trying to use the poultice when we need the surgeon's knife.

A Message from President Woodrow Wilson

During the evening the following telegram was received from President Woodrow Wilson and read by Dr. C. P. Davis: "To the Clinical Congress of Surgeons of North America: My warmest greetings and best wishes. It cheers us all to see thoughtful, patriotic work done in such good spirit. Woodrow Wilson."

Owing to illness Dr. Franklin Head Martin was unable to be present to introduce the distinguished representatives of the Army and Navy and the visitors from abroad, so Major Edward Martin was requested to take his place.

Address of Surgeon-General Gorgas

Surgeon-General Gorgas said that he had looked forward with dread to the necessary enlargement of his corps on account of the war and had expected to have considerable trouble in the management of so many well informed medical men, but he was happy to say that everything had gone smoothly and there had been no trouble. He thought the fact that he had scrambled along for six months in complete unison with his staff, which contained many eminent men, should have been mentioned in the eulogies that had been showered on him by the other speakers. When he consulted his records he found that not one had been court martialed or had spent a day in the guardhouse. The nation is engaged in the most important war of all history and we must acknowledge that it had responded most nobly in all its branches and not swerved away. No part has been called on to respond so promptly as the medical profession, and he thought it was fair to point out that they had measured up to all that could be expected. He closed by saying that no civilian agency had been of such great service to the government as organized medicine, and he wished to thank the congress of surgeons as all other societies for so full heartedly rendering this aid.

Address of Admiral Braisted

Admiral Braisted, surgeon-general of the Navy, spoke principally of the work of the National Board of Medical Exam-

iners, which had been carrying on its work for two years and reporting from time to time. Its third examination had just been completed. The quality of the examination has been recognized everywhere. It has recently been announced that the Mayo Foundation would receive licentiates without further requirements. Many of the states have arranged to accept the certificate on registration. It had been deemed advisable to go on with the examinations during the period of the war and conduct them even more frequently, going to the larger cities and bringing them before the interns of the hospitals. In the examination just completed there were twenty-nine candidates. The next examination is in January. "It is the privilege of few men to do many great things and the National Board of Medical Examiners," said Dr. Braisted, "is one of the great things of the world."

Address of Surgeon-General Blue

Surg.-Gen. Rupert Blue of the Public Health Service said that this is the time for the estimation of values, and that everything that leads to efficiency brings us nearer victory. He was thankful to announce that the health of the United States was in better condition today than ever before. There had been an awakening of the consciousness of the American people regarding the prevention of disease, and the water and food supplies, the inspection of schools and the control of communicable diseases had all been placed on a good basis. Research has tracked infection to its lair and provided new methods for its control. With the knowledge that we must fight came the realization that these sanitary measures must be followed, and out of this war will come a better, stronger and more enduring national health.

Colonel Goodwin of the British Army

Col. T. H. Goodwin, R. A. M. C., said that Great Britain and America were in this great fight side by side with a common object, identical ideals and with the certain expectation of a mutually attained victory in the future—although probably not in the near future. When he came here five or six months ago Great Britain was in straits owing to the scarcity of medical men necessary, and they owed an unending debt of gratitude to America for the way in which she had responded. Since that time 900 medical officers and nearly 500 nurses have gone across to help on the western front, and their work would be helpful beyond description.

Colonel Derclé of the French Army

Col. C. Derclé of the French Medical Corps received a most hearty welcome. "The manifestations of sympathy moved him more," he said, "because he realized they were meant less for him than for France herself." He spoke of the battle of the Marne where the French army under the command of its chief, Major Joffre, covered itself with glory. "The French," he said, "intimated to Germany to stop—and they have stopped." He could not describe the treasures of devotion he witnessed. The deaths of the men had never been a cause of discouragement on the part of those who followed. On the contrary, there have always been many willing to occupy the vacant places. He highly approved of everything he had seen in the training camps he had visited, and was sure that every physician and surgeon was able to do his war work when strikes the hour. "This was due particularly," he said, "to the personal enthusiasm and activity of Surgeon-General Gorgas, who is giving such wonderful encouragement to every one who works in his service."

Lieut. John Philip Sousa, in a brief speech, said that it seemed to him the meeting was for the purpose of glorifying the medical profession. He then conducted the band in a series of numerous encored selections.

Address of Sir Berkeley Moynihan

"At midnight on Aug. 4, 1914, England—to her lasting honor—declared war against Germany, and at 8 a. m., Aug. 5, 1914, I became for the tenth successive generation a soldier of my sovereign," began Sir Berkeley Moynihan, and he was greeted with a furor of applause. From that time until he stepped aboard the boat at Liverpool he had practiced military surgery, thought of military problems and had lived with military people. There were about 30,000 medical men in England and one-third of them are wearing the king's uniform, and have seen active service or foreign service. In his center in Leeds they had a civilian hospital of 480 beds with a staff of four surgeons and four assistant surgeons. When the territorial system of hospitals was established throughout the country, Leeds was chosen as one of the centers, and they were asked to supply a military hospital of

520 beds. They agreed, and the men attached to the hospital staff became by that act officers in the territorial branch of the army. Of the eight surgeons there are three left at home, himself included—who is often in France, often in London and occasionally in Leeds. With that disabled staff, with the help of the practitioners in the neighborhood, they are running, with an efficiency he would not hesitate to display to the military surgeons of any land, a military hospital of 6,300 beds. The men of the Royal Army Medical Corps are both soldiers and doctors; as soldiers they go into any part of the line from the front trench to the base according to the needs at the moment. Since the war began up to the 25th of August, 1917, they had suffered 1,800 casualties. That number of their men had either been killed or wounded, or gassed or disabled from further service. The highest distinction which any Englishman can gain in the opinion of every Englishman is the Victoria Cross, and they had gained more than their share of that coveted distinction. Two members of the profession have won both the cross and the clasp, indicating that they have won the decoration twice. He paid high tribute to Surgeon-General Gorgas and Major Mayo for their work in connection with the Medical Reserve Corps and in preventive medicine. Ninety-eight per cent. of English soldiers have been voluntarily inoculated against typhoid with the result that they have had only 292 deaths from that disease and only 6,022 cases altogether, whereas in the South African War they had 57,684 cases with over 8,000 deaths, although this infinitely larger army lived under much more difficult circumstances. In many other directions they have helped to stamp out or reduce the prevalence of disease. He begged us never to forget that Germany is a great and formidable nation with an implacable hatred of them and of us, and said we might be sure that in this war with her reserves which come up fresh at the rate of a million and a quarter a year she will use against us every dirty device which she can think of. He believed that America would find as England had found that for her the war would begin when every man of military age in the whole country has offered his services and is prepared to surrender his life to his country.

Address of Major Crile

Major George W. Crile said that during his service in France he had heard no one express the opinion that the enemy was wavering or starving, that he was short of munitions or no longer fights a hard fight, or that the imperial power was crumbling. He had talked with many German prisoners and they were strong and well and well nourished. On the other hand, he had heard from British soldiers that when the Britain and the Teuton meet face to face the Teuton throws up his hands and surrenders, which shows that the Teuton has at least good judgment. He had come to know the British but had known the French less well; he had seen the Briton as a hero and had seen the same on the part of the French, and while he could conceive that the British and French might not win the war he knew that their bodies would never be taken away from the line. They might be buried there but they would never retreat. Everyone in France thinks that the war will be long. The opinion that the enemy is weakening, or is nearing a collapse, and that the war is almost over he had heard only since he arrived in New York. This shows a new danger—how extensive has been the peace offensive waged against the United States.

There are now six American hospitals in France serving with the British Expeditionary Forces. These units have taken over hospitals of from 1,600 to 2,000 beds; there are also several hundred men in the field service, ambulance corps and other capacities. These men know no fear and frequently shake hands with fate, but they stick to their tasks bravely and are men of whom we should all be proud. The British Medical Service has kept their army more free from colds and infection than the civilian population of Chicago. Their medical organization is so perfect that their transport never failed. The death rate from infection and wounds in the French and British lines has been reduced to an incredible minimum, and a vast army of soldiers has been returned to active service, wearing on their sleeves the insignia of having been wounded. The demands of surgery at the present moment are felt by every one; a new set of problems has arisen, and if they are to be solved we must abandon our more personal interests for the time being. Many surgeons must leave their practice and do for the wounded man what had been done for the diseased in every line of surgery. The same intense devotion toward the problems of the wounded soldiers would do for the soldier what had been done for the civilian who remains at home. It is a serious mistake to

suppose that military surgery is surgery for the unskilled. It demands a greater versatility and the ability to stand in twelve-hour shifts and to meet every problem that arises in the sequence in which it comes. If a man is interested in any particular thing and says so, the stream is turned on him until he surrenders. More progress has been made in surgery of the chest and abdomen and in the treatment of wounds, of infection and hemorrhage and in the treatment of exhaustion in the past three years of the war than in any time before. This is not a war of men but of ideas, and when thousands are to be saved, what greater gain can be had than to discover means of prevention that may be applied?

Afternoon Session, October 23

At an afternoon session, held at the Congress Hotel, moving pictures of war methods were shown, and special addresses were given. The first address was that of Col. Thomas H. Goodwin of the British Army, in which he described the effect of the war on the English medical profession. Following this address was that given by Major Rist, characterized as the French Osler, on a similar subject, but applying to the French medical profession.

Address of Dr. Frank Billings

An address was then given by Dr. Frank Billings, head of the American Red Cross Commission to Russia, who has just returned from abroad. Dr. Billings brought a message both unencouraging and encouraging in its various aspects. He believes that politically and economically Russia is far from the disorganization pictured by so many writers. With the food now on hand, he is convinced that Russia could easily exist for another year. Numerous supplies of practically every kind are available. In one storehouse in Petrograd there are stored over 6,000,000 suits of underwear for the use of soldiers. However, there is some disorganization, and this shows its effect chiefly in intercommunication; the transportation of food, supplies and munitions is accomplished only with the greatest difficulty. There have been seven cabinets in Russia since the revolution, and these cabinets are created without definite authority, each cabinet having its backing within itself. Dr. Billings was convinced that in her strong young men, particularly Kerensky, who he believes is an honest man and a man who stands for country first, Russia will eventually find herself, and will become a democracy firmly founded possibly through a limited monarchy. The hospitals and the medical department of the army are admirably conducted; in fact, Dr. Billings believes it is equal to that of any in the world. There are certain surgical and medical supplies which Russia requires, but only a few. Before the war, Russia made no synthetic chemicals, but at the time he left, factories in Petrograd were turning out tremendous quantities of needed material. "Russia is making chemicals and drugs as efficiently as we are," said Dr. Billings, "though not to such an extent." He is convinced that after the war not a package of any kind marked "Made in Germany" for consumption in Russia will be received in Russia. Following the address of Dr. Billings, Capt. J. Gilmour of the British Army described the progress of a wounded man from the front to "Blighty."

Report of further meetings will appear next week.

NEWS OF THE TRAINING CAMPS

Fort Benjamin Harrison

ADDITIONS TO OUR WARMTH

At last the long-expected stoves for the barracks have been installed, and with their advent the spirits of the camp have ascended in proportion. Now the evening grind over the Army Regulations and Manual of the Medical Department will be a pleasure, since the tremor (*frigidorum*) will disappear.

Glad tidings of woolen clothing to be sold to the medicos by the quartermaster have reached a more authentic stage than L. O. (Latrine Order) No. 23. It is now understood that an order which provided that no more clothing be furnished by the government to any one until the entire National Army had been completely equipped has been rescinded. Of course, officers are not issued uniforms of any kind by the government, but they have the privilege of purchasing such supplies from the various quartermasters at cost price. The officers of the Medical Reserve Corps in active service are willing to take advantage of the low prices of the quartermaster's department in purchasing supplies, as the difference between these and the constantly ascending prices of the

retail merchants is tremendous. It is to be hoped that this purchase privilege will be lasting.

EQUIPMENT OF MEDICAL OFFICERS

More doctors are coming into the training camps constantly, and the variegated sort of equipment that they bring justifies some advice as to the necessities. True, umbrellas no longer appear in their equipment, but they still bring swords and rocking chairs, and, no doubt, if the military equipment establishments sold walking spurs and guard lines, some enthusiastic doctor would be induced to buy. A doctor ordered on active duty should purchase only the absolute necessities. The quarters that will be assigned are limited, and the military authorities will allow only a certain amount in weight and shape for transportation in campaign. It is folly, therefore, to load up with extra baggage, as the excess is destined to immediate shipment home.

The following list will cover all that is necessary for the winter season:

Uniforms.—One heavy weight serge uniform, with cap, for dress. A white linen collar and white cuffs must be worn with this uniform. Many of us find a white linen military stock more convenient than a stiff linen collar.

One olive drab service blouse, with two pairs of trousers, which it is usually possible to purchase at contract price from the government, though the latter privilege is by no means certain. The decorations on the collar of the blouse should be the letters U. S. R. and a caduceus on each side, the letters in front, the caduceus a short distance behind; on each shoulder, the bars indicating the rank, and around each sleeve, the proper distance above the wrist, a circle of brown braid.

No leather belt is worn outside of the blouse. A sword is unnecessary. The belt to support the trousers should be olive drab webbing.

Shirts.—Two olive drab, flannel. More may be obtained from the quartermaster at a very reasonable price. The collar ornaments for the shirt, when the blouse is not worn, are a caduceus on the left side, U. S. R. on the right side, near the front, with the rank designation a short distance behind it. It is better to buy the smaller size of these ornaments.

Puttees.—Leather, one pair, costing about \$7. These must be purchased to fit.

Shoes.—One pair of Munson last, tan, a half size longer and one size wider than the shoe ordinarily worn. More shoes may be purchased from the quartermaster's stores on arriving at camp.

Overcoat.—A heavy regulation officer's coat. This also may be purchased from the quartermaster, but alteration will be necessary, and the quartermasters do not always have them in stock. It is better, therefore, to purchase it at home.

A sheepskin-lined, moleskin, short coat, with a fur collar, is very useful, though not necessary. This is called a "trench" coat.

A tan-colored rubber coat is essential, and a pair of light-weight rubber boots useful. These boots should be large enough to allow the wearing of a pair of felt slippers. The latter can also be used in the barracks.

Underwear.—Woolen; two suits.

Socks.—Two pairs, light weight woolen; two pairs, heavy weight woolen.

Gloves.—Woolen, olive drab.

All of these can be procured from the quartermaster on arriving at camp, provided, of course, his stock has not been depleted.

Hat.—A campaign hat, with an officer's hat cord, is necessary. This is to be worn on all occasions, except for dress.

Sweater.—A sweater is not provided for in regulations, but is allowed in camp for fatigue. This must be of the regulation olive drab color. The Red Cross sleeveless sweaters are a great comfort, but must be worn inside the shirts. The Red Cross wristlets are allowed and advisable, if of olive drab.

Pajamas.—Woolen pajamas are a necessity. Nightgowns are ridiculous.

Trunk.—One locker trunk, of regulation size. At present they cannot be procured from the quartermaster.

Cot.—A strong Gold Medal cot, higher than is usually sold—in fact, high enough to allow of placing the trunk underneath.

Bedding-Roll.—This must be purchased, but can be procured in camp for about \$11.25.

Blankets.—Bring them with you. Thick, warm, woolen blankets, of dark color, preferably three. Two comforters—one woolen and one cotton, of strong material, the cotton to sleep on, the woolen to wrap up in.

Sheets.—Only the fastidious need sheets, and army life soon cures that disease. The sheet is about as useful at this time of year in barracks as a bedspread would be.

Pillow.—A small, thick, hard pillow, covered with dark material. A pillow slip is unnecessary.

Towels.—Turkish towels answer the purpose best. These can be purchased in camp, at a reasonable price, but it is well to bring several along.

The Red Cross comfort kit and toilet roll will be needed. A safety razor is best, as often one shaves without a mirror and with cold water.

Do not forget the tooth-brush, and to use it. If this has been neglected heretofore, practice its use before coming to camp.

In this connection, it will be well to add that it may serve a good turn to practice daily bathing, as it will be necessary in barracks. Also, it is *à propos* to remark that it would be well to bring your table and home manners with you, as you are expected to be house-broken while living with other men.

A small, light typewriter is a great convenience.

It will be possible to procure everything else needed on arriving at camp, except some ready money to carry you over until you cash your first pay check. I might add that pay vouchers are sent in on the 20th of the month, and not after, and pay therefor is received near the first, by check of large denomination, which it is not always easy to cash.

Instruction in camp is undergoing many changes leading up to actual service conditions, as, for instance, intensive equitation, gas-mask instruction, actual duty in the elaborately constructed trenches on the reservation, etc. Experiences in connection with these duties will be described in the succeeding numbers of THE JOURNAL.

NEWS OF THE CANTONMENTS

Twenty-Eighth Division, Camp Hancock, Augusta, Ga.

The strength of this command, officers and men at this time is 27,548 of which there are 149 sick in hospital and 286 sick in quarters. There are no cases of alcoholism and but 289 of venereal disease. Nearly all are cases of gonorrhea and only about twelve of these contracted since arriving here. Several cases of mumps and a case of scarlet fever constitute the infectious diseases.

The division is particularly free from serious diseases or surgical conditions, and the sanitary conditions are very good. The command is about immunized to typhoid and variola. Paratyphoid inoculations are nearing completion.

Thirty-First Division, Camp Wheeler, Macon, Ga.

Thirty-three medical officers recently arriving from the training camp at Fort Oglethorpe have almost filled the vacancies in this division. Others to come will complete the commissioned medical personnel in a very short time. The enlisted force is still over 400 short. The camp hospital, which has cared for all patients of the division, was closed on September 18. The medical officers' school was, of necessity, closed during the past week on account of the arrival of drafted men who came in by trainloads—from 1,000 to 4,000 a day. Pneumonia is the only serious disease in the camp. Twelve cases have occurred so far, with no deaths. Major Weil is making a careful study of all cases, in an endeavor to throw some light on the etiology, prevention and treatment of this, now the most fatal of all diseases in our camps. It is feared that the coming cold weather, with a shortage of heavy clothing, may cause an increase in the amount of pneumonia. The Public Health Service is doing good work in Macon and the country about the camp. Under the direction of Surgeon Williams, dairies, lunch rooms, ice cream factories and the like, are being put in good sanitary condition. The American Red Cross and the city of Macon have furnished the funds thus far.

The Commission of Training Camp Activities is beginning a campaign to clean up the city of Macon morally. The chief obstacle is a certain amount of clamor from those financially interested, who claim there is no vice in the city. The venereal wards at the hospital give these claims the lie.

A first aid station has been established in the city in order to care for soldiers who are injured or need medical atten-

tion while in the city. This is believed to be the first one of its kind established in the history of the Army.

On account of the breaking up of the Fifty-Sixth Depot Brigade, Major Livingston has been transferred to the One Hundred and Sixth Engineer Regiment.

ONE HUNDRED AND SIXTH SANITARY TRAIN, CAMP WHEELER, GA.

The camp hospital, maintained as a division hospital during the construction of the base hospital, was evacuated on the 16th instant. The transportation of 123 men unable to walk, and fifty-five ambulatory cases, was accomplished by Ambulance Companies Nos. 121 and 123, in two hours and forty minutes.

Major Lorin A. Greene and the Florida Field Hospital officers and men are to be commended for the efficient manner in which the camp hospital was conducted. Working under conditions naturally crude, and handicapped by many shortages, the handling of 888 sick soldiers was conducted.

One hundred and thirty-five men were drawn by the train from the incoming troops from Camp Gordon. It helps some, but we still need 400.

Major George A. O'Connell (Alabama) will command the third motor field hospital just authorized, and Capt. James A. Blackwell (Alabama) the third motor ambulance company.

The conduct of the train as a regiment seems to be working out well. Why the sanitary train is not authorized a train commander of equal grade with commanders of other trains is hard to understand.

Lieut. Edwin S. Byrd (Georgia) has returned to duty a full fledged benedict.

Major George F. Keenan (Massachusetts) represented the medical department of the division at the annual meeting of the Red Cross chapter at Macon, the past week. The needs of the hospital service were discussed, and cooperation urged.

The flooring and walling of the tents for the winter is nearing completion.

Lieut. Daniel Campbell (Florida) has returned from leave of absence as witness in an important murder trial in his home state.

BASE HOSPITAL NOTES

The hospital was opened for the reception of patients at 8 a. m. on Wednesday, October 17, just thirty-nine days from the time the first nail was driven.

The following buildings were then ready for occupancy: commander's and officers' quarters, administration, receiving ward, laboratory, patients and employees' mess hall and kitchen, medical wards 1, 3, 15 and 17, surgical wards 2, 4, 14 and 16, each numbered ward containing thirty-eight beds. As carpenters go out of one end of completed buildings beds for patients come in at the other end. This without interfering with the contracting force. One hundred and fifty stoves for heating have been authorized to be purchased locally and will be in place within a week. The operating pavilion will be heated by using surplus steam from sterilizing plant, and hot and distilled water for the laboratory will be obtained from the same source.

Patients began to arrive at 8:30 a. m., and by 4:30 p. m. 252 had been admitted. The arrival of new cases has kept pace with the utmost endeavor of the personnel but none have been turned away. Today, Saturday, we have ten wards open and 312 patients under treatment. Considering the shortness of the force and the other difficulties under which this work has been accomplished, the result is astonishing, but no more than should be expected of American soldiers. The mess officer deserves special mention for his efforts and results.

This unit has thus early demonstrated what can be done by intelligent, united effort, and every member has shown the proper *esprit de corps*.

Thirty-Fourth Division, Camp Cody, Deming, N. M.

Camp Cody, N. M., the Thirty-Fourth Division, is being formed of troops from the National Guard of Minnesota, the Dakotas, Nebraska and Iowa. Lieut.-Col. J. M. Coffin is division surgeon, and about a hundred medical officers of the division are already working under his direction.

The camp is situated just west of the city of Deming, occupying an area of 4 by 2½ miles, being part of an extensive "bolson" plain near the continental divide, at an elevation of about 4,400 feet, with isolated mountains around it in all directions at distances of from 6 to 50 miles. The Army

sanatorium for tuberculosis at Fort Bayard is distant only 54 miles.

The health of the troops is excellent. The climatic and other local conditions are of the best, and the division surgeon has succeeded in preventing the introduction of disease from outside. Surgeons examine all incoming troops promptly on arrival, and isolate all patients with contagious disease. A board of five medical officers is examining all troops for incipient pulmonary tuberculosis. Capt. E. S. Bullock of Silver City, N. M., is president of this board. Similar boards make careful examinations along other lines. Capt. H. R. Carter, Jr., formerly of Johns Hopkins Medical School, is director of the board for cardiovascular examinations; Capt. L. C. Covington of Charleston, W. Va., of the board for ocular diseases and defects, and Lieut. H. Phillips of the Pennsylvania State Hospital for the Insane for mental disease and defects. Less than 0.5 per cent. of the troops have shown incipient pulmonary tuberculosis, 1 per cent. some form of conjunctivitis, and less than 1 per thousand serious mental incapacity.

VENEREAL DISEASE

Venereal diseases have resulted in admissions to the hospital at the rate of 2 per thousand. The municipal authorities in the city of Deming have cooperated loyally and zealously in combating these and other diseases at the source. The segregated district in the city has been abolished, and the reestablishment of houses of prostitution prevented.

Two cases of typhoid have developed among civilians. These infections have been traced in each case to a source outside the camp. No cases have developed among the soldiers, and vaccination against typhoid, paratyphoid and smallpox is being accomplished.

WATER SUPPLY

The water supply comes from wells from 70 to 100 feet deep. Previous examinations have shown the water to be pure, free from alkali and organic pollution, and careful examination of water from each of the four individual wells is now being conducted. An interesting character of the subsoil contributes to the safety of the water supply. The rainfall is very slight, and the water in the ground has come in from the mountains surrounding the plain. These water-bearing strata lie beneath a layer that is almost impervious. Water stands in unlined cisterns for months without apparent diminution, but there is evidence of an exceedingly slow capillary movement of subsoil water upward to replace that lost from the surface by evaporation. This water carries with it lime salts in solution which are slowly deposited a foot or more below the ground surface as the water evaporates, and a considerable layer of "caliche" has thus been formed. This is used for surfacing streets and earthen floors.

Although the soil is thus impervious, the contamination of the surface by excreta and garbage is prevented for other reasons that are obvious. Cesspools in Deming have been replaced by connection with the sewerage system, and where open closets are still used, the dry earth system and fly tight boxes are required. Garbage is sold under contract, and other refuse is burned in the company incinerators over which all waste or dirty water from kitchens or other sources is evaporated.

INSTRUCTION OF MEDICAL OFFICERS

Recently an order was issued from Washington requiring courses of instruction for medical officers with divisions. Such a course of instruction was instituted in Camp Cody, October 1, ten days in advance of the receipt of the order. It is designed to cover the work that will be required of medical officers in campaign, and includes sanitation in camp and on the march, the care of the person, foods, cooking and mess management, as well as the study of Army Regulations, Manual of the Medical Department, organization of the Army, relation of the Medical Department to the rest of the Army, and other administrative work which is essential in an effective organization, and in which the Medical Department necessarily plays a very large part. The course is objective and practical, and includes participation in regimental, brigade and divisional maneuvers.

In the more specifically medical part of the course, regular conferences are held in the wards of the base hospital, at which regimental surgeons and others discuss with the hospital staff cases which they have sent in, paying especial attention to those in which the diagnosis at the base hospital differs from that on admission.

Lectures by specialists present with the division, or sent for the purpose, deal with various departments of military medi-

cine and surgery, diseases incident to life in the trenches, gas poisoning, and the special conditions that the Medical Department is likely to have to meet during the present war.

The physicians who have exchanged civilian life for the orderly round of military duties in the camp are finding the work heavy but full of professional and human interest. All are finding the well ordered life in the mountain air good for health and spirits, and are happy in the consciousness of giving increasingly efficient service to the United States.

Thirty-Ninth Division, Camp Beauregard, Alexandria, La.

Camp Beauregard, a National Guard camp, houses the Thirty-Ninth Infantry Division, composed of the National Guard units of Arkansas, Louisiana and Mississippi, and is under the command of Major-Gen. Harry B. Hodges. Only about 7,000 troops have arrived to date; but they are coming in rapidly, and a full division of 27,000 men will be here soon. The first medical officer to arrive was Major George F. Lull, commanding officer of the base hospital, who reported for duty, August 13. Lieut.-Col. William G. Schaffler, late surgeon-general of the New Jersey National Guard, who is division sanitary inspector, was the next arrival. Under his careful and efficient supervision the entire camp has been put in a most satisfactory sanitary condition. Next came Lieut.-Col. William Smart of the Medical Corps, who is division surgeon. Colonel Smart is a son of the late Surgeon-General Smart of the Army. At present time there are forty-five medical officers in camp. There are ten regimental infirmaries, one field hospital and the base hospital. The latter is located on a hill in the pine woods about 2 miles from the rest of the camp. The buildings are not yet quite complete, so the patients of the camp who are too sick to be treated in the regimental infirmaries or the field hospital are being taken care of in the Alexandria Sanatorium by members of the staff of the base hospital. However, the constructing quartermaster has given assurance that the base hospital will be sufficiently complete to receive patients during the present week. The personnel of the base hospital staff includes the commanding officer, Major George F. Lull, M. C., who brings to the position a wide experience acquired in Panama and on the Border, and the chiefs of the sections, as follows: medicine, Major J. B. Guthrie, professor of clinical medicine in Tulane University; surgery, Major John T. Burrus, High Point, N. C.; orthopedics, Capt. E. D. Fenner, professor of orthopedics in Tulane University; surgery of the head, Capt. W. C. Heisey, McKeesport, Pa.; neurology, Capt. John T. Sample, Saginaw, Mich., formerly medical house officer of Johns Hopkins Hospital; section of venereal diseases, Dr. Loyd Thompson, Hot Springs, Ark., editor of the *American Journal of Syphilis*; and laboratory, Dr. Charles Burhans, Cleveland.

MEASLES

An epidemic of measles broke out in the First Louisiana Infantry the latter part of August, and to date there have been about 100 cases. There are now twenty-seven cases, most of them comparatively mild. As these cases constitute the majority of the cases of illness in the camp, the clinical work of the staff of the base hospital has been comparatively light. The time is taken up with drills, classes on the ever present paper work, the bugbear of the medical reserve officer, French lessons and quizzes. The *esprit de corps* is excellent, and when the division goes to France, the base hospital should prove a most efficient unit.

TUBERCULOSIS SURVEY

A special detail of medical reserve officers and contract surgeons, headed by Major W. G. Owen, has been sent to the camp to make a survey of the entire command for tuberculosis. About 300 men are being examined daily, and so far three positive cases have been discovered. All men that show suspicious signs are placed in bed under observation for ten days with daily sputum examinations.

Seventy-Sixth Division, Camp Devens, Ayer, Mass.

Fire in the Army base hospital at Camp Devens, Ayer, Mass., believed of incendiary origin, periled the lives of 300 patients, but by prompt action, all patients were removed without casualty. The fire was extinguished before the main building was reached. The process of reconstruction is expected to go forward rapidly and the patients will be handled temporarily in other buildings.

Eighty-First Division, Camp Jackson, Columbia, S. C.

The cantonment at Camp Jackson is on a plateau northeast of Columbia. It occupies about 3,000 acres of land which only three months ago was largely under cultivation. Even now large fields of cotton can be seen about it. From the entrance of the camp to the base hospital a distance of over 2 miles must be traversed. The base hospital comprises eighty buildings, and the work is being rushed to completion. The hospital quarters for officers will be ready by the end of the week.

The camp is situated on a ridge, on the continuation of which Camden, the southern winter resort, is built. From this site the distant hills can be seen reaching the sky.

The field hospital contains no sick whose diseases are due to camp life.

The barracks have electric light and heat, latrines which are heated by stoves, and shower baths with hot and cold water. The drainage and sanitary arrangements are complete; these have been under the direction of Major Thomas J. Leary.

The base hospital is built on the highest level of the cantonment: "as the mountains are round about Jerusalem," so are the hills about Camp Jackson. The buildings can accommodate 1,500 patients, and are connected by covered porches; all are grouped about a center, access to which can be gained, thus providing safety against fire. Lieut.-Col. Kent Nelson is the division surgeon, and Major James F. Johnston, assistant and now sanitary officer. The commanding officer of the base hospital is Major Thomas J. Leary, a Regular Army man with experience in Panama, and in the Philippines under General Pershing. The chiefs of the staff of the base hospital are Major W. W. Herrick, internist; Major Richard H. Hutchings, psychiatrist; Major James Stone, surgeon; Capt. Henry Tucker, in charge of venereal diseases; Capt. John W. MacConnell, otolaryngologist; Capt. Frederick W. Baeslock, chief of the pathologic laboratory; Capt. Harrison A. Greaves, roentgenologist, and Capt. Burton Chance, ophthalmologist.

Major James F. Johnston was transferred, October 16, to the post of division sanitary inspector so ably conducted by Major Leary, who was appointed commander of the base hospital. The staff was organized as a central board, under Colonel Nelson, to decide on the acceptability of the rejected men found physically or mentally deficient by the regimental surgeons, who hold examinations of the drafted men daily. Assisting in this examination are Lieutenants Hart, Braun, Long, Gerhardt, Gibbs, Robbins, Woodhouse, Heard, Lattin and Pendleton. So far over 1,400 men have been rejected.

The city has opened its heart to the officers and men with true Southern hospitality, and already they are welcome to enter many a charming home. Entertainments have been prepared for all. The churches keep open their buildings Saturday nights, and a number of eat-shops have been established for the comfort of the soldiers visiting the town. Car lines have been extended to the camp, and it is hoped that express steam trains will run later. Every one is happy, and I have yet to see a man or officer with a "grouch." There are all kinds of sports, including baseball and football, but no "highballs," for South Carolina is "bone dry" to the advantage of the entire cantonment.

PERSONAL

Capt. Wayne Babcock, regimental surgeon, has been transferred to the base hospital at Fort McPherson.

Lieut. Stuart Hart, who had conducted the cardiovascular studies, was recalled to New York.

Capt. Burton Chance received his commission in September.

Lieutenant Birnie recently arrived from Fort Sill. He came to conduct the gas defense drills. A gas house is being constructed in which the gases will be demonstrated.

Saturday, October 6, many members of the base hospital were guests at a barbecue held at White Pond, an attractive sheet of water about 20 miles from Columbia. To most this was a unique feast. Besides the delicious food, the occasion gave the medical officers an opportunity to meet socially Generals Barth and McIver and many officers of the line.

Shortly after his arrival at the cantonment, Captain Tucker instituted an investigation of prostitution in Columbia in which he was ably assisted by several public spirited citizens who had become concerned over the ravages of the social evils. The name of every prostitute and many suspects and the location of all houses in which the trade is carried on is known. The Army of the United States, with cooperation of the civil authorities, can eradicate social diseases. Columbia is "bone dry," and if any argument for prohibition is needed, behold the National Army!

Eighty-Fifth Division, Camp Custer, Battle Creek, Mich.

Major John Ridlon has been in camp since October 16, and has given especially interesting and practical talks to the medical officers of this camp on conditions of orthopedic surgery. There was a large attendance at these meetings, as orders from the division surgeon requested every medical officer to attend. After hearing these lectures no one regretted having complied with the order, as the major presented the subject in such a way as to be of much benefit. He also delivered a course of practical talks on the care of the feet to a large number of line officers.

The medical society of Battle Creek (Calhoun County Medical Society) has passed resolutions making two regular monthly meetings instead of one. This was done for the purpose of bringing the medical corps of the division in closer touch with the profession of Battle Creek and things of medical interest other than from a military point of view. At the last meeting, October 2, Dr. Hugh T. Patrick of Chicago talked on "Diagnosis of the Functional from the Organal Diseases of the Nervous System." Major Lewis Wine Bremerman, Camp Custer, Mich., talked on "Diagnostic Points in Genito-Urinary." The meeting was well attended, both by regular members and by the medical corps of the Eighty-Fifth Division.

VENEREAL DISEASE

The subject of venereal diseases is paramount at this time. Calhoun County Medical Society passed special resolutions at the October 2 meeting, having in mind the protection of the soldier against these diseases.

Camp regulations are such that they require the isolation of all venereal diseases among soldiers, no passes being permitted to these men until they are free from infection and thus prevented from spreading the disease. Whenever it is possible to obtain from the soldiers who are infected the name of the women from whom they contracted the disease, it is forwarded to the health officer in Battle Creek. If this plan works out, there is no reason why venereal diseases in this particular division should not be reduced to a minimum, for there is no question that if the resolutions are carried out to the letter, the infected professional prostitute will find difficulty in transmitting her infection to others.

Eighty-Sixth Division, Camp Grant, Rockford, Ill.

The medical condition of Camp Grant continues to be satisfactory. Many of the cases in the base hospital are those found by the regimental surgeons in making their routine examinations of all the recruits, and are waiting for their discharge papers to come through. In justice to the local boards, it should be said that most of these cases are of such a nature that they could not be recognized at a single examination, but were brought to light by more extended careful observation.

In examining large numbers of recruits, it is necessary to use every device possible to save time that does not diminish the efficiency of the examination. It has been found most practical to have the examination of each man divided among several medical officers than to have each recruit completely examined by a single officer. The following method will run through about eighty an hour: Thirty recruits are admitted into the room at a time and are stripped. One physician weighs and measures the recruit, and notes the muscular development; another listens to the heart and lungs; the next examines the genitalia and for hernia, hemorrhoids and varicose veins; the fourth tests the muscles and joints; the fifth counts the absent teeth and looks at the nose and throat, and two men examine the eyes and ears. In addition it is often advantageous to vaccinate the recruits for smallpox and typhoid fever. In this case one man is assigned to each form of vaccination. With this division of labor, the line of recruits will pass through smoothly. All questionable recruits fall out of line and are passed on by the commanding officer and, if necessary, are told to report at a less busy time for a more extended examination.

Each medical officer has an enlisted man who records his findings on the proper form and passes it on to the next. In this way, when the recruit has finished his examination, there is a complete record of the findings ready for the signature of the commanding officer. The finger prints are taken by a noncommissioned officer.

The vaccinating officers usually have two helpers. For smallpox, the first washes the arm with soap and water, the second applies ether or alcohol. For typhoid, the first paints

the arm with the tincture of iodine, and the second runs the sterilizer.

There have been few changes in the personnel in the last two weeks. The various departments are perfecting their organization and are running smoothly. The laboratory has started a menagerie which at present consists of several white mice. The personnel are rapidly becoming sophisticated, and have stopped looking for 5 yards of skirmish line.

Eighty-Seventh Division, Camp Pike, Little Rock, Ark.

The arrival of forty-five medical officers from Fort Oglethorpe, October 19, marked the practical completion of the commissioned medical personnel of the Eighty-Seventh Division. These were assigned to the three field hospitals yet without officers and to four ambulance companies not having their full commissioned quotas. The remaining officers were divided among the various regimental infirmaries and the infirmaries of the depot brigade.

With the completion of the commissioned personnel, it is expected that the work of training will go rapidly forward, the enlisted personnel being drawn as rapidly as possible from the drafted army. A full and complete course of instruction will be carried out, being very similar in character to that given at the various medical training camps. While a large percentage of the medical officers in this division were former students at training camps, there is a certain percentage who were there only a short time, and a few who have had no special instruction along army medical lines. The plan as outlined provides for the training and instruction of the untrained by those who have had the advantage of the full course of instruction in training camps. This plan will not only give plenty of "work for idle hands to do," but also will add greatly to the interest of the "army medical game," and relieve to some extent the monotony that is sure to creep into camp life.

The work of examining the colored troops continues, and as the War Department is very anxious to expedite this work, the examining medical officers are not allowed to sleep on post. As soon as examined and given the triple typhoid vaccination and equipped, the colored troops are removed to other cantonments. An officer who traveled on one of the troop trains with these men makes the statement that wherever the troops were "paraded" for the purpose of exercise the populace invariably commented on their soldierly appearance and the aptitude with which they acquired the drills.

The general health of the command remains good, measles being the prevailing ailment, and there being only about thirty or forty cases of that in a command of over 20,000. The number of cases of malaria is very small.

Weather conditions are better of late. The heat has been great during part of the day, and the nights are cold. The dust has also been a great hindrance to effective work whenever the wind blew. A good rain has laid the dust and steadied the atmosphere to a more nearly equable temperature during the past twenty-four hours.

Capt. G. H. Campbell, alienist at the base hospital, has become a major. Otherwise everything is "quiet along the Potomac" as regards promotions.

Eighty-Eighth Division, Camp Dodge, Des Moines, Iowa

The medical department at Camp Dodge is now a well organized institution. We have the distinction of being the first troops to arrive at the new National Army cantonment, and have played a considerable part in the work of the camp thus far.

August 25, thirty-three medical officers and 200 of the enlisted personnel of the Medical Department were sent from Fort Riley, Kan., to Camp Dodge. For most of us it was our first experience traveling with troops. When we arrived at Camp Dodge, very few of the barracks were completed, and none of the sewerage, water or lighting accommodations were installed. However, Major Fronk of the sanitary department had arrived before us and had made adequate measures for our care, although they were of a rather rough nature.

During the first two weeks spent here, Lieut.-Col. Shook, the division surgeon, organized the various regimental detachments and had them ready for the physical examination of the first men of the draft on their arrival, September 10. The rapidity and thoroughness with which these men were examined spoke well for this organized work. Since then the second increment of the draft army has arrived and all have

been examined, and the regimental surgeons are now having a little respite while awaiting the third increment of men, which will arrive about October 25.

About one week ago, forty-eight medical officers arrived from Fort Riley after the completion of their course of instruction at that place. These officers have been assigned to the several regiments, field hospital companies and ambulance companies, filling these several organizations, so that each now has their required number of officers.

BASE HOSPITAL

The base hospital was organized under the directorship of Major Craft, a Regular Army officer. As the new base hospital buildings were not completed, it was installed temporarily in four barracks provided for the use of the ambulance companies later on.

The new buildings for the base hospital are about 80 per cent. complete. November 1 is the date fixed now for the completion of this hospital. Meanwhile the base hospital is doing a rushing business in the temporary barracks in which they are now located.

"Colds," influenza and pneumonia are the predominating illnesses. Every venereal patient is confined to the hospital until the discharge ceases or the contagious stage is past. There have been three cases of delirium tremens due to the sudden cutting off of the liquor. Without doubt, the total abstinence of the soldiers from liquor will be the greatest step in disease prevention which the War Department has taken, and the draft men who have been excessive users, while suffering most at first, will be greatly benefited by their army life.

A number of surgical operations have already been performed successfully in the improvised operating room. This includes two cases of acute appendicitis.

The examination of the recruits has revealed 100 cases of diseased teeth and tonsils. The dental and nose and throat services of the base hospital are busy removing these foci of infection. This is a form of preventive medicine and surgery that has been neglected in other wars. While the sanitary department is busy removing the causes for disease in the physical surroundings of the men, our medical and surgical staffs are busy removing the causes for disease in the men themselves. It is impossible to estimate the value of these measures to the efficiency of our new Army.

There have been two deaths thus far, one acute mania and one from delirium tremens.

AMBULANCE COMPANIES

Four weeks ago the Red Cross ambulance company of Denver, under the command of Captain Hopkins, arrived. This company is composed chiefly of college men from the University of Denver and the University of Colorado.

Another Red Cross ambulance company arrived three weeks ago from Flint, Mich. It is composed of men from the automobile industries of Michigan, and was equipped by these concerns. Captain Winchester is in command.

NEWS NOTES

Major Black, M. R. C., Milwaukee, Wis., spent three days at the base hospital last week in his general inspection. He reported that the hospital and the type of work being done was excellent.

Major H. E. Mock has been relieved from duty at Camp Dodge, and has been called to the Surgeon-General's Office, Washington, D. C.

A tuberculosis board, headed by Captain Peck, arrived at Camp Dodge a few days ago, and began work immediately.

DISEASE CONDITIONS AMONG TROOPS IN THE UNITED STATES

Extracts from Telegraphic Reports Received in the Office of the Surgeon-General for the Week Ending Oct. 12, 1917

| | |
|--|-----------|
| 1. TOTAL STRENGTH OF TROOPS | 1,000,680 |
| Admission rate per 1,000 | 19.1 |
| Non-effective rate | 19.1 |
| 2. NATIONAL GUARD—STRENGTH | 303,967 |
| Admission rate all camps | 20.5 |
| Non-effective rate all camps | 21.8 |
| Camps showing admission rate higher than average: | |
| 29th Division, Camp McClellan, Anniston, Ala. | 21.3 |

| | |
|---|------------|
| 31st Division, Camp Wheeler, Macon, Ga. | 28.6 |
| 33d Division, Camp Logan, Houston, Tex. | 24.1 |
| 34th Division, Camp Cody, Deming, New Mex. | 21.9 |
| 35th Division, Camp Doniphan, Fort Sill, Okla. | 26.4 |
| 36th Division, Camp Bowie, Fort Worth, Tex. | 28.7 |
| 38th Division, Camp Shelby, Hattiesburg, Miss. | 30.9 |
| 39th Division, Camp Beauregard, Alexandria, La. | 28.6 |
| 40th Division, Camp Kearney, Linda Vista, Calif. | 34.5 |
| 42d Division, Camp A. L. Mills, Garden City, L. I. | 23.4 |
| Camps showing non-effective rate higher than average: | |
| 30th Division, Camp Sevier, Greenville, S. C. | 24.5 |
| 31st Division, Camp Wheeler, Macon, Ga. | 29.2 |
| 32d Division, Camp MacArthur, Waco, Tex. | 32.4 |
| 33d Division, Camp Logan, Houston, Tex. | 26.1 |
| 36th Division, Camp Bowie, Fort Worth, Tex. | 29.8 |
| 38th Division, Camp Shelby, Hattiesburg, Miss. | 36 |
| 39th Division, Camp Beauregard, Alexandria, La. | 23.7 |
| 42d Division, Camp A. L. Mills, Garden City, L. I. | 24.9 |
| 3. NATIONAL ARMY—STRENGTH | 428,855 |
| Admission rate all camps | 19.1 |
| Non-effective rate all camps | 14.6 |
| Camps showing admission rate higher than average: | |
| 79th Division, Camp Meade, Annapolis Junction, Md. | 19.7 |
| 82d Division, Camp Gordon, Atlanta, Ga. | 22.2 |
| 85th Division, Camp Custer, Battle Creek, Mich. | 20.2 |
| 87th Division, Camp Pike, Little Rock, Ark. | 23.7 |
| 88th Division, Camp Dodge, Des Moines, Iowa. | 22.1 |
| 89th Division, Camp Funston, Fort Riley, Kan. | 29.7 |
| 90th Division, Camp Travis, Fort Sam Houston, Tex. | 31.6 |
| 91st Division, Camp Lewis, American Lake, Wash. | 30.4 |
| Camps showing non-effective rate higher than average: | |
| 78th Division, Camp Dix, Wrightstown, N. J. | 14.7 |
| 80th Division, Camp Lee, Petersburg, Va. | 25 |
| 85th Division, Camp Custer, Battle Creek, Mich. | 16.5 |
| 88th Division, Camp Dodge, Des Moines, Iowa. | 28.5 |
| 91st Division, Camp Lewis, American Lake, Wash. | 28.3 |
| 4. VENEREAL DISEASE— | |
| Admission rate all troops | 133.4 |
| Admission rate National Guard (Camps) | 106.2 |
| Admission rate National Army | 204.8 |
| Camps National Guard having rate above average: | |
| 29th Division, Camp McClellan, Anniston, Ala. | 139.3 |
| 30th Division, Camp Sevier, Greenville, S. C. | 150.6 |
| 31st Division, Camp Wheeler, Macon, Ga. | 254.5 |
| 33d Division, Camp Logan, Houston, Tex. | 134.5 |
| 34th Division, Camp Cody, Deming, N. Mex. | 134.2 |
| 35th Division, Camp Doniphan, Fort Sill, Okla. | 114.9 |
| 36th Division, Camp Bowie, Fort Worth, Tex. | 168.6 |
| 37th Division, Camp Sheridan, Montgomery, Ala. | 107.1 |
| 38th Division, Camp Shelby, Hattiesburg, Miss. | 235.7 |
| 39th Division, Camp Beauregard, Alexandria, La. | 221.1 |
| Camps National Army having rate above average: | |
| 87th Division, Camp Pike, Little Rock, Ark. | 1,103.3 |
| 89th Division, Camp Funston, Fort Riley, Kan. | 479.4 |
| 90th Division, Camp Travis, Fort Sam Houston, Tex. | 384.7 |
| 91st Division, Camp Lewis, American Lake, Wash. | 229.8 |
| 5. NUMBER OF CASES OF PNEUMONIA | 93 |
| Highest number in any one camp | (Dodge) 10 |
| NUMBER OF CASES OF MENINGITIS | 16 |
| Highest number in any one camp | (Shelby) 4 |

SPECIAL DISEASES REPORTED DURING THE WEEK ENDING OCTOBER 12, 1917

| Division | Pneumonia | Dysentery | Malaria | Venereal | Paratyphoid | Typhoid | Measles | Meningitis | Scarlet Fever | Strength of Command |
|---------------------|-----------|-----------|---------|----------|-------------|---------|---------|------------|---------------|---------------------|
| 26th, Boston..... | .. | .. | .. | .. | .. | .. | .. | .. | .. | ..... |
| 27th, Wadsworth.. | .. | .. | .. | 29 | .. | .. | .. | .. | .. | 24,570 |
| 28th, Hancock.... | 1 | .. | .. | 47 | .. | .. | .. | .. | 1 | 27,548 |
| 29th, McClellan.... | 4 | .. | 3 | 67 | .. | 4 | 5 | .. | .. | 25,258 |
| 30th, Sevier..... | .. | .. | 6 | 51 | .. | .. | 5 | .. | .. | 17,557 |
| 31st, Wheeler..... | 3 | 2 | 7 | 56 | .. | .. | 36 | .. | .. | 11,462 |
| 32d, MacArthur.. | .. | 13 | .. | .. | .. | .. | 3 | .. | .. | 21,127 |
| 33d, Logan..... | 1 | 26 | 9 | 44 | .. | .. | 1 | .. | .. | 17,026 |
| 34th, Cody..... | 1 | 4 | .. | 48 | .. | .. | 3 | .. | .. | 18,627 |
| 35th, Doniphan.... | 2 | 1 | 5 | 44 | .. | .. | 11 | .. | 2 | 19,874 |
| 36th, Bowie..... | .. | .. | 6 | 57 | .. | .. | 9 | .. | .. | 17,572 |
| 37th, Sheridan.... | 1 | .. | .. | 38 | .. | .. | 5 | .. | .. | 18,246 |
| 38th, Shelby..... | 6 | 2 | 6 | 75 | .. | .. | 37 | 4 | 1 | 16,548 |
| 39th, Beauregard.. | 2 | .. | 8 | 22 | .. | .. | 34 | .. | .. | 5,147 |
| 40th, Kearney..... | .. | .. | .. | 12 | .. | .. | .. | 3 | .. | 7,143 |
| 41st, Greene..... | .. | .. | .. | 11 | .. | .. | 29 | 2 | 2 | 14,999 |
| 42d, A. L. Mills... | 4 | .. | 13 | 20 | .. | .. | 9 | .. | .. | 25,677 |
| 76th, Devens..... | 1 | .. | 3 | 62 | .. | .. | .. | 1 | .. | 35,800 |
| 77th, Upton..... | .. | .. | .. | 50 | .. | .. | 1 | .. | .. | 23,055 |
| 78th, Dix..... | 1 | .. | .. | 40 | .. | .. | .. | .. | .. | 21,837 |
| 79th, Meade..... | 1 | 3 | 1 | 16 | .. | .. | .. | .. | .. | 22,849 |
| 80th, Lee..... | 1 | .. | .. | 33 | .. | .. | .. | .. | .. | 30,559 |
| 81st, Jackson.... | 2 | 2 | 2 | 5 | .. | .. | 11 | .. | .. | 17,458 |
| 82d, Gordon..... | 1 | 1 | 14 | 51 | .. | .. | 40 | .. | .. | 20,350 |
| 83d, Sherman..... | 5 | .. | .. | 69 | .. | .. | .. | 2 | .. | 32,150 |
| 84th, Taylor..... | 3 | .. | 3 | 66 | .. | 1 | 1 | .. | .. | 29,342 |
| 85th, Custer..... | .. | .. | .. | 15 | .. | .. | .. | .. | 1 | 18,290 |
| 86th, Grant..... | 4 | .. | .. | 22 | .. | .. | .. | .. | .. | 26,170 |
| 87th, Pike..... | 6 | 1 | 10 | 503 | .. | .. | 49 | .. | .. | 23,603 |
| 88th, Dodge..... | 10 | .. | .. | 42 | .. | .. | 1 | .. | .. | 22,887 |
| 89th, Funston.... | 3 | .. | .. | 343 | .. | .. | .. | .. | .. | 37,201 |
| 90th, Travis..... | 4 | 1 | 15 | 236 | .. | 1 | .. | .. | .. | 31,971 |
| 91st, Lewis..... | 8 | .. | .. | 156 | .. | .. | 1 | .. | .. | 35,303 |

| | Regulars, U. S. Army, in U. S. only, 1916 | | Regulars in U. S. week ending Oct. 12, 1917 | | Nat'l Guard, All Camps and Dept., week ending Oct. 12, 1917 | | Nat'l Army, All Camps, week ending Oct. 12, 1917 | |
|---|--|-------|--|-------|---|-------|---|-------|
| | Cases | Rate | Cases | Rate | Cases | Rate | Cases | Rate |
| Admissions, dis- eases only, an- nual rate per 1000 | 613 | ..... | 910.8 | ..... | 1043.4 | ..... | 994.7 | ..... |
| Pneumonia..... | 2.59 | 6 | 1.4 | 30 | 4.3 | 50 | 6.0 | |
| Dysentery..... | 3.97 | 4 | 0.9 | 49 | 7.1 | 8 | 0.9 | |
| Malaria..... | 12.52 | 20 | 4.8 | 97 | 14.2 | 48 | 5.8 | |
| Venereal..... | 91.00 | 214 | 51.6 | 660 | 96.7 | 1689 | 204.8 | |
| Paratyphoid..... | 0.31 | 1 | 0.2 | 0 | 0 | 0 | 0 | |
| Typhoid..... | 0.21 | 0 | 0 | 4 | 0.5 | 2 | 0.2 | |
| Measles..... | 20.29 | 88 | 21.2 | 263 | 38.9 | 104 | 12.8 | |
| Meningitis..... | 0.29 | 2 | 0.4 | 10 | 1.4 | 3 | 0.3 | |
| Scarlet fever..... | 0.59 | 8 | 1.9 | 6 | 0.8 | 1 | 0.1 | |

7. DEATHS BY CAUSES:

| | |
|--|---|
| Lobar Pneumonia | 7 |
| Cerebrospinal Meningitis | 3 |
| Appendicitis | 2 |
| Myocarditis | 2 |
| Bronchopneumonia | 2 |
| Delirium Tremens | 2 |
| Cerebral Abscess | 1 |
| Acute Hemorrhagic Enterocolitis | 1 |
| Acute Pulmonary Edema | 1 |
| Cardiac Dilatation | 1 |
| Tuberculous Enteritis | 1 |
| Epilepsy | 1 |
| Septic Meningitis (Otitis Media) | 1 |
| Suicide | 5 |
| Traumatism | 3 |
| Traumatism by Firearms | 2 |
| Homicide | 2 |
| Fracture of Skull | 2 |

ORDERS TO OFFICERS OF THE
MEDICAL CORPS

Colonel HENRY D. SNYDER, Medical Corps, to be relieved from duty at the Medical Supply Depot, 628 Greenwich St., New York, and directed to proceed to Washington, D. C., and report in person to the Surgeon-General of the Army, for duty in his office.

Major EDWARD W. LAZELL, Medical Corps, Colorado National Guard, specialist in nervous and mental diseases, to be relieved from Field Hospital Company No. 4, Camp Mills, Garden City, L. I., N. Y., and to report in person to the commanding general thereof and to the commanding officer of the base hospital for duty in his specialty.

Lieut. COLE B. GIBSON, Medical Corps, Meriden Sanatorium, Meriden, Conn., who has passed the preliminary examinations for appointment in the Medical Corps of the Army, to active duty and to proceed to Fort Oglethorpe, Ga., and report in person to the commandant, Medical Officers' Training Camp, Camp Greenleaf, that place, for the required course of instruction.

Lieut.-Col. EDWARD M. TALBOTT, Medical Corps, to be relieved from duty at El Paso, Tex., and to proceed to Fort Oglethorpe, Ga., and report in person to the commandant, Medical Officers' Training Camp, Camp Greenleaf, for duty as instructor.

Colonel JAMES M. KENNEDY, Medical Corps, now at duty at the Port of Embarkation, New York, to proceed to Washington, D. C., and report in person to the Surgeon-General of the Army for consultation, and on completion of this duty to return to his proper station.

Major ELMER E. KEISER, Medical Corps, Pennsylvania National Guard, 3932 Tulip St., Tacony, Philadelphia, to proceed to Camp Green, Charlotte, N. C., and report in person to the commanding general thereof for duty.

Lieut.-Colonel NELSON GAPEN, Medical Corps, now on duty in the office of the chief surgeon, aviation section, Signal Corps, in this city, be detailed as an additional member of the board appointed in paragraph 47, Special Orders, No. 246, War Department, Oct. 20, 1916, for the purpose of examining and determining the fitness of persons who make application for commission in the aviation section of the Signal Officers' Reserve Corps.

Major FREDERICK H. FAUCAR, Medical Corps, to be relieved from duty with the 35th Infantry, Nogales, Ariz., and to proceed to Washington, D. C., and report in person to the Commandant, Army Medical School, for temporary duty.

Major THOMAS J. LEARY, Medical Corps, to be relieved from his present duties at Camp Jackson, Columbia, S. C., and to report in person to the commanding general, 81st Division, that camp, for duty as commanding officer of the base hospital.

Major JAMES F. JOHNSTON, Medical Corps, from his present duties at Camp Jackson, Columbia, S. C., to report in person to the commanding general, 81st Division, that Camp, for duty as sanitary inspector.

ORDERS TO OFFICERS OF THE MEDICAL
RESERVE CORPS

Alabama

To Birmingham, Ala., for duty as Medical Member of Examining Board, Lieut. GASTON W. ROGERS, Birmingham.

To Camp Hancock, Augusta, Ga., for temporary duty, from Fort Oglethorpe, Lieut. ERNEST A. MOORE, Coatopa.

To Camp Wheeler, Macon, Ga., for duty, from Fort Oglethorpe, Lieut. HOWARD P. RANKIN, Midway.

To Monmouth, N. J., for duty with the signal battalion, from Fort Oglethorpe, Lieut. AUSTIN F. J. BOYD, Emelle.

To Neurological School, University of Pennsylvania, Philadelphia, Pa., for intensive training in brain surgery, from Fort Oglethorpe, Lieut. JAMES L. BOWMAN, Union Springs.

To San Antonio, Tex., Kelly Field, for duty, Lieut. EDGAR W. DALY, Birmingham.

Arizona

To Boston, Mass., for a course of instruction in military roentgenology, Lieut. RICHARD FAVOUR, Keams Canon.

To Fort Oglethorpe, for instruction, Lieut. HARRY J. FELCH, Phoenix.

To New York City, U. S. Army General Hospital No. 1, Lieut. THERON H. SLAUGHTER, Miami.

Arkansas

To Camp Grant, Rockford, Ill., for duty in the division of ophthalmology, section of surgery of the head, Capt. JOHN H. HARVEY, Waldron.

To Camp Pike, Little Rock, for temporary duty, Lieut. SAMUEL McA. MAUNEY, Earl.

California

To Camp Kearny, Linda Vista, Calif., for duty, Capt. ALFRED E. BANKS, San Diego; for temporary duty, Lieuts. EDWARD E. TREDWAY, Pasadena; ARTHUR L. DAVIS, for the examination of troops, and for service in the base hospital in his specialty, from Presidio, San Francisco, HAROLD W. WRIGHT, San Francisco.

To County Hospital, Los Angeles, Calif., for a course of instruction in military roentgenology, Lieut. RAY A. CARTER, Los Angeles.

To Fort Benjamin Harrison, for a course of instruction in tuberculosis examinations, Lieut. ROYAL W. DUNHAM, Los Angeles.

To Neurological School, University of Pennsylvania, Philadelphia, Pa., for intensive training in brain surgery, Capt. STERLING BUNNELL, San Francisco; Lieut. WARREN B. ALLEN, Oakland.

To Reorganization Camp, Presidio, San Francisco, for the purpose of instructing medical and line officers and to examine orthopedic cases, Capt. MAYNARD C. HARDING, San Diego.

Colorado

To Camp Sherman, Chillicothe, O., for duty, from Fort Benjamin Harrison, Lieut. CHARLES E. CONGDON, Breckenridge.

To Fort Oglethorpe for instruction, Lieut. WILLIAM R. CAMPBELL, Denver.

Connecticut

To Camp Upton, Yaphank, L. I., for temporary duty, Lieut. CHARLES L. BANKS, Bridgeport.

District of Columbia

To Camp Hancock, Augusta, Ga., for temporary duty, from Fort Oglethorpe, Lieut. WILLIAM R. BUCHANAN, Washington.

To Camp Robinson, Sparta, Wis., for duty with the 17th Field Artillery, from Fort Oglethorpe, Lieut. HOWARD W. BARKER, Washington.

To New York, N. Y., for orthopedic work, Lieut. JAMES H. ALLEN, Washington.

To Washington, D. C., for duty as member of a medical research board, Aviation Section, Signal Corps, Majors EDWARD G. SEIBERT and WILLIAM H. WILMER, Washington.

Florida

To Camp Shelby, Hattiesburg, Miss., for temporary duty, Lieut. JOHN A. NEWNHAM, Clermont.

To Camp Wheeler, Macon, Ga., for duty, from Fort Oglethorpe, Lieuts. SHALER A. RICHARDSON, Jacksonville; JOHN T. BRADSHAW, San Antonio.

Georgia

To Camp Hancock, Augusta, Ga., for temporary duty, from Fort Oglethorpe, Lieut. JOHN W. BRADLEY, Woodstock.

To Camp Johnston, Jacksonville, Fla., for duty, from Fort Oglethorpe, Lieut. HAROLD I. REYNOLDS, Athens.

To Camp Wheeler, Macon, Ga., for duty, from Fort Oglethorpe, Lieut. DAVID M. SILVER, Augusta.

To Neurological School, University of Pennsylvania, Philadelphia, Pa., for intensive training in brain surgery, Capt. CHARLES E. DOWMAN, Atlanta.

To New York, N. Y., for orthopedic work, Lieut. HUGH I. BATTEY, Atlanta.

To Rockefeller Institute, New York, for a course of instruction in laboratory work, from Army Medical School, Lieut. ROBERT C. WALKER, Waycross.

To Walter Reed General Hospital, Tacoma Park, D. C., for duty in the surgical service, Capt. THOMAS C. DAVISON, Atlanta.

To report by wire to the commanding general, Southern Department, for assignment to duty, Lieut. JOHN H. PHILLIPS, Oakhurst.

Idaho

To Fort Sill, Okla., Camp Doniphan, for duty as member of board of medical officers for the special examination of the command for tuberculosis, Lieut. CLYDE E. WATSON, Nampa.

Illinois

To Camp Beauregard, Alexandria, La., for duty as member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. CLARENCE McK. CHEADLE, Rockford.

To Camp Grant, Rockford, Ill., for temporary duty, Lieut. John L. Rock, Chicago.

To Camp McClellan, Anniston, Ala., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. SAMUEL M. MARCUS, Chicago.

To Camp Meade, Annapolis Junction, Md., and report in person to commanding general and to the commanding officer of the base hospital for duty as assistant to the chief of the medical service, Lieut. HERMON H. COLE, Springfield.

To Camp Sherman, Chillicothe, O., for duty from Fort Benjamin Harrison, Lieuts. WALTER S. BEBB, Downers Grove; for duty in the division of ophthalmology section of surgery of the head, WALTER D. STEVENSON, Quincy.

To Camp Taylor, Louisville, Ky., for temporary duty, Lieut. ELIOT C. DUMARS, Peoria.

To County Hospital, Chicago, Ill., for instruction in military roentgenology, Lieut. HAROLD SWANBERG, Chicago.

To Fort Oglethorpe for instruction from County Hospital, Chicago, Ill., Lieuts. FRANK A. BEARDSLEY, Champaign; for instruction, FRANK E. NAGEL, Secor.

To Fort Sheridan, Ill., for the purpose of examining in his specialty, Capt. CHARLES RICKSHER, Kankakee.

To Neurological School, University of Pennsylvania, Philadelphia, Pa., for intensive training in brain surgery, from Fort Benjamin Harrison, Capt. THOMAS E. CHERRY, Cowden; CHARLES J. SWAN, Evanston.

To Philadelphia, Pa., for a course of instruction in orthopedic surgery from Fort Benjamin Harrison, Lieut. MANDEL A. I. COHEN, Chicago.

To Psychopathic Hospital, Ann Arbor, Mich., for intensive training in his specialty, Lieut. ISAAC J. FRISCH, Chicago.

To Rockefeller Institute, New York, for duty from Camp Devens, Ayer, Mass., Lieut. ARTHUR W. ALLEN, Robinson.

To Washington, D. C., for duty in Surgeon-General's Office, Capt. PAUL B. MAGNUSON, Chicago.

To his home and return to the inactive list of the Medical Reserve Corps, after completing course at University of Pennsylvania, Lieut. GEORGE H. SCHROEDER, Chicago.

Indiana

To Camp Cody, Deming, N. M., for duty, from Camp Grant, Rockford, Ill., Major JOHN W. SLUSS, Indianapolis; for duty in the surgical service, Lieut. REAVILL M. WALDEN, Evansville.

To Camp Custer, Battle Creek, Mich., for duty, from Fort Benjamin Harrison, Lieuts. ANDREW S. NEWELL, Converse; HOMER S. HEWITT, De Motte; DAVID E. REED, Russellville.

To Camp Funston, Fort Riley, Kan., for temporary duty, Lieut. GEORGE H. SMITH, Newcastle.

To Camp Hancock, Augusta, Ga., for temporary duty, from Fort Oglethorpe, Lieut. WILLIAM W. HOGGATT, French Lick.

To Camp Lewis, American Lake, Wash., for duty with the Thirtieth Engineers, Lieut. WILLIAM C. MOORE, Summitville.

To Camp McClellan, Anniston, Ala., base hospital, for duty in the surgical service, Lieut. ELMER C. SINGER, Fort Wayne.

To Camp Sherman, Chillicothe, Ohio, for duty, from Fort Benjamin Harrison, Capt. JOHN E. METCALF, Gary; Lieuts. HERMAN M. BAKER, Holland; JAMES L. WALKER, La Fontaine; RUFUS J. DANNER, Terre Haute.

To Fort Oglethorpe, for instruction, Lieuts. GEORGE B. KENT, Mulberry; CLARENCE L. BOCK, Muncie.

To Indianapolis, for the purpose of assuming charge of physical examining unit, Aviation Section, Lieut. BERNARD J. LARKIN, Indianapolis.

Honorably discharged from the Medical Reserve Corps of the Army, Capt. CHARLES E. BARNETT, Fort Wayne.

To the inactive list of the Medical Reserve Corps, on account of being physically disqualified for active service, Lieut. EDGAR H. MYERS, South Bend.

Iowa

To Camp Pike, Little Rock, Ark., for temporary duty, Capt. JOHN W. CUNNINGHAM, Dumont; GUTHEIR McCONNELL, Waterloo.

To Camp Grant, Rockford, Ill., for duty, Lieuts. WALTER A. SMITH, Donnellson; ELMER J. LAMBERT, Ottumwa.

To Camp Funston, for temporary duty from Medical Officers' Training Camp, Fort Riley, Kan., Lieut. GEORGE S. BAWDEN, Davenport.

To Fort Oglethorpe, for instruction, Lieut. MEREDITH MALLORY, Des Moines.

To Neurological School, University of Pennsylvania, Philadelphia, for intensive training in brain surgery, Lieut. THOMAS R. GITTINS, Iowa City.

To Philadelphia, for a course of instruction in orthopedic surgery, Lieuts. THOMAS F. THOMSEN, Charter Oak; FRANK G. MURPHY, Mason City.

To Washington, D. C., for duty as member of a medical research board, Aviation Section, Signal Corps, Major EUGENE R. LEWIS, Dubuque.

To inactive list of the Army, Capt. JAMES E. KESSELL, Des Moines.

Kansas

To Camp Lewis, American Lake, Wash., for duty in the Division of Ophthalmology, section of surgery of the head, Lieut. FRANK C. ELLIS, Frederick.

To Camp MacArthur, Texas, for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Lieut. LEWIS S. HARVEY, Dunlap.

To Fort Riley, for duty, Major FREDERIC W. O'DONNELL, Junction City; for duty in the surgical service, from Camp Funston, Capt. JAMES C. BUTLER, Stafford; for duty as assistant roentgenologist, Lieut. GUY A. FINNEY, Wamega.

To Kansas City, Mo., for a course of instruction in military roentgenology, from Fort Riley, Lieut. PAUL V. ANNADOWN, Centralia.

Kentucky

To Camp Grant, Rockford, Ill., for temporary duty, Lieut. GUY D. GRIGGS, Hitesville.

To Camp Taylor, Louisville, Ky., for temporary duty, Lieut. ALBERT STEWART, Frankfort.

To Fort Riley, as assistant in ophthalmology, section of surgery of the head, from Medical Officers' Training Camp, Lieut. GEORGE A. ROBERTSON, Louisville.

To Neurological School, University of Pennsylvania, Philadelphia, for intensive training in brain surgery, Lieuts. WILLIAM D. REDDISH, Lexington; DAVID C. DONAN, Morganfield.

To inactive list of the Medical Reserve Corps on account of being physically disqualified for active duty, Lieut. ALBERT C. BOND, Ashland.

Louisiana

To Camp Beauregard, Alexandria, La., for temporary duty, Lieut. COVINGTON H. SHARP, New Orleans.

To Camp Sevier, Greenville, S. C., for duty in the surgical service, from Fort Oglethorpe, Lieut. THADDEUS I. ST. MARTIN, Houma.

To Camp Wheeler, Macon, Ga., for duty from Fort Oglethorpe, Lieut. WILEY R. BUFFINGTON, New Orleans.

To Fort Oglethorpe, for instruction, Lieuts. JOSEPH W. GARRETT, ROBERT J. PLATT, New Orleans.

To Rockefeller Institute, New York, for a course of instruction in laboratory work, from Fort Oglethorpe, Lieut. PAUL K. RAND, Alexandria.

Honorably discharged from Medical Reserve Corps of the Army, Lieut. FRANCIS F. ROUGON, Oscar.

Maine

To Camp Mills, Garden City, L. I., for duty with Field Hospital Co. No. 4, from Allentown, Pa., Lieut. DUDLEY C. KALLOCH, Portland.

To Portland, for duty as medical member of the Examining Board, Lieut. JULIUS C. ORAM, Portland.

Maryland

To Camp Hancock, Augusta, Ga., for temporary duty, from Fort Oglethorpe, Lieut. EDWARD P. SIMPSON, Chance.

To Camp Lee, Petersburg, Va., for temporary duty, Lieut. WILLIAM H. KABLE, Woodsboro.

To Camp McClellan, Anniston, Ala., to act as a member of a board of medical officers for the special examination of the command for tuberculosis, from Walter Reed General Hospital, Capt. CHARLES W. RAUSCHENBACH, Baltimore.

To Phills Clinic, Baltimore, for intensive training in his specialty, Lieut. HENRY E. AUSTIN, Baltimore.

To Plattsburg Barracks, N. Y., for duty in connection with ophthalmology and otolaryngology, section of surgery of the head, Capt. ALEXANDER D. McCONACHIE, Baltimore.

To Rockefeller Institute, New York, for a course of instruction in laboratory work, from Fort Oglethorpe, Lieut. HARRY C. SCHMEISSER, Baltimore.

To San Antonio, Texas, Kelly Field, for duty, Lieut. FREDERICK C. W. REINHARD, Baltimore.

To Washington, D. C., and report in person to the Surgeon-General of the Army for temporary duty in his office, Major ROBERT T. TAYLOR, Baltimore.

Massachusetts

To Army Medical School, Washington, D. C., Lieut. JOSEPH H. MCGUIRE, Boston.

To Camp Custer, Battle Creek, Mich., for duty, from Fort Benjamin Harrison, Lieuts. WILFRID T. LA FORTUNE, Fitchburg; DENNIS J. LOWNEY, New Bedford.

To Camp Devens, Ayer, Mass., for temporary duty, Capt. CORNELIUS J. MCGILLICUDDY, Boston; for the purpose of examining the troops in his specialty and for duty in the neuropsychiatric buildings at the base hospital, from Fort Adams, R. I., MORGAN B. HODSKINS, Palmer; for duty in the surgical service, from Fort Ethan Allen, Vt., Lieuts. ARTHUR W. ALLEN; for duty in the hospital laboratory, FRANK G. NORBURY, Boston; for temporary duty, RICHARD P. MacKNIGHT, Fall River; FRANK W. MATHEWSON, New Bedford.

To Camp Lee, Petersburg, Va., for duty in the genito-urinary and dermatologic section, Capt. JOSEPH B. SAYLES, Taunton.

To *Camp Sherman*, Chillicothe, Ohio, for duty, from Fort Benjamin Harrison, Lieuts. CLARENCE H. DOBSON, Conway; CLARKE S. GOULD, Norwood; VICTOR A. AIMENE, Winchester.

To *Camp Upton*, Yaphank, L. I., for duty in the venereal section from Camp Wadsworth, Spartanburg, S. C., Lieut. FREDERICK R. SANBORN, Lynn.

To *Niagara, N. Y.*, for duty with Field Hospital No. 30, from Field Hospital, No. 28, Capt. Dana W. Drury, Boston.

To *Fort Sam Houston*, Texas, for duty in the Department Laboratory, Lieut. Charles B. Spruit, Boston.

To *Rockefeller Institute*, for a course of instruction in laboratory work, Lieuts. GEORGE H. BIGELOW and DAVID M. HASSMAN, Boston.

To *Syracuse, N. Y.*, for the purpose of making examination of the troops in his specialty, Lieut. HENRY R. VIETS, Boston.

To his home and return to the inactive list of the Medical Reserve Corps, Capt. CHARLES WHELAN, Higham.

Michigan

To *Camp Custer*, Battle Creek, Mich., for duty in connection with the Division of Otolaryngology, section of surgery of the head, Major ROY B. CANFIELD; for duty, from Fort Benjamin Harrison, Lieuts. HARRY M. MALEJAN, Ann Arbor; WYNAND VAN K. PYLE, Detroit; JAMES A. HUMPHREY, Lansing.

To *Camp Devens*, Ayer, Mass., for temporary duty, Capt. JOHN F. CONNERS, Detroit.

To *Camp Sherman*, Chillicothe, Ohio, for duty from Fort Benjamin Harrison, Capt. EARL M. MCCOY, Grand Ledge; Lieuts. SHELDON B. YOUNG, Caseville; ROBERT C. MOEHLIG, Detroit; DAN H. EATON, Kalamazoo; JOE DEPRESS, Zeland.

Honorably discharged from the Medical Reserve Corps of the Army, from El Paso, Texas, Lieut. CULLEN H. HENDRY, Detroit.

Minnesota

To *Camp Bowie*, Fort Worth, Texas, for duty in connection with the division of ophthalmology, section of surgery of the head, Lieut. HARRY E. CANFIELD, Willmar.

To *Camp Dix*, Wrightstown, N. J., for temporary duty, Lieut. CHARLES D. SQUIRES, Rochester.

To *Camp Dodge*, Des Moines, Iowa, for temporary duty, Capt. HERBERT A. MORRIS, Minneapolis.

To *Camp Grant*, Rockford, Ill., for temporary duty, Lieut. ARTHUR I. ARNESON, Emmons.

To *Camp Kearny*, Linda Vista, Calif., for temporary duty, Capt. RALPH J. SEWALL, Crosby.

To *Neurological School*, University of Pennsylvania, Philadelphia, for intensive training in brain surgery, Lieuts. ADOLPH M. HANSON, Faribault; OSCAR M. KLINGEN, Minneapolis; HARRY B. ZIMMERMANN, St. Paul.

Mississippi

To *Camp Hancock*, Augusta, Ga., for temporary duty, from Fort Oglethorpe, Lieut. ARCHIBALD W. McNEAL, Ruleville.

To *Camp Logan*, Houston, Texas, for duty in connection with the Division of Otolaryngology, section of surgery of the head, Capt. EWING F. HOWARD, Vicksburg.

To *Camp Wheeler*, Macon, Ga., for duty from Fort Oglethorpe, Lieut. HENRY F. SPROLES, Vicksburg.

To *Jackson, Miss.*, to examine applicants and appointment in the Medical Reserve Corps of the Army, and on completion of this duty to return to his home and to the inactive list of the Medical Reserve Corps, Lieut. INMAN W. COOPER, JR., Meridian.

To *San Antonio, Texas*, Kelly Field, for duty, Lieut. SAMUEL T. WELLS, Alligator.

Missouri

To *Camp Bowie*, Fort Worth, Texas, for duty as member of a board of medical officers of the special examination of the command for tuberculosis, from Fort Riley, Lieuts. SAMUEL R. JOHNSON, St. Charles; ALLEN G. WAINWRIGHT, St. Louis.

To *Camp Funston*, Fort Riley, Kan., for temporary duty, Capt. ALVIN H. SIPPY, St. Louis.

To *Camp Hancock*, Augusta, Ga., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. ROBERT E. BYRNS, St. Louis.

To *Fort Leavenworth*, Kan., for duty in the Department Laboratory, Lieut. BERNARD J. McMAHON, St. Louis.

To *Camp Logan*, Houston, Texas, for duty in connection with the division of otolaryngology, section of surgery of the head, Lieut. GEORGE A. GRIOT, St. Louis.

To *Camp Sherman*, Chillicothe, Ohio, for temporary duty, Lieut. JOHN J. DEVEREAUX, Hawk Point.

To *Camp Wheeler*, Macon, Ga., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Capt. SOLON CAMERON, St. Louis.

To *Fort Oglethorpe*, for instruction, Lieuts. WILLIAM C. VERNON, Kansas City; ARTHUR L. FUERTH, St. Louis.

To *Neurological School*, University of Pennsylvania, Philadelphia, for intensive training in brain surgery, Lieut. ELLIOTT K. DIXON, St. Louis.

To *Walter Reed General Hospital*, Takoma Park, D. C., for duty in his specialty, Capt. GUTHRIE E. SCRUTCHFIELD, Farmington.

To *Washington University*, St. Louis, for three weeks' intensive training, Lieut. SHERMAN B. HIBBARD, Kansas City.

To the inactive list of the Medical Reserve Corps after completion of a course at University of Pennsylvania, Philadelphia, and Rockefeller Institute, New York, Capt. JOHN G. HAYDEN and Lieut. FRANK R. TEACHENOR, Kansas City.

Montana

To *Camp Dodge*, Des Moines, Iowa, for temporary duty, Capt. ADOLPH T. GILHUS, White Sulphur Springs.

To *Camp Grant*, Rockford, Ill., for temporary duty, Lieut. HERBERT HAYWARD, Darby.

Nebraska

To *Camp Bowie*, Fort Worth, Texas, for duty as a member of the board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. JOHN F. ALLEN, Omaha.

Nevada

To *Camp Kearny*, Linda Vista, Calif., for duty, from Fort Douglas, Utah, Capt. EDWARD D. GIROUX, Winnemucca.

New Hampshire

To *Camp Beauregard*, Alexandria, La., for duty in the surgical service, from Fort Oglethorpe, Capt. GEORGE M. WATSON, Manchester.

To *Camp Devens*, Ayer, Mass., for duty, Capt. JAMES J. POWERS, Manchester.

To *Fort Oglethorpe*, for instruction, Lieut. WALLIS D. WALKER, Portsmouth.

New Jersey

To *Camp Custer*, Battle Creek, Mich., for duty, from Fort Benjamin Harrison, Lieuts. CLARENCE A. GREENLEAF, Olean; HOWARD R. RARIG, Palmyra; MORRIS N. LEAVER, Quakertown.

To *Camp Funston*, Fort Riley, Kan., for duty in connection with the division of otolaryngology, section of surgery of the head, from Medical Officers' Training Camp, Fort Benjamin Harrison, Lieut. JEREMIAH B. WINTERSTEEN, Moorestown.

To *Camp Pine*, New York, for duty with the 15th Field Artillery, from Fort Oglethorpe, Lieut. EDWARD B. ROGERS, Collinswood.

To *Camp Sevier*, Greenville, S. C., 30th Division, to act as a member of a board of medical officers for the special examination of the command for tuberculosis, from Walter Reed General Hospital, Lieuts. EDWARD S. KRANS, Plainfield; for duty in the surgical service from Fort Oglethorpe, WALTER F. KEATING, Ridgewood.

To *Camp Upton*, Yaphank, L. I., for temporary duty, Lieut. GUSTAVE A. BRAUN, Newark.

To *Neurological School*, University of Pennsylvania, Philadelphia, Pa., for intensive training in brain surgery, Lieuts. MARTIN W. REDDAN, JOSEPH G. DENELEBECK, Trenton.

To *San Antonio, Tex.*, Kelly Field, for duty, Lieut. SAMUEL L. SALASIN, Atlantic City.

To *Walter Reed General Hospital*, Takoma Park, D. C., for duty, Lieut. EDWARD S. KRANS, Plainfield.

New Mexico

To *Camp Doniphan*, Fort Sill, Okla., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Lieut. ORIN J. WHITCOMB, Raton.

New York

To *Ann Arbor, Mich.*, State Psychopathic Hospital, for intensive training in his specialty, from Medical Officers' Training Camp, Fort Benjamin Harrison, Lieut. ABRAHAM M. RABINER, Albany.

To *Army Medical School*, Washington, D. C., for duty in the bacteriologic laboratory, Lieut. BYRON D. WHITE, Brooklyn.

To *Camp Custer*, Battle Creek, Mich., for duty, from Ft. Benjamin Harrison, Capt. GUSTAVE R. MANNING, New York; Lieuts. GEORGE E. HENDERSON, Brooklyn; WILLIAM OSTROW, Buffalo; CHARLES E. E. PANNACI, Gloversville; LEON M. KYSOR, Hornell; MAXIMILIAN FRICK, New York City; EDWARD E. GILLICK, Niagara Falls; EDWIN D. JACKSON, Rochester; ALEXANDER N. LOEWENSTEIN, Troy.

To *Camp Devens*, Ayer, Mass., for temporary duty, Lieut. THOMAS A. D. SOMERS, New York City.

To *Camp Funston*, Fort Riley, Kan., for duty in connection with the division of otolaryngology, section of surgery of the head, from Fort McDowell, Calif., Capt. KENT E. WILLIAMS, Rome; for temporary duty, from Medical Officers' Training Camp, Fort Riley, Lieut. FREDERICK D. KEPPEL, Licklaen.

To *Camp Hancock*, Augusta, Ga., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Capt. CHARLES H. ERWAY, Elmira.

To *Camp McClellan*, Anniston, Ala., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieuts. PATRICK J. HIRST, Middle Grove; FRANK J. HERBIG, Staten Island.

To *Camp Meade*, Annapolis Junction, Md., for temporary duty, Lieut. JAMES H. PAUL, Jamesville.

To *Camp Shelby*, Hattiesburg, Miss., for duty in the base hospital laboratory, Lieut. RAYMOND SANDERSON, Poughkeepsie.

To *Camp Sherman*, Chillicothe, O., for duty, from Fort Benjamin Harrison, Lieuts. VALENTINE V. BOURKE, Brooklyn; FREDERICK J. PFISTERER, Ceres; GEORGE J. GEISLER, Hempstead; MILTON G. BURCH, Hornell; VALENTINE C. BAKER, JAMES G. CORNEILLE, LEWIS GREENBERG, JAMES D. MURPHY, JOSEPH SCHAPIRO, New York City; WATSON A. LAWRENCE, Valhalla;

CLINTON E. GOODWIN, Weedsport; LEWELL T. GENUING, Worcester.

To *Camp Taylor*, Louisville, Ky., for temporary duty from Medical Officers' Training Camp, Fort Benjamin Harrison, Lieuts. ALFRED BRAUN, SAMUEL H. GEIST, DANIEL POLL, New York City.

To *Camp Upton*, Yaphank, L. I., for temporary duty, Lieuts. HYMAN I. TEPERSON, Brooklyn; RALPH D. REID, Central Islip; MAX CLIMAN, HUGO A. SIEBENEICHEN, New York City.

To *Camp Wadsworth*, Spartanburg, S. C., and Camp Lee, Petersburg, Va., for the purpose of inspecting the methods in use for the protection of the command against infection with venereal diseases, and on completion to return to his proper station, Major EDWARD L. KEYES, Forest Hills.

To *Camp Wadsworth*, Spartanburg, S. C., 27th Division, to act as a member of a board of medical officers for the special examination of the command for tuberculosis, from Walter Reed General Hospital, Lieut. EPHRAIM GOLDMAN, New York City.

To *Camp Wheeler*, Macon, Ga., for duty, from Fort Oglethorpe, Lieut. ARTHUR B. GRAVES, Perrysburg.

To *Cornell Medical College*, New York, for a course of military roentgenology, Lieuts. AARON M. MORGENLANDER, New York City; JOHN C. KNAPP, Philmont.

To *Fort Oglethorpe* for instruction, Lieuts. DANIEL E. L. STEDEM, Buffalo; WEBB W. WEEKS, New York City; ASA R. DIMOCK, Valatie.

To *Neurological School*, University of Pennsylvania, Philadelphia, Pa., for intensive training in brain surgery, Capt. IRA COHEN, New York City.

To *New York*, for orthopedic work, Lieut. NORMAN McL. DINGMAN, New York City.

To *Philadelphia, Pa.*, for a course of instruction in orthopedic surgery, Lieuts. EDWARD A. FLYNN; CARL C. YOUNT, New York City.

To *Rockefeller Institute*, New York, for a course of instruction in laboratory work, Capts. MORRIS B. BEECROFT, Albany; GEORGE BAEHR, New York City.

To report in person to the surgeon-general of the Army for duty in his office, Capt. GEORGE DRAPER, New York City.

To the inactive list of the Medical Reserve Corps of the Army, Capt. LOUIS HAUSWIRTH, New York City, Lieut. NATHAN D. GARNSEY, Kinderhook.

North Carolina

To *Camp Hancock*, Augusta, Ga., for temporary duty, from Fort Oglethorpe, Lieut. ISRAEL W. MAYERBERG, Selma.

To *Camp Jackson*, Columbia, S. C., for duty with Ambulance Co. No. 31, Lieut. WILLIAM E. BRACKETT, Caroleen.

To *Gettysburg, Pa.*, reorganization camp for duty, Lieut. KELSO A. CARROLL, Raleigh.

Honorably discharged from the Medical Reserve Corps of the Army, Lieut. RALPH E. DEES, Greensboro.

North Dakota

To *Camp Dodge*, Des Moines, Iowa, for temporary duty, Lieut. BENJAMIN FRANKSON, Rugby.

To *Fort Douglas*, Utah, for duty, from Fort Riley, Lieut. JACOB F. BRECKLE, Kulm.

To *Neurological School*, University of Pennsylvania, Philadelphia, for intensive training in brain surgery, Capt. ROBERT D. CAMPBELL, Grand Forks.

Ohio

To *Camp Custer*, Battle Creek, Mich., for duty, from Fort Benjamin Harrison, Lieuts. RALPH E. POWERS, Akron; EMIL E. WOLF, Cleveland; THEODORE J. KASINSKI, Youngstown.

To *Camp Sherman*, Chillicothe, O., for duty, from Fort Benjamin Harrison, Lieuts. JOHN T. GIBBONS, Celina; JOHN R. CRUM, Forest; JAMES D. VARNEY, Greenfield; for temporary duty, ALDO V. SIBERT, Lima; ROBERT M. FULWIDER, Zanesfield.

To *Camp Taylor*, Louisville, Ky., for temporary duty, from Medical Officers' Training Camp, Fort Benjamin Harrison, Lieut. ELMER A. KLEIN, Norwood.

To *Fort Oglethorpe* for instruction, Lieut. GEORGE C. SMITH, Mansfield.

To *Philadelphia*, for a course of instruction in orthopedic surgery, Lieut. ALLEN N. WISELEY, Ada.

Oklahoma

To *Camp Doniphan*, Fort Sill, Okla., for temporary duty, Lieuts. CHARLES W. BACON, Enid; R. EARLE SMITH, Gracemont.

To *Philadelphia*, for a course of instruction in orthopedic surgery, from Army Medical School, Lieut. DAVY L. GARRETT, Altus.

To the inactive list of the Medical Reserve Corps of the Army, Lieut. FRANK L. CARSON, Shawnee.

Oregon

To *Fort Douglas*, Utah, for duty, Lieut. JAMES A. BEST, Pendleton.

To *Neurological School*, University of Pennsylvania, Philadelphia, for intensive training in brain surgery, Capt. LAWRENCE SELLING, THOMAS M. JOYCE, Portland.

To the inactive list of the Medical Reserve Corps on account of being physically disqualified for active service, Lieut. HAROLD T. ALLISON, Heppner.

Pennsylvania

To *Camp Beauregard*, Alexandria, La., for duty in the surgical service, from Fort Oglethorpe, Lieuts. LEOPOLD M. JACOBS, Philadelphia; NORMAN A. TIMMONS, South Bethlehem.

To *Camp Custer*, Battle Creek, Mich., for duty with the division of ophthalmology, section of surgery of the head, Lieuts. MARION H. POWERS, Point Marion; for duty from Fort Benjamin Harrison, JOHN H. MURRAY, Punxsutawney.

To *Camp Dix*, Wrightstown, N. J., for temporary duty, Lieut. SNOWDEN K. HALL, Pittsburgh.

To *Camp Hancock*, Augusta, Pa., Lieuts. HAROLD S. BROOMALL, for duty in the division of otolaryngology, section of surgery of the head; from Fort Oglethorpe, EDWARD W. COLLINS, Philadelphia; for temporary duty from Fort Oglethorpe, THOMAS A. BOOTH, Boothwyn; EDMOND B. PIPER, Philadelphia.

To *Camp McClellan*, Anniston, Ala., for duty in connection with the division of otolaryngology, section of surgery of the head, Lieut. AARON L. BISHOP, Philadelphia.

To *Camp Meade*, Annapolis Junction, Md., for temporary duty, Lieuts. JAMES S. HAMMERS, Danville; EDWIN S. COOKE, Philadelphia; GEORGE G. GRAZIER, for duty in charge of the division of otolaryngology, section of surgery of the head, WILLIAM P. BARN-DOLLAR, Pittsburgh.

To *Camp Sherman*, Chillicothe, Ohio, for duty, from Fort Benjamin Harrison, Capt. FREDERICK A. RUPP, Lewistown.

To *Camp Wadsworth*, Spartanburg, S. C., for duty in charge of the division of ophthalmology, section of surgery of the head, from Camp McClellan, Anniston, Ala., Lieut. CHARLES M. STILES, Philadelphia.

To *Camp Wheeler*, Macon, Ga., for duty from Fort Oglethorpe, Lieuts. FRANKLIN P. LYTLE, Birdsboro; JOHN H. STEARNS, Delaware Water Gap; CHARLES C. CROUSHORE, Greensburg; EDWARD Y. ORD, McKeesport; PORTER M. WALL, Monongahela; VINCENT J. FENERTY, JACOB J. RUTBERG, Philadelphia; WILLIAM J. STEWART, Pittsburgh; WALTER M. BERTALET, THOMAS M. SNYDER, Reading.

To *Canal Zone*, Panama Canal Dept., for duty, Capt. ISAAC H. JONES, Philadelphia.

To *Fort Benjamin Harrison* for duty in the bacteriologic laboratory of the base hospital, from Army Medical School, Lieut. CARL GOEH-RING Pittsburgh.

To *Fort Oglethorpe* for instruction, Lieuts. HOWARD P. BLAKE, Altoona; CLIFFORD B. LULL, Philadelphia.

To *Fort Riley* for duty in the surgical service, from Fort Oglethorpe, Lieuts. GEORGE M. PURVES, ARTHUR R. WOODS, for duty in connection with the division of ophthalmology, section of surgery of the head, from Fort Benjamin Harrison, for duty in the bacteriologic laboratory, Philadelphia.

To *Gettysburg, Pa.*, for duty with the machine gun battalion, from Fort Oglethorpe, Lieut. WILLIAM E. LEFFLER, Ashland.

To *Harvard Medical School*, Boston, Mass., for orthopedic instruction, Lieut. RANDALL ZIMMERMAN, Wilmerding.

To *Neurological School*, University of Pennsylvania, Philadelphia, for intensive training in brain surgery, Lieut. LOUIS H. MAYER, JR., Johnstown.

To *Pine Camp*, New York, for duty with the 15th Field Artillery, from Fort Oglethorpe, Lieut. ELMER HESS, Erie.

To *Pittsburgh, Pa.*, for a course of instruction in military roentgenology, Lieut. CHARLES H. POOLE, Ruffsedale.

To *San Antonio, Texas*, Kelly Field, for duty, Lieuts. RAY N. LEWIS, Apollo; HENRI SCHMID, Pittsburgh.

To *Walter Reed General Hospital*, Takoma Park, D. C., for instruction in tuberculosis examinations, from Plattsburg Barracks, N. Y., Capt. ALBERT P. FRANCINE, Philadelphia.

To *Washington University*, St. Louis, Mo., for three weeks' intensive training and on completion of this course to return to his home and to the inactive list of the Medical Reserve Corps, Capt. THOMAS C. STELLWAGON, JR., Philadelphia.

To inactive list of the Medical Reserve Corps, from Fort Ethan Allen, Vt., Major JACK G. GITTINGS, Philadelphia.

Philippine Islands

To *Manila, P. I.*, Philippine Dept. for duty, Major HENRY PICK, Manila.

Rhode Island

To *Camp Custer*, Battle Creek, Mich., for duty, from Fort Benjamin Harrison, Lieut. PATRICK J. MANNING, Wickford.

To *Camp Sherman*, Chillicothe, Ohio, for duty, from Fort Benjamin Harrison, Lieuts. WILLIAM P. BERNARD, Central Falls; FRANCIS E. CROGHAN, Providence.

South Carolina

To *Camp Lee*, Petersburg, Va., for temporary duty, Lieut. WILLIAM E. LESTER, Lake View.

To *New York*, for orthopedic instruction, from Army Medical School, Lieut. KARL L. ABLE, Leesville.

To *San Antonio, Texas*, Kelly Field, for duty, Lieut. WILLIAM S. McMURRAY, Lockhart.

Honorably discharged from the Medical Reserve Corps of the Army, Major FRANCIS L. PARKER, Charleston.

South Dakota

To *Fort Riley*, for duty in the surgical service, Lieut. LINDSAY Z. FLETCHER, Montrose.

Tennessee

To *Camp Hancock*, Augusta, Ga., for temporary duty, from Fort Oglethorpe, Lieut. DAVID T. AUSTIN, Bogota.

To *Camp McClellan*, Anniston, Ala., for temporary duty, Lieut. THOMAS M. HARPER, Medina.

To *Camp Pike*, Little Rock, Ark., for temporary duty, Capt. WILLIAM E. HOWELL, Morristown.

To *Camp Wheeler*, Macon, Ga., for duty, from Fort Oglethorpe, Lieut. ROBERT B. GRIFFIN, Ridgely.

To *Cornell Medical College*, New York, for a course of instruction in military roentgenology, from Medical Officers' Training Camp, Fort Benjamin Harrison, Lieut. THOMAS O. MENEES, Nashville.

To *Fort Oglethorpe* for instruction, Lieut. WILLIAM C. COLBERT, Memphis.

To *Neurological School*, University of Pennsylvania, Philadelphia, for intensive training in brain surgery, Capt. WILLIAM H. SMITH, Brunswick.

To *San Antonio, Texas*, Kelly Field, for duty, Lieut. CHARLES HENDLEY, Cottagegrove.

Honorably discharged from the Medical Reserve Corps of the Army on account of being physically disqualified for active service, from Fort Oglethorpe, Lieut. SNETHEN B. DUGGAN, Eagleville.

Texas

To *Atlanta, Ga.*, for duty in hospital laboratory, Lieut. GEORGE C. BRUNNELL, El Paso.

To *Camp Dodge*, Des Moines, Iowa, for temporary duty, Lieut. JOHN E. WILSON, Shiro.

To *Camp Grant*, Rockford, Ill., for duty as chief of the surgical service, from Medical Officers' Training Camp, Fort Oglethorpe, Capt. JOHN W. LANE, Houston Heights.

To *Camp McClellan*, Anniston, Ala., for duty, from Manila, Philippine Islands, Lieut. RUFUS H. HAGOOD, JR., Texas City.

To *New York*, for orthopedic work, Lieut. QUINCY B. LEE, Wichita Falls.

To report by telegraph to the commanding general, Southern Dept., for assignment to duty, Lieuts. DIMETRUS J. LOUIS, El Paso; THOMAS D. VAUGHAN, Taylor; LYTTON C. AMENT, Victoria; JOHN B. BAUGUSS, Whitewright.

To *Washington, D. C.*, for duty in the office of the Surgeon-General of the Army, from duty at Camp Travis, Fort Sam Houston, Texas, Lieut. CLAUDE C. CODY, JR., Houston.

Utah

To *Linda Vista*, Calif., for temporary duty, Lieut. ONTIE HOVEN-DEN, Salt Lake City.

Vermont

To *Camp Custer*, Battle Creek, Mich., for duty, from Fort Benjamin Harrison, Lieut. GEORGE E. LATOUR, Burlington.

To *Canal Zone*, and report in person to the Governor of the Panama Canal, Balboa Heights, for assignment to duty, Capt. GEORGE G. MARSHALL, Rutland.

Virginia

To *Camp Sheridan*, Montgomery, Ala., base hospital for duty in the surgical service, Lieut. HERBERT W. ROGERS, Nassawadox.

To *Camp Wheeler*, Macon, Ga., for duty, from Fort Oglethorpe, Lieut. WILLIAM S. WILEY, Bristol.

To *Fort Oglethorpe*, for instruction, Capt. WILSON E. DRIVER, Norfolk.

To *Neurological School*, University of Pennsylvania, Philadelphia, for intensive training in brain surgery, Lieuts. JOSEPH F. GEISINGER, ALVAH L. HERRING, FRANK H. REDWOOD, Richmond.

To *Newport News*, Norfolk, Petersburg, Richmond, Alexandria, Washington, Winchester, Harrisonburg, Staunton, Charlottesville, Lynchburg, Roanoke, Pulaski, Bristol, Lynchburg, Danville, South Boston, Richmond, Roanoke, for the purpose of examining applicants for appointment in the Medical Reserve Corps of the Army and upon completion of this duty to return to their proper station, Major JOHN G. NELSON, Lieut. JOSEPH T. MCKINNEY, Richmond.

To *Richmond Medical College*, Richmond, Va., for a course of instruction in military roentgenology, Lieut. JAMES N. WILLIAMS, Clifton Forge.

Washington

To *Army Medical School*, Washington, D. C., for preparation for nutritional survey, Lieuts. ROLLA B. HILL, Colfax, for instruction, JOSEPH R. TURNER, Tacoma.

To *Rockefeller Institute*, New York, for a course of instruction in laboratory work, from Army Medical School, Capt. AUSTIN U. SIMPSON, Seattle.

West Virginia

To *Camp Hancock*, Augusta, Ga., for temporary duty, from Fort Oglethorpe, Lieut. CLERMONT E. PARK, Parkersburg.

To *Macon, Ga.*, and report in person to the commanding officer Remount Dept., for duty, Lieut. JOSEPH K. COWHERD, Ridgeley.

Wisconsin

To *Camp Hancock*, Augusta, Ga., for duty as member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. ADELOR E. GENDRON, River Falls.

To *County Hospital*, Chicago, Ill., for instruction in military roentgenology, Lieut. MAXIMILIAN W. MOELLER, Milwaukee.

To *Neurological School*, University of Pennsylvania, Philadelphia, for intensive training in brain surgery, Lieut. ORVILLE R. LILLIE, Milwaukee.

ORDERS TO CONTRACT SURGEONS

Arkansas

To *Camp Sheridan*, Montgomery, Ala., for the purpose of conducting examinations in his specialty, and upon completion of this duty to return to his home, Dr. WILLIAM E. HUGHES, Pocahontas.

California

To *Walter Reed General Hospital*, Washington, D. C., for instruction in tuberculosis examination, Dr. FREDERICK A. BROWN, Hayward.

Colorado

To *Camp Doniphan*, Fort Sill, Okla., for duty as a member of the tuberculosis examining board, Dr. J. W. CRAIGHEAD, Denver.

Connecticut

To *Camp Dix*, Wrightstown, N. J., for duty as member of tuberculosis examining board, Dr. JOSEPH WALSH, New Britain.

To *Camp Greene*, Charlotte, N. C., for duty as a member of medical officers for the examination for tuberculosis, from Walter Reed General Hospital, Dr. GEORGE H. JENNINGS, Jewett City.

To *Camp Wadsworth*, Spartanburg, S. C., from Walter Reed General Hospital, Takoma Park, D. C., for duty as a member of the tuberculosis examining board, Dr. HUGH F. KEATING, New Haven.

To *Walter Reed General Hospital*, Takoma Park, D. C., for instruction in tuberculosis examinations, Drs. WILLIAM H. GRAY, Mystic; PATRICK J. CASSIDY, Norwich.

To *Walter Reed General Hospital*, Takoma Park, D. C., for duty, Dr. PERCY HICKLING, Washington.

Illinois

To *Camp Sevier*, Greenville, S. C., for duty as member of the tuberculosis examining board, Dr. JAMES S. RANKIN, De Kalb.

To *Fort Benjamin Harrison* for instruction in tuberculosis examination, Drs. WERNER E. EARLANDER, BENEDICT W. ROGERS, Chicago; CLARENCE N. McCUMBER, Lewiston.

Indiana

To *Camp Sheridan*, Montgomery, Ala., from Fort Benjamin Harrison, for duty as member of tuberculosis examining board, Dr. CHARLES J. MCINTYRE, Indianapolis.

To *Fort Benjamin Harrison* for instruction in tuberculosis examinations, Drs. H. E. WHITLEDGE, Evansville; STEVENS C. MARKLEY, Richmond.

Iowa

To *Camp Logan*, Houston, Tex., for the purpose of acting as a member of a board of medical officers for the special examination for tuberculosis, Dr. ROBERT E. CONNIFF, Sioux City.

To *Fort Benjamin Harrison* for instruction in tuberculosis examination, Dr. ANDREW L. BELT, Fort Dodge.

To *Fort Dodge*, Des Moines, Ia., 88th Division, as member of board of medical officers for examination for tuberculosis, Drs. WALTER L. BIERRING, ADDISON C. PAGE, E. B. WINNETT, Des Moines.

Louisiana

To *Camp Beauregard*, Alexandria, La., 38th Division, for duty as member of the tuberculosis examining board, Drs. LEON J. MANVILLE, Houma; L. O. CLARK, Lafayette; ROBERT W. O'DONNELL, THOMAS E. WRIGHT, Monroe; WALTER J. DURAL, A. L. LEVIN, New Orleans.

Maryland

To *Phipps Clinic*, Baltimore, Md., for duty as director in his specialty, Dr. ADOLF MEYER, Baltimore.

To their homes, Drs. EUGENE J. LEOPOLD, A. P. HERRING, Baltimore; J. P. WADE, Cantonville.

Massachusetts

To *Walter Reed General Hospital*, Takoma Park, D. C., for instruction in tuberculosis examination, Drs. JOSEPH A. COGAN, Boston; L. T. NEWHALL, Brookfield.

Michigan

To *Camp MacArthur*, Waco, Tex., 32d Division, for the purpose of acting as a member of a board of medical officers to examine for tuberculosis, Dr. B. A. SHEPARD, Kalamazoo.

To *Fort Benjamin Harrison*, for instruction in tuberculosis examinations, Dr. E. B. PIERCE, Howell.

To *State Psychopathic Hospital*, Ann Arbor, Mich., for duty as specialist in nervous and mental diseases, Dr. ALBERT M. BARRETT, Ann Arbor.

Minnesota

To *Des Moines, Ia.*, Camp Dodge, for duty as member of board of medical officers for tuberculosis examination, from Fort Snelling, Minn., Drs. WALTER J. MARCLAY, HARRY R. NORDLEY, Minneapolis.

To *Camp Lewis*, American Lake, Wash., for purpose of examining in his specialty and upon completion of this duty to return to his home, Dr. RALPH E. MORRIS, Minneapolis.

To *Camp Logan*, Houston, Tex., for duty as a member of the tuberculosis examining board from Fort Snelling, Dr. ROBINSON BOWORTH, St. Paul.

To *Fort Snelling*, Minn., as roentgenologist, Dr. CHARLES A. DONALDSON, Minneapolis.

Missouri

To *Fort Benjamin Harrison* for instruction in tuberculosis examination, Dr. L. T. HALL, Potosi.

To his home from duty at Fort Worth, Tex., Dr. PHILIP COGAN, St. Louis.

New Jersey

To *Camp Dix*, Wrightstown, N. J., for duty as member of tuberculosis examining board, Dr. MARCUS W. NEWCOMB, Brown Mills.

New Mexico

To *Fort Bayard*, N. M., Army General Hospital for duty, Dr. H. W. BREWER, Columbus.

To his home from duty at Camp Cody, Dr. E. D. MCKINLEY, Alamogordo.

New York

To *Camp Sevier*, Greenville, S. C., for duty as member of board of medical officers for tuberculosis examinations, Drs. FRANK F. FINNEY, Burke; LEONARD P. SPRAGUE, Chateaugary.

To *Camp Upton*, Yaphank, L. I., for the purpose of conducting examinations in his specialty, from Camp Mills, L. I., Drs. GLENTWORTH R. BUTLER, TASKER HOWARD, Brooklyn.

To *Camp Wadsworth*, Spartanburg, S. C., for duty as a member of the tuberculosis examining board, from Walter Reed General Hospital, Dr. PERCIVAL F. DALPHIN, Malone.

To *Walter Reed General Hospital*, Takoma Park, D. C., for instruction in tuberculosis examination, Drs. HOWARD VAN RENSSELAER, Albany; ALFRED G. WILDING, Malone.

To *Washington*, D. C., for duty on the Advisory Committee on Venereal Diseases, Dr. GROVER W. WENDE, Buffalo.

To their homes, Drs. T. STUART HART, GEORGE H. KIRBY, ROBERT BURLINGTON, New York City.

North Carolina

To *Camp Greene*, Charlotte, N. C., from Fort Oglethorpe for duty as member of board of medical officers for special examination for tuberculosis, Dr. F. B. SPENCER, Salisbury.

Ohio

To *Fort Benjamin Harrison*, for instruction in tuberculosis examination, Dr. E. C. DAVIS, Cleveland.

Oklahoma

To *Fort Reno*, Okla., for duty, Dr. W. R. MILLER, Calumet.

Oregon

To *Camp Lewis*, American Lake, Wash., for duty as a member of a board of medical officers for tuberculosis examination, Drs. BRICE R. WALLACE, Albany; GUY L. BOYDEN, Pendleton; C. D. BODINE, NOBLE W. JONES, RAY W. MATSON, RICHARD WELLINGTON, Portland.

Pennsylvania

To *Camp Dix*, Wrightstown, N. J., for duty as members of tuberculosis examining board, Drs. ALIX H. DAVISSON, J. CLINTON FOLTZ, ELMER H. FUNK, MOSES JACOB, ISADORE KAUFMAN, H. R. M. LANDIS, ROBERT S. McCOMBS, CHARLES M. MONTGOMERY, J. J. ROBRECHT, CLARENCE D. SMITH, Philadelphia.

Camp McClellan, Anniston, Ala., for the purpose of conducting examinations in his specialty and upon completion of this duty to return to his home, Dr. THOMAS C. SIMONTON, Pittsburgh.

To *Camp Sevier*, Greenville, S. C., for duty as member of the tuberculosis examining board, Dr. G. FRANKLIN BELL, Williamsport.

To *Fort Benjamin Harrison*, for instruction in tuberculosis examination, Drs. H. J. HARTZ, E. S. VANDER-SLICE, Philadelphia.

To *Walter Reed General Hospital*, Takoma Park, D. C., Drs. JOHN W. ELLENBERGER, Harrisburg; JACOB ROSENBLUM, Pittsburgh.

To his home and report by wire to Surgeon-General of the Army upon his arrival, from Camp Wadsworth, Spartanburg, S. C., Dr. WILLIAM C. WALLACE, Ingram.

Rhode Island

To *Camp Hancock*, Augusta, Ga., from Walter Reed General Hospital, Takoma Park, D. C., for duty as a member of the tuberculosis examining board, Dr. JAY PERKINS, Providence.

Tennessee

To *Fort Benjamin Harrison* for instruction in tuberculosis examination, Dr. H. P. COILE, Knoxville.

To his home from duty with the Tennessee National Guard, Dr. J. J. NEELY, Memphis.

Texas

To his home from duty at Leon Springs, Tex., Dr. ROBERT G. McCORKLE, San Antonio.

Virginia

To *Walter Reed General Hospital*, Takoma Park, D. C., for instruction in tuberculosis examination, Dr. FRANK G. SIMMONS, Richmond.

Washington

To *Camp Lewis*, American Lake, Wash., for duty as member of tuberculosis examining board, Drs. E. R. AHLMAN, Hoquiam; A. B. McLEAN, Pe Ell.

Wisconsin

To *Camp MacArthur*, Waco, Tex., 32d Division, for duty as member of tuberculosis examining board, from Camp Robinson, Sparta, Wis., Drs. W. B. FORD, J. D. MADISON, L. G. SYKES, J. G. TAYLOR, Milwaukee.

To *Camp Sheridan*, Montgomery, Ala., for duty as member of tuberculosis examining board, Dr. THOMAS MILLER, Oconomowoc.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

New Members of Board of Examiners.—Dr. Coit Hughes, Phoenix, has been appointed a member of the State Board of Medical Examiners to succeed Dr. Ira E. Huffman, Tucson; Dr. Albert L. Gustetter, Nogales, to succeed Charles T. Sturgeon, Globe, and David L. Conner, Phoenix, to succeed Dr. George W. Martin, Tucson.

Personal.—Dr. Franklin C. Norman, Hayden, has been appointed superintendent of the State Hospital for the Insane, Phoenix, succeeding Dr. John R. Walls, Tucson, resigned. —Dr. J. Bernard Nelson, Mesa, has been appointed superintendent of public health of the state, succeeding Dr. Robert N. Looney, Prescott. —Dr. Allen H. Williams has succeeded the late Dr. Harry J. James as medical director of St. Luke's Home for Tuberculosis, Phoenix. Dr. Marian Walker Williams, wife of Dr. Allen Williams, has been made assistant director.

ARKANSAS

Venereal Clinic.—A free clinic for venereal diseases has been opened in the Medical School of the University of Arkansas, Little Rock, by Drs. Sterling P. Bond, Claude C. Pierce, U. S. P. H. S., Augustus C. Shipp and Mr. H. H. Railey. The clinic is open each day from 12:30 to 2.

FLORIDA

Hospital Site.—Drs. J. Edward Smoak and Mack R. Winton have purchased, for \$10,000, a site for a hospital, 32 by 110 feet, at Bravard and Grand Central avenues, Tampa.

Antituberculosis Campaign.—Plans for a general campaign throughout the state were discussed at the meeting of the executive committee of the Florida Antituberculosis Association, September 19. Dr. Carrol H. Frink, secretary of the association, presided.

Trachoma in Florida.—A number of cases of trachoma have appeared in Riverside and other sections of the state, and Dr. William H. Cox, Brooksville, state health officer, has requested the Surgeon-General of the United States Public Health Service to detail an officer to aid in combating the disease. Dr. John McMullen, U. S. P. H. S., has been detailed to this duty.

ILLINOIS

Diphtheria in Edwardsville.—Dr. John J. McShane of the state board of health is investigating conditions in Edwardsville where twenty-five cases of diphtheria have occurred, with one death.

To Aid Tuberculosis Work in France.—Miss Elizabeth Wallace left Chicago, October 15, for France as a member of the Tuberculosis Commission headed by Dr. Livingston Farrand, president of the University of Colorado, and secretary of the National Association for the Study and Prevention of Tuberculosis.

Personal.—Dr. Frank Billings arrived in Chicago, October 19, after several months spent in Russia as chairman of the American Red Cross Commission. —The wife of Dr. H. Wernicke Gentles, Chicago, disappeared from her home, October 20, while suffering from melancholia, and her body was found in Lake Michigan the next day. —Dr. James A. Day, Jacksonville, announces his removal to Springfield.

Tuberculosis Clinics.—Two special clinics were given, October 12 and 13, at the Chicago Municipal Tuberculosis Sanatorium by Dr. H. Kennon Dunham, Cincinnati, who spoke on "The Interpretation of Roentgen-Ray Photographs of the Lungs in Tuberculosis," and by Dr. William Snow Miller of the University of Wisconsin, Madison, who spoke on "The Anatomy of the Lungs." The clinics were attended by present and former members of the staff of the sanatorium and its dispensary, and by the class of the Chicago School of Military Roentgenology.

Chicago

Canadian Surgeon-General to Address Institute of Medicine.—Surgeon-General Fotheringham of the Canadian Army will address the Institute of Medicine of Chicago on Friday,

Nov. 2, 1917, in the LaSalle Hotel, at 8 p. m. Surgeon-General Fotheringham went to France in 1914, with the first Canadian contingent, and was in active service in France with the Canadian forces until April of this year, when he was promoted to the Department of Militia and Defense, Ottawa, as Surgeon-General of Canada.

The subject of his address will be "Modern Methods in War from a Medical Standpoint."

IOWA

Personal.—Dr. Arthur A. Schmidt, Postville, while driving his automobile over a grade crossing near Postville, was struck by a train. The automobile was destroyed, and Dr. Schmidt sustained a broken arm, fracture of the nose and internal injuries.

MARYLAND

Personal.—Dr. Archibald C. Harrison, Baltimore, director of the University of Maryland Base Hospital Unit, was operated on at St. Joseph's Hospital, October 7, for disease of the abdomen and is reported to be doing well.—Dr. George M. Fischer, Spring Gap, has been appointed justice of peace for Allegany County.

New Tuberculosis Hospitals Proposed.—Dr. John D. Blake, health commissioner of Baltimore, in a recent report of the heads of the department, mentioned the great number of deaths due to tuberculosis among the negroes in Baltimore, and attributed this to the fact that there is no hospital at which they can be treated, and they are carrying the disease into the homes of the white people. Mayor Preston stated that he contemplated building two hospitals in the near future, one for whites and another for colored persons.

Meetings.—The semiannual meeting of the Medical and Chirurgical Faculty of Maryland will be held on October 31 at Havre de Grace. Dr. Purnell F. Sappington, Bel Air, president of the Harford County Medical Society, will deliver the address of welcome. Dr. Guy Steele, president of the Medical and Chirurgical Faculty, will speak on "Pellagra in Maryland." Dr. Herbert Harlan of Baltimore will read a paper on "Proposed Changes in the Medical Practice Act," and Dr. Arthur P. Herring, secretary of the state lunacy commission, will address the meeting on "Psychiatric Problems of the War."

Hospital rates Increased.—Representatives from all the hospitals in Baltimore appeared before the board of estimates recently and showed that it is impossible to treat city patients sent to the hospitals by supervisors of city charities at the existing rate of 62½ cents a patient per day, because of the high cost of food, medicine, gauze and coal. The city was asked to pay the hospitals next year \$1.75 a patient a day. Dr. Charles O'Donovan, who represented St. Joseph's Hospital, said that it cost that hospital to maintain and treat a patient sent by the city \$1.55½ a day. St. Joseph's from Oct. 1, 1916, to Oct. 1, 1917, has spent on city patients \$56,000, and 1,723 patients were sent to the hospital by the city authorities for treatment during that time. Dr. Alexius McGlannan, who represented St. Agnes' and Mercy hospitals, stated that it costs those hospitals \$1.50 a day to maintain and treat a patient. Dr. Randolph Winslow of the Maryland General Hospital placed the cost of city patients in that hospital from \$1.50 to \$1.60 a day. Similar statements were made by Dr. G. Milton Linthicum of the University Hospital; Dr. Smith of Mercy Hospital, and Dr. Albert T. Chambers of the Franklin Square Hospital. Dr. Linthicum pointed out to the board that the city officials should take good care of the hospitals so that the poor patients sent for treatment might be given proper care. It was hinted by all the physicians present that unless the city pays more money for the poor patients sent for treatment, the work will have to be curtailed or stopped altogether.

MINNESOTA

Diphtheria at State Hospital.—The epidemic of diphtheria which began about July 15, at the State Hospital for the Insane, Rochester, has now subsided. There were about 250 cases, with no deaths.

Southern Minnesota Physicians to Meet.—The annual meeting of the Southern Minnesota Physicians' Association will be held at Mankato, November 26 and 27, under the presidency of Dr. Aaron F. Schmitt, Mankato.

Good Work at Sanatorium.—The state board of control received a report from the State Sanatorium for Tuberculosis,

Owatonna, which says that thirty-five patients had been discharged, cured, from the institution during September. Of these, thirty have gained an average of 40½ pounds during their stay at the institution.

Personal.—Prof. C. C. Palmer of the College of Agriculture of the State University has been appointed head of the department of bacteriology, physiology and hygiene, at the Delaware College, Newark, Del.—Dr. Frederick M. Allen of the Rockefeller Institution, New York, delivered an address for the University of Minnesota Medical Society at Minneapolis, October 8, on "Diabetes."—Dr. Charles E. Smith has resigned as medical inspector in the St. Paul Health Department, to accept a position with the state department of health.—Dr. Harry G. Irvine, Minneapolis, has been appointed director of the State Bureau of Venereal Diseases of California.

New State Officers.—At the annual meeting of the Minnesota State Medical Association, held in St. Paul, October 10-12, under the presidency of Dr. Harper M. Workman, Tracy, the following officers were elected: president, Dr. Arthur J. Gillette, St. Paul; vice presidents, Drs. Ora C. Strickler, New Ulm; Edward H. Frost, Willmar, and Matthew J. Lynch, Minneapolis; secretary, Dr. Thomas S. McDavitt, St. Paul (reelected); treasurer, Dr. Earle R. Hare, Minneapolis; councillor, for the sixth district, Dr. Frank R. Weiser, Windom, and for the eighth district, Dr. Hugh F. McGaughey, Winona; delegate to the American Medical Association, Dr. George D. Head, Minneapolis, and alternate, Dr. John W. Ball, Minneapolis. Resolutions were adopted by the association urging the establishment of a safety zone around Fort Snelling, and the enactment of laws for the control of venereal diseases by the state board of health.

MISSOURI

Personal.—Dr. Wilson J. Ferguson, Sedalia, recently appointed a member of the state board of health, was elected vice president of the board, September 29.—Dr. Woodson Moss, Columbia, has retired from the faculty of the University of Missouri, after a service of forty-three years.

St. Louis

Emergency Unit Organized.—A medical unit of thirty physicians and surgeons has been organized by the St. Louis Medical Society to cooperate with the home guard regiments for service in case of emergencies, such as the recent race riots in East St. Louis, Ill.

Cleared of Disloyalty Charge.—The St. Louis Medical Society, at its meeting, September 23, exonerated Dr. R. Emmet Kane of a charge of disloyalty, made by several members of the auxiliary Medical Defense Committee, and extends an honorable vote of thanks to Dr. Kane for his "untiring and patriotic medical work since the war began."

Personal.—Dr. Charles W. Shery has been appointed city bacteriologist and pathologist, succeeding Dr. Frederick A. Baldwin, resigned.—Dr. George W. Flynn sustained severe cuts and bruises when a city ambulance collided with his automobile, October 5.—Dr. Aden C. Vickrey was found unconscious beside his automobile, September 22, with a fracture of the base of the skull, and is under treatment in the Alexian Brothers Hospital.

Registration Subcommittee Appointed.—The Auxiliary Medical Defense Committee of St. Louis has appointed a subcommittee for the registration of medical practice, consisting of Drs. Willard Bartlett, N. M. Freund and G. A. Jordan. The committee has formulated plans to insure that competent physicians will take case of the practice of any medical men volunteering for Army and Navy service with the provision that from one third to one half of any fees collected should be turned over to the family, or deposited to the physician's credit.

MONTANA

Hygienic Laboratory Opened.—The hygienic laboratory of the state board of health at the state capitol, Helena, was opened, October 15, under the charge of Dr. Arthur H. McCray.

State Board Election.—At the October meeting of the State Board of Medical Examiners in Helena, Dr. Sidney A. Cooney, Helena, took his seat as a member of the board, and was elected secretary, succeeding Dr. William C. Ridell, resigned. Dr. Patrick H. McCarthy, Butte, was elected president.

Hospital News.—Work will be commenced soon on the new Deaconess Hospital, Billings. The necessary fund of \$10,000 has been oversubscribed, and a 10-acre site has been secured between Lewiston and Alderson avenues; the contract has been awarded.—An addition has been made to the Park Hospital, Livingston, at a cost of \$20,000. This addition increases the capacity of the hospital by twenty rooms, and will accommodate fifty patients.

NEW MEXICO

Personal.—Dr. Miguel F. Des Marais, superintendent of the New Mexico Hospital for the Insane, East Las Vegas, has resigned.—Dr. Samuel H. Eckles, Miami, Ariz., has succeeded Dr. Edward W. Hooper, Silver City, resigned, as physician of Grant County. Dr. Eckles has been ordered to report for duty in New York City, November 15, and expects to be sent abroad.—Dr. LeRoy S. Peters has disposed of his interest in the Albuquerque Sanatorium, and has been appointed associate medical director of St. Joseph's Sanatorium, Albuquerque.

State Society Meeting.—The annual meeting of the New Mexico Medical Society was held at Las Cruces the first week in October, and the following officers were elected: president, Dr. John W. Kinsinger, Roswell; president elect, Dr. Charles A. Frank, Albuquerque; vice presidents, Drs. Hugh V. Fall, Roswell; Chester Russell, Artesia, and Howard M. Cornell, Las Cruces; secretary, Dr. Robert E. McBride, Las Cruces; treasurer, Dr. Frank E. Tull, Albuquerque; delegate to the American Medical Association, Dr. Harry A. Miller, Clovis; alternate, Dr. Robert E. McBride, Las Cruces, and councillors, first district, Dr. Robert L. Bradley, Roswell; second district, Dr. Harry A. Miller, Clovis; third district, Dr. Walter E. Kaser, Las Vegas; fourth district, Dr. Charles H. Churchill, Madrid; fifth district, Dr. George S. McLandress, Albuquerque, and sixth district, Dr. Troy C. Sexton, Las Cruces. Albuquerque was selected as the next place of meeting.

NEW YORK

Centennial of Medical Society.—The one hundredth anniversary of the Steuben County Medical Society was celebrated at Bath, October 16. The presidential address on "Our Centennial Anniversary," was delivered by Dr. Henry J. Wynkoop, Bath.

District Society Meetings.—The Sixth District Branch of the Medical Society of the State of New York held its eleventh annual meeting at Glenn Springs, October 9, and elected the following officers: president, Dr. R. Paul Higgins, Cortland; vice presidents, Drs. John M. Quirk, Montour Falls, and Leon M. Kysor, Hornell; secretary, Dr. Charles H. Gallagher, Ithaca, and treasurer, Dr. Stuart B. Blakely, Binghamton.—At the eleventh annual meeting of the Seventh District Branch of the Medical Society of the State of New York, held in Canandaigua, September 27, Dr. John Pratt, Manchester, was elected president; Drs. J. Polk Delaney, Geneva, and Festus M. Chaffee, Middlesex, were elected vice presidents; Dr. John F. Myers, Sodus, was elected secretary, and Dr. Alfred W. Armstrong, Canandaigua, treasurer.

New Adjustment of Medical Claims Under Compensation Act.—The State Industrial Commission has issued a statement announcing changes in procedure on claims for medical compensation to injured employees. Hereafter all claims for medical services must be made direct to the commission, which will pass upon the claims, make awards covering medical services in amounts that may be deemed reasonable, and issue an order directing payment which, if not obeyed, may be filed in the county clerk's office and become a judgment of the Supreme Court. This change has been made as the result of a recent decision of Justice Benedict in the Appellate Division of the Supreme Court, which has established in effect that no action can be maintained in the courts for medical services, but that the matter must be determined by the commission, which establishes both the reasonableness of the amount and the location of the liability. If the employee provides his own medical attention he will be obliged to meet the expense, and the doctor may have a lien on the compensation to be paid.

New York City

Case of Anthrax at Bellevue.—A victim of anthrax died recently in Bellevue Hospital. This was the sixth case of anthrax which has been cared for at Bellevue within a brief period. Among the six cases there was one recovery.

Harvey Lecture.—The first lecture of the Harvey Society series delivered at the New York Academy of Medicine, October 27, by Prof. W. T. Porter of Harvard University, took up the question of "Shock; Observations at the Front."

New Brooklyn Hospital.—The cornerstone of the new hospital building which is to replace the Cumberland Street Hospital was laid on the afternoon of October 18, by Mayor Mitchell and Comptroller Prendergast. The new structure is to cost \$800,000, and the contract calls for its completion within a year.

Lectures on Skin Diseases.—The governors of the New York Skin and Cancer Hospital announce that Dr. L. Duncan Bulkley, assisted by the attending staff, will give the nineteenth series of clinical lectures on diseases of the skin in the outpatient hall of the hospital on Wednesday afternoons, beginning November 7, at 4:15 o'clock.

Anniversary Dinner of Pharmacy College.—The Brooklyn College of Pharmacy will celebrate its twenty-fifth anniversary by a dinner to be given at the Elk's Club, Brooklyn, November 21. The dinner is in honor of two members of the faculty, Profs. D. C. Mangan and H. D. Schimpf, who have completed twenty-five years of continuous service.

Ambulance Wrecked by Trolley.—As the result of a collision with a trolley car at Forty-Sixth Street and Fifth Avenue, Brooklyn, on October 14, a Norwegian Hospital ambulance was wrecked. The ambulance surgeon, Dr. John M. Tamraz, and the driver sustained minor injuries. No patient was in the ambulance at the time of the accident.

Psychiatric Changes.—On October 1, the State Hospital Commission appointed Dr. Kirby, formerly director of clinical psychiatry at the Manhattan State Hospital and recently medical inspector of the New York state hospitals, director of the Psychiatric Institute, Ward's Island. Dr. Kirby has also been appointed professor of psychiatry at the Cornell University Medical College, succeeding Dr. August Hoch, who has resigned and will remove to California.

Free Clinic for Speech Defects.—Financed by public-spirited citizens of New York, a New York Clinic for Speech Defects has been incorporated, with Dr. Herbert L. Wheeler as president. The clinic will be open this month, under the medical direction of Dr. James Sonnett Greene, and among the members of the consulting board are Drs. Abraham Jacobi, John MacKenty, Phillip D. Kerrison and George M. Parker. In addition to the task of restoring the former powers of speech to soldiers rendered mute by shellshot, the board will develop the treatment of inherited or acquired speech defects.

Hospitals Face Large Deficit.—According to the report of the United Hospital Fund for the fiscal year ending September 30, forty-six of the large hospitals that share in this fund are facing a deficit that will total over \$1,000,000. Estimates compiled by the fund show that in 1917 the expenses of these forty-six prominent hospitals were \$6,862,359, and their total income only \$6,371,832, leaving a deficit of over \$490,000. For the year just ended there was a further deficit of \$700,000, and several of the large hospitals have not yet sent in full returns but state that their deficits are the largest in their history. The New York Hospital has reported a deficit of \$96,812; the German Hospital, \$52,724; the Volunteer, \$40,377; the Nursery and Child, \$60,539; Polyclinic, \$21,430; Lying-In, \$19,416.

Medical Experiences at Camp Upton.—The Base Hospital, Seventy-Seventh Division, National Army, Camp Upton, Long Island, furnished the program of the Section on Medicine of the New York Academy of Medicine at the regular meeting of October 16. The program included a description of the complicated administration of an army base hospital by Major J. D. Whitham. A paper on the "First Psychiatric Experiences in the National Army" was read by Dr. Aaron J. Rosanoff which brought out the fact that the examination of recruits has shown a much larger number of individuals with psychopathic conditions than has been hitherto recognized, and that many such cases that might pass under a doctor's care in civil life without their mental condition being diagnosed were sifted out by the routine examinations and longer periods of observation in vogue in the Army. Dr. Abraham Zingher gave a talk on the "Schick Reaction in Recruits of the National Army," in which he stated that out of several thousand men subjected to the Schick test 85 per cent. were found immune to diphtheria. The application of the Schick test would leave only about 15 per cent. of the troops to be watched for diphtheria, would materially assist in making a diagnosis of diphtheria in doubtful cases, and would result in a great saving of diphtheria antitoxin. Dr. Russell L. Cecil spoke on the "Reactions Produced by Prophylactic Inoculation with the So-Called Triple Typhoid Vaccine." In his experience only an average of one man in every 1,000 inoculated suffered from a reaction sufficiently severe to

send him to the hospital, and even then his stay in the hospital was very short, frequently only twenty-four hours. He found the reactions from the use of the triple vaccines no more frequent or severe than those from the typhoid vaccine alone.

PENNSYLVANIA

Philadelphia

Veterinarians Mobilize.—Dr. Clarence J. Marshall, state veterinarian and professor of veterinary medicine at the University of Pennsylvania, has gone to Washington to supervise the mobilization of the government's veterinary service. There are 12,000 experts and enlisted men in force.

Jefferson Unit in New Quarters.—The Jefferson Base Hospital Unit No. 38, under Major John S. Lambie, has entered new quarters at the Second Regiment Armory. Here Major William M. L. Coplin and Capt. Frank H. Hustead have their offices. The 152 men of the personnel of the unit will receive hospital training in the city institutions, and learn cooking in the hotels.

Medical Club Nominations.—At the meeting of the Medical Club of Philadelphia, October 19, the following nominations were made: president, Drs. Albert P. Brubaker and William D. Robinson; first vice president, Dr. G. Oram Ring; second vice president, Dr. Alexander McAllister; secretary, Dr. William S. Wray; treasurer, Dr. Lewis H. Adler, Jr., and governor, Dr. McCluney Radcliffe.

Hospital Opens New Office.—The Pennsylvania Committee (Medical Section) of the Council of National Defense has opened its office in City Hall. An information bureau has been established with a view to supplying institutional vacancies as they may occur with medical men, in the capacity either of interns or of visiting physicians. Vacancies in private practice will also be filled whenever possible.

Personals.—Dr. D. Randall MacCarroll has been elected to fill the vacancy on the obstetric staff of the Maternity Hospital caused by the resignation of Dr. Charles C. Norris.—Major S. MacCuen Smith has been relieved from active duty at Camp Meade, and has returned to Philadelphia.—Dr. D. Gregg Metheny has returned to Philadelphia from Newport, R. I., where he has been in the service of the United States Navy. Dr. Metheny has been temporarily detached from active service in order to resume his duties at the Jefferson Medical College.—Dr. Frank C. Hammond, who is connected with the Samaritan Hospital, has been appointed a member of the board of health, to serve during the absence in France of Dr. Alexander C. Abbott, who entered the Army Medical Corps several months ago.—Dr. Hubley R. Owen, chief of police surgeons, who enlisted as first lieutenant in the Jefferson Hospital unit, which will leave for France, the early part of 1918, was granted an indefinite leave of absence. No successor has been chosen for Dr. Owen.—Dr. Clement A. Fogerty, who left for England early in August, has been promoted to the position of assistant surgeon in the Southwark Hospital, London.—Dr. Mary Ridegway, who was severely burned when a lamp exploded and threw burning oil on her face and arms, is in a serious condition.

VERMONT

Bennington County Physicians Elect Officers.—At the annual meeting of the Bennington County Medical Society, held at Manchester Center, Dr. John I. Cochran, East Dorset, was elected president; Dr. James L. Lovcjoy, Manchester Depot, vice president, and Dr. L. H. Ross, Bennington, secretary-treasurer. At this meeting Dr. Schuyler W. Hammond of Rutland discussed the "Allen Treatment for Diabetes Mellitus."

New State Officers.—The Vermont State Medical Society held its one hundred and fourth annual meeting in Barre, October 11 and 12, under the presidency of Dr. Clarence H. Beecher, Burlington, and elected the following officers: president, Dr. Clayton W. Bartlett, Bennington; vice president, Dr. William Lindsay, Montpelier; secretary, Dr. William G. Ricker, St. Johnsbury (reelected); treasurer, Dr. Edward H. Martin, Middlebury; auditor, Dr. Waldo J. Upton, St. Albans, and councilor for first district, Dr. James N. Jenne, Burlington, and for the second district, Dr. Frank E. Farmer, St. Johnsbury. Burlington was selected as the next place of meeting.

TEXAS

Quarantine Station.—A committee representing Beaumont, Port Arthur and Sabine has gone to Austin to endeavor to

secure an additional appropriation of \$15,000 from the legislature for the construction of the proposed state quarantine station at Sabine.

Personal.—Dr. Albert H. Braden, Beaumont, has been appointed chief director for the International Board of the Rockefeller Foundation, and will be in charge of the health and sanitary survey to be conducted throughout the state.—Dr. William E. Howard, Dallas, has been elected surgeon of the United Spanish War Veterans.

New Officers.—At the semiannual meeting of the South Texas District Medical Association, held in Beaumont, October 12, Dr. James E. Thompson, Galveston, was elected president; Dr. Wil T. Williams, Beaumont, vice president, and Dr. Albert H. Braden, Beaumont, secretary-treasurer. Houston was selected as the next place of meeting.—At the annual meeting of the Dallas Association for the Study and Prevention of Tuberculosis, October 10, Dr. Robert B. McBride was elected president, and Dr. Raleigh W. Baird, vice president.—At the fifth annual meeting of the Texas Surgical Society, held in Houston, October 8 and 9, the following officers were elected: president, Dr. W. Burton Thorning; vice presidents, Drs. Frank Paschel, San Antonio, and Andrew B. Small, Dallas; secretary, Dr. Frank L. Binds, Houston; treasurer, Dr. J. B. Smoot, Dallas, and recorder, Dr. Judson L. Taylor, Houston. Waco was selected as the next place of meeting.

CANADA

Medical Officers Decorated.—The following Canadian Medical officers have been invested by King George with the military cross: Capts. Walter Lawson, Hugh Mustard and Frederick Pees.

Hospital News.—Major D. W. Whitton is appointed to command a hospital ship.—Lieut.-Col. E. J. Williams is appointed to command the Canadian hospital at Hastings, England, succeeding Lieut.-Col. Hugh E. Munroe.—The accommodation at Camp Hill Military Hospital, Halifax, N. S., is to be increased by the addition of two new wings. It will then have a capacity of 600 beds.—The Military Annex of the Vancouver General Hospital was formally opened, September 15. The buildings has accommodation for 300 patients, there being eight wards, each containing from thirty-four to forty beds.

Army Medical News.—Temporary Brig.-Gen. Auckland Campbell Geddes, M.D., Montreal, has had conferred on him the honor of Knight Commander of the Order of the Bath. Dr. Geddes is director of recruiting in England. Sir Auckland C. Geddes had occupied the chair of anatomy in McGill University a year when war broke out. He is a brother of Sir Erie Geddes, First Lord of the Admiralty.—The Military Cross has been awarded the following officers of the Canadian Army Medical Corps: Capts. Ronald Hugh Macdonald, Winnipeg; Robert James Manion, Fort William, Ont; Archibald McCausland, and Capt. Ashley C. Cooper Johnston, Lundbreck, Alberta.

Medical Boards in Ontario.—Nine medical boards will be stationed in the Province of Ontario. Of these, three will be located in London, one each in Windsor, Sarnia, Harriston, Guelph and Brantford, and there will be one traveling board. These boards will examine the drafted men, and a central board will be located at Ottawa to review the cases passed on by the local boards.—A second army medical board has been established in Windsor, Ont., composed of Captain Walsh, Guelph; Lieutenants Ross, London and Brisson, Tilbury. The first board is composed of Capts. W. Gallow, Goderich; G. Murray Flock, and Major W. A. Burgess, Windsor.

Personal.—Dr. William D. Brydone-Jack, Vancouver, B. C., has been appointed superintending engineer of the public works department for the provinces of Manitoba and Saskatchewan.—Dr. Arthur C. Nash, Vancouver, has been appointed resident physician and medical officer of health at Massett, Queen Charlotte Islands.—Major Andrew MacPhail, A. D. M. S., London, England, is returning to his home in Montreal. Dr. MacPhail has been overseas two and one-half years, and will be assigned to duty in Canada. He is editor of the *Canadian Medical Association Journal*. Major John S. Jenkins, Charlottetown, P. E. I., succeeds him.—Lieut.-Col. Henry R. Casgrain, Windsor, Ont., who has been in command of Bushey Park Red Cross Hospital, England, has been appointed to command the French-Canadian Hospital at St. Cloud, near Paris, France.

Lieutenant-Colonel Lebel, who was in command, will probably return to Canada. Lieutenant-Colonel McQueen, late of the Fifth Field Ambulance, will succeed Colonel Casgrain in command of Bushey Park.

GENERAL

Southern Gastro-Enterologists to Meet.—The next annual meeting of the Southern Gastro-Enterological Association will be held at Memphis, Tenn., November 12, under the presidency of Dr. James C. Johnson, Atlanta, Ga.

Tuberculosis Foes Elect Officers.—At the closing session of the fifth Mississippi Valley Conference on Tuberculosis, held in St. Paul, October 10, Dr. Alfred Henry, Indianapolis, was elected president; Dr. Walter J. Marcley, Minneapolis, vice president, and Mr. James Minnick, Chicago, was reelected secretary.

Anesthetists Elect Officers.—At the annual meeting of the Interstate Annual Meeting of Anesthetists, held in Toledo, Ohio, October 11, Dr. Elmer J. McKesson, Toledo, was elected president; Dr. John J. Buettner, Syracuse, N. Y., vice president, and Dr. F. Hoeffler McMechan, Avon Lake, Ohio, secretary-treasurer.

National Board Examination.—The third examination of the National Board of Medical Examiners was held in Chicago, October 10-18. Twenty-eight candidates were examined, of whom twenty-two passed. Arrangements have already been made for another examination, which will be held at the Bellevue Hospital, New York City, Jan. 9-17, 1918.

New Mississippi Valley Officers.—At the annual meeting of the Mississippi Valley Medical Association, held in Toledo, Ohio, October 9 to 11, Dr. Francis M. Pottenger, Monrovia, Calif., was elected president; Dr. Frank B. Wynn, Indianapolis, vice president; Dr. Henry Enos Tuley, Louisville, secretary (reelected); Dr. Samuel C. Stanton, Chicago, treasurer (reelected). Louisville, Ky., was selected as the next place of meeting.

Bequests and Donations.—The following bequests and donations have recently been announced:

Columbia University, Mt. Sinai Hospital, United Hebrew Charities, and Montefiore Home, each \$5,000; Home for Aged and Infirm Hebrews, St. John's Guild and Society for Improving the Condition of the Poor, New York City, each \$2,500 by the will of Isaac Newton Seligman.

Johns Hopkins University, Baltimore, and the Charity Organization of New York, each \$100,000, and one half of the residuary legacies of four beneficiaries by the will of Jennie Gillender.

Red Cross First Aid Trip.—The Central Safety Committee of the Missouri Pacific Railway Company has arranged with the American Red Cross Society for the Red Cross First Aid Car No. 2 in which Dr. Eric S. Green, Washington, D. C., is to make a trip along its lines for the purpose of instructing employees and their families in first aid for the injured and the means of preventing accidents. Dr. Green will deliver lectures and make demonstrations. The trip began October 9, at St. Louis, and will end December 23, at Texarkana, Ark.

Southwestern Physicians Elect Officers.—The Medical Association of the Southwest held its annual meeting in Kansas City, October 15 to 17, under the presidency of Dr. Everett S. Lain, Oklahoma City, and elected the following officers: president, Dr. Edward H. Martin, Hot Springs, Ark.; vice presidents, Drs. C. Lester Hall, Kansas City, Mo.; James M. Bonham, Hobart, Okla.; Matthew M. Smith, Dallas, Texas, and Ernest F. Day, Arkansas City, Kan., and secretary, Dr. Fred H. Clark, El Reno, Okla. (reelected). The next meeting will be held in Dallas, Texas.

Prevention of Infant Mortality.—At the annual meeting of the American Association for the Prevention of Infant Mortality, held in Richmond, Va., October 15 to 17, under the presidency of Dr. William C. Woodward, Washington, D. C., the following officers were elected: president, Mrs. William Lowell Putnam, Boston; president-elect, Dr. Philip Van Ingen, New York City; vice presidents, Drs. Isaac A. Abt, Chicago, and Watson S. Rankin, Raleigh, N. C.; secretary, Dr. Henry F. Helmholz, Chicago; treasurer Mrs. Austin McLanahan, Baltimore, and executive secretary, Miss Gertrude B. Knipp, Baltimore.

New Officers for Railway Surgeons' Association.—At the fourteenth annual meeting of the American Association of Railway Surgeons, held in Chicago, October 17 to 19, under the presidency of Dr. William B. Malone, Memphis, Tenn., the following officers were elected: president, Dr. Edwin S. McDonald, Cameron, Mo.; vice presidents, Drs. Jacob Hinden,

Strong, Kan.; Francis L. Reder, St. Louis, and Robert McConaughy, York, Neb.; secretary, Dr. Louis J. Mitchell, Chicago (reelected for the twentieth year); treasurer, Dr. Henry B. Jennings, Council Bluffs, Iowa (reelected for the tenth year), and members of the executive board, Drs. Guy G. Dowdall, Chicago, and Joseph R. Hollowbush, Rock Island, Ill. Chicago was selected as the next place of meeting.

Hospital Standardization.—The most important event connected with the recent meeting of the American College of Surgeons and the Clinical Congress of Surgeons was the meeting devoted to hospital standardization. A large number of papers were presented covering the whole subject of hospitals, hospital standardization and the efficiency of hospital work, as well as, and more important, the control of operative procedures. As an outcome of the deliberations it was decided to make an inspection of the various hospitals in the early future, and a committee was appointed to report on the method of procedure. This committee was to report on Friday. It consisted of Dr. E. A. Codman, Boston; Dr. A. J. Ochsner, Chicago, and Mr. John G. Bowman, the director of the college. From the Carnegie Foundation a fund of \$50,000 has been received with which to carry on this investigation. A complete report will appear in Society Proceedings next week.

FOREIGN

Peruvian Commission to the United States.—The Peruvian Medical Commission, which will tour the United States inspecting medical schools and hospitals, began its work in Baltimore, October 14, and from there went to Philadelphia and New York. The commission is composed of Prof. Dr. Guillermo Gastaneta and Drs. E. Campodonico and R. Asplazu. The object of the commission is to secure information for the reorganization of the medical schools of Peru after American standards.

Annual Meeting of the Internists of Italy.—It is announced that the twenty-sixth annual meeting of the Italian Societa di medicina interna is to be held during the latter part of October in some city near the firing line. The themes appointed for discussion are camp jaundice, malaria, soldier's heart, kidney disease and tuberculosis in their relations to the military service, and the sympathetic syndromes in soldiers. The secretary of the congress is Prof. A. Berti of Padua.

Deaths in the Profession Abroad.—R. Oppenheim, one of the editors of the *Progrès médical*, chief of an ambulance at Vichy, and author of numerous works on the suprarenals and shell shock, aged 43.—A. Stahl, at one time president of the Porto Rico Medical Association, and dean of the profession in Porto Rico, aged 79.—R. del V. Rodriguez, Porto Rico.—F. Moser, a prominent physician in Switzerland; on account of the absence on military duty of the other physicians in his vicinity, he disregarded pneumonia in himself to attend to urgent calls, aged 53.

Annual Meeting of the Porto Rico Medical Society.—This meeting is to be held at San Juan, Porto Rico, December 22 and 23. One evening is to be devoted to a public lecture on the care of infants. The president of the society is Dr. G. Villaronga of Ponce, and the secretary, Dr. A. R. Laugier of San Juan. The bulletin published in Spanish by the society is a fine monthly of about fifty or sixty pages. The leading article is on the hygiene of the home, the writer, Dr. Atilas, urging his medical hearers, among other points, to make every effort to combat certain superstitions still rife in Porto Rico, such as that cobwebs should never be disturbed or bad luck will follow.

LONDON LETTER

LONDON, Oct. 2, 1917.

The War

THE SHORTAGE OF MEDICAL STUDENTS

The effect of medical students' joining the army either as combatants or as members of the medical corps in the early part of the war has been described in THE JOURNAL. The position that has now been reached is well summarized in a memorandum submitted to the government by the committee of reference of the Royal Colleges of Physicians and Surgeons (a body appointed to deal with the problem of medical recruiting). The annual average wastage of physicians in normal times preceding the war owing to death, retirement from practice, or permanent incapacity was about 900. The average number of physicians added to the Medical Register annually was about 1,100. There is now a large abnormal

wastage in physicians arising directly out of the war. The supply of physicians to meet the needs of the civil population has been reduced to the lowest number consistent with safety, and there is practically no reserve to make good the normal annual wastage from deaths or incapacity. All new additions to the ranks of the medical profession by the qualification of students are at once requisitioned by the army and are not available, therefore, to make good the normal average wastage of physicians required for the civil population. The number of fifth-year men students due to qualify in 1917 (922) is only barely sufficient to make good the normal wastage in the profession of that year. The number of fourth-year men students due to qualify during 1918 was 1,078. This number has been reduced since these statistics were obtained, by some of the men's having accepted commissions as probationary surgeons in the navy, and the number who will actually qualify in 1918 is probably only just sufficient to meet the normal annual wastage, that is, about 900. The number of third-year men students due to qualify during 1919 is only 519, and if the greater number of these qualify in due course they will little more than meet half the normal wastage. There were 783 second-year men students due to qualify in 1920, and 1,432 first-year men students due to qualify in 1921. But since these figures were compiled, the situation has undergone considerable alteration because medical students who were rejected as not fit for general military service have been called up on the introduction of a series of grades of physical fitness under which men of inferior physique are accepted for military work of a kind suitable to them, and also because first-year students as they have reached the age of 18 have been called up. The number of first-year students due to qualify in 1921 is therefore probably at present not more than half the figure given above, and the number of second-year students is less, though probably not to quite the same extent. The average number of medical students registered in times preceding the war was about 1,800 a year. The shortage, therefore, of first, second and third-year students, as compared with normal times, is a reduction by about two thirds. In regard to probationer surgeons in the navy, the committee recommends that these (who for the most part are fourth or fifth-year men) should be demobilized after six months of service, for otherwise their qualification is being indefinitely postponed. In order to enable this to be done, it is necessary that a supply of junior students as they pass their second medical examination should be available, and some of these could become surgeon probationers, and thus make it possible to demobilize those who have served six months. The Central Medical War Committee therefore strongly recommends that medical students now serving in the navy or army as officers or privates should be demobilized to continue their studies, and further, that the calling up of more medical students that have completed their first year of study should cease.

AMERICAN MEDICAL OFFICERS IN ENGLAND

American Army surgeons continue to arrive in this country and take up duty in the military hospitals of London and the provinces as well as in France. There are now over 900 serving with the British forces in Great Britain and France. In addition, during the past year there has been a constant stream of American civilian physicians drafted into our hospitals. The arrangement has a double advantage. It relieves the drain on the civil medical profession in this country and it gives our American colleagues the opportunity of gaining experience of the wounds of modern warfare which, no doubt, they will later turn to account in treating their own soldiers.

The replacement of part-time and in some cases whole-time civilian physicians employed in military hospitals by American surgeons has given rise to some resentment in consequence of the curt manner in which the change was announced by the War Office. There is no question as to the American surgeons' being perfectly welcomed by their British colleagues as well as by the country at large. The British surgeons were simply given a week's notice that their services were no longer required by the War Office, and they were not even thanked, although many of them had made sacrifices in order to undertake the work. The War Office no doubt finds justification for the immediate employment of American surgeons by the fact that the Central Medical War Committee has informed it that no more physicians can be called up for the army without seriously endangering the supply for the treatment of the civil community. However, the replacement has taken place in districts in which there is no shortage of physicians. The mistake made by the War

Office consisted in not consulting the professional committees as to the places where this could be done with the greatest advantage to the civil community. The tendency, of course, of military authorities everywhere is to give orders and not to try to satisfy or take into account the opinions of persons concerned.

CAMPAIGN AGAINST VENEREAL DISEASE

Considerable progress has been made with the organization of measures for the provision of free diagnosis and treatment for persons suffering from venereal diseases, or suspected to be suffering from them. Between 140 and 150 hospitals in England and Wales have expressed their willingness to participate in the schemes of local authorities, and although in a few instances the authorities of important hospitals have been reluctant to inaugurate during the war any fresh arrangements for the treatment of these diseases, this hesitation has been overcome in some cases. The shortage of medical staff and the pressure on the accommodation at most hospitals have presented obstacles. The former difficulty has been met to some extent by the Army Council's arranging that certain officers of the Army Medical Corps specially skilled in the treatment of venereal diseases should devote part of their time to the work of the clinics provided at general hospitals for the treatment of these diseases. Complete schemes have already been submitted by 115 out of the 145 councils that are charged with the execution of the regulations. The total population of the areas of these councils is about 29,000,000. Eighty-nine schemes, serving a population of about 25,000,000, have been approved, and the work has already started at sixty-two hospitals. It is estimated that the facilities provided at these hospitals will serve a population of at least 18,000,000.

ARTIFICIAL LIMBS FOR SOLDIERS

Great attention is being devoted to providing the best artificial limbs possible for the large number of mutilated men discharged from the army. Mr. John Hodge, minister of pensions, speaking at a public function, said that the outstanding ideal before the Pensions Ministry was not the allotment of pensions so much as the restoration to useful citizenship of mutilated men. Wherever possible an endeavor would be made to restore men to the full use of their limbs, and he was seeking money from the government for the purpose of starting a national experimental laboratory where we might get as near as possible to perfection in artificial limbs. He desired to call to his aid the greatest skill and the greatest inventive faculty that the country possessed in order to get the best artificial limb possible. Incidentally he mentioned that there were 900,000 pensioners on the books of his department, and that this number was being increased by hundreds every week.

FOOD ECONOMY

In a press interview, Lord Rhondda, the food controller, has announced a fresh campaign to awaken the public to the vital necessity of decreased eating. If voluntary measures fail, he will have no compunction in putting the nation on compulsory rations. The danger of the food situation lies not to so much in the submarine peril as in the world shortage of cereals, meats and fats. The timely action of the United States government, in strenuously curtailing food exports to neutral countries, should be of inestimable benefit to the Allies in Europe. But the tightening of the blockade is a two-edged sword. Imports of bacon and other products into the United Kingdom from Denmark are thereby bound to be seriously reduced. This throws us more than ever on the North American continent for our supplies. What we ask from the United States and Canada we cannot procure elsewhere. Unless the Allies in Europe are able to import the supplies necessary for feeding their armies and the civil populations, victory may slip from our united grasp. During the forthcoming twelve months, our minimum requirements in foodstuffs from the United States and Canada will amount to over 10,000,000 tons, and will represent an expenditure, without freight charges, exceeding \$1,250,000,000 or roughly speaking, between 3 and 4 million dollars a day. Most of this will be for the purchase of cereals, hog products, sugar and meat. Several steps have recently been taken with a view to closer cooperation. The first is the formation by France, Italy and the British government of a meats and fats executive, on the lines of the wheat executive, which since last October has been buying in the United States and Canada all the wheat required by the Allies. In the future all purchases, by the Allies, of bacon, ham, lard, butter and cheese in the United States will be pooled through this newly formed executive, thus eliminating competitive buying between

the Allies, which inevitably tended to raise prices on the North American continent and at home. Several thousand tons of bacon have been bought within the last few days. Executives to pool purchases, by the Allies, of other foodstuffs may be established before long. A special mission, representing the Ministry of Food, will shortly leave for New York to set up the permanent organization for the meats and fats executive to take up with Mr. Hoover on the spot those matters that vitally affect us, and to keep us informed of developments in the United States and Canada. A long stride has been taken toward the stability of the sugar trade. The difficulty of providing shipping for sugar from the East has been largely responsible for a world shortage, with increased competition—and consequent high prices—for the Cuban crop. Mr. Hoover suggested that purchases of Cuban sugar should be centralized in a committee to sit in New York, on which Great Britain should have two delegates. As to prices, while Lord Rhondda admits that we are paying to the United States and Canada today for all our most important imported foodstuffs more than double what we paid before the war, he expresses his confidence that Mr. Hoover and Mr. Hanna are taking steps similar to those taken in this country to limit the profits derived from the food industries. Sir Arthur Yapp, director of food economy, has issued through the religious press an appeal to the churches, asking for their support and for the display of Christian patriotism in the direction of the conservation of food.

A Ministry of Public Health

As foreshadowed in previous letters to THE JOURNAL, draft legislation for the creation of a ministry of public health has been submitted to the government. Among the many problems that will face the government after the war, that of health and the cure of disease is one of the most important. The whole tendency of recent years is for the state to employ the medical profession more and more. Commencing with health officers, there were instituted in succession factory surgeons, school medical officers and tuberculosis medical officers. Finally came the insurance act, which transformed most of the physicians of the country into part-time state employees. During the last ten years the government has shown great and increasing activity in promoting maternity and infant welfare. Thus we have reached a stage in which an enormous amount of treatment is given by the state, either gratuitously or partly gratuitously. Like the institutions of this country in general, the various departments concerned with public health have grown up as the necessity arose, and were not created according to any theoretically elaborated plan. The result is a want of coordination and some consequent overlapping of the work of the departments. These disadvantages would be overcome by a ministry of health which would take charge of the whole field. But its establishment will encounter many difficulties because of the various interests involved. The insurance act authorities who represent the great friendly societies have certain views which probably diverge from those of the local government authorities, who now administer health legislation. The medical profession, again, has its own ideals, and views with alarm the increasing activity of the state, which may in the end reduce physicians to little more than state officials. A ministry of health does not necessarily imply this, but it is a great step which would facilitate the transformation.

A Chair of Tuberculosis

The Edinburgh University Court has instituted a chair of tuberculosis, the first one in this country. Sir Robert Philip, the writer on the treatment of tuberculosis, has been appointed as the first professor. The appointment is appropriate, as he was the founder at Edinburgh in 1887 of the first tuberculosis dispensary in the world. The movement then spread from Edinburgh to the European continent and to America.

PARIS LETTER

PARIS, Sept. 27, 1917.

The War

PROTECTION OF THE CHEST AND ABDOMEN OF COMBATANTS

At one of the recent meetings of the Académie de médecine, Dr. Delorme, medical inspector-general of the Service de Santé militaire, presented a communication on this subject. He stated that it was practically impossible to obtain complete and absolute protection of the thorax and abdomen by means

of any protective apparatus because of the velocity and penetrating force of the rifle bullets; however, a considerable protection can be given against shell fragments, grenades and shrapnel, because the penetrating force of these missiles is much less than that of bullets. In trench warfare these missiles have, in a measure, replaced the bullet. A thoracic-abdominal protector made of a thin sheet of steel gives as much protection to the internal organs or viscera as does the steel helmet for the skull. Dr. Delorme has not sought to guarantee protection of all the thorax and all of the abdomen, but only those organs which, when wounded or injured, give rise to serious or grave conditions. They are the heart, the large vessels, the hilum of the lung, the lung itself, and the small intestine. The proposed cuirasse or chest protector may be made of a steel plate or of pieces or "leaves" (*feuilles*) of leather. On the basis of experience Delorme prefers the former, and he presented a model which will protect the combatant while he is advancing, as well as when he is lying down in the position of a reclining marksman, the shield being switched from front to back, as may be necessary. The academy appointed a commission to study this question, and its findings, whatever they may be, will be referred to the ministry of war.

TREATMENT OF INFECTED WOUNDS BY IODIZED STARCH

M. Auguste Lumière recently addressed the Académie des sciences on the advantages accruing from the use of iodized starch in the treatment of infected wounds, especially wounds of the soft parts, without the formation of deep fistulas or sinuses which would be inaccessible to the antiseptic. This antiseptic, iodized starch, has given much satisfaction. Wounds have been sterilized in a very short time. In the case of deep wounds of the soft parts without fracture, Lumière has used iodized starch irrigation according to the method of Carrel with great success. For that purpose he has made use of the following solution: soluble starch, 25 gm.; boiling water, 1,000 gm., "solution of iodo-iodurée à 1 per cent.," 50 c.c. This solution contains per liter 0.5 gm. of iodine, and is possessed of an antiseptic power that is equal to that of neutral solution of chlorinated soda. The solution is not irritating to the skin, nor does it injure clothing or bedding. Wounds treated with the solution heal with remarkable rapidity.

CONGRESS OF THE MUTILATED

A new congress, devoted to the study of the interesting question of "war injured," will be convened some time during the month of November, 1917. The organizers of the congress are the mutilated themselves, and delegates from all societies now existing in France for the purpose of assisting these men and protecting their interests will be present. A provisional program has been drawn up by the "Société Aide et protection" (society of aid and protection), the oldest of these mutual aid and defense societies. The principal points to be discussed at this congress are the following: raising pensions, and making a new classification of infirmities; questions relating to prosthetic appliances, placing the mutilated, employing reserves, admission requirements, institutions of cooperation, protection and conservation; the question of half pay without pension and the discharged auxiliaries, and the creation of a permanent council of mutilated, which will discuss and arbitrate all the matters in dispute. The address of the secretary of the National Congress of the Mutilated is rue Molière, 15, Paris.

RELIEF OF MEDICAL MEN IN THE ARMY OF THE ORIENT

Deputy Josse, having asked the ministry of war the following questions, (1) why the medical men of the Army of the East are not all treated in the same manner and from the same point of view, namely, the length of service, some having often seen certain of their comrades return to France without being ill, although they themselves have been there more than twenty months, and (2) whether a definite order of leave is obtainable, has received the following response: The relief of the officers of the Service de Santé of the Army of the East is affected according to the conditions provided for and applying in the Armies of the North and Northeast. It is not possible to follow strictly a rule of leave for the return of the personnel of the Army of the East, by reason of the perfect physical condition needed to resist, even under the best conditions, the climate of the Balkan peninsula. The choice of the officers sent to the Army of the East is always made on the basis of youth and health, although volunteers of all ages who can meet the physical requirements are accepted.

RÔLE OF THE AMERICAN RED CROSS

At a recent reunion of the Anglo-American Press Association, Major Murphy, high commissioner of the American Red Cross in Europe, speaking of the purposes of this organization, said that whatever may be the character of the American Red Cross in time of peace, he held the firm conviction that today, during this catastrophe, its supreme function is to help in every way possible to win the war. It would be in truth pitiable and despicable to regard its worth as charity alone at a time like this. During the past three years our allies have taken on themselves our part of the fight. They have borne all the burden of the difficulty, they have suffered all the wounds, they alone have died. It is inevitable that some time must pass before our troops can take their part in the trenches. When the time comes, the American organizations will demand a like privilege, and will consider it an obligation to do all that lies in their power to help the valiant nations, to whom our people are indebted.

AMERICAN DECORATED BY LEGION OF HONOR

The president of the republic has decided to award the cross of the Legion of Honor to Mrs. Henry Morgenthau, wife of the ex-ambassador of the United States to Constantinople. Mrs. Morgenthau has rendered invaluable service to the French hospital of Constantinople.

IMPROVING WAR BREAD BY NEUTRALIZING
THE BRAN FERMENTS

For some time the effort has been made to improve war bread, and this subject has been spoken about often before the Académie des sciences and the Académie de médecine. Notable communications have been made by M. Lapique, professor in the museum of natural history, and by Dr. Legendre to improve the quality of the bread manufactured from flour bolted at 85 per cent., simply by utilizing lime water in place of ordinary water for kneading the dough. The lime so introduced neutralizes the acidity of the flour containing a considerable proportion of bran, prevents the fermentation of the bread, and assures the best qualities in bread.

The Académie de médecine has appointed a commission to investigate this procedure, and recommend its adoption by the public if it is found to be valuable.

THE WAR AND GENERAL PARALYSIS

The three Paris societies which are devoted to the study of mental diseases, the Société clinique de médecine mentale, the Société medico-psychologique and the Société de psychiatrie, recently held two joint meetings to discuss two important questions in military mental medicine: the discharge of men with general paralysis, and shell shock with its special etiology, evolution and sequels. A whole session was devoted to each of these questions in turn, with M. Justin Godart, undersecretary of state for the military medical service, in the chair at one meeting, and Dr. Simonin, medical inspector, presiding at the second meeting.

The discussion on the discharge of soldiers with general paralysis was brought about by the extremely severe rule voted by the Société de neurologie in December, 1916, on this subject, and by the too literal application of this rule by the medical men entrusted with the task of passing on the candidates for discharge from the army. The society had officially declared that every soldier with general paralysis should be granted discharge No. 2, except when he had been the victim of traumatism of the brain, in which case discharge No. 1 should be granted with an incapacity rate of from 10 to 30 per cent.

Dr. Pactet, in the leading address, demonstrated that a doctrinal question was responsible for the vote of the Société de neurologie, namely, the belief that general paralysis is exclusively syphilitic in its origin. But to be syphilitic is not enough to bring on general paralysis. Can any one affirm that the fatigues, the emotions, the dangers of the war do not play a part in localizing, aggravating and accelerating the production of the meningo-encephalitis? Instead of regarding *en bloc* all the cases of general paralysis, each should be given a separate examination, and in each individual case the effort should be made to estimate the part for which the circumstances of war are responsible, just as is being done for the tuberculous. The military authorities must be asked for the data as to the services imposed on the patient, and if the general paralysis seems to have been influenced by them, then grant discharge No. 1, with a pretty high rate of incapacity. Dr. Lépine, professor of nervous and mental diseases at Lyons, declared his views as entirely in accordance with those of Dr. Pactet. Dr. Dupré, agrégé professor at

Paris and hospital physician, insisted on the exclusively syphilitic origin of general paralysis, and demanded that discharge No. 1 should be reserved for cases in which some grave war mishap could be invoked.

Dr. Marie, physician-in-chief to the public *Asiles* of the Seine department, and Lortat-Jacob, Paris hospital physician, gave a description of the general paralysis of wartime as running a much shorter course, with no intermissions, with repeated sudden attacks, and with an early fatal outcome, skipping the stage of helpless dementia. Dr. Vallon, physician-in-chief of the Asile Sainte Anne, reiterated that the interests of the patients must not be sacrificed to too absolute theories—"fragile, like all theories." In the question of discharge from the military service, as in all medicolegal problems, each case must be studied separately, and the men on active service should not be treated any less favorably than workmen becoming paralyzed after an industrial accident.

Dr. Roubinovitch, physician-in-chief of the Bicêtre and Salpêtrière hospitals, expatiated on the lessons to be learned from the Russo-Japanese War, which led to recrudescence of cases of parietic dementia in the army. Dr. Colin, physician-in-chief of the insane asylum at Villejuif, presented an array of exact data regarding the cases of general paralysis in soldiers that he has had in his charge. He remarked further that wounds of the brain are spoken of always as authorizing discharge No. 1, but in this connection it must be borne in mind that general paralysis has never been observed in men wounded in the brain. The physicians on the military discharge commissions interpret in the narrowest sense the term *traumatisme encéphalique*. The restrictions in question will not be applicable to more than a small proportion of the patients, not over 15 per cent., the majority of cases being among the territorials, the noncombatants. He then specified some cases in which the routine application of discharge No. 2 would constitute a revolting injustice.

The following rule was finally definitely adopted by a unanimous vote. For men with general paralysis, accord discharge No. 2, except in special cases in which a careful inquiry would demonstrate in times of peace, and more especially in time of war, the aggravating influence of military service. The rate of disability should then be from 60 to 80 per cent.

Death of Dr. Legludic

Word has been received of the death of Dr. Legludic, formerly director of the school of medicine and pharmacy of Angers, and physician in chief in the Hôtel-Dieu of that city. Dr. Legludic was 78 years of age.

Marriages

LIEUT. WADE H. FORTNER, M. R. C., U. S. Army, Princeton, Wis., to Miss Elsie Pineau of Milwaukee, at Fond du Lac, Wis., September 26.

MAJOR CHARLES WALTER HAVERKAMPF, M. C., U. S. Army, Fort Oglethorpe, Ga., to Miss Francis Marion Armitage of Chicago, October 17.

LIEUT. LOUIS WALLACE FRANK, M. R. C., U. S. Army, to Miss Jean Macdonough, both of Philadelphia, in New York, September 30.

SURG. IRVING WHITMORE ROBBINS, U. S. Navy, to Miss Caroline Brandriff Moore of Washington, D. C., at Scarsdale, N. Y., August 21.

LIEUT. CHARLES R. IRVING, M. C., W. Va. N. G., Hansford, W. Va., to Miss Elizabeth Logan Bentley of Richmond, Va., September 25.

CLARENCE EDWARD NORTHCUTT, M.D., Lexington, Okla., to Miss Marie Robertson of Pauls Valley, Okla., August 30.

HOMER WINFIELD CRANE, M.D., Berkeley, Calif., to Miss Jessie Overshiner of Manteca, Calif., October 16.

FORREST LEROY SCHUMACHER, M.D., DuBois, Pa., to Miss Emma Vail of Punxsutawney, Pa., October 3.

MICHAEL JOSEPH MCCARTY, M.D., Pottsville, Pa., to Miss Blanche Reilly of Freeland, Pa., October 3.

WILLIAM CHRISTOPHER WILLIAMS, M.D., to Miss Ethel Mae Hopkins, both of Durham, N. C., October 4.

JULIUS RAYMOND FERNANDEZ, M.D., to Miss Agnes E. Pedeaux, both of New Orleans, October 3.

WARD ALLEN MINOR, M.D., to Mrs. Bessie Bogart, both of Utica, N. Y., September 8.

Deaths

William Moore Wright, M.D., Huntingdon, Tenn.; Washington University, St. Louis, 1869; aged 78; formerly a Fellow of the American Medical Association; a member of the Tennessee State Medical Association; a surgeon in the Confederate service throughout the Civil War; a member of the Tennessee Constitutional Convention in 1870; superintendent of prisons in Tennessee from 1871 to 1875; a trustee of the Tennessee Hospital for Insane, Nashville, from 1875 to 1879, and a trustee of the West Tennessee Hospital for the Insane, Bolivar, for several years; died at his home, October 6.

Wyman W. Pilcher, M.D., Warrenton, Ga.; Medical College of Georgia, Augusta, 1893; aged 47; formerly a Fellow of the American Medical Association; a member and president in 1912 and 1913 of the Medical Association of Georgia; one of the most prominent physicians of the South; trustee of the Warrenton Public School; died in the University Hospital, Augusta, October 8, from heart disease.

John Edwin Rigg, M.D., Wilkinsburg, Pa.; College of Physicians and Surgeons, Baltimore, 1879; aged 62; a Fellow of the American Medical Association, and once president of the Allegheny County Medical Society; for two years school director, and for several years president of the local board of health; president of the First National Bank of Wilkinsburg; died at his home, October 3.

James Stifer Gilbert, M.D., Bordentown, N. J.; College of Physicians and Surgeons, Baltimore, 1886; aged 58; formerly a Fellow of the American Medical Association; a member of the Medical Society of New Jersey; from 1896 to 1901 mayor of the city, and later, when Bordentown adopted the commission form of government, continued as mayor; died at his home, October 11.

Melvin Sheldon, M.D., Brooklyn, N. Y.; Albany, N. Y., Medical College, 1893; aged 51; a member of the Medical Society of the State of New York, and for some time a member of the staff of the Samaritan Hospital, Brooklyn; treasurer of the Physicians' Economic League, of Brooklyn; died at his summer home, in Churchtown, N. Y., October 8, from pneumonia.

Albert Preston Tarter, M.D., Alameda, Calif.; University of California, San Francisco, 1882; aged 57; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of California; district surgeon to the Southern Pacific System; died at the Alameda Sanatorium, October 6, after an operation for disease of the intestines.

Earl Micaiah Stewart, M.D., St. Joseph, Mo.; University of Louisville, Ky., 1908; aged 33; formerly assistant surgeon, U. S. P. H. S., and on duty in the Marine Hospital, Louisville, and later surgeon in charge of the Santa Fe Hospital, La Junta, Colo.; died at the home of his parents, in St. Joseph, October 1, from laryngeal tuberculosis.

George W. Bruce, M.D., Moundsville, W. Va.; University of Pennsylvania, Philadelphia, 1848; aged 90; a member of the West Virginia State Medical Association; for several terms a member of the common council of Moundsville, and once mayor of the city; president of the Marshall County Bank; died at his home, October 6.

Hezekiah Gilbert Leigh, Jr., M.D., Petersburg, Va.; Bellevue Hospital Medical College, 1891; aged about 50; a member of the Medical Society of Virginia, and for many years coroner of the city, and surgeon for the Atlantic Coast Line Railway; died, September 22, at Blue Ridge Summit, Pa., from heart disease.

James A. Gibson, M.D., Buffalo, N. Y.; Western University, London, Ont., 1890; aged 50; a Fellow of the American Medical Association; secretary and professor of anatomy in the University of Buffalo; a member of the American Association of Anatomists; died at his home, October 4, from pneumonia.

Fremont C. Jones, M.D., Ebensburg, Pa.; University of Pennsylvania, Philadelphia, 1885; aged 55; formerly a Fellow of the American Medical Association; local surgeon of the Pennsylvania system, and physician to the Cambria County almshouse and jail; died at his home, October 4, from heart disease.

Obadiah Layton Huffman, M.D., Galion, Ohio; Jefferson Medical College, 1894; aged 56; formerly a member of the Ohio State Medical Association; a specialist in diseases of

the eye, ear, nose and throat; died while making a professional call near Galion, October 7, from cerebral hemorrhage.

Andrew Baxter Miller, M.D., Chicago; College of Physicians and Surgeons, Chicago, 1898; aged 45; a Fellow of the American Medical Association; professor of clinical gynecology in the Chicago College of Medicine and Surgery; died in his office, October 19, from heart disease.

William Scott Thompson, M.D., Girard, Ohio; Starling Medical College, Columbus, Ohio, 1896; aged 47; formerly a Fellow of the American Medical Association; for many years local health officer; died in St. Elizabeth's Hospital, Girard, October 10, from pleuropneumonia.

John Copestake, M.D., Ames, Iowa; Queen's College, Birmingham, England, 1858; aged 80; a veteran of the Civil War, who was run over by an automobile in Chicago, September 17, died in the Presbyterian Hospital from his injuries, a few hours later.

Harmer M. Newman, M.D., South Milford, Ind.; Rush Medical College, 1886; aged 57; formerly a fellow of the American Medical Association; a member of the Indiana State Medical Association; died at his home, October 12, from nephritis.

Frank Herbert Gardner, M.D., Portland, Me.; Bowdoin Medical School, Brunswick and Portland, 1878; aged 63; formerly a Fellow of the American Medical Association; a member of the Maine Medical Association; died at his home, October 7.

Alfred L. Lafferty, M.D., Las Animas, Colo.; Keokuk Medical College, College of Physicians and Surgeons, 1905; aged 36; formerly a member of the Colorado State Medical Society; died at Howard, Colo., October 5, from tuberculosis.

Will Orvis Scott, M.D., Parish, N. Y.; Albany, N. Y., Medical College, 1891; aged 49; formerly a member of the Medical Society of the State of New York; died in Massena Springs, N. Y., May 24, from chronic parenchymatous nephritis.

Vardaman S. McLellan, M.D., Canton, Miss.; Kentucky School of Medicine, Louisville, 1891; aged 47; a member of the Mississippi State Medical Association; health officer of Madison County; died at his home, September 21, from acute gastritis.

Frederick J. Tischbein, M.D., Cincinnati; Medical College of Ohio, Cincinnati, 1895; aged 45; formerly a member of the Ohio State Medical Association; died at his home in Sedamville, Cincinnati, October 6, from cerebral hemorrhage.

John Byron Burns, M.D., North Yakima, Wash.; Trinity University, Toronto, Ont., 1896, aged 60; formerly a Fellow of the American Medical Association; died at the home of his son in North Yakima, October 4, from heart disease.

Glenn Lazarus Todd, M.D., Jackson, Miss.; Atlanta, Ga., College of Physicians and Surgeons, 1907; aged 35; a member of the Mississippi State Medical Association; was shot and killed in his office in Jackson, October 10.

George Raymond McDonagh, M.D., Toronto, Ont.; University of Toronto, Ont., 1876; L. R. C. P., London, 1877; aged 61; professor of otolaryngology in his alma mater; died at his home, August 26, from pneumonia.

Frederick Phineas Drake, M.D., London, Ont.; Victoria University, Coburg, Ont., 1883; aged 58; associate professor of medicine in the Western University, London, Ont.; died at his home, October 6, from heart disease.

Joseph Francis Somes, M.D., Vincennes, Ind.; Rush Medical College, 1889; aged 53; formerly a Fellow of the American Medical Association; a member of the Indiana State Medical Association; died at his home, September 28.

Arthur Lee Campbell, M.D., Kansas City, Mo.; St. Louis College of Physicians and Surgeons, 1890; Marion-Sims College of Medicine, St. Louis, 1891; aged 49; died in his private hospital in Kansas City, September 27.

Michael Richard Laden, M.D., Hartford, Conn.; New York University, New York City, 1898; aged 43; formerly a Fellow of the American Medical Association; died at his home, August 2, from heat prostration.

John Wesley Stork, M.D., Darmstadt, Ind.; Kentucky School of Medicine, Louisville, 1895; aged 46; a Fellow of the American Medical Association; died at his home, October 1, from cerebral hemorrhage.

Quimbert C. Schuhart, M.D., Rochester, N. Y.; College of Physicians and Surgeons, Baltimore, 1882; aged 61; formerly a member of the Medical Society of the State of New York; died at his home about September 24.

Alfred M. Gamman, M.D., Corning, N. Y.; New York Homeopathic Medical College, New York, 1866; aged 65; a pioneer oil man of Tulsa, Okla.; died in a hospital in Kansas City, October 5, from nephritis.

Harry Morris Capwell, M.D., Meshoppen, Pa.; Temple University, Philadelphia, 1915; formerly an intern in the Robert Packer Hospital, Sayre, Pa.; died at his home, September 22, from pulmonary tuberculosis.

William Urias Truckenmiller, M.D., Allenwood, Pa.; Buffalo University, 1868; aged 76; formerly a member of the Medical Society of the State of Pennsylvania; died on his farm, near Allenwood, September 30.

Wright Hall, M.D., Wilmington, N. C.; Edinborough Medical College, Lumbertown, N. C., 1875; aged 68; a member of the Medical Society of the State of North Carolina; died at his home, September 30.

Nora Soule Davenport, M.D., River Forest, Ill.; Northwestern University, Women's Medical School, Chicago, 1889; aged 72; a Fellow of the American Medical Association; died at her home, October 7.

Daisy Estelle Brown Bonner, M.D., Mount Sterling, Ky.; Woman's Medical College of Pennsylvania, Philadelphia, 1907; aged 38; a colored practitioner; died at her home, August 13, from uremia.

Jonathan Leigh, M.D., Hiawatha, Kan.; Washington University, St. Louis, 1854; aged 100; for sixty years a practitioner of Doniphan County; died at his home, October 9, from heart disease.

Charles H. Nourse, M.D., Darnestown, Md.; Georgetown University, Washington, D. C., 1869; aged 73; a member of the Medical and Chirurgical Faculty of Maryland; died at his home, October 11.

Sarah F. Harris Norris, M.D., Hyde Park, Boston; New England Female Medical College, Boston, 1872; for eight years a medical missionary in Bombay, India; died at her home, October 2.

Joseph Dorpat, M.D., Arapahoe, Neb.; Missouri Medical College, St. Louis, 1875; aged 91; a veteran of the Civil War; died at the home of his daughter in Arapahoe, July 24, from senile debility.

John Henry Ellison, M.D., Altoona, Ala.; University of Tennessee, Nashville, 1888; aged 55; a member of the Medical Association of the State of Alabama; died at his home, September 26.

Jesse W. Hill, M.D., Fort Worth, Texas; University of Pennsylvania, Philadelphia, 1855; aged 84; a Confederate veteran; died at the home of his son, in Fort Worth, September 28.

James Henry Garlick, M.D., Staunton, Va.; Medical College of Virginia, Richmond, 1865; aged 75; a member of the Medical Society of Virginia; died at his home, October 7.

Charles W. Benham, M.D., Vincennes, Ind.; Louisville, Ky., Medical College, 1889; aged 56; a Fellow of the American Medical Association; died at his home, about October 3.

Gilbert Knapp Ellis, M.D., South Sodus, N. Y.; Niagara University, Buffalo, 1886; University of Buffalo, N. Y., 1897; aged 60; died at his home, September 19, from diabetes.

John Raymond Stark, M.D., Indianapolis; Indiana University, Indianapolis, 1913; an honor graduate; aged 26; died suddenly at his home, September 30, from heart disease.

Robert H. Cabell, Chillicothe, Mo. (license, Missouri, 1864); aged 83; formerly a member of the Missouri State Medical Association; died at his home, October 8.

Sebe Duane Austin, M.D., Albuquerque, N. M.; Cleveland College of Physicians and Surgeons, 1910; formerly of Marlboro, Ohio; died in Albuquerque, September 28.

Samuel D. Logan, M.D., Cainesville, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1874; aged 73; died at his home, October 2, from nephritis.

George Wood Jewett, M.D., Brewster, N. Y.; New York University, New York City, 1884; aged 85; died at the home of his grandson, in Brewster, October 4.

William Francis O'Brien, M.D., Pawtucket, R. I.; Tufts College Medical School, Boston, 1904; aged 38; died at his home, August 28, from typhoid fever.

H. C. H. Holcomb, M.D., Ashtabula, Ohio; Philadelphia University of Medicine and Surgery, 1868; aged 74; died at his home, September 23.

A. M. Horner, Laredo, Texas (license, Texas, forty-third judicial district board, 1907); died about September 28.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

"HAINES' GOLDEN TREATMENT"

A Cruel Humbug Exploited as a Cure for the Liquor Habit

"Dr. Haines' Golden Treatment" is sold and advertised by the Golden Specific Company of Cincinnati, Ohio. Before lying on the trade package carried with it a risk of prosecution, the "Golden Treatment" was sold as "Golden Specific." The preparation is one of the numerous fakes exploited as cures for the liquor habit which can be given secretly, curing the alcoholic in spite of himself. Here are some of the claims that have been made:

"Golden Treatment is Odorless and Tasteless—Any Lady Can Give It Secretly at Home in Tea, Coffee, or Food."

"Golden Remedy, the Great Home Treatment For Drunkards."

"Let no woman despair. The sure quick permanent cure for drunkards has been found. It is Golden Remedy. It has no odor. It has no taste. Just a little is put in the drunkard's cup of coffee or tea or in his food. He will never notice it, he will be cured before he realizes it, and he will never know why he abandoned the taste for liquor."

"Golden Remedy has cured some of the most violent cases in a day's time."

"... a craving for liquor relieved in thousands of cases without the drinker's knowledge, and against his will."

Any one with an elementary knowledge of the treatment of alcoholism knows how cruelly false such claims as these are. Not only is the statement that the stuff will cure the drunkard "without his knowledge" and "against his will" a falsehood, but it is also a cowardly falsehood in that it deceives those who in the very nature of the case will hesitate to raise any protest against the deception.

The Golden Specific Company advertises that it will send a "free trial package" to any one who will use it. Those who answer the advertisements are sent (1) a form letter so prepared as to simulate an individual communication, (2) a sample of the "Golden Treatment" and (3) a booklet



Some typical advertisements of "Haines' Golden Remedy" (reduced) of various dates.

entitled "The National Curse, Drunkenness." The letter, the directions on the sample treatment, and especially the booklet all emphasize the alleged ease with which drunkards can be cured without their knowledge and against their will. Says the letter: "We are sending you a trial package of Golden Treatment . . . to prove to you how easily and secretly it can be given . . . without the drunkard ever suspecting that he is being treated at all." And the booklet: "Many drunkards have been made temperate men who have taken Golden Treatment in their coffee without their knowledge, and today believe They Quit Drinking of Their Own Free Will." And elsewhere in the book: "There is no oppor-

tunity of the victim knowing that he is being treated, and therein lies its greatest power for good." On the envelope containing the sample treatment we read: "This is but a trial treatment to show how easily and secretly it may be given . . ." The directions accompanying the sample are very brief, but the recipient is told that "fuller directions and suggestions accompany the full treatment."

Those who send for the "full treatment" (price \$3.00) receive a box containing forty powders. The directions accompanying the box are, as was promised on the "trial treatment," much fuller. Moreover there is a marked differ-

There is no opportunity of the victim knowing that he is being treated, and therein lies its greatest power for good.

Furthermore, the drunkard usually resents the suggestion that he should take anything for his weakness. But Golden Remedy cannot be defeated by mere refusal, for it loses itself in his coffee or food and thus often in secret does good that otherwise might never have been done at all.

Least alarm. Never need he know how it was that he was reclaimed, in fact, in many cases, the drinker has believed that he stopped drinking of his own free-will!

No woman need have the least scruple about doing good secretly. A drunkard, it must be borne in mind, is usually not as able to take care of himself as is a child. Would you allow

Reproductions of clippings from the booklet sent to prospective victims by the Golden Specific Company. Note the emphasis put on the alleged power of the "Golden Remedy" to cure the liquor habit without the knowledge or cooperation of the patient.

ence in the attitude of the company toward its victim after it once has received payment for its worthless treatment. The whole trend of the advertising (until the purchase is actually made and the money paid) is that of leading the prospective purchaser to believe that the "treatment" is not only efficacious when given without the knowledge of the patient, but that this is an ideal way to administer it. The directions that accompany the \$3.00 package of powders, however, express, or at least imply, doubt as to the probability of success unless the patient is anxious to be cured of his habit and takes the stuff knowingly. "If necessary to administer without the knowledge of the patient . . ."—commence the directions after the victim has paid her money; and: "Whenever it is possible to induce the patient to take the treatment *voluntarily* with a full knowledge of its qualities and effects, it is always the better way . . ." Further, the poor woman, who has purchased this "treatment" in the belief that she can reclaim her husband or brother or father, without his knowledge, is told that "after patient has been under treatment for two days, give sponge (or towel) baths of warm salt water every three days for at least two weeks"! Finally, of course: "If one treatment does not succeed, get another quick."

Although the worthlessness of this product is obvious it was believed that its composition would be of interest, and an analysis of the stuff was made in the Chemical Laboratory of the Association. The report follows:

LABORATORY REPORT

"Original packages of 'Dr. Haines' Golden Treatment for the Liquor Habit' (price, \$3.00 each), prepared by the Golden Specific Co., Cincinnati, O., were submitted to the Chemical Laboratory for examination. Each box contained 40 powders, the average weight of each powder being .75 gm. (11.5 grains). The material had a light brown color, a celery-like odor and a sharp taste. Under the microscope a few starch grains resembling those of ipecac were discerned; wheat starch was present in relatively large amounts. Qualitative tests demonstrated the presence of capsicum, lactose, starch, a small amount of resin and a very small amount of alkaloid. The amount of alkaloid was so small that positive tests could not be obtained for the ipecac alkaloids. Emodin-bearing drugs were not present. The quantitative determinations were ash 1.47 per cent.; moisture (loss at 130°) 4.29 per cent.; lactose 47.5 per cent.; alkaloids 0.0003 per cent.

"From the analysis it appears that Dr. Haines' Golden Treatment is composed essentially of milk sugar, starch, capsicum and a minute amount of ipecac."

Mr. Samuel Hopkins Adams in his series in "The Great American Fraud" devoted one chapter to "The Scavengers." In it he paid his respects to the fakers who professed to cure the drug habit. In the same chapter Mr. Adams discussed the fake liquor-habit cures. In this connection he said:

"The Sunday newspapers and small weeklies teem with advertisements of 'drink cures,' which are supposed to exorcise the alcoholic craving when secretly given in tea or coffee. Few of these concoctions can be described as immediately dangerous, though none of them is really safe. All are swindles. They do not cure the drink habit."

Then Mr. Adams named several preparations of the type he had in mind. In the list was "Dr. Haines' Golden Specific"; it was properly classified.

Correspondence

EFFICIENCY METHODS AND THE PHYSICIAN'S WORK

To the Editor:—How can we, in this time of great demands, accomplish the best work possible with the least expenditure of time and strength? During the last twenty years such experts as Taylor, Gilbreth and Emerson have developed a new science of efficiency, making magician-like changes in the industrial world. Cannot something of this be applied to the physician's work?

Expert studies have proved two facts, and these must be clearly grasped before one can have any sympathetic understanding of this work. First, the average seemingly busy man wastes, daily, solely from inattention and carelessness, an incredible amount of time. Wastages of one to two hours working-time daily are not exceptional but ordinary. Second, processes one repeats over and over, even handed down through generations, do not thereby become perfected, but ossified. Working methods, to be improved, should be persistently studied, analyzed and recorded and the deductions applied. Let us consider a few of the efficiency principles:

1. Efficient Records: The science of quick, accurate, adequate case-recording should be developed. We have many varying systems. Too many of us keep no records at all. Convenient blanks, a good system of symbols, rubber stamps and outlines all need perfecting. More uniformity among workers in similar lines would tend greatly to scientific progress.

2. Standardized Conditions: In large industrial plants, experts are constantly at work planning the simplest details of choice, condition and arrangement of equipment, tools and materials. The physician's office and treatment rooms are, in a sense, a factory in which many complex processes are carried out. As a rule, equipment and arrangement simply grow. The moment's needs are met, and in time we have a helter-skelter mass of stuff with many really needful things lacking. Careful planning and listing of each detail of equipment, beginning with the larger details of office furniture, lighting, etc., the details of dressing-table, laboratory, emergency bag, the filing system for histories, medical journals, catalogs, can well be studied. Such changes simplify one's work and clarify and refresh one's mind. Results are immediate.

3. Standardized Operations: Mr. Frank Gilbreth chanced to see at an exposition an expert girl-operator labeling shoe-polish boxes. After a few minutes' use of his stop-watch he made suggestions whereby her speed increased from twenty boxes in forty seconds to twenty in twenty-six seconds on the first trial, and in twenty seconds on the second. Such results involve use of time and motion studies, methods which are described in the works of these experts and which can be applied to many of the activities of the physician. So routine a process as the questioning of patients can be greatly speeded, made accurate and improved by a few lists of ques-

tions covering routine points, planned and memorized. This does not tend to routinism, but, clarifying best present practices, makes a firm foundation for growth. Sequences of motion and process in all operations from the simplest, such as applying iodine, to the most complex manipulations of the surgeon, would respond well to study and analysis.

4. Written Practice Instructions: In the modern industrial plant each worker, from the highest paid to the lowliest, has his definite printed instructions for each detail of his work. The physician who has worked out a good process, such as a technic for cleansing the ear, giving hypodermic injections, etc., will naturally put this in writing for practice and future improvement. Our chief need here, however, is in good printed instructions for patients. Many of us do, more of us ought to, spend endless hours instructing our "chronics" how to eat, sleep, bathe, exercise, take enemas, cleanse cavities, etc., when such instructions could far better be given in printed slips, adapted for marking to apply to the individual case. Printed instructions are far better than hurried, perfunctory verbal ones.

Much valuable work along this line is now being done for the Medical Department of our Army and some by hospital staffs and the medical staffs of industrial corporations. I believe a general reading of the books in the appended list would prove rewarding, not only in a practical way but as a most interesting record of American ingenuity, persistence and achievement against opposition and discouragement:

Taylor, Frederic W.: Principles of Scientific Management.

Gilbreth, Frank E.: Motion Study.

Emerson, Harrington: Course in Personal Efficiency.

Hudders: Indexing and Filing.

Lewis, St. Elmo: Getting the Most Out of Business.

STEWART LEWIS, M.D., Lakehurst, N. J.

THE EARLY RECOGNITION OF MULTIPLE SCLEROSIS

To the Editor:—Neither in a paper read at the last session of the American Medical Association on this subject nor in the discussion, was mention made of a symptom which, if observed early and correctly interpreted, helps very materially in the early recognition of the disease.

When either a chronic or an acute retrobulbar neuritis occurs which cannot be explained by the ordinary causes, especially in a youthful person, a suspicion of a beginning multiple sclerosis must be aroused even though none of the other cardinal symptoms are present. The first symptom of a chronic retrobulbar neuritis is usually an impaired vision; a most characteristic symptom is better vision at night than in the daytime. The cause of this impairment is a central scotoma, at first only for red or green, later absolute, due to the involvement of the papillomuscular bundle of nerve fibers.

Ophthalmoscopically it is possible at times in the early stages to distinguish a blurring of the temporal half of the disk, and later, a pallor; at times no distinguishable ophthalmoscopic signs are present. The commonest cause of a chronic retrobulbar neuritis is a chronic alcohol-tobacco poisoning—the so-called tobacco-alcohol amblyopia. Another frequent cause is diabetes. At times a chronic retrobulbar neuritis is due to occupational poisonings with lead, arsenic, dinitrobenzene, etc. When a retrobulbar neuritis of the chronic toxic type is present, and we are able to rule out tobacco-alcohol poisoning, diabetes or chronic occupational intoxication, a grave suspicion of a beginning multiple sclerosis must be aroused. In an acute retrobulbar neuritis the earliest symptoms are usually severe disturbances of central vision, and pain on moving the eyeball. Ophthalmoscopically the symptoms may vary from slight hyperemia of the nerve head to severe degrees of papillitis.

In the ordinary case of acute retrobulbar neuritis, there is a tendency to quick recovery. When, however, the attack has been a severe one and the nerve badly involved, atrophies, partial or complete, at times ensue.

The commonest cause of an acute retrobulbar neuritis is pus in one of the accessory nasal sinuses, especially in the sphenoidal; the anatomic relation of the sphenoidal sinus to the optic nerve is the cause of this. Almost any of the acute

infectious diseases, as well as any form of poisoning, may bring about an acute retrobulbar neuritis.

When an acute retrobulbar neuritis occurs, and these various causes can be ruled out, multiple sclerosis must always be thought of. Bruns and Stoltz (Zeitschrift für Augenheilkunde, January, 1900) found the optic nerve involved in thirteen out of thirty-eight cases of multiple sclerosis. Anatomic studies showed the pathology to be an interstitial neuritis in various and varying stages. This article first called my attention to the importance of either acute or chronic retrobulbar neuritis as an early symptom of multiple sclerosis. During the past seventeen years I have seen two cases in which this symptom was present when nothing else suggested a possible multiple sclerosis, both of which later developed into well defined cases of that disease.

E. F. SNYDACKER, M.D., Chicago.

THE MORAL OBLIGATION OF THE INTERN TO THE HOSPITAL

To the Editor:—I have read with much interest the letter of Dr. Lockwood in regard to the demoralization of hospital interns (THE JOURNAL, Oct. 13, 1917, p. 1290). If conditions in his own city are as deplorable as they seem from the perusal of his letter, I believe that much can be accomplished toward improving this regrettable state of affairs by a study of conditions elsewhere. It is usually impracticable in a large city to require those taking an examination for positions of hospital interns to sign a pledge stating that they will take no other hospital internships, if successful in the hospital that requires the pledge. From long experience on examining boards of several hospitals, I have formed the opinion that we must look on the problem from the point of view of the applicant as well as that of the examiner. It has been our custom at the Michael Reese Hospital during recent years to hold an examination at about the same time as that of other hospitals. The position as intern at the Cook County Hospital has always been considered as the greatest honor that an undergraduate could have. This is a matter of tradition which is well deserved and will probably always be so. We have attempted in the past to ask the young men to sign pledges not to take internships in any other hospital, and they have been so frequently broken that we think it best at present to look on the question from the point of view of the student and to permit him to take the Cook County examinations, and if he is successful in the latter, to choose between his Cook County position and our own. At the same time we have attempted through an educational campaign to show the resident staff that our hospital service is almost as good at the present time as the Cook County, and we have been very successful in having our interns recommend our service to various friends in the graduating class, and this more liberal policy has enabled us to omit any pledge. Our positions are taken by those successful candidates who do not prefer the county hospital positions, and the quality has been constantly improving, so that we have today a resident staff that can compare most favorably with that of the county hospital. We thoroughly disapprove of any system of appointing interns, and believe that a competitive examination is the best test, especially if it is combined with an investigation of the character and previous scholarship of the applicant. In Boston and New York the principal hospitals have combined and hold a joint examination for the position of intern, and then permit the successful applicant to take his choice of which hospital he desires to enter.

I am not ready to express an opinion in regard to the value of such a system, owing to a lack of personal experience. A fifth compulsory year, during which every member of the senior class will be obliged to serve a fifth hospital year before his degree will be given, will soon be in force in Illinois, and this will eliminate any friction that now exists. "The unfortunate laxity of professional obligation and duty which hospitals condone" in Dr. Lockwood's letter is one that is not likely to occur if competitive examinations for hospital positions are the rule, and a more liberal policy is pursued by hospitals toward their interns both at the time of

examinations, and in giving them better treatment after entrance than many hospitals do at present.

If hospitals will agree not to accept an intern who has not completed his term of service in any other hospital, much of the abuse to which Dr. Lockwood refers, and dishonorable practices arising therefrom, will be abolished. By this I mean that candidates who have begun an intern service in another hospital cannot be lured to leave that hospital by friends who happen to be on another staff of interns, and not be able to get another position if they have been discharged for misbehavior, etc.

DANIEL N. EISENDRATH, M.D., Chicago.

"EXPERIMENTAL PELLAGRA"

To the Editor:—The attention of this office has been called to a statement in the editorial on experimental pellagra (*THE JOURNAL*, Sept. 29, 1917, p. 1082) which is capable of misinterpretation.

McCullom and Pitz are quoted, correctly, as follows: "There is no reason whatever why we should assume, as Voegtlin, Goldberger, Funk and others have done, that pellagra is due to a lack of a specific unidentified dietary factor, a 'vitamin.'"

Neither Professor Voegtlin nor Dr. Goldberger has ever assumed to the exclusion of other possibilities, nor have they stated in any of their publications, that pellagra is due to a lack of a specific vitamin. This was clearly recognized, as were other possibilities; but a perusal of their published work will show that their views on this point have been interpreted erroneously.

G. W. McCoy, M.D., Washington, D. C.

Director, Hygienic Laboratory, U. S. P. H. S.

"THE FULL SACRIFICE"

To the Editor:—Your editorial in *THE JOURNAL*, October 20, p. 1355, entitled "The Full Sacrifice," strikes home. I am guilty; and yet I cannot bow gracefully to the charge of neglecting my duty. Surely I have done no bargaining. Indeed, on numerous occasions I have expressed my willingness to do anything I am asked to do. It happens though that in years I am past 55; but in health and strength I am often taken for 40. Except for a partial plate of teeth, I am physically and mentally as fit as I ever was. And in patriotism I am not wanting, for I am American through and through. Besides, I am married to an English woman who has lost many relatives and loved ones in the present war. Now what more do I need to fire me with a spirit of service? True, my specialty is that of obstetrics; but I know other things too. I feel that a man of my experience should be given tasks commensurate with his ability to perform them; yet I am willing to let someone else be the judge of my fitness. You say, "Men of mature age have the glory of choice." I fail to see it. They seem to be denied an opportunity to serve because they are of mature age. Will you not point out a little more clearly how one beyond the age limit can make the full sacrifice?

FRED ELMER LEAVITT, M.D., St. Paul.

Casualties on Steam Railways.—For the year ended Dec. 31, 1916, according to Accident Bulletin 62 of the Interstate Commerce Commission, the total number of casualties on the steam railways of the United States was 206,723, of which 10,001 were fatal. The figures show an increase over the previous year of 1,371 in the number of persons killed and 34,835 in the number injured. Not all of these represent accidents on trains, however, as 525 persons were killed and 129,740 were injured in nontrain accidents, which means those occurring in and around shops, on boats and wharves, at stations, freight houses, engine houses, coaling stations, water stations, tracks, etc., but not accidents occurring directly in connection with operation of trains. Of the number killed in 1916 there were 2,941 employees, 291 passengers and persons carried under contract, and 6,769 other persons, including trespassers and nontrespassers. Of the persons injured, 176,923 were employees, 8,008 passengers and persons carried under contract, and 11,791 other persons.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TRUE ANTIPERISTALSIS IN THE SMALL INTESTINE

To the Editor:—1. What is the consensus of opinion as to the possibility of true antiperistalsis in the small intestine?

2. Kindly cite recent literature on this subject.

CARL A. DRAGSTEDT, M.S., Iowa City, Iowa.

ANSWER.—1. True antiperistalsis of the small intestine has so far never been observed in man or animals under normal conditions. Antiperistalsis may occur when the small intestine is exposed to the air, or when a portion of the intestine is isolated and subjected to various experimental manipulations. It would also appear that, contrary to the original observations of Mall, a portion of the small intestine that has been resected and sutured in the reversed direction may, after a lapse of several months, show normal antiperistalsis. It has also been shown that antiperistalsis, or something closely akin to it, may occur in intestinal obstruction, and possibly in certain types of stasis. Small particles, like lycopodium spores, introduced in large enemas, may reach the stomach. This has by some been interpreted as evidence of normal antiperistalsis. Boldyreff asserted that antiperistalsis of the duodenum occurred as a normal process whenever the gastric acidity exceeded from 0.25 to 0.30 per cent. But Hicks and Visser showed that the regurgitation of duodenal contents into the stomach under those conditions is not due to antiperistalsis of the duodenum. According to Alvarez, any condition that induces a motor automatism of the jejunum of a higher order than that of the duodenum will lead to antiperistalsis.

Alvarez, C. W.: The Motor Functions of the Intestine from a New Point of View, *THE JOURNAL*, July 31, 1915, p. 388.

Beer and Eggers: Are the Intestines Able to Propel Their Contents in an Anti-Peristaltic Direction? *Ann. Surg.*, 1907, **46**, 576

Boldyreff: The Self-Regulation of the Acidity of the Gastric Contents and the Real Acidity of the Gastric Juice, *Quart. Jour. Exper. Physiol.*, 1914, **8**, 8.

Cannon, W. B.: Movements of the Stomach and Intestines in Some Surgical Conditions, *Ann. Surg.*, 1906, **43**, 524; Peristalsis Segmentation and the Myenteric Reflex, *Am. Jour. Physiol.*, 1912, **30**, 114.

Hicks and Visser: Physiology of Stomach: Mechanism of Regurgitation of Duodenal Contents into Stomach, *Am. Jour. Physiol.*, 1915, **36**, 1.

McClure and Derge: A Story of Reversal of the Intestines, *Bull. Johns Hopkins Hosp.*, 1907, **18**, 4712.

Pruz: Transposition of Intestine, *Arch. f. klin. Chir.*, 1904, **72**.

BRUCK'S SEROCHEMICAL TEST FOR SYPHILIS

To the Editor:—Kindly publish the technic of Bruck's serochemical test for syphilis, or advise me where I can find it.

R. H. L. BIBB, M.D., Saltillo, Mexico.

ANSWER.—Nitric acid when added to syphilitic blood serum causes a precipitate to form. Bruck's technic is based on an acid containing, per hundred gm., 24.77 gm. of nitric acid, or, per hundred c.c., 28.48 c.c. of nitric acid with a specific gravity of 1.149. He uses 0.3 c.c. To 0.5 c.c. of clear serum, 2 c.c. of distilled water are added. This is shaken, and then 0.3 c.c. of nitric acid is added with a standardized pipet. This is shaken and permitted to stand at room temperature for ten minutes. Then 16 c.c. of distilled water at 15 C. are added and shaken slowly three or four times so as not to foam. This shaking is repeated ten minutes later, and then the tube is set aside for one-half hour. If the serum is syphilitic it shows a distinct flocculent turbidity. In twelve hours, a precipitate is piled up on the floor of the test tube. If the serum is nonsyphilitic, there is no precipitate at any time. The test is described in the *Münchener medizinische Wochenschrift*, Jan. 2, 1917, p. 25.

DISPOSAL OF COMMISSION ON RECEIVING A HIGHER ONE

To the Editor:—I received a First Lieutenant's commission in the Medical Reserve Corps, Sept. 10, 1917, which I accepted. Under date of Sept. 26, 1917, I received a Captain's commission in the Medical Reserve Corps, which I also accepted. Shall I return the First Lieutenant's commission?

F. M. V.

ANSWER.—No.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 13-14. Sec., Dr. T. J. Stout, Brinkley.
ARKANSAS: Eclectic: Little Rock, Nov. 13. Sec., Dr. C. E. Laws, 803½ Garrison Ave., Fort Smith.
CONNECTICUT: New Haven, Nov. 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.
CONNECTICUT: Homeopathic: New Haven, Nov. 13. Sec., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.
CONNECTICUT: Eclectic: New Haven, Nov. 13. Pres., Dr. J. W. Fyfe, Saugatuck.
DELAWARE: Wilmington, Dec. 11-13. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.
FLORIDA: Jacksonville, Dec. 4-5. Sec., Dr. W. M. Rowlett, Citizens Bank Bldg., Tampa.
MAINE: Portland, Nov. 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.
MARYLAND: Baltimore, Dec. 11. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.
NEBRASKA: Lincoln, Nov. 14. Sec., Dr. J. J. Hompes, 612 Security Mutual Life Bldg., Lincoln.
NEVADA: Carson City, Nov. 5. Sec., Dr. S. L. Lee, Carson City.
NEW HAMPSHIRE: Concord, Dec. 10-12. Sec., Dr. W. S. Crosby, Beacon Bldg., Manchester.
OHIO: Columbus, Dec. 4-6. Sec. Pro-tem., Dr. Herbert M. Platter, 185 E. State St., Columbus.
SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.
TEXAS: Dallas, Nov. 20-22. Sec., Dr. M. F. Bettencourt, Mart.
VIRGINIA: Richmond, Dec. 11-14. Sec., Dr. J. W. Preston, McBain Bldg., Roanoke.
WEST VIRGINIA: Clarksburg, Nov. 21-23. Chairman, Dr. S. L. Jepson, Capitol Bldg., Charleston.

Mississippi June Examination

Dr. W. S. Leathers, secretary of the Mississippi State Board of Health, reports the written examination held at Jackson, June 19-20, 1917. The examination covered 8 subjects and included 64 questions. An average of 75 per cent. was required to pass. Of the 19 candidates examined, 15 passed and 4 failed. Eleven candidates, including 1 osteopath, were licensed through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|--------------------------------------|------------|-----------|
| Birmingham Medical College | (1915) | 78 | |
| University of Alabama | (1917) | 84, 89 | |
| Loyola University | (1916) | 76 | |
| Tulane University of Louisiana | (1915) 81, 84 (1917) 80, 80, 81, 85, | | |
| Jefferson Medical College of Philadelphia | (1916) 80; (1917) | 81 | |
| University of Tennessee | (1917) | 79 | |
| University of Texas | (1916) | 75 | |
| University of Virginia | (1914) | 82 | |
| FAILED | | | |
| College of Physicians and Surgeons, Little Rock | (1910) | * | |
| Chicago College of Medicine and Surgery | (1917) | 72 | |
| Meharry Medical College | (1916) | 67 | |
| Memphis Hospital Medical College | (1911) | 61 | |

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|--|------------------------------|------------|------------------|
| Atlanta College of Physicians and Surgeons | (1907) | | Georgia |
| Illinois Medical College | (1908) | | Indiana |
| University of Louisville | (1887) | | Texas |
| Tulane University | (1891) | (1903) | Louisiana |
| University of Maryland | (1884) | | Virginia |
| Memphis Hospital Medical College | (1903) | (1910) | Tennessee |
| | (1912) | | Arkansas |
| University of Tennessee | (1916) | | Tennessee |

* No grade given.

Virginia June Examination

Dr. J. W. Preston, secretary of the Virginia State Board of Medical Examiners, reports the written examination held at Richmond, June 19-22, 1917. The examination covered 8 subjects and include 80 questions. An average of 75 per cent. was required to pass. Of the 65 candidates examined, 60 passed and 5, including 1 osteopath, failed. Eleven candidates, including 1 osteopath, were licensed through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|------------|-----------|
| Howard University | (1916) 82; (1917) | 88 | |
| Johns Hopkins University | (1916) | 83 | |
| North Carolina Medical College | (1917) | 86, 86 | |
| Ohio State University | (1917) | 87 | |
| Hahnemann Medical College of Philadelphia | (1917) | 87 | |
| Jefferson Medical College of Philadelphia | (1917) | 90 | |
| Medical College of Virginia | (1916) 78; (1917) 75, 75, 75, 75, 77, 77, | | |
| | 78, 78, 78, 79, 79, 80, 81, 81, 81, 82, 82, 82, 83, 83, 83, 83, 85, 85, | | |
| | 85, 85, 85, 86, 86, 86, 88, 88, 88, 88, 89, 89, 90, 90, 93. | | |
| University of Virginia | (1915) 87; (1917) 81, 86, 88, 89, 89, 90, 90, 90, | | |
| | 92, 93. | | |
| Meharry Medical College | (1917) | 77 | |

FAILED

Medical College of Virginia ... (1912) 74; (1916) 56; (1917) 72, 72

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|---|------------------------------|------------|------------------|
| George Washington University | (1907) | | Dist. Colum. |
| Atlanta Medical College | (1916) | | Georgia |
| Tulane University of Louisiana | (1906) | | Louisiana |
| College of Physicians and Surgeons, Baltimore | (1909) | | N. Carolina |
| | (1912) | | W. Virginia |
| University of Maryland | (1898) | | W. Virginia |
| University of Michigan Homeo. Med. School | (1910) | | Indiana |
| Lincoln Memorial University | (1913) | | Tennessee |
| Vanderbilt University | (1909) | | N. Carolina |
| University of Moscow | (1906) | | Russia |

Wisconsin June Examination

Dr. J. M. Dodd, secretary of the Wisconsin State Board of Medical Examiners, reports the practical and written examination held at Milwaukee, June 26-28, 1917. The examination covered 18 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 45 candidates examined, 43, including 6 osteopaths, passed and 2 failed. Fourteen candidates, including 1 osteopath, were licensed through reciprocity. One candidate was granted a reregistration certificate. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|--------------|-----------|
| Chicago College of Medicine and Surgery | (1914) 79.1; (1915) 77.6, 81.3, 82.1, 85.3, 89.4. | | 78.1 |
| Hahnemann Medical College of Chicago | (1891) | | 82.3 |
| | (1917) 83.6, 87. | | |
| Loyola University | (1915) | 78.6; (1917) | 76.6 |
| Northwestern University | (1914) | | 82.2 |
| Rush Medical College | (1889) 85.2; (1915) 85.7, 87.8; (1916) | | 86.8 |
| | (1917) 82.3, 87, 87.7, 88.9, 89.5, 91.6. | | |
| University of Illinois | (1917) | | 86.8 |
| Johns Hopkins University | (1916) | | 88.8 |
| Washington University | (1917) | | 91.4 |
| Columbia University | (1916) | | 86 |
| University of Cincinnati | (1917) | | 86.7 |
| University of Pennsylvania | (1917) | | 85.4 |
| Marquette University | (1917) | | 80.2 |
| | 80.6, 80.7, 80.9, 83.3, 86, 89.2. | | |
| University of Christiania | (1915) | | 83.2 |

FAILED

Chicago College of Medicine and Surgery (1912)*; (1915) 70.3

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|--|------------------------------|------------|------------------|
| College of Physicians and Surgeons, Chicago | (1903) | (1912) | Illinois |
| Northwestern University | (1909) | | N. Dak. |
| Rush Medical College | (1912) | | Illinois |
| University of Illinois | (1914) | (1915) | Illinois |
| Louisville Medical College | (1905) | | Arkansas |
| University of Minnesota | (1916) | | Minnesota |
| Ohio State University College of Medicine | (1915) | | Ohio |
| University of Pennsylvania | (1897) | | Penna. |
| Wisconsin College of Physicians and Surgeons | (1909) | | N. Dakota |
| University of Toronto | (1906) | | N. Dakota |

* No grade given.

Oklahoma July Examination

Dr. R. V. Smith, secretary of the Oklahoma State Board of Medical Examiners, reports the oral and written examination held at Oklahoma City, July 10-11, 1917. The examination covered 11 subjects and included 100 questions. An average of 70 per cent. was required to pass. Of the 21 candidates examined, 18, including 5 osteopaths, passed, and 3, including 1 osteopath, failed. Twenty-five candidates, including 4 osteopaths, were licensed through reciprocity and 4 candidates were granted reregistration certificates. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|--------------------------------|-------------------|------------|-----------|
| University of Alabama | (1913) | | 76 |
| Northwestern University | (1916) | | 87 |
| University of Illinois | (1917) | | 86 |
| University of Louisville | (1917) | | 81 |
| Tulane University of Louisiana | (1915) | | 91 |
| University of Maryland | (1917) | | 82 |
| Washington University | (1916) | | 86 |
| University of Oklahoma | (1915) 78; (1917) | | 80 |
| Jefferson Medical College | (1905) | | 85 |
| Meharry Medical College | (1917) | | 82 |
| Vanderbilt University | (1916) | | 81 |
| Fort Worth School of Medicine | (1917) | | 84 |

FAILED

St. Louis College of Physicians and Surgeons (1888) 70
Memphis Hospital Medical College (1913) 68

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|--------------------------------|------------------------------|------------|------------------|
| University of Arkansas | (1913) (1913) | (1915) | Arkansas |
| University of Louisville | (1898) | (1916) | Kentucky |
| Louisville Medical College | (1904) | | Arkansas |
| Tulane University of Louisiana | (1897) | | Arkansas |
| Baltimore University | (1899) | | W. Virginia |

| | | | | |
|---|--------|-----------|--------|----------|
| Barnes Medical College | (1899) | Arkansas; | (1909) | Missouri |
| National University of Arts and Sciences | (1912) | | | Missouri |
| St. Louis College of Physicians and Surgeons..... | (1908) | | | Missouri |
| St. Louis University | (1907) | | | Missouri |
| University Medical College of K. C. | (1913) | | | Missouri |
| Washington University | (1903) | | | Missouri |
| University of Nashville | (1907) | Tennessee | | |
| University of Tennessee | (1892) | Arkansas | | |
| Memphis Hospital Medical College | (1912) | Arkansas | | |
| University of Texas | (1912) | Texas | | |
| Medical College of Virginia | (1906) | Virginia | | |

Medicolegal

Business Corporation and Manager Giving Medicine

(*Godfrey vs. Medical Society of New York County (N. Y.), 164 N. Y. Supp. 846*)

The Supreme Court of New York, Appellate Division, Second Department, reverses a judgment for \$2,500 rendered in favor of the plaintiff, who asked damages for an alleged malicious prosecution for having unlawfully practiced medicine without a license, of which he was acquitted. The court says that it regards this case as one of very great importance, as being likely, if it should stand as a precedent as it was, to lead to the opening of many quack sanatoriums and "cure-all" institutes under the guise of business corporations or registered trade-names of individuals not licensed physicians.

The evidence in this case showed that the plaintiff, who was not a physician, had organized, under the business corporations law of New York State, the "Gatlin Institute of New York, Incorporated, . . . to maintain and operate institutes for the cure of the liquor and drug habit." He became and acted throughout as its manager. He purchased from the so-called parent corporation in Chicago the right to use the so-called "Gatlin treatment" for the cure of the drink habit, which consisted for the most part in the taking of a certain liquid medicine and pills, the ingredients of which were unknown to the plaintiff or to any one connected with the New York corporation, the articles being obtained from the said parent corporation or plant. The trial justice properly charged that the New York corporation could not practice medicine; that is, that in that respect it stood the same as an individual. He also properly charged the jury that if the plaintiff, as the manager of the corporation, aided and abetted it in so practicing medicine, he was equally guilty with the corporation itself, which of course is in strict accord with the provisions of Section 2 of the penal law. Still, the court thinks the trial was conducted on an entirely mistaken theory of the law, and that, on the correct theory thereof, probable cause for the criminal prosecution was clearly established. The trial justice conducted the trial and submitted the case to the jury on the theory of law that, if the plaintiff, as manager of the New York corporation, had it treat its patrons, although in its own name, by giving medicine only "on the advice and counsel, or prescription, in the particular case, of a duly licensed physician, it was not practicing medicine, and neither the corporation nor the plaintiff would be guilty of violating the law," which prohibits such practice by any person other than a licensed physician. That the treatment amounted to the practice of medicine by some one cannot be doubted.

Even assuming that the law of the case was correctly declared by the trial justice, as above summarized, the court thinks that probable cause was established for the criminal prosecution because the evidence demonstrated that the advice or prescription of a licensed physician, on which the plaintiff claimed the institute only treated, was a mere sham and pretense. In all instances such prescription was merely treatment by the Gatlin method. There was in the prescription no modification or direction as to time or quantity of the dose, or anything of the sort. The medicine was a secret. Neither the plaintiff nor the physician knew its ingredients. The giving of a prescription by a physician must, of necessity, involve the exercise of judgment as to the particular case, and as well some scientific knowledge of the nature of the medicine prescribed. Here the physician could have pos-

sessed no such knowledge, and even the plaintiff, the manager, did not have it. Hence such a prescription was a mere sham and pretense.

On the cross-examination of the physician of the institute, an inquiry to show that he made no analysis or other scientific examination to ascertain the ingredients of the medicine was excluded. This proof was entirely competent to show that the prescriptions given by the physician were pretenses, based on no scientific knowledge.

The court regards the verdict here as directly against a sound and necessary public policy, and is convinced that it should not stand; so the judgment is reversed, with costs; and the complaint dismissed, with costs.

Meaning of the Terms "Physician" and "Medicine"

(*People ex rel. Gage vs. Siman et al. (Ill.), 115 N. E. R. 817*)

The Supreme Court of Illinois says that a "physician" is one versed in or practicing the art of medicine, and the term is not limited to the disciples of any particular school. The term "medicine" is not limited to substances supposed to possess curative or remedial properties, but has also the meaning of the healing art—the science of preserving health and treating disease for the purpose of cure—whether such treatment involves the use of medicinal substances or not. In common acceptation, any one whose occupation is the treatment of diseases for the purpose of curing them is a physician, and this is the sense in which the term is used in the medical practice act.

The term is not used in any different sense in Section 15 of the vital statistics act, which requires every physician, midwife, undertaker and sexton to register his or her name, address and occupation with the local registrar of the vital statistics district in which he resides. Section 7 of the act directs that the required certificate of death shall be made and signed by the legally qualified physician, if any, last in attendance. The term "legally qualified physician" in this connection is not different in meaning from the term "physician" in Section 15. Each means a physician authorized to practice medicine. The qualification of the physician is only incidentally connected with the subject-matter of the act, which is vital statistics. The state authorizes osteopathic physicians to treat human ailments without the use of medicine and without performing surgical operations, and if a patient dies he cannot be said to have died without medical attendance, so as to authorize the coroner or local registrar to make the certificate of death.

A proviso to Section 3 of the medical practice act declares that only those who are authorized to practice medicine and surgery in all their branches shall call or advertise themselves as physicians or doctors. This proviso was regarded by the counsel for the respondents as sustaining the position that only persons licensed to practice medicine and surgery in all their branches are authorized to issue certificates of death. The proviso is somewhat inconsistent with the provision that treatment for any physical ailment shall constitute the practice of medicine and which authorizes such treatment by persons not authorized to practice medicine and surgery in all their branches. It does not, however, declare that persons treating physical ailments without the use of medicine and without performing surgical operations are not physicians, but only that they shall not call themselves physicians or advertise themselves as such. Whether the legislature can constitutionally prohibit one of these classes from publicly assuming the title of physician or doctor was a question discussed in the brief of the relator which the court does not find it necessary to decide.

This appeal was brought directly to this court on the ground that if the word "physician," in Sections 7 and 15 of the vital statistics act, means only those who are authorized to practice medicine and surgery in all their branches, then to that extent those sections are unconstitutional, and that the proviso to Section 3 of the medical practice act is unconstitutional; but the court does not find it necessary to decide those questions, since it holds that the word "physician," in the vital statistics act, is not limited to any particular school of medicine, but includes osteopathic physicians.

Society Proceedings

COMING MEETINGS

Amer. Acad. of Ophthal. and Oto-Laryng., Pittsburgh, Oct. 29-30.
Amer. Public Health Association, Washington, D. C., Dec. 4-7.
Kentucky State Medical Association, Louisville, Nov. 6-9.
Southern Medical Association, Memphis, November 12-15.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

Thirtieth Annual Meeting, held at Newark, N. J., Sept. 17-19, 1917

(Continued from page 1378)

Recurrences After the Five Year Period in Carcinoma of the Cervix

DR. X. O. WERDER, Pittsburgh: In fifty-nine cases of cancer of the cervix in which operation by the radical cauterization was performed, I have twenty-seven patients, 45.76 per cent., living at the end of five years. In eight of these cases, or 29 per cent., recurrences are reported from five to nine years after operation. While the five year recoveries after the cauterization operation, therefore, show better results than those of Wertheim, who is credited with 42.5 per cent. of cures, the late results after five years are decidedly less favorable. The great difference in the percentage of late recurrences following these two methods of radical operation of carcinoma of the cervix is explained by the more unfavorable material dealt with as compared with that at the large European clinics. Late recurrences practically all develop in the glandular structures in which metastasis must have existed at the time of operation. It has been demonstrated that these may remain quiescent for years before active development takes place. The greater frequency of late recurrences following the cauterization operation must, therefore, be accounted for by a larger portion of lymphatic involvement due to a more advanced stage of the disease at the time of operation. As only a small proportion of the regional glands liable to become invaded from the original cancer focus can be extirpated, this procedure is not considered as of any material influence in reducing the percentage of late recurrences. On the other hand, it may be argued that an agent which causes cancer metastases to remain dormant for so many years in such a large percentage of cases must have had some specific effect on the cancer cells, not present in the other operative procedures. It seems possible that some product results from the intense heat in contact with living tissues which, while not absolutely destructive, renders the cancer elements harmless, in many cases for years.

DISCUSSION

DR. J. HENRY CARSTENS, Detroit: I have never had a case of cancer of the cervix in any of my suprapubic hysterectomies. I recall one patient who had a discharge and some irritation of the cervix. I took her uterus out by way of the vagina, had it examined carefully, and there was nothing malignant about it.

DR. EDWARD A. WEISS, Pittsburgh: In 1898 Dr. Werder described the so-called combined operation for cancer of the cervix. Two years later Wertheim described identically the same operation. When Wertheim's attention was called to this fact he gave Dr. Werder priority, but in none of his subsequent writings has he given Werder credit for the operation. Dr. Werder was not satisfied with the results of this operation because the mortality was high and the morbidity very great. Twelve years ago he began to do what he now calls igniextirpation, and his results have been remarkable as compared with those from the old operation, both as to mortality and to morbidity.

DR. X. O. WERDER, Pittsburgh: During the last two or three years I have had four cases in which I found carcinoma in the cervix following the removal of the uterus some time previously. In most cases hysterectomy for fibroid antedated the operation for cancer of the cervix for a number of years, so that I am beginning to consider the removal of the cervix in cases of fibroid of the uterus, and when I do suprapubic

hysterectomy I open the uterus and inspect its cavity to see whether there is any evidence of carcinoma. In several instances I have found carcinoma present in the body of the uterus. It is also advisable to do a preliminary curettage to be absolutely sure of the condition of the cervix. With those precautions we can safely continue to do suprapubic hysterectomy, which is far superior to a panhysterectomy, not even considering the fact that it is accompanied by less mortality.

Gallbladder Trouble Complicating Disease of the Internal Genitals

DR. J. HENRY CARSTENS, Detroit: One frequently finds gallstones connected with pelvic trouble, especially fibroid tumors, pelvic adhesions and displacements. If we inquire into the history of these women, we find that they often have had puerperal fever, septic conditions following labor, or miscarriages, and were confined to bed for four to six weeks. Even if no symptoms are complained of by the patient, one can usually detect gallbladder trouble, and be prepared to relieve it when operating for the other trouble.

The Thyroid in Gynecology

DR. HERMAN E. HAYD, Buffalo: I recommend thyroid extract in the treatment of the hemorrhages of women, when the causes are obscure, until a diagnosis can be established and the best kind of subsequent treatment adopted. In the amenorrheas of young girls, when the periods are irregular or scanty, and even absent, or when the menstrual function has not appeared at the usual pubic period, I have of late years relied on thyroid feeding, in gradually increasing doses, in conjunction with good hygiene and exercise.

The Influence of Pregnancy on the Development, Progress and Recurrence of Cancer

DR. WILLIAM SEAMAN BAINBRIDGE, New York: Two cases of malignancy in pregnant women bear a distinct relation to the question of the possible influence of pregnancy on the initiation, progress and recurrence of cancer. In the first case, one of recurrent carcinoma of the breast, there was a previous history of amputation of the right breast fourteen months earlier. When first examined the patient, a primipara, was nearly five months pregnant, and had a large mass in the right axilla and another above the clavicle, with metastases in the right lung. The patient and family refused to submit to the termination of the pregnancy, and despite indicated treatment the disease extended rapidly and proved fatal in less than a year. The child was born at term and lived one month. In the second case, one of sarcoma of the eye, the patient, a mother of two children, was pregnant seven months when first seen. At this time she had a small growth, which was promptly excised with an apparently safe margin of healthy tissue. There were three other successive operations for rapid recurrences and extension of the disease—all within a period of two months. Termination of the pregnancy had been refused, and a healthy child was born at term. One month later the patient succumbed.

In the first case the growth above the clavicle was probably not malignant until pregnancy took place; from the history of the second case it would seem as if the beginning of the development of the sarcoma was closely related to the beginning of the pregnancy, and that the almost terrific rapidity of development and recurrence after operation was commensurate with the progress of the pregnancy. From these and other personal observations, as well as from the literature, it is apparent that pregnancy exercises a stimulating and hence a malign influence on coexistent cancer in any part of the body. Therefore, in all such cases there seems little ground for delaying the termination of pregnancy.

Toxemia and Eclampsia and Its Treatment

DR. ASA B. DAVIS, New York: I have performed 359 abdominal cesarean sections. In twenty-five instances, toxemia of pregnancy has been the indication. These twenty-five cesarean sections have been done on twenty-three different women. Eight women died. Twenty-nine children were

delivered, twins in two cases. One set of twins was dead when the patient was admitted. The mother lived. Nine of the twenty-nine children delivered failed to leave the hospital alive. It is a noticeable fact that few pregnant women in private practice under the care of skilled obstetricians develop eclampsia. The time to treat eclampsia is before it occurs.

Conservative Treatment of Eclampsia

DR. ROSS MCPHERSON, New York: A survey of the mortality statistics of patients suffering from eclampsia, taken from the reports of numerous writers both here and abroad, will show that, treated by radical methods, the maternal mortality approaches an average of from 25 to 30 per cent., these figures being easily available, and that the fetal mortality averages from 40 to 50 per cent. Our series now includes fifty-five true convulsive toxemias. Of these fifty-five, seven mothers died, showing a gross maternal mortality of 12.7 per cent. Two of these mothers, however, died before treatment of any sort could be administered. In other words, there was a mortality of approximately 9 per cent. Abdominal cesarean section has absolutely no place in the treatment of convulsive toxemia of pregnancy, except in the cases in which the eclampsia is accompanied by a deformed pelvis or some severe disproportion between the mother and the child. More conservative measures can be resorted to with a lower mortality.

Indications for Interference in Preeclamptic Toxemia

DR. WILLIAM G. DICE, Toledo, Ohio: The character and quantity of the waste products from a study of urine are not definite indexes of severity of the toxemia. The systolic blood pressure taken throughout pregnancy is ordinarily a better index. A steadily increasing rise from the average normal, 110 to 120, up to 150, is significant, and there is a sudden increase in the evidence of toxemia when blood pressure reaches that point. Elevated blood pressure often precedes albuminuria, and the two are not necessarily proportional. When the blood pressure reaches 170, if other signs of toxemia are also present, time for expectant treatment is near an end. Toxins in the blood give rise to a retinitis, the first symptom objectively being edema, later infiltration, degeneration and hemorrhages or perhaps detachment of the retina; both the latter indicate grave toxemia. In the early stage of retinitis, the vision may not be affected, but the ophthalmoscope shows a haziness of the fundus, an inability to make out the fine details, which is the first sign of cloudy swelling. The interference with vision depends on the location of the lesion, whether in the macula or only in the areas surrounding it. The condition clears up entirely if it does not go beyond the stage of cloudy swelling. In primiparas this haziness of the retina is easily detected if the pupil is widely dilated, and this haziness is the first indication of retinitis; but if there has been previous eye trouble, it probably cannot be made out so early. Conservation of vision as well as life demands prompt induction of labor.

Methods for Overcoming Mechanical Obstruction to Pregnancy

DR. ROBERT T. MORRIS, New York: Several forms of salpingitis leave mechanical obstruction to pregnancy because of adhesions, or of closed lumina between ovary and uterus; but in a certain proportion of selected cases the buried fimbriated end of an oviduct may be freed and grafted near the fundus of the uterus, thus making a short circuit past adhesions or a closed lumen. I have a patient about to be delivered of a child who had only one such oviduct allowing of plastic repair of this kind. Perhaps the most extensive plastic work I have done was for a patient who had lost both ovaries and tubes some years previously. In that case I first grafted an ovary from another patient, and about a month later I reopened the abdomen to determine if the graft appeared to be in good condition. This was the case and a new oviduct was constructed from a transplanted loop of ileum, one end of which encompassed the engrafted ovary, the other end being sutured to the walls of the open lumen of the uterus. There has been no practical result in the latter case, and it may be that the mucous secretion from the

bowel transplant may interfere with impregnation. But the work may, at least, be done experimentally for a patient who understands and accepts the work on that basis.

Should the Uterus Be Removed When It Becomes Imperative to Interrupt Pregnancy?

DR. EMERY MARVEL, Atlantic City, N. J.: The interruption of pregnancy is accepted only when maternal life is seriously jeopardized. The exciting cause is active within the uterus, and involves the uterine structure. To remove the conception and leave the uterus when serious toxemia exists leaves a major part of the burden that could be removed. If the uterus is permitted to remain, it invites the recurrence of the condition and in a more aggravated form. If maternal life is threatened by coexisting maladies—such as tuberculosis, or renal or cardiac inefficiency—hysterectomy protects against recurrence. The removal of the uterus eliminates the necessity for sexual abstinence. Hysterectomy secures greater freedom from the menace which immediately threatens; it protects against recurrence of the trouble, and provides for the continuance of the sexual life without fear and all that it involves. This can be accomplished with no increased risk over other surgical methods.

COLORADO STATE MEDICAL SOCIETY

Forty-Seventh Annual Meeting, held at Colorado Springs, Sept. 25-27, 1917

The President, DR. ALEXANDER C. MAGRUDER, in the Chair

Achylia Gastrica

DR. J. L. MORTIMER, Denver: In achylia gastrica, definite abnormal changes of the mucous membrane can be demonstrated, although not infrequently they are absent. We differentiate between a primary, congenital achylia simplex and secondary achylia. The latter either develops on the basis of a neurasthenia, or necessitates organic changes, thereby accompanying diseases of the stomach, such as chronic gastritis or cancer of the stomach, or general diseases, such as pernicious anemia, pulmonary tuberculosis, typhoid, syphilis and chronic interstitial nephritis. Of foremost importance in the treatment of achylia gastrica is the dietetic management. This must be individualized according to the predominating symptoms. Meat is usually poorly tolerated. It should be served minced or hashed, and preference given to the white meats and fish. Vegetables are prepared in purée form. Fats, excepting butter and cream, are poorly digested. Meat extractions and carbonated water have a tendency to stimulate the flow of gastric juice. Milk that is cooked, and cocoa, malted milk, rice, farina and tapioca may be added. Eggs, buttermilk, toast, zwieback and reheated stale bread may be allowed. If gastric fermentation is present, gentle lavage, three times weekly, with physiologic sodium chlorid solution, salicylic acid or resorcin, 1:1,000, is useful. Other accessory measures that prove beneficial are gentle abdominal or general massage, faradization of the abdomen, the Priessnitz or hot abdominal compress, and finally the alternating hot and cold abdominal douche.

DISCUSSION

DR. PHILIP HILLKOWITZ, Denver: Einhorn contends that in the cases of achylia gastrica he has examined, no alterations were found in the mucosa, because the pathologist naturally considered it established that there can be no change in function without some change in the tissues. But in these days we doubt the universality of this dictum, and that is why we explain the etiology of achylia gastrica on the basis of innervation.

Fasting as a Therapeutic Measure in the Treatment of Gastro-Intestinal Disorders in the Tuberculous

DR. C. D. SPIVAK, Denver: No matter what the derangement of the gastro-intestinal tract may be, there is present an injury to the integrity of the organ and consequently it cannot perform its function efficiently. The logical conclusion is that the stomach and the intestine should be put at rest until the repair is effected. Such rest means the

cessation of feeding. I have applied this form of rest cure in many cases, with *restitutio ad integrum*, in the majority of them, and certain relief in all cases, except in malignancy.

DISCUSSION

DR. HERBERT WHITNEY, Denver: Nothing has been of so much benefit in my practice as the proper observation of the principles of rest and exercise in the treatment of patients with chronic disease.

DR. H. A. SMITH, Delta: The chiropractor, the dietist and the food cranks are getting results in cases that are slipping away from the practitioner of medicine because he does not do one of two things, namely, he either does not go to the trouble of making a diagnosis, or fails to instruct the patient in the matter of diet. If the doctor will regulate the diet of these patients, tell them how much to eat, what to eat, how many meals they should have a day, and the quantity of food for each meal, he will get results in the class of cases in which nutrition is disturbed indirectly.

DR. M. R. FOX, Sterling: If we paid more attention to rest and exercise, and used a little more "horse-sense," we would get better results.

DR. ROBERT LEVY, Denver: For many years, superalimentation has been practiced by some of the very best and most reputable authorities in the treatment of tuberculosis. In many instances superalimentation has developed a desire for food, and the patients have improved.

DR. JULIUS L. MORTIMER, Denver: An effort should be made so to prepare food that it will be inviting and palatable to the patients. I have seen patients eat a great deal more because the food was prepared and served in a most inviting manner, thus stimulating their appetites.

DR. KATE LINDSAY, Boulder: Allen and Josslyn have obtained excellent results in diabetic cases with their methods of treatment simply because they have treated patients individually.

Acute Cholecystitis

DR. Z. H. McCLANAHAN, Colorado Springs: Drainage is now being employed in a progressively lessening number of cases of gallbladder disease, while cholecystectomy is gaining in frequency of employment in proportionate ratio. As the most frequent site of infection has been shown to be the gallbladder wall, this is a rational change, and cholecystectomy is the rational treatment in the absence of certain contraindications. Pancreatitis contraindicates cholecystectomy. Granting that cholecystectomy is the ideal procedure, drainage still has a field of usefulness in the superlatively acute cases in which the immediate prevention of mortality is of first consideration.

Cholecystectomy Versus Cholecystostomy

DR. F. N. COCHEMS and DR. A. J. BENDER, Salida: The definite indications for cholecystectomy are all cases of chronic cholecystitis, injuries, ulcerations, perforations and gangrene of the gallbladder, persistent fistulas and primary malignancy. The advantages are easier convalescence, fewer adhesions, greater percentage of recoveries, diminished recurrences and lower percentage of mortality. The disadvantages are the destruction of the special function of the gallbladder, overlooking common duct stone or stricture. Cholecystostomy would be the operation of choice in many cases of acute cholecystitis, stones in the hepatic and common ducts, acute pancreatitis and when gallstones are accidentally discovered during the course of operations on other abdominal organs.

DISCUSSION

DR. H. S. HENDERSON, Grand Junction: I think the pendulum is swinging too far backward. Cholecystectomy is performed more frequently than it should be. Cholecystectomy is indicated when the gallbladder is badly damaged, when its mucous membrane is no longer functioning. In malignant disease the gallbladder should be removed; but the indiscriminate removal of gallbladders because they have stones in them or are inflamed is not good surgery.

DR. LEONARD FREEMAN, Denver: The consensus of opinion among surgeons today is that cholecystectomy is better than cholecystostomy. It is better to take out the gallbladder than

to drain it, provided we can take out the gallbladder with safety to the patient, and that the common bile duct is not obstructed or going to become obstructed. There are cases in which the gallbladder is so badly involved that we are willing to run the risk of taking it out; but such cases are not extremely common. If a patient's condition is such that an attempt to remove the gallbladder increases the risk, the gallbladder should not be touched. If the common bile duct or the cystic duct is obstructed, it should be taken out.

DR. J. G. HUGHES, Greeley: When a drainage operation because of the presence of infection is performed, the chances of healing and recovery of the patient are materially enhanced by the use of autogenous vaccines.

(To be continued)

INDIANA STATE MEDICAL ASSOCIATION

Annual Meeting, held at Evansville, Sept. 26-28, 1917

The President, DR. JOHN H. OLIVER, Indianapolis, in the Chair

SYMPOSIUM ON DISEASES OF THE GALLBLADDER

Diagnosis

DR. A. C. KIMBERLIN, Indianapolis: Owing to a better knowledge of pathology, we have changed our ideas very materially as to the manner in which the infection reaches the gallbladder. We now accept the theory that in most instances it is carried through the blood stream. A certain periodicity in the attacks, and local tenderness may or may not be conspicuous. Neither is jaundice always present. We must know more of the pathology. We do not give enough time to a careful study and analysis of the clinical history.

Medical Treatment

DR. CHARLES SOWDER, Indianapolis: I would emphasize the necessity for active preventive treatment during the course of and following acute infectious processes which we have determined must furnish the active cause. If we can maintain a normal flow of healthy bile, and by medicinal measures tend to keep the gallbladder sterile, we have taken a long step forward in the prevention of gallbladder disease. We can lay down no hard and fast rule to guide us in treatment. In general, if there is obstruction of the cystic duct resulting in enlargement of the gallbladder, or if repeated attacks of pain or disturbance of digestion render the patient unable to follow his usual vocation, surgical aid should be given. All cases of cholelithiasis with recurring attacks of cholecystitis or pericholecystitis should be subjected to immediate surgical interference. When acute cholecystitis can be ruled out, at least six months' medicinal treatment should be instituted before surgical measures are considered.

Cholecystectomy Versus Cholecystotomy

DR. H. H. MARTIN, Laporte: When Rosenow published the results of his experimental work on gallbladder infections, the profession began to realize the limitations of simple drainage of the gallbladder, and to appreciate the cause for so many surgical failures in those cases in which success was legitimately anticipated. Rosenow proved that in the majority of cases, and probably in all, the infection takes place by way of the circulation direct, and that it is the gallbladder walls, and not the bile or the gallbladder mucous membrane, that is primarily involved. Consequently simple drainage fails to relieve many of these patients. Every pathologic gallbladder demanding operative interference should be removed, provided this operation does not add to the mortality rate of a cholecystectomy over a cholecystotomy.

DR. H. A. DUEMLING, Fort Wayne: In my opinion, both operations are valuable. Some cases require simply incision and drainage; other patients as certainly must have the gallbladder removed to regain health. We should be very careful in obtaining the history of the patient so that we may make a correct diagnosis; patients, however, are cured not by scientific examination, but by scientific treatment. I do not believe that there ever has been a case of recurrence of

stone. Stones do not reform—they are overlooked. This fact led to the exploration of the ducts—a tremendous step forward, and then a new operation appeared—cholecystotomy. Finally, the removal of the gallbladder was advised, but we have not yet reached our goal.

DISCUSSION ON THE GALLBLADDER

DR. THOMAS B. NOBLE, Indianapolis: Gallstone disease, as it is commonly referred to, is simply an end-product, an ultimate outgrowth of some antecedent happening or accident in the way of infection, or fault in the habit of life of the individual. Cholecystectomy and cholecystotomy are both valuable procedures. They each have their specific indications. I do not believe that every gallbladder requiring operative interference should be removed. The important thing is drainage—in every case.

DR. CHARLES STOLTZ, South Bend: There is no doubt that stones do recur. Stones form in the hepatic and also in the common duct, and we know of cases in which the biliary ducts are filled with stones. The gallbladder should not be removed in every instance. In many cases drainage offers rest for the mucosa and submucosa of the common ducts as well as the biliary ducts.

DR. J. RILUS EASTMAN, Indianapolis: It is mischievous to take out a gallbladder simply because it is an attractive operative procedure. If we had to deal with an infection of the gallbladder alone, this would be a very easy question to solve; but I have never seen a badly infected gallbladder that was not associated with infections of the ducts, or with infection of the pancreas. I believe we shall decide more and more to utilize the gallbladder for drainage in such cases.

DR. MAURICE ROSENTHAL, Fort Wayne: Unfortunately those cases of biliary duct and gallbladder infection which require excision of the gallbladder are the very cases which really require drainage of the ducts. It is quite possible and just as easy to drain the gallducts after removing the gallbladder as to drain them through the gallbladder. Passing a small tube through the stump accomplishes drainage of the ducts very satisfactorily.

DR. H. O. PANTZER, Indianapolis: The term "gallstone disease" is not comprehensive enough, and represents only a small part of gallbladder disease. Gallstones may be retained a long time without causing any trouble if the gallbladder is normal. It is futile to attempt any medication in cases of gallbladder disease, for living typhoid germs have been found in the gallbladder twenty, even fifty, years after the attack of typhoid.

DR. A. S. JAEGER, Indianapolis: I do not think all inflammations of the gallbladder are infective, or that this is Rosenow's belief. Undoubtedly the gallbladder is infected in the majority of cases, owing to bacterial activity; but a nonspecific inflammation of the gallbladder will give the same results.

Complications and End-Results of Tonsillectomy and Adenectomy

DR. J. W. IDDINGS, Lowell: Specialists in laryngology have a duty to perform in educating the laity and the profession that the tonsil and adenoid operation is not a minor operation, but one which may be attended with severe, even fatal, consequences; that definite indication should be present before it is advised or attempted, and that it should be undertaken with the same care, skill and caution displayed in any major operation.

DISCUSSION

DR. G. W. SPOHN, Elkhart: The technic is not so important as the results. It matters not so much how the tonsils and adenoids are removed, if the work is done correctly, thoroughly, expeditiously and with no injury to the adnexa. The end-results of such work are satisfactory to both patient and physician.

DR. W. A. HOLLIS, Hartford City: The danger of pulmonic infection through aspiration of infectious material, or from the ether, or the danger of suffocation from inhalation of solid particles, is greatly exaggerated. If the operation is done in the Trendelenburg position, it is impossible to have such an accident if one is a careful operator.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

October, CLIV, No. 4

- 1 *Utilization of Immune Response in Renal Tuberculosis. E. Bonine, New York.—p. 469.
- 2 *Pulse Pressure Test in Preoperative Estimation of Reserve Strength of Cardiovascular System. B. Z. Cashman, Pittsburgh.—p. 476.
- 3 *Acute Appendicitis; Analysis of Five Hundred Cases. F. Beekman, M. K. Smith and S. Everingham, New York.—p. 490.
- 4 Two Cases of Congenital Persistent Acroasphyxia in Infants. N. Toomey, Iowa City, Iowa.—p. 500.
- 5 Anxiety Neuroses. F. R. Fry, St. Louis.—p. 506.
- 6 Bronchiolitis Obliterans Following Inhalation of Acrid Fumes. J. H. Wagner, Pittsburgh.—p. 511.
- 7 Syphilis of Nervous System in Some of Its Clinical and Pathologic Manifestations. W. G. Spiller, Philadelphia.—p. 523.
- 8 *Researches in Regard to Coagulo Reaction of Syphilitic Serum. H. Uemura, Japan.—p. 533.
- 9 *Nervous Symptoms of Polycythemia Vera. H. A. Christian, Boston.—p. 547.
- 10 *Heat Stroke; Report of One Hundred and Fifty-Eight Cases from Cook County Hospital, Chicago. H. Gauss and K. A. Meyer, Chicago.—p. 554.
- 11 Electrocardiographic Study of Heart Showing Ectopic Auricular Contractions, with Special Reference to Influence of Vagus Nerves on Ectopic Focus. D. Luten, St. Louis.—p. 564.
- 12 Etiologic Factors of Acne Vulgaris. A. Strickler, Philadelphia.—p. 579.
- 13 *Chronic Heart Block. Treatment by Alpha-Iodin. J. M. Blackford, Seattle, Wash., and F. A. Willius, Rochester, Minn.—p. 585.
- 14 Vitiligo and Syphilis of Central Nervous System. E. M. Auer, Indianapolis.—p. 592.

1. Immune Response in Renal Tuberculosis.—Bonime's paper may be summarized as follows: The prognosis in renal tuberculosis up to the present has been unfavorable under the present day method of treatment. Nephrectomy as an operation for the relief of the patient suffering from tuberculosis of the kidney is a failure, for it fails to remove the focus of infection outside of the kidney, leaving the patient liable to extension of the infection to the remaining kidney from the same focus. The tuberculin treatment of renal tuberculosis has not been as satisfactory as the tuberculin treatment of other forms of tuberculosis, (1) because of the inability to make an early diagnosis; (2) because of the production of early damage before the tuberculin treatment was instituted; (3) as a result of the failure to recognize the important rôle that mixed infection plays in the production of symptoms and pathologic processes. Enough has been shown, however, with tuberculin treatment of renal tuberculosis, in fact, to make it almost certain that were it instituted before permanent damage has resulted—in other words, early in the disease—the prognosis of renal tuberculosis would have a far more favorable aspect. Early diagnosis in renal tuberculosis can be accomplished through the tuberculin test alone. Its more frequent use in early symptoms referable to an indefinite lesion anywhere in the urinary tract is absolutely essential to the more hopeful treatment of renal tuberculosis.

2. Pulse Pressure Test of Cardiovascular System.—Pulse pressure readings were used by Cashman as a means of estimating the ability of the circulatory system to withstand strain, for it is the additional strain of the surgical ordeal that is responsible for circulatory exhaustion or collapse. His plan was to subject the patient to the strain of work and observe not only the systolic pressures but the diastolic and pulse pressures as well, for the pulse pressure is the head of pressure which is actually driving the blood through the circulatory system, and inasmuch as the cardiovascular system maintains pulse pressure when an additional strain is imposed on it, so much is efficient circulation maintained. The chief value of the test is in the cases in which the force and rhythm are regular or but slightly irregular, the type of case in which the ordinary method of examination does not throw light on the condition of the circulatory apparatus, and the type of case in which surgeons are so

liable to blunder. This test signifies the ability of the cardiovascular system to respond to strain at the time the test is made, and it does not signify what portion of the cardiovascular system is at fault. The condition may be due to a permanently damaged heart muscle or cardiovascular system, which is working with very little reserve and which may fail if subjected to sudden strain. On the other hand, the condition may be a temporary one, due to toxemia, exhaustion, or fatigue, but nevertheless this is the type of case that should not be subjected to additional severe strain. How frequently women are worn out from multiple pregnancies, toxemias, and chronic infections suffering from chronic fatigue and exhaustion. If the histories of these patients are gone into carefully it will be found that they tire readily, suffer from dizziness, dyspnea on exertion, weak spells, or slight swelling of the feet and ankles, although the heart appears to be normal by the ordinary methods of examination. These are the patients who have stormy convalescence after abdominal section. Patients with little reserve and who respond so poorly to light strain should be subjected to neither a severe operation nor a cross-country run as an elective procedure. Cashman describes his method of procedure in detail.

3. Acute Appendicitis.—There were thirty-four deaths, or a mortality of 6.8 per cent., among the 500 cases analyzed by the authors. Twice as many died who were operated on the third day after the onset of symptoms as on any other day of the illness. The mortality of those under 10 years and over 50 is 23 per cent. as opposed to a mortality of 4.7 per cent. for those between. Complications were found in 151 persons, or 30 per cent. There were 107 cases of appendicular abscess, or 21 per cent. The mortality was 5.7 per cent. There were forty-five instances of diffuse peritonitis, or 9 per cent. Twenty-one, or 47 per cent., of these patients died. Fecal fistula occurred twenty-four times, an incidence of 5 per cent.; four patients died, a mortality of 17 per cent. Pneumonia occurred twelve times, an incidence of 2.5 per cent. There were four fatalities in the series, or 33 per cent. Secondary peritoneal abscess occurred in eleven instances, being present in one patient at operation and ten times as a sequel. Three of these were subphrenic abscesses. Of the eleven cases, four patients died, a mortality of 36 per cent. Only two cases of ileus were found: one was due to adhesions; the other was a paralytic ileus.

A history of previous attacks was obtained in one fourth of the cases. Vomiting was mentioned in the histories of four fifths of the cases. Five per cent. more had nausea without vomiting. Constipation was five times as frequent as diarrhea. A blood count was recorded in 377 of the cases. Neither a normal blood count nor a very high one rules out appendicitis, although such counts are comparatively rare. The mortality was higher among the two extremes and most favorable with a moderate leukocytosis. The relation of the numerical count to the differential count did not appear to have any prognostic significance. Of 117 perforated cases seventeen died, a mortality of 15 per cent. Of 138 cases with gangrene and no perforation nine died, a mortality of 6.5 per cent. Of 180 suppurative cases without either perforation or gangrene four patients died, a mortality of 2 per cent. Thirty per cent. of perforated, 16 per cent. of gangrenous and 10 per cent. of suppurative cases developed abscesses. Twenty-four per cent. of perforated, 8 per cent. of gangrenous, and 1 per cent. of suppurative developed diffuse peritonitis. The incidence of all complications in perforative cases is 61 per cent., in gangrenous 38 per cent., and in suppurative 22 per cent. It appears from this that the danger of a diffuse peritonitis is greater when there is a perforation than when the inflammation spreads through the appendicular wall, for in the latter case there is a better chance of the peritoneum localizing the disease. There were twenty cases, or 4 per cent., in which it was not possible to remove the appendix. All but two of these were in abscess cases. Three of the twenty patients died, a mortality of 15 per cent.

8. Coagulo Reaction of Syphilitic Serum.—Uemura is convinced that the coaguloreaction is highly characteristic in the case of syphilitic serum, especially when the elaborated

case of syphilitic serum, especially when the elaborate method described by him is applied, and the sources of possible mistakes are avoided. In many cases this test is said to be distinctly superior to the Wassermann reaction. It is hardly probable that the coaguloreaction will finally supersede the Wassermann reaction; but it does seem calculated both to furnish scientific research with valuable data in regard to the transformation of serum as wrought by syphilis, and also to facilitate the diagnosis of doubtful cases of syphilis, possibly also of certain apparently similar conditions.

9. Nervous Symptoms of Polycythemia Vera.—Of ten cases observed by Christian, all but two showed very definite nervous symptoms, and in most the nervous disturbances were the chief cause of the patient's discomfort. These symptoms varied in duration from a few days to many years. The most frequent symptoms were headache and dizziness. Other common symptoms were disturbances of vision, such as easily induced fatigue of the eyes, blurring of vision, scotomas often scintillating, transient blindness, hemianopsia, and diplopia. Disturbances of sensation, particularly paresthesia, occurred. In several patients motor disturbances, such as paresis and paralysis, were seen. The case in which these were transient and recurred is of special interest. The nervous symptoms in some of the patients were sufficiently focal in character to lead to the diagnosis of brain tumor. One case was of special interest in this connection, for during a period of ten years, during which the patient was seen repeatedly by ophthalmologists and neurologists, brain tumor often was suggested as the cause of his symptoms, and no one seems to have suspected the polycythemia until he was admitted to the hospital, and even when the blood count was known it was still thought possible that some of the focal symptoms were due to a cerebral tumor.

Heat Stroke.—All patients with a temperature of 103 F. or over were immediately placed in a tub of tap water, the level of which was just high enough to cover the body except the head, which was supported in a hammock packed with ice. Vigorous friction was applied to the entire body by four or more persons; ice was freely added to the water, the friction being constantly maintained; the temperature was taken rectally every minute. When the temperature reached 102 F. the patient was removed from the bath, wrapped in sheets or blankets, and returned to the ward. Generally 102 F. was reached in ten to thirty minutes. When the patients were returned to the wards their temperature usually continued to fall, frequently reaching subnormal—95 to 97 F. Cardiac stimulants were given freely, strychnin, sodium caffein benzoate, digitalis, strophanthus; an ice bag was placed at the head and chipped ice was given by the mouth. For subnormal temperature external heat was applied. For recurrences in temperatures up to 103, cold packs and alcohol sponges were given; above 103 the patient was again given a cold water friction bath. It was observed that recurrent temperatures could not be reduced as easily as the initial high temperature, and in a few instances the temperature continued to rise in spite of prolonged friction in cold water. For restlessness and convulsions sedatives were used; morphin, chloral hydrate, scopolamin, the bromids and mechanical restraints.

13. Alpha Iodin in Chronic Heart Block.—During the examination of a case of chronic heart block Blackford and Willius attempted to increase the idioventricular rate by the administration of large doses of alpha iodine, the active constituent of the thyroid which Kendall has isolated recently. The administration of this drug has been followed in four cases by marked improvement in the patients' nutrition, associated with increased ventricular rate and cessation of the Stokes-Adams syndrome, though one patient has since died. One-half milligram alpha iodine was administered daily. Alpha iodine quickens the idioventricular rate in complete heart block. This is followed by marked subjective relief to the patient. The drug must be pushed to the tolerance of the patient and the dose then reduced to the largest amount that can be taken without discomfort. The auricular rate increases much earlier and to a much higher figure proportionately than the ventricular rate.

American Journal of Public Health, Boston*October, VII, No. 10*

- 15 Red Cross and Relief in Civilian Communities. F. R. Johnson, Boston.—p. 803.
- 16 Simple Medium for Rapid Differentiation of Typhoid and Paratyphoid Bacilli. I. J. Kligler, New York.—p. 805.
- 17 Large Concentration Camp in Its Relation to Civilian Community. C. E. Simpson, Lowell.—p. 806.
- 18 Graphical Study of Epidemiology of Poliomyelitis. T. G. Hull, New York.—p. 813.
- 19 Effect of Atmospheric Conditions on Fatigue and Efficiency. C. E. A. Winslow, New Haven, Conn.—p. 827.
- 20 Missing Links in Chain of Evidence Concerning Occupational Diseases. W. H. Rand, Washington, D. C.—p. 835.
- 21 Milking Machine as Factor in Production of Sanitary Milk. G. L. A. Ruehle, R. S. Breed and G. A. Smith, Geneva, N. Y.—p. 840.

American Journal of Orthopedic Surgery, Boston*October, XI, No. 10*

- 22 Place of Orthopedic Surgery in War. J. E. Goldthwait, Boston.—p. 679.
- 23 *Orthopedic Problems in After-Treatment of Infantile Paralysis. R. W. Lovett, Boston.—p. 687.
- 24 *Patellar Bone Graft in Excision of Knee. H. P. H. Galloway, Winnipeg, Canada.—p. 704.
- 25 Injury of Musculospiral Nerve. S. L. McCurdy, Pittsburgh.—p. 711.
- 26 Infraction of Head of Second and Third Metatarsal Bones; Report of Cases. W. C. Campbell, Memphis, Tenn.—p. 721.

23. **After-Treatment of Infantile Paralysis.**—Lovett believes that if a patient is not paralyzed in all four extremities, as well as back and abdomen, that he can be made to walk in some form or other; that is to say, that if he has one good arm and one leg with some power in it, it does not seem to matter how bad the contractions and deformities may be, so far as walking is concerned, because most of them, except scoliosis, can be remedied so that the patient can get his legs under him. Cases with general involvement of one or both legs, some paralysis perhaps of the abdomen, and perhaps the total loss of one or two muscles, persisting as total paralysis about three months after the attack, belong in the class of possible recovery. The longer tenderness lasts, the more slowly improvement begins, and in these cases the whole scale seems to be set further along. The more erratic and irregular the distribution of the paralysis, the better chance there seems to be for improvement. The most unfavorable cases seem to be those in which there is a pretty complete loss of power on both sides below a definite level. Cases which have a considerable amount of total paralysis persisting after two or three months do not seem, as a rule, to belong in the class of possible complete recovery. Paralysis of the deltoid is a serious proposition, but complete recovery may take place, especially with the use of the platform splint. Paralysis of the abdomen is very frequently overlooked, but, if supported by corsets from the outset, is, in Lovett's opinion, in most cases, amenable to treatment.

24. **Patellar Bone Graft in Knee Excision.**—Galloway uses the patella as a means of assisting fixation and promoting bony union in cases of knee resection. After the joint is exposed a thin flap of bone is raised from the side of each condyle and turned upward, being kept out of the way, if necessary, by a temporary suture or two. Corresponding raw surfaces are created on each side of the head of the tibia, but in the case of this bone the bony flap is immediately cut away. The lower end of the femur and upper end of the tibia are then sawed off in such a plane that when brought together the bones will fit with accurately apposed plane surfaces when the leg is flexed about 15 degrees in relation to the thigh, the direction of the saw cut being further planned so as to secure apposition without any greater lateral deviation of the leg than is present in the sound limb. Only a thin slice of bone should be taken at first, so that the plane of the cut can be altered by the removal of further thin slices should it be found necessary to do this in order to secure an ideal relation of the leg to the thigh. While an assistant steadies the upturned patella by seizing with a lion-jaw forceps the soft tissues in which it is embedded, Galloway next removes the posterior half of the patella with the saw, and a corresponding flat surface is created with the same instrument on the front of the femur and tibia. After bringing the knee

into the extended position and accurately fitting the bones together, a small incision is made through the skin on each side of the tibial head, about 1½ inches below the free margin of the bone, through which are driven two 5-inch wire nails in such a direction as to cross each other and nail the bones securely together. The patella is then placed on the bed prepared for it and nailed across the front of the joint, its upper half in contact with the femur and its lower half in contact with the tibia, thus forming a solid bony bridge across both bones. The flaps of bone raised from the femur are then brought into contact with the raw lateral surfaces on the head of the tibia. With a running suture of catgut, the deeper soft tissues are quickly brought together, the redundant tissues about the center of the flap being removed if found advisable. Plaster is applied to the leg and thigh separately, these two parts of the lower extremity being then connected by three iron brackets which span the region of the joint and permit subsequent dressing if required.

Archives of Diagnosis, New York*July, X, No. 3*

- 27 Study of Vasomotor Efficiency. G. W. Norris and F. F. Lane, Philadelphia.—p. 233.
- 28 Rachicentesis and Spinal Fluid. J. H. Barach, Pittsburgh.—p. 239.
- 29 Inadequacy of Present Classification of Pulmonary Tuberculosis. W. C. Voorsanger, Los Gatos, Calif.—p. 251.
- 30 Mechanism of Mental Torticollis. L. P. Clark, New York.—p. 257.
- 31 Diagnosis and Prognosis of Urinary Stone in Infant and Child. A. N. Collins, Duluth, Minn.—p. 259.
- 32 Cardiospasm in Infancy. L. Kerr, Brooklyn.—p. 269.
- 33 Pitfalls in Diagnosis in Pediatric Practice. G. R. Pisek, New York.—p. 275.
- 34 Therapeutic Diagnosis of Amebic Abscess of Liver. W. Allan, Charlotte, N. C.—p. 281.
- 35 Turning Test in Appendicitis. S. C. Blaisdell, Brooklyn.—p. 285.
- 36 Abdominal Pain; Its Differential Diagnosis. R. F. Ives, Brooklyn.—p. 286.

Boston Medical and Surgical Journal*October 4, CLXXVII, No. 14*

- 37 Treatment of Gastric Hyperacidity and Hypersecretion. W. F. Boos, Boston.—p. 469.
- 38 *Cerebrospinal Fluid in Anterior Poliomyelitis; Report on One Hundred and Eight Cases. W. Overholser, Westboro.—p. 480.
- 39 Dr. Samuel G. Howe and Beginning of Work for Feeble-minded in Massachusetts. F. E. Williams, New York.—p. 481.
- 40 Feeble-minded as an Element in Poverty. R. W. Kelso, Boston.—p. 484.
- 41 What it Means to Have Noncommitted Feeble-minded in Community. C. C. Carstens, Boston.—p. 487.
- 42 Plea for Instruction and After-School Care of Feeble-minded Deaf. C. A. Yale, Northampton.—p. 490.
- 43 Defective Girl Who Is Immoral. M. B. Blake, Boston.—p. 492.

38. **Cerebrospinal Fluid in Poliomyelitis.**—Overholser found that in the early postparalytic stage of anterior poliomyelitis the spinal fluid usually shows a moderate lymphocytosis and a slight to moderate increase in pressure and in globulin content. Fehling's solution is reduced, but this phenomenon is of little diagnostic value. A reasonably constant curve is yielded by Lange's colloidal gold test; this curve has some value in the differential diagnosis. The picture is only fairly constant, and in the absence of positive clinical findings does not justify a diagnosis.

Illinois Medical Journal, Chicago*October, XXXII, No. 4*

- 44 Advisability of Prostatectomy in Presence of Cord Lesion. E. S. Judd and W. F. Braasch, Rochester, Minn.—p. 229.
- 45 Our State Hospitals' Straits. S. D. Wilgus, Rockford.—p. 233.
- 46 Is Nitrous Oxid Oxygen Gas in Labor Dangerous to Babies? R. R. Ferguson, Chicago.—p. 242.
- 47 Physician and Public Health. W. E. Park, Rockford.—p. 245.
- 48 Practical Methods of Sewage Disposal. E. Bartow, Urbana.—p. 248.
- 49 Hygiene of Pregnancy. E. V. Davis, Chicago.—p. 250.
- 50 Duty of State to Choreic Child. C. B. King, Chicago.—p. 253.
- 51 Etiology of Poliomyelitis. J. W. Nuzum, Chicago.—p. 254.
- 52 Epidemiology of Poliomyelitis. C. W. East, Springfield.—p. 256.
- 53 Duties and Problems of Secretary of Active County Medical Society. T. G. McLin, Jacksonville.—p. 259.
- 54 Medical Legislative Work in Illinois. D. W. Deal, Springfield.—p. 261.
- 55 Organization of Medical Legislative Work in County Society. F. C. Gale, Pekin.—p. 264.
- 56 Syphilis Among Admissions to Elgin State Hospital. E. W. Fell, Elgin.—p. 267.
- 57 Studies in Meningitis. A. Levinson, Chicago.—p. 270.

- 58 Why Do We Have Recurrences After Operations on Biliary Tract. D. N. Eisendrath, Chicago.—p. 272.
 59 Postoperative Meningeal Hemorrhage. G. W. Green and J. J. Moore, Chicago.—p. 278.
 60 Blood Pressure Again. J. Sherlaw, Chicago.—p. 281.
 61 Urinary Abnormalities Among Insane. H. T. Child, Kankakee.—p. 287.

Journal of Abnormal Psychology, Boston

August, XII, No. 3

- 62 Theories of Freud, Jung and Adler. Work of Sigmund Freud. J. J. Putnam, Boston.—p. 145.
 63 Notes with Reference to Freud, Jung and Adler. T. Burrow, Boston.—p. 161.
 64 Adler Concept of Neuroses. W. A. White, Washington, D. C.—p. 168.
 65 Some Criticisms of Freudian Psychology. R. S. Woodworth, New York.—p. 174.
 66 Need for Stricter Definition of Terms in Psychopathology. M. Solomon, Chicago.—p. 195.

Journal of Bacteriology, Baltimore

September, II, No. 5

- 67 Preliminary Report of Committee of Society of American Bacteriologists on Characterization and Classification of Bacterial Types. C. E. A. Winslow and others.—p. 505.
 68 Counting Living Bacteria in Milk; Practical Test. W. D. Frost, Boston.—p. 567.
 69 Bacterial Metabolism of Sulphur. Formation of Hydrogen Sulphid from Certain Sulphur Compounds under Aerobic Conditions. F. W. Tanner, Urbana, Ill.—p. 585.

Journal of Laboratory and Clinical Medicine, St. Louis

September, II, No. 12

- 70 *Operative Treatment of Peripheral Nerves After Severance, More Particularly After Loss of Substance—Critical Review. G. C. Huber, Ann Arbor, Mich.—p. 837.
 71 *War Deafness and Its Prevention—Critical Review. S. R. Guild, Ann Arbor, Mich.—p. 849.
 72 *Fourth Venereal Disease—Erosive and Gangrenous Balanitis. R. G. Owen and F. A. Martin, Detroit.—p. 862.
 73 *Possible Explanation for Cyanosis and Hyperpnea Seen in Pneumonia and Cardiac Decompensation. R. G. Pearce Cleveland.—p. 867.
 74 *Experimental Asthma in Guinea-Pig. H. Sewall, Denver.—p. 874.
 75 Cases of Chronic Infection Apparently Focal in Gallbladder. P. G. Woolley, Cincinnati.—p. 883.
 76 *Acute Death from Chlorin Poisoning. O. Klotz, Pittsburgh.—p. 889.
 77 *Blood Picture Following Experimental Splenectomy. T. G. Orr, Rosedale, Kan.—p. 895.
 78 Review of Mosenhal's Work on Measurement of Renal Function. C. D. Christie, Cleveland.—p. 899.
 79 Thermostat for Water Bath. H. J. Breuer, Lincoln, Nebr.—p. 906.

70. **Surgery of Peripheral Nerves.**—Huber says that the question of using autotransplants or homotransplants of nerve segments in preference to heterotransplants, in clinical cases, on the basis of experimental and clinical observations can be decided in favor of autotransplants or homotransplants in case suitable fresh nerves from man are available at the time of the projected operation, but it should be borne in mind, that especially in secondary operations for loss of nerve substance, both the time of the operation and the method used are often a matter of choice. Heterotransplants, transplantation of nerve segments taken from an animal of another species than the one to which the transplant is made, is an operation, not to be wholly condemned, since clinical observations and experimental work both justify this operation. Both clinical and experimental observations warrant the deduction that the operation of choice in cases of repair of an injured peripheral nerve, where direct suture cannot be obtained, is the operation of nerve transplantation, especially if autotransplants or homotransplants are available. This may be combined with tubulization by means of fascial sheaths or hardened arteries. Of the methods of tubular suture and tubulization, hardened arteries and tubes of fascia are to be given preference. Experimental observations with other methods do not warrant their recommendation.

71. **Prevention of War Deafness.**—The issuance and compulsory use of some preventive, even if it be nothing more than cotton with petrolatum, Guild says, is in the interests of efficiency in the army and of economic importance. Even such small things as ear plugs are of importance if they can serve to keep trained men in active service. The providing of preventives should not be left to the individual soldier.

Nor should such preventives as we have be issued only "when demanded" and to those few who realize the danger and know of the preventive, but they should be issued like clothing, rations, ammunition and other equipment; to all the troops, officers and men alike, and their use not left optional but made compulsory when going into action. Like any other preventive, the object of their use is to keep the active service list up and the hospital list down. Guild believes that the increased efficiency of an army using plugs would be many times greater than the cost of the plugs; they would be one of the smallest expense items of all the equipment of a soldier, and the bulk of even large numbers would not be a very noticeable factor in the problem of transporting supplies.

72. **Gangrenous Balanitis.**—The six cases cited by Owen and Martin were examined within one to three days after the sore appeared, all being in the erosive stage, with an abundant discharge of foul pus, moderate edema with slight phimosis, and exquisitely tender ulcers, the largest sore being about the size of a dime. The ulcers were covered with pus and considerable coagulated serum and exudate, beneath which lay a very superficial reddish colored erosion. All showed moderate inguinal adenitis, painless in character. There were no constitutional symptoms. In all of these cases the sore had appeared within four days after exposure. One patient with a history of repeated exposures, but denying coitus in os showed *Spirochaeta pallida*, as well as the organisms characteristic of this condition. This case cleared up promptly under salvarsan and local treatment with hydrogen peroxid. Three other cases treated with wet dressings of hydrogen peroxid cleared up within a few days. The remaining two patients were advised to use the same treatment, and presumably cleared, as they failed to return to their attending physician.

73. **Cyanosis and Hyperpnea Seen in Pneumonia.**—Pearce points out that the percentage of carbon dioxid in the alveolar air is not a good guide as to blood acidosis, at least in cardiac disease, pneumonia and congenital heart disease. In the cardiac case a low carbon dioxid alveolar air pressure is a result of the attempt of the respiratory center to prevent its venous carbon dioxid pressure from being unduly raised because of the slow circulation. In pneumonia and congenital heart disease, the respiratory center reacts to keep the arterial blood at a normal carbon dioxid tension.

74. **Experimental Asthma in Guinea-Pig.**—It has been shown by Sewall that guinea-pigs, especially after previous sensitization, may react to intranasal instillation of horse serum by the development of respiratory seizures which have the essential characters of bronchial asthma. In some cases an apparent immunity of the respiratory apparatus may be developed while general hypersensitiveness still remains, as proved by the fatal effect of intravenous injection of serum. In most cases the hypersensitiveness of the respiratory apparatus, once acquired, tends eventually to return, at least through a period of thirteen months. Small nasal instillations of serum, 0.04 c.c., not themselves usually capable of inducing asthmatic paroxysms, apparently have a distinctly inhibiting effect on the development of asthma by large instillations, 0.2 c.c., which themselves tend to maintain hypersensitiveness and override resistance. It is an opinion supported by many additional observations, that serum is actually absorbed by the mucous membrane of the nose whenever placed in contact with it and that the immunologic reactions are internal to the surface. The conclusion, emphasized in other papers is here strengthened that in therapeutic prophylaxis better results may probably be expected by choosing a dosage of antigen which just fails to produce an obvious reaction than by one which entails a marked disorder.

76. **Acute Death from Chlorin Poisoning.**—The acute reaction found by Klotz in the lungs of animals exposed to chlorin consisted mainly in an intense congestion with edema and capillary thrombosis. Animals surviving a longer period showed a pulmonary infiltration of inflammatory cells mainly lymphocytes. The acute capillary thrombosis appears of importance in the acute deaths when the concentration of the gas is great. The intense pulmonary edema obtained by

abstracting a thin serum from the pulmonary blood vessels causes an alteration in the quality of the blood and an increase in its viscosity. This dense blood tends to clot spontaneously and is also influenced in this more rapid clotting by the presence of chlorin within the lung. These two factors, increased viscosity and capillary thrombosis, impede the ready flow of blood through the lung and lead to a fall in the arterial blood pressure. Thus, acute chlorin gassing differs materially from other forms of asphyxia.

77. Blood Picture Following Experimental Splenectomy.—In a series of twelve rabbits Orr succeeded in producing an anemia by splenectomy which had a duration of sixty or more days, after which time the red blood count and hemoglobin returned to normal. No definite change was produced by splenectomy in the platelet count and coagulation time. Changes in the total white cell count produced by removal of the rabbit's spleen were not constant. The same conclusion applies to the elements in the differential counts, with the exception of the large mononuclears, which were increased in every instance after splenectomy.

Kentucky Medical Journal, Bowling Green

October, XV, No. 10

- 80 Combinations, Mixtures and Sequences of Anesthetics. W. H. Long, Louisville.—p. 454.
- 81 Oral Sepsis from View Point of Pediatricist. E. M. Tarr, Boston.—p. 458.
- 82 How School Teachers Can Benefit Physicians. E. McKendrie, Bardwell.—p. 461.
- 83 Thyroid. U. V. Williams, Frankfort.—p. 462.
- 84 Treatment of Menorrhagia and Metrorrhagia. J. F. Dunn, Arlington.—p. 464.
- 85 Treatment of Tuberculosis in Private Home. W. L. Tyler, Curds-ville.—p. 465.
- 86 Report on Use of Carrel-Dakin Solution. F. Stites, Jr., Hopkins-ville.—p. 467.
- 87 Classification of Anemias with Special Reference to Differential Diagnosis and Treatment of Addison-Biermer Type. R. L. Bone and A. L. Thompson, Madisonville.—p. 468.
- 88 Typhoid. J. B. White, Cave City.—p. 472.
- 89 Medicine of Future. W. J. Gerding, Newport.—p. 473.
- 90 Progress of Internal Medicine During Year 1916. E. B. Willingham, Paducah.—p. 473.
- 91 Beriberi or Endemic Multiple Neuritis; Report of Twenty-One Cases. F. M. Travis, Eddyville.—p. 476.
- 92 Fibroid Tumors. A. W. Cain, Somerset.—p. 483.

Maine Medical Association Journal, Portland

September, VIII, No. 2

- 93 Experience in Base Hospital in France. E. Nichols, Boston.—p. 31.
- 94 Medical Preparedness. W. L. Cousins, Portland.—p. 43.

Medical Record, New York

October 6, XCII, No. 14

- 95 Critical Analysis of Treatment of Tuberculosis with Copper and Potassium Cyanid. G. H. Evans, San Francisco.—p. 575.
- 96 Plea for Greater Exactness in Diagnosis and Treatment of Tuberculosis. R. C. Newton, Montclair, N. J.—p. 580.
- 97 Lesions of Posterior Urethra; Their Symptomatology, Diagnosis and Treatment. E. M. Watson, Buffalo.—p. 583.
- 98 Splenic Reflexes of Abrams in Diagnosis and Treatment of Syphilis. A. Abrams, San Francisco.—p. 586.
- 99 Necessity of Further Administrative Control of Scalp Diseases in Children and Adults. W. A. Manheimer, New York.—p. 587.
- 100 Treatment of Lobar Pneumonia. M. F. Morris, Jr., Chelsea, Mass.—p. 589.
- 101 Seventeen Cases of Goiter Treated with Injections of Phenol, Iodin and Glycerin. J. E. Sheehan, New York.—p. 591.
- 102 Five Cases of Acute Streptococcic Infection. E. G. Zimmerer, Lincoln, Nebr.—p. 592.
- 103 Hot Air and Calomel Vapors in Treatment of Catarrhal Deafness and Other Mucous Membrane and Systemic Conditions. E. J. Brown, Minneapolis.—p. 593.

New York Medical Journal

October 6, CVI, No. 14

- 104 Aspiration or Vacuum Suction Apparatus. R. C. Myles, New York.—p. 629.
- 105 Etiology and Treatment of Frequency of Urination in Women. W. E. Stevens, San Francisco.—p. 630.
- 106 Vital Statistics. W. H. Guilfooy and E. W. Kopf, New York.—p. 633.
- 107 Modern Children's Clinic of Outpatient Department. C. Herrman, New York.—p. 636.
- 108 Typhoid Appendicitis. E. W. Skelton, New York.—p. 638.
- 109 Intubation in Diphtheria. A. J. M. Treacy, Philadelphia.—p. 643.
- 110 Serum Disease, Anaphylaxis and Allergie. F. E. Stewart, Philadelphia.—p. 644.
- 111 Urticaria. O. Joerg, New York.—p. 647.

Ophthalmic Record, Chicago

October, XXVI, No. 10

- 112 Hemianopsia. R. I. Lloyd, Brooklyn.—p. 491.
- 113 Acute Pneumococcus Conjunctivitis with Complications and Fatal Termination from Meningitis. R. R. Brownfield, Phoenix, Ariz.—p. 516.
- 114 Habitual Use of Spectacles. An Insurance against Traumatism Rather than a Risk. H. Gifford, Omaha.—p. 519.

Rhode Island Medical Journal, Providence

October, I, No. 10

- 115 Medical Officers' Reserve Corps. H. D. Arnold.—p. 205.
- 116 Organization of Dispensary Services of Second Naval District. D. N. Carpenter.—p. 208.

South Carolina Medical Association Journal, Greenville

September, XIII, No. 9

- 117 Some of the Predisposing Influences of Nervous and Mental Diseases. J. F. Munnerlyn, Columbia.—p. 668.
- 118 Carcinoma of Female Breast. H. S. Black, Philadelphia.—p. 671.
- 119 Stones in Urinary Tract. E. P. Merritt, Atlanta, Ga.—p. 676.
- 120 Plea for Local Anesthesia in Major Surgery. J. H. Johns, Westminster.—p. 678.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

September, XXII, No. 4

- 1 Roentgenology of Os Petrosum. H. W. Stenvers.—p. 97.
- 2 Method for Rapid Determination of Depth of Foreign Bodies from Roentgen Ray Plates. E. H. Nelthorpe.—p. 113.

British Medical Journal, London

September 15, II, No. 2959

- 3 *Infective Jaundice. B. Dawson, W. E. Hume and S. P. Bedson.—p. 345.
 - 4 Some Nose and Throat Diseases of Childhood. D. Guthrie.—p. 355.
 - 5 *Combined Vaccination with Multiple Vaccines (Quadruple, Quintuple and Sextuple). A. Vastellani and F. Taylor.—p. 356.
 - 6 *Rupture of Left Bronchus from Trachea. J. Patrick.—p. 359.
 - 7 *Treatment of Vincent's Angina. E. Emrys-Roberts.—p. 360.
- September 22, No. 2960
- 8 *Meningococcus of Weichselbaum. E. C. Hort.—p. 377.
 - 9 *Suitability of More Soluble Salts of Quinin and Cinchonin for Intravenous Injection. L. Rogers.—p. 381.
 - 10 Scabies Problem on Active Service. H. MacCormac and W. D. D. Small.—p. 384.
 - 11 Convenient Method of Preparing Eusol. J. L. Smith, J. Ritchie, and T. Rettie.—p. 386.
 - 12 Carrel-Dakin-Daufresne Treatment. R. M. Rowe.—p. 387.
 - 13 Carrel-Dakin Treatment and Method for Its Application on Extensive Scale. L. Dimond and R. McQueen.—p. 387.
 - 14 Case of Intra-Ureteral Primary Syphilitic Chancre. P. A. Clements.—p. 388.
 - 15 Screen Method of Localization. J. H. Shaxby.—p. 389.

3. Infective Jaundice.—It would seem to be proved by the authors that there is in the armies in France a type of infective jaundice which is the same in clinical and pathologic features as that described by the Japanese workers, and that this disease is caused by the *Spirochaeta icterohemorrhagiae*. And there is also undoubtedly proof that this same spirochete may cause a similar train of symptoms without the appearance of jaundice. The entire subject of infective jaundice is reviewed by the authors and a complete bibliography is appended to this article.

5. Combined Vaccination with Multiple Vaccines.—Tetravaccine No. 1 (T. A. B. C.) prepared by the authors consists of four standardized emulsions mixed together in equal proportions and containing, per cubic centimeter: typhoid, 500 million; paratyphoid A, 250 million; paratyphoid B, 250 million; cholera, 2,000 million. Of this mixture 0.5 c.c. is given under the skin of the arm the first time, and the same or double the amount a week later. Tetravaccine No. 2 (T. A. B. M.) consists of an emulsion in phenolized saline solution (phenol 0.5 per cent., salt solution 0.85 per cent.) of *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B, and *M. melitensis*. After standardizing the four different vaccines and testing their sterility they are mixed together in equal parts. The vaccine will contain, per cubic centimeter: typhoid, 500 million; paratyphoid A, 250 million; paratyphoid B, 250 million; Malta fever, 2,000 million. Of this vaccine 0.5 c.c. is injected subcutaneously in the arm, and a week later the same or double the amount is given. Pentavaccine

No. 1 (T. A. B. C. P.) consists of a phenolized saline emulsion of typhoid, paratyphoid A, and paratyphoid B bacilli, cholera vibrios and plague bacilli. The vaccine is standardized to contain, per cubic centimeter: *B. typhosus*, 500 million; *B. paratyphosus* A, 250 million; *B. paratyphosus* B, 250 million; *V. cholerae*, 2,000 million; *B. pestis*, 500 million. Half a cubic centimeter is given the first time and double the amount a week later. Pentavaccine No. 2 (T. A. B. C. M.) is so standardized that each cubic centimeter contains: typhoid, 500 million; paratyphoid A, 250 million; paratyphoid B, 250 million; cholera, 2,000 million; Malta fever, 2,000 million. At the first injection 0.5 c.c. is given and the same or double the dose a week later.

Hexavaccine (T. A. B. C. P. M.) consists of an emulsion in phenolized salt solution (phenol 0.5 per cent., salt solution 0.85 per cent.) of *B. typhosus*, *B. paratyphosus* A, *B. paratyphosus* B, *V. cholerae*, *B. pestis* and *M. melitensis*. The combined vaccine is standardized so as to contain, per cubic centimeter: *B. typhosus*, 500 million; *B. paratyphosus* A, 250 million; *B. paratyphosus* B, 250 million; *V. cholerae*, 2,000 million; *B. pestis*, 500 million; *M. melitensis*, 2,000 million. The first time 0.5 c.c. is given and the same or double the amount a week later. The authors point out that the inoculation of the combined vaccines is harmless. The reaction is not severe with the exception of those containing *B. pestis*, but even simple plague monovaccines, whatever their method of preparation, give a severe reaction. It is essential to use in the preparation of the vaccines selected strains of the various micro-organisms which have been found by experience to be rich in antigen. This is especially the case as regards *B. paratyphosus* A and *M. melitensis*, some strains of which are very poor in antigen, and when injected give rise to only a small production of antibodies. Combined vaccines are of practical advantage, especially in the case of troops, rendering possible a contemporaneous immunization for several different maladies; this saves a great deal of time, and the men do not suffer the discomfort of a large number of inoculations. To protect the troops against typhoid, paratyphoid A, paratyphoid B, and cholera with the method of ordinary monovaccines in succession, eight inoculations, at least, were necessary, spread over a period of two months; with the tetravaccine (T. A. B. C.) two inoculations only are sufficient, spread over a period of a week.

6. Rupture of Left Bronchus from Trachea.—The injury in this case was caused by a gunner falling from an empty general service limber, whose wheel then passed over his chest. Besides other injuries there was partial separation of the left bronchus from trachea, the tear being through the anterior portion to the extent of two-thirds of the circumference; acute inflammatory reddening of the mucous membrane of both bronchi; inflammatory infiltration of cellular tissue of middle mediastinum; the cartilaginous rings of trachea and bronchi normally flexible and tough. The most striking primary features of the postmortem examination were the profound degree of collapse of the left lung, its acute hemorrhagic state, evidence of the severity of the crushing blow and the acuteness of the pericardial inflammation.

7. Treatment of Vincent's Angina.—The treatment used by Emrys-Roberts consists in the local application of the following lotion:

| | gm. or c.c. | |
|---------------------------|-------------|--------|
| Hydrogenii peroxidi | 150 | 3 v |
| Vini ipecacuanhae | 12 | 3 iiij |
| Glycerini | 15 | 3 v |
| Aquae | ad 240 | 3 viij |

By its use the gingivitis is usually cured in about six days, while the throat condition clears up altogether in from twenty-four to forty-eight hours.

8. Meningococcus of Weichselbaum.—Hort believes he is able to produce direct morphologic evidence that the meningococcus is not a bacterium at all, and that both it and the filterable virus actually represent different phases in the life cycle of an ascomycetic organism which has hitherto been believed to be an involution form of the meningococcus. This communication deals mainly with the morphologic characters of the meningococcus and of its so-called giant forms

which represent an ascual stage in the life cycle of an organism allied to the ascomycetes. The ascus may be either large or small, or of any intermediate size (0.2 to 5 microns). The meningococcus of Weichselbaum is an ascospore, derived from the giant meningococcus by a process of endosporulation. Hort says that the true nature of the meningococcus and its alleged giant forms has hitherto been missed because of the practically exclusive use of solid mediums for purposes of identification, and because direct examination of unstained living organisms, including warm stage development in liquid cultures, has not been carried out.

9. Intravenous Injection of Quinin in Malaria.—As 3 grains of the bihydrochlorid contain as much quinin as 4 of the acid hydrobromid, after commencing with 0.5 gm. doses to ascertain whether the patient has any idiosyncrasy toward the drug, up to 12 grains of the bihydrochlorid or 16 grains (approximately 1 gm.) of the acid hydrobromid, in 7.5 and 10 c.c., respectively, of normal saline (making practically 10 per cent. solutions), may be given once daily for at least four days. Rogers advises to supplement the intravenous doses with quinin by the mouth, as the former is likely to be rapidly excreted through the kidneys, a point he is now investigating. In any case prolonged oral administration should follow the more active intravenous medication. Once the resistant relapse producing stages of the malarial parasite have been produced, quinin by intravenous administration is not likely to be so effective, but the vigorous treatment of primary attacks of malaria by intravenous quinin appears to be worthy of careful trial to ascertain if the frequency of subsequent relapses can be reduced. A further material advantage of such early intravenous administration is likely to be that dangerously large infections, which may terminate at any moment in fatal coma under oral administration of quinin, are likely to be rapidly controlled, and the present mortality from malaria to be reduced to practically nothing.

Glasgow Medical Journal

September, LXXXVIII, No. 3

- 16 *Rectal Crises of Nontabetic Origin. A. MacLennan.—p. 129.
- 17 Plastic Meatotomy. J. L. Hamilton.—p. 132.
- 18 Inguinal Hernia; Some Comments on Present Views. C. Bennett.—p. 134.

16. Rectal Crises of Nontabetic Origin.—Both sexes are liable to these attacks, though, in MacLennan's experience, they occur more frequently in males. It has been observed in ages ranging from 16 to 50. The pain complained of is of the most commanding character; it is located in the sacral region. Tender areas are not associated with the deep seated pain, but, on the contrary, pressure tends rather to give relief. The crisis commonly arises during defecation, especially if accompanied by straining. On the other hand, the patient may be awakened from a sound sleep by the rapidly growing pain. Tenesmus is present, and the act of defecation, though at first it causes an exacerbation of the suffering, results in its cessation. In men the crisis may be accompanied by priapism. When the crisis has reached its zenith the onset of a general tremor or rigor, accompanied by the sensation of cold, is almost invariably followed by a rapid cessation of the pain. The pain may wax and wane, but the most severe attacks are often the shortest. Examination of the rectum during the attack has demonstrated in two cases the presence of a fine fibrillar tremor in the internal sphincter. Piles may be present and undoubtedly enter into the etiology. A severe type of rectal crisis was recently observed after colostomy in a case of inoperable cancer of the rectum. The lesion is a neurosis. In no case examined during the pain has the rectum been found quite empty, and constipation of a minor degree has been the rule. The treatment MacLennan has found most efficacious has been the inhalation of a dozen drops of chloroform placed on a handkerchief.

Lancet, London

September 8, II, No. 4906

- 19 *Treatment of Chest Wounds. T. R. Elliott.—p. 371.
- 20 Purulent Bronchitis; Its Influenzal and Pneumococcal Bacteriology. A. Abrahams, N. F. Hallows, J. W. H. Eyre and H. French.—p. 377.

- 21 *Trench Fever, Associated with Presence of Hemogregarine. L. Dimond.—p. 382.
22 Case of Influenzal Meningitis. K. S. Bhat.—p. 384.
23 Case of Periodic Attack of Pyrexia. R. V. Solly.—p. 386.
24 Case of Advanced Multiple Brain Softening. T. Walmsley.—p. 387.
25 Case of Chickenpox Simulating Smallpox. F. C. Poynder.—p. 388.
26 Case of Malaria Acquired in England. S. C. Biswas.—p. 388.
27 Studies in Anatomic Nomenclature. W. C. Morton.—p. 398.

19. **Treatment of Chest Wounds.**—The chief practical points emphasized by Elliott are the following: A sterile hemothorax of moderate size, that is, of about 30 ounces, will recover as rapidly by natural absorption as by aspiration. The retention of foreign bodies in the chest in aseptic cases does not appear to exert any crippling effect for military service, but more accurate information is urgently needed on this point. Cases of infected hemothorax that have been drained in France and the patients transferred to the united kingdom, generally recover rapidly and completely. None die and subsequent operations are rarely needed. More than one-half of these empyema patients can be returned to duty. The late mortality from chest wounds is practically nothing in England, and it is only 5 per cent. on the lines of communication in France; but in the area of the armies it is higher than was at first supposed. About 10 or 15 per cent. may die in medical units at an early date from the severity of the injury and about 10 per cent. may die later at the casualty clearing stations from complicating sepsis. Among those casualties in which sepsis is developed within the chest the mortality is very high, rising to nearly 50 per cent. under the present system of treatment by rib resection and drainage. The old conservative routine of surgical nonintervention, except by late drainage, finds its justification only in the satisfactory recovery of those cases of gunshot wound of the chest which remain noninfected, that is, about 75 per cent. The high mortality in those patients who develop sepsis demands a wider practice of the new prophylactic method of cleansing operation performed at an early hour on certain carefully chosen groups of patients.

21. **Trench Fever Associated with Hemogregarine.**—The presence of a small hemogregarine, resembling in many respects the *Hemogregarina gracilis* found by Wenyon in a lizard host, has been noted by Dimond in the venous blood, the blood from the liver, spleen and lung punctures in twelve cases of trench fever. The fact that this protozoon of trench fever is a hemogregarine suggests the extreme probability that the *Pediculus corporis*, or what is even more likely, that a louse allied to the *Hematopinus stephensi* and parasitic on the Indian field rat, is the carrier of the protozoon. The presence of such large numbers of rats in the trenches, which come into close association with the troops seems to favor this conclusion. An effort is being made to trace out the cycle of sporogony in the stomach cells of the different types of lice commonly present in the underclothing of soldiers.

Medical Journal of Australia, Sydney

August 25, II, No. 8

- 28 Broken Hill Epidemic. G. H. Burnell.—p. 157.
29 Cases of Perforated Gastric and Duodenal Ulcers. D. Kelly.—p. 162.
30 Case of Splenectomy for Splenic Anemia. H. Bullock.—p. 163.
31 Differential Diagnosis and Pathology. P. E. W. Smith.—p. 164.

September 1, No. 9

- 32 Fractures. R. H. Russell.—p. 177.
33 Case of Fracture of Skull. A. Aspinall.—p. 183.

September 8, No. 10

- 34 Clinical Treatment of Syphilis in Australian Army. H. H. Griffith.—p. 197. To be continued.
35 Diagnosis, Prophylaxis and Treatment of Plumbic Ocular Neuritis Among Queensland Children. J. L. Gibson.—p. 201.
36 Case of Tetania Parathyreopriva Complicating Pregnancy. J. D. Herlihy.—p. 204.

Archives Médicales Belges, Paris

August, LXX, No. 8, pp. 673-792

- 37 *War Surgery from Paré to Carrel. F. Helme.—p. 673.
38 *Epinephrin in Addison's Disease. P. Nolf and H. Fredericq.—p. 691.
39 *The Functioning of the Suprarenal Capsules in Infections. N. Goormaghtigh.—p. 697.

- 40 *Treatment of Relapsing Fever. de Rudder.—p. 710.
41 Present Status of Opinion in Respect to Soldier's Heart. Wybauw.—p. 714.
42 The Conclusions Voted by the Conférence Chirurgicale Interalliée in relation to Treatment of War Wounds.—p. 769.

37. **The Development of War Surgery.**—Helme traces the history of the care of the wounded in war from Paré in the sixteenth century to Carrel in the twentieth. His quotation from Paré's book, published in 1545, reads as if it might have been written last week: "When I hear people speak of the weapons and war machines that used to be used in battles and in taking towns, they seem like children's toys in comparison to those that are being used today, which surpass in size and cruelty all that one could imagine of the most cruel." Mines, counter mines and grenades were already in use then, and wounds were dressed with boiling oil. Paré, the young barber-surgeon, used cool turpentine oil instead of boiling oil, in the numerous campaigns which he accompanied. Vesalius was about the same age at the same time and served in the enemy army. Each at the age of 28 published an epoch-making work, Vesalius breathing new life into anatomy and Paré creating surgical anatomy and introducing the ligation of vessels to arrest hemorrhage after an amputation. Before him, the bleeding vessels had been seared with a hot iron. Without any knowledge of the principles of antisepsis, he applied antisepsis in treatment of wounds, and his mixture of brandy, salt and water is not unlike the hypertonic solution which some advocate now for dressing wounds. Paré lived to be 80, serving four kings and tending thousands of soldiers in more than 100 battles. His work was translated into four other languages but, notwithstanding this, his influence on military surgery nearly all died with him. Only one principle survived, namely, the importance of avoiding delay before the wounded get surgical care. Larrey and Percy insisted on this principle in Napoleon's campaigns and preached "Operate quickly, operate thoroughly, and watch over the general condition as well as the local." The next great advance, Helme declares, was when Carrel showed how to ward off secondary infection and suture the wound early. He adds: "Carrel seems to have inherited in his fingers the delicate touch of his forebears, silk weavers of Lyons. After four years of intern service at Lyons and a term as prosecutor of anatomy, he spent several years at Chicago and then entered the Rockefeller Institute at New York where his leading idea—to perfect the surgery of the lungs—drew him on through the various phases of suturing of blood vessels, and means to stimulate healing, to his final successful technic, the secondary suture, which Professor Depage regards as the greatest discovery that has been made in surgery since Lister."

38. **Epinephrin in Addison's Disease.**—The case of Addison's disease described by Nolf and Fredericq is exceptional only in the extreme tolerance of the patient for epinephrin. The man of 38 with grave symptoms of suprarenal insufficiency was given 10.5 mg. epinephrin in four and a half hours; this included 2 mg. subcutaneously and 8.5 mg. intravenously. No sugar appeared in the urine and the blood pressure was not brought up quite to the normal figure even with this. The following days 6 and 4 mg. were given. There were no signs of intolerance at any time, even though to attain the desired therapeutic result these large doses were found necessary. The case teaches that we need not shrink from large doses of epinephrin in emergencies, as with acute suprarenal insufficiency under chloroform, or with gaseous gangrene or other hypotony of infectious origin. By watching over the blood pressure as the epinephrin is being taken, we can continue it and push it until the arterial pressure is brought up to a point where the functioning of the organs is possible once more.

39. **Suprarenal Functioning During Acute Infections.**—Goormaghtigh has been systematically investigating what occurs in the suprarenals under the influence of a general infection, before actual pathologic changes become installed. He examined seventy suprarenal capsules taken from the cadaver from fifteen to sixty minutes after death. This research demonstrated among other things that the supra-

renals show macroscopic changes during the course of infectious processes complicating war wounds, more than any other organ in the body. The suprarenals become turgid, the surface grows redder, a bright red or a brownish or sepia red, while the organ increases in weight. From the very incipency of the infection, the cortex pours out into the blood stream its reserve of cholesterol and proceeds to secrete more. In grave infections, terminating fatally in two or three days, all the reserves are exhausted. The secretion of new lipoids is activated. With infectious processes running an average of ten or twenty days, the suprarenals develop pathologic lesions, the most important of which seems to be the atrophy of the fasciculated zone. The glomerular zone seems to reenforce or substitute the functioning of this zone. Its task seems to be the collection from the blood of the materials necessary for the production of cholesterol. The other zones show signs of secretory hyperactivity. In infectious processes of slow development, the parenchyma of the gland becomes hypertrophied. The data presented apparently demonstrate a close analogy between the mechanism of the secretory processes in the suprarenals, corpora lutea, and the interstitial gland of the ovaries. The epinephrin-secreting medullary substance of the suprarenals is stimulated to enhanced secretion by the infection. The morphologic evidence of this hyperactivity is the pronounced differentiation of its constituent elements. In some cases this excessive activity completely exhausts this portion of the gland. In conclusion he reports that injection of epinephrin in the course of infections notably augments the activity of the medullary parenchyma of the gland. Three colored plates illustrate the phases which he describes.

40. Relapsing Fever in East Africa.—De Ruddere describes the clinical picture and the complications of relapsing fever as it appeared among the Belgian troops on their victorious march through German East Africa. It affected black and white troops alike. The ticks that transmit this disease are rare in the Belgian Congo but are extremely numerous in German East Africa, especially along the caravan routes. The disease is easily recognized by the frontal headache and pains in the bloodshot eyes. The spirilla are found in the blood during the febrile attack but not at other times. Salvarsan and its substitutes did not seem to have any curative action except at the first attack, but they materially relieved the pain and discomfort at each relapse. The duration and frequency of the attacks did not seem to be modified by them in the least. Iridocyclitis is a comparatively common complication, but this yielded to salvarsan or atoxyl in his experience. One man succumbed to complicating epistaxis, and in most of the severe cases the heart muscle was modified, the heart sounds duller and the pulse small and fast during and between the relapses. There may be ten or fifteen relapses of tick fever, and the men are sick with it for a total of rarely less than three months.

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XXXVI, No. 5, pp. 87-100

- 43 *Influence of Colored Light on Flies. C. Galaine and C. Houlbert.—p. 95.

No. 6, pp. 101-120

- 44 *The Danger from Preservatives in Foods. A. Satre.—p. 107.
45 Extraction of Projectiles Under Screen Control. F. Bec and P. Hadengue.—p. 109.
46 Appendicitis in Five of Eight Children in Family with Inherited Syphilis. Gaucher and Brenet.—p. 110.
47 Strophanthus in Treatment of Cardiac Insufficiency. Vaquez and Lutembacher.—p. 110.
48 *Silent Peritonitis and Sudden Death. J. Minet.—p. 112.
49 Importance of Lip Reading for the War Deaf. Lannois and Chavanne.—p. 114.

No. 7, pp. 121-140

- 50 Historical Sketch of Suture Procedures for Wounds of the Intestines. A. Satre.—p. 127.
51 The Diet for Diabetics. Nigay.—p. 128.
52 Quinin Intravenously in Treatment of Malaria. F. Barbary.—p. 130.
53 Treatment and Prophylaxis of Trench Foot. V. Raymond and J. Parisot.—p. 131.
54 *Hot Drinks and Hot Foods as Factor in Stomach Troubles. A. Manquat.—p. 133.
55 *The Antirat Campaign. A. Calmette.—p. 137. Commenced in No. 6, p. 115.

43. Flies and Colored Lights.—From the research by Galaine and Houlbert it seems evident that flies are able to see only white light. All rays outside of the range from green to orange fail to act on their eyes, and are perceived as darkness. In a room lighted through light blue glass the flies behaved as in the dark. Flies avoid rooms lighted through stained glass as if the rooms were dark.

44. Preservatives in Foods.—Satre remarks that the substances added to foods to prevent fermentation before they are eaten, prevent it also after they are eaten, so that the food is unable to be subjected to the normal digestive changes in the alimentary tract. The person thus suffers from defective digestion, while the liver and kidneys may be gradually affected by the minute doses of the preservative. The diagnosis is extremely difficult unless a whole group of persons eating the same food develop parallel dyspepsia, etc. Differential diagnosis may be difficult, even with such an easily suspected drug as arsenic ingested in minute amounts over long periods. The new-born, the elderly, and pregnant women are particularly sensitive. The infant gets salicylic acid in its breast milk if the mother is getting salicylic acid as a preservative in some article of food. If brought up on the bottle, its digestive functioning may be upset by the preservatives added to the cow's milk, or sodium bicarbonate or other substance used in cleaning the bottles. In the elderly, as the kidneys grow less permeable, the preservatives ingested in food are retained and pile up in the body. The kidney is also less permeable in the pregnant woman, and retained accumulating antiseptics have a directly injurious action on both herself and the fetus. Satre adds that as all questions connected with food are particularly grave now and pressing for solution, legislation in behalf of pure food, free from adulterations and preservatives, is of paramount importance now.

48. Silent Peritonitis and Sudden Death.—Minet reports three cases of sudden death in supposedly quite healthy soldiers. Death occurred in bed at night, and in each case necropsy revealed acute peritonitis, the sudden death being the first appreciable manifestation. One of the men had been kicked in the abdomen four days before and had fainted at the time, but then had apparently felt no further disturbance. Death came with absolute suddenness in each case.

54. Hot Foods as Factor in Dyspepsia.—Manquat relates various experiences which converted him to the opinion that in a very large proportion of cases dyspepsia and aerophagia are brought on and maintained by the habit of taking beverages and food too hot for the tissues to bear without injury. This is particularly the case with hot soups, tea, etc., taken on an empty stomach. The hot fluid passes so rapidly through the mouth that the buccal mucosa is not injured. When the hot drink is taken at the close of a meal, the injury is comparatively slight as the stomach walls are protected by other food. The thermometer will show temperatures of 60 or even 68 C. (140 or 154 F.) in soups and other dishes currently taken, and even higher than this in a baked potato. He found that those dyspeptics accustomed to hot beverages and hot soups usually had long, narrow and sagging stomachs. The stomach is tender under pressure and spontaneously painful at a variable period during digestion. Hypersecretion with varying acidity and constipation are the rule—all indicating a tendency to chronic gastritis. The action of ptyalin on starch becomes reduced at temperatures over 45 C. (113 F.) and pepsin may have a similar temperature range of action. The hand cannot be held in water at 45 C. (113 F.) without modifications in the respiration and the general circulation. These modifications must certainly be more profound when the extensive and delicate mucosa of the stomach is exposed to such high temperatures. In practice, when Manquat has been able to overcome the habit of hot drinks and foods, the dyspepsia improved notably. The symptoms from stagnation in the stomach and the aerophagia were the first to show the benefit. When heat is indicated for the stomach, he adds in conclusion, "apply it to the outside."

55. **The Antirat Campaign.**—Calmette relates that the *Mus rattus* has been known from the earliest historical times, but that the sewer rat was not known in Europe until 1727 when, owing to famine and extensive earthquakes in India, large bodies of sewer rats migrated westward and overran western Europe in a few years. By the end of the eighteenth century public rat-hunts were common; in one month 16,000 rats were killed in one building in France. Calmette reviews the history of the rat further, and shows that it is often responsible for transmission of trichinosis as well as of the plague. Remlinger has also proved the transmission of rabies from dog or cat to man by the bite of rats. He has reported the case of a girl at Smyrna who developed rabies after she had been bitten in the finger by a mouse that had attacked her, in her cellar, without the slightest provocation. Calmette describes the measures adopted in various countries to repress rats, saying that, left unmolested, one couple theoretically would breed 500,000 descendants in two years. Even if only a tenth survive, they form a formidable army. The system of bounties seems to work well, he says. In Stockholm 600,000 rats have been killed. At Odessa 500,000 roubles were appropriated for the purpose, and in the Japanese cities a bounty of 2 or 3 cents is paid. In France, the Danysz virus has been used on a large scale against destructive field mice, but it does not act so well on rats. Numbers have been killed with it but others escape. In the Antilles the mongoos, a weasel-like animal domesticated in India, was introduced to exterminate rats, which it does most effectually. But as it attacks also poultry, etc., its depredations were found worse than those of the rats. Calmette thinks that nonvenomous serpents would be better, such as the boa, which is a great consumer of rats while harmless for man. He adds that in 1909 the British parliament voted measures to promote and regulate the destruction of rats, and he pleads that the French parliament should imitate this example. The profession must educate public opinion to realize the enormity of the economic waste from the depredations of rats, and the dangers to which they expose the land from the murderous epidemics which they transmit.

Presse Médicale, Paris

August 30, XXV, No. 48, pp. 497-504

56 *Recent Progress in the Fight Against Tuberculosis. J. Danysz.—p. 497.

57 Suggestions for Improved Technic for Gynecologic Examination. H. Sosnowska.—p. 500.

58 *Immediate Extraction of Projectiles. J. Fiolle.—p. 501.

September 6, No. 49, pp. 505-512

59 *Representative American Authorities in Medical Hygiene. J. J. Matignon. Title Page.

60 *Alcohol Nerve Blocking in Treatment of Causalgia. Pitres and L. Marchand.—p. 505.

61 *Exercises that Stretch the Sciatic Nerve. G. Roussy, L. Cornil and R. Leroux.—p. 506.

62 *With Active Pulmonary Tuberculosis the Sputum May Contain Tubercle Bacilli from the First. C. Richet, Jr.—p. 508.

56. **The Fight Against Tuberculosis.**—Danysz explains the mechanism of infection by the tubercle bacilli as it differs from other infections. He shows how the special phase of production of antibodies which, in diphtheria, corresponds to immunization and the cure of the disease, in tuberculosis corresponds to the beginning of the pathologic state. In diphtheria it is the excess of toxins, in tuberculosis, the excess of antibodies within the cells which determines the pathologic moment and the lesions. He presents evidence further demonstrating that a certain relative immunity can be realized by bacteriovaccination. This, in connection with the spontaneous cures in certain cases, suggests that it may yet be possible to cure the disease with a combination of vaccination and chemotherapy. But scattered experiences and experiments do not afford an adequate basis for determining the best technic for both. This is a task too vast to be left to isolated establishments. To date, the hospitals, the sanatoriums have not been able to keep the tuberculous long enough and control the results with uniform methods. To realize appreciable progress, experimental and clinical experts must be grouped in establishments for study and cure of tuberculosis, the whole work systematized and endowed, so that every discovery, old or new, can be given a thorough

test for its clinical value, under the best conditions for control. These studies will be necessarily long and expensive, but they will prove less expensive in the long run than the present haphazard methods in scattered clinics, etc., without any general direction. We know now that it is possible to render the organism more resistant to contagion, and the task before us is to utilize better the clinical and experimental data already acquired, and to organize new research to clear up certain still obscure points. The services of bacteriologists, chemists, physicians and veterinarians should be organized and correlated, carrying on parallel the study of tuberculosis in both man and cattle.

58. **Immediate Extraction of Projectiles.**—Fiolle follows the path of the projectile in seeking for it, and says that nine times out of ten, it is thus possible to find and remove the missile. He strives to open up and clear out the path down to the projectile without touching it with the fingers. As the path of the projectile has to be cleared out any way, he thinks this is better than cutting down on the projectile where it is shown by the roentgen rays. Bécclère advocates the latter. With a little experience, roentgenography can be dispensed with in these immediate operations, with the passage-way of the bullet still gaping or easily permeable.

59. **American Medical Pioneers in Hygiene.**—Among the names mentioned in Matignon's historical sketch of American pioneer work in medical hygiene are besides Gorgas, Reed and Lazear, Capt. E. B. Vedder of beriberi fame, Major F. F. Russell of the army antityphoid vaccination, Gentry and Ferenbaugh who found Malta fever in Texas goats, and Major Hoff and Capt. B. K. Ashford who stamped out smallpox and ankylostomiasis in Porto Rico.

60. **Nerve Blocking in Treatment of Causalgia.**—Pitres and Marchand report that Sicard's method of injecting diluted alcohol into the trunk nerve has put an end to the distressing cases of intense pain, or causalgia, following a war wound. Before this method was introduced, they had numbers of wounded suffering tortures from this cause which they were unable to relieve by any measures. The pains subsided at once on blocking the nerve with alcohol, injecting 60 per cent. alcohol into the nerve above the lesion in the thirty patients given this treatment. Three cases are described in detail to demonstrate that this nerve blocking does not aggravate preexisting motor paralysis or bring on new. On the contrary, when the pain was arrested by the alcohol, certain other disturbances disappeared with it, especially the co-organic paralysis, the nature of which is still a mystery. The causalgia in the first case had persisted for a year, not modified by an operation to free the nerve embedded in cicatricial tissue. The second patient had been wounded in the thigh, and the causalgia accompanied paresis in the domain of the femoral nerve. The femoral nerve was opened up under chloroform and 4 c.c. of 60 per cent. alcohol injected. The pains disappeared at once, and also the paresis but more gradually. Alcohol at 60 per cent. interrupts conduction of sensation but apparently does not modify conduction of motor impulses. Before the nerve blocking there was partial reaction of degeneration, but this gradually became total notwithstanding the conservation of volitional contractility in the muscles involved. In the third case the pains were in the palm although the wound was on the arm. The alcohol was injected in the wrist, but this induced merely a very brief and fleeting relief of the pain. This experience sustains Sicard's directions that the nerve has to be blocked above the lesion to be effectual.

61. **Diagnosis of Sciatica.**—Roussy gives some illustrations showing the attitudes inevitably assumed with true sciatica in doing certain exercises. For example, in trying to bend over and touch the floor, the knees stiff, the knee on the side of the sciatica is necessarily bent, or else the foot kicks out behind. When the patient sits on the floor with legs straight out, the knee on that side is always bent a little, and it cannot be fully extended. Pressure on the knee to extend the limb straight causes a sharp pain in the sphere of the sciatic nerve. Another test is the pain felt when the trunk is bent forward. The trunk has to be kept within a given angle to avoid increasing the pain of the sciatica. This unilateral

Kernig's sign was found positive in 63.6 per cent. of his cases of true sciatica. The standing Lasègue sign was positive in 63.45 per cent. By this term he means the outward rotation of the tip of the foot and the knee on that side as the trunk is bent over, trying to touch the floor, the heels solidly planted, about 20 cm. apart. With true sciatica, squatting does not aggravate the pain, while the simulator goes through much groaning as he assumes a squatting position.

62. Open Pulmonary Tuberculosis.—Richet insists that sputum containing tubercle bacilli is the rule with a chronic pulmonary tuberculous lesion in evolution. All such lesions, he declares, are "open" from the first, and hence are contagious from the very first of their infection. Repeated examinations may be necessary to disclose the bacilli.

Progrès Médical, Paris

September 1, XXXII, No. 35, pp. 287-294

- 63 *Traumatic Asthma. M. Loeper and H. Codet.—p. 287.
64 *The Clinical Picture of Intoxication with Suffocating Gases. P. Voivenel and P. Martin.—p. 288.
65 *Signs of Real and Apparent Death. A. Terson.—p. 289.

63. Traumatic Asthma.—Loeper and Codet remark that dyspnea is frequent as a sequel of war wounds of the chest. It is sometimes continuous, sometimes intermittent or brought on by exertion, and it may be of mechanical, nervous or reflex origin from some chronic inflammation or sclerosis of lungs or pleura, or some lesion in the diaphragm or mediastinum. It was observed in about 40 per cent. of their cases of war wounds of the chest from six months to a year or more after the injury. The dyspnea assumed the type of asthma in from 2 to 5 per cent. They describe in detail two typical cases of this traumatic asthma. The paroxysms were accompanied by exaggeration of the oculocardiac reflex and a tendency to nausea and syncope. The wound involved the mediastinum in their cases; in one case, radioscopy revealed the presence of a projectile. In other cases the asthma was brought on by effort, especially marching, or during digestion. In these cases there was some lesion of the phrenic nerve, and hiccup was common. There is likewise a purely nervous dyspnea, a kind of pulmonary epilepsy, they say, which presents all types, from the shortness of breath after exertion to the paroxysmal tachypnea simulating true asthma, an actual respiratory neurosis. Treatment of traumatic asthma is palliative above all. They found belladonna, with atropin, much more effectual than morphin. With it datura or valerian can be associated, and even ipecac during waves of congestion. From the results obtained in some cases, thiosinamin seems to aid in resorption of fibrous tissue.

64. Clinical Picture with Asphyxiating Gases.—Voivenel and Martin report that the gases used recently by the enemy in their sector were of the chlorin type, causing corrosion of lung tissue. The men die from subacute edema of the lung causing asphyxiation, as if they were drowning. The men gasp for breath and lean their heads down to let the fluid run out of their lungs, unless the coma is too profound. The blood is black and viscous. Ipecac in large doses (4 or 5 gm. or more) with copious venesections gave remarkable results. They warn against using a mask in giving oxygen in these cases. They gave it by Gréhan's method. The above is the more common type of gassing injury, but some of the men presented what they call the livid type; the face is livid, the lips blanched, the dyspnea intense, but there is no acute edema and few signs on the part of the lungs. The pulse is fast and extremely weak, and there is much agitation and frequent sudden starts. One patient in this group became dazed and apathetic. In nearly all in this group signs of suprarenal insufficiency were pronounced especially white dermographism. These evidences of suprarenal injury suggested epinephrin in treatment, and it proved successful. The manifest suprarenalitis explains further the persisting asthenia in these cases. It was so extreme that even by the end of the week, merely changing from one ward to another sent up the temperature and the pulse grew irregular. The mild forms were of three types; the pulmonary, with spasmodic cough and a few rhonchi but the pulse and general

condition good; the gastro-intestinal type, with abdominal and epigastric pains, constipation and nausea; and the nervous type, with headache and backache, muscular weakness and a dazed condition. These various types may be blended. There was no albuminuria even in the severer cases. Once past the second day, the men all recovered. The temperature, pulse and respiration began to return to normal the second or third day and by the fourth or the fifth they persisted normal except that the pulse continued to drop, a bradycardia of 60 or 50 persisting often for three weeks or longer. The men that had been gassed seemed to be peculiarly susceptible thereafter to infections and fatigue.

65. The Eye Signs of Death.—Summarized recently when published elsewhere, Abstract 41, p. 1035.

Revue Médicale de la Suisse Romande, Geneva

XXXVII, No. 6, pp. 329-384

- 66 *Treatment of Leg Ulcers. Cunier.—p. 329.
67 *Experimental Research on the Differential Cell Count of Pleural Effusions in the Tuberculous. J. Golay.—p. 337.
68 *Poisoning from Rhubarb Leaves. Maillart.—p. 344.
69 Treatment of Gonococcus Urethritis. G. Cornaz.—p. 348.
70 Rectoscope with Interchangeable Tubes of Different Lengths. C. Perrier.—p. 354.
71 Case of Fatal Puerperal Infection of Antepartum Origin. C. Waegeli.—p. 355.

66. Treatment of Leg Ulcers.—The author of this article, recently deceased, endowed a prize for the best work on treatment of varices presented to the Swiss committee. The canton of Vaud has charge of the prize fund. He combines general medication and a compressing bandage with an antiseptic or aseptic dressing. The leg is wound with a roller bandage, 7 meters long by 10 cm. wide, wound smoothly from the toes to the knee. This bandage is applied in the morning on rising and is changed or taken off at bedtime. To keep this bandage from slipping down, after the bandage has been wound to the ankle, it is brought up slanting to just below the knee before the bandage is folded over, the bulge of the calf thus holding the bandage in place all day. He gives illustrations to show this firm bandage and states that it has to be worn indefinitely to prevent return of the varicose trouble in after years.

67. Differential Cell Count in Effusions.—In research on rabbits reported by Golay, he found mononuclears relatively more abundant in the pleural effusion in the tuberculous than in the healthy animals, but the difference is not marked.

68. Poisoning from Rhubarb Leaves.—The man of 41, his wife, four children and servants were all taken with violent diarrhea a few hours after having eaten a dish of rhubarb leaves cooked with spinach. All rapidly recovered except the man. He developed acute epithelial nephritis during the following week. Under dietetic measures the symptoms gradually subsided and there was no further trace of albumin in the urine by the twenty-seventh day, and his health has been excellent since.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 23, XXXVIII, No. 67, pp. 921-928

- 72 *The Ocular Lesions with Diphtheria. T. Di Giuseppe.—p. 921.
August 30, No. 69, pp. 945-952
73 Treatment of Suppurating War Wounds; Necessity for Individualizing. I. Andreoli.—p. 945.

72. The Ocular Lesions with Diphtheria.—Di Giuseppe practices in a mountain quarry district where the streets and even some of the houses are hewn out of the rocky mountain side. Typhoid is endemic and other infectious disease flare up in numerous epidemics. In the last fifteen years he has been through five epidemics of diphtheria there, with a total of about 5,000 diphtheria patients in his charge. Among this large number he encountered only five cases with complications on the part of the eyes. They subsided under large doses of antitoxin and local application of the same every hour, although the cornea had ulcerated in three of the cases. In one case the corneal ulceration was so severe that vision was completely lost in that eye. One child had the bilateral diphtheric conjunctivitis with false membranes as the first manifestation of the disease. The other children in the family had

the usual throat localization. In the two other cases of ocular complications there was merely paralysis of the oculomotor muscles, and this did not seem to be influenced by the intensive antitoxin treatment applied, both children being left with squint. The prognosis with oculomotor paralysis should be reserved, as one never knows whether the oculomotor nerve center has been destroyed by the diphtheria toxin or has been merely transiently injured.

Riforma Medica, Naples

September 1, XXXIII, No. 35, pp. 849-868

- 74 *Effect of Cholesterol in Culture Medium on Development of Germs. L. Manfredi.—p. 849.
75 History of Acromegaly. (Rivendicazioni italiane.) A. Ferrannini.—p. 857.

74. **Cholesterol in Culture Mediums.**—Manfredi reports that addition of 0.5 per thousand cholesterol to the ordinary culture mediums did not seem to affect the development of typhoid and allied bacilli. A larger proportion checked their growth even when the content was less than the cholesterol content liable to be found in the blood in corresponding cases of these diseases. The colon bacillus and the streptococcus of erysipelas and puerperal fever were checked only with proportions over 1 per thousand, and the staphylococcus, diphtheria and cholera germs only with 2 per thousand.

Brazil-Medico, Rio de Janeiro

August 11, XXXI, No. 32, pp. 269-278

- 76 *The Mortality from Tuberculosis at Rio de Janeiro. P. Barbosa.—p. 269. Commenced in No. 30, p. 251.
August 18, No. 33, pp. 279-286
77 *Ankylostomiasis in the Brazilian Navy. J. Porto-Carrero.—p. 279. Commenced in No. 32, p. 271.
78 Entameba Found in Snake. (Entameba serpentis, n. sp.) A. M. de Cunha and O. da Fonseca.—p. 279.

76. **Tuberculosis at Rio de Janeiro.**—Barbosa remarks that the mortality from tuberculosis at Rio is higher than in the thirty other large cities of the world. It is surpassed only by that of Caracas in Venezuela and Callao in Peru while the climatic and sanitary conditions in these latter cities are far below the level of the Rio of today. The tuberculosis mortality has declined everywhere, and in Rio it dropped from about 12 per thousand inhabitants in 1863 to about 4 since 1903, the variable range since being from 4.61 to 3.83 per thousand inhabitants. Barbosa pleads to have tuberculosis and prophylactic measures against it included in the routine work of the national public health department, with a special chief for the tuberculosis work. He enumerates the measures found useful elsewhere, and urges their adoption, with penalties for promiscuous spitting. He emphasizes that tuberculosis is an epidemic disease and should be handled like all epidemic diseases. The fact that it is chronic instead of an acute epidemic does not alter the threefold principles on which every epidemic should be combated, notification, isolation and sterilization. He insists on compulsory notification but does not approve of relying on terminal disinfection. Yellow fever is almost the only disease with which terminal disinfection is of vital importance, as this kills the infected mosquitoes. Tubercle bacilli, on the other hand, rapidly succumb to air, light and drying. Rio is particularly fortunate in its housing conditions, in comparison to other large cities. There is no overcrowding; the houses have light, air and space in abundance, and there are scarcely any tenements. The high tuberculosis morbidity is due to the unrestricted dissemination of the germs and the low resisting powers of the populace which consists in large proportions of half-breeds who are extraordinarily susceptible to tuberculosis. The excellent housing conditions, the universally recognized authority of the public health service, and the docility of the people render very promising a well planned campaign against tuberculosis.

77. **Hookworm in the Brazilian Navy.**—Carrero protests against recent rumors in regard to the prevalence of disease in the navy, citing his own experience as fleet surgeon for the last six years. Salt water is peculiarly unfavorable for the hookworm and its transmission on ships is exceptional. Among the 6,511 marines and crews stationed at Rio in 1916, there were 214 who were given treatment for hookworm, but

he doubts whether in any instance it had been acquired after entering the navy service. Only one of the thirteen patients with malarial polyneuritis had hookworm, and none of the five with beriberi. There was no death attributable to hookworm in the navy. The dispensary for hookworm patients opened in 1915 in the Marine Hospital has had to be closed for lack of patients.

Semana Medica, Buenos Aires

July 5, XXIV, No. 27, pp. 1-28

- 79 Pathogenesis and Treatment of Cancer. E. Cisneros.—p. 1.
80 Paraffin Film Treatment of Burns. J. M. Jerez and M. E. Jerez.—p. 20.
July 12, No. 28, pp. 29-56
81 Proposed Legislation for Unified Control Over All Public Hospitals, Asylums, Etc., in Argentina. (Asistencia Publica Nacional.) E. R. Coni.—p. 29.
82 *The Balantidium Coli in Argentina. S. E. Parodi, V. Widakowich and R. Borzone.—p. 35.
83 Present Status of Conception of Assimilation. E. Foster.—p. 41.
84 Partial Colectomy for Necrosis. E. Icasati.—p. 45.
85 Experiments in Plasmogenesis. (Recientes conquistas biogenesicas.) V. Delfino.—p. 47.
86 *Ichthyolized Petrolatum for Burns. M. R. Suarez.—p. 48.

82. **The Balantidium Coli in Argentina.**—Parodi and his co-workers report in detail three cases of balantidiosis in persons who had always or for twenty years lived in Argentina. The case histories and the illustrations testify that the *Balantidium coli* is prevalent in Argentina and is liable to induce the same pathologic states as it induces in other countries, and it may breed healthy carriers. Systematic examination of the stools in diarrheas and dysenteries should be the routine practice. The first known case in Argentina was published only last year. Parodi's first case was in a boy of 8. He was apparently healthy, but the stools contained not only the *Balantidium coli* but also the necator, hymenolepis and trichocephalus. Repeated examination showed that the balantidium disappeared from the stools in the course of two weeks. Possibly the exclusive milk and vegetable diet may have contributed to its disappearance. One other child in the family was said to have been having diarrhea for over a year. In the two other cases reported the balantidiosis was very severe; the adult recovered under suppression of meat and treatment with acid enemas and intravenous injections of 0.01 gm. of mercuric cyanid. No specimens of the balantidium could be discovered after the ninth day. The other patient, a boy of 9, died. The parasites had burrowed into the mucosa and induced ulceration at various points. Numerous young forms of the parasite were found close to the edges of the ulcerations, showing that it finds in them specially favorable conditions for reproduction. In each of the three cases the patients had come to the hospital for another cause, treatment of hernia or pleurisy, and the discovery of the parasite was casual. In the first it caused no symptoms; in the second case, periods of tenacious diarrhea alternated with periods of good health. In the third, the toxic necrosis of the bowel proved promptly fatal.

86. **Ichthyolized Petrolatum for Burns.**—Suarez has been using for ten years a 10 or 15 per cent. ichthyolized petrolatum in treatment of burns, and he here expatiates on its analgesic and healing power and the fact that with it the dressings do not stick to the tissues.

Russkiy Vrach, Petrograd

XVI, No. 15, pp. 337-360

- 87 *Cheese in Dietetic Treatment of Nutritional Disturbances in Infants. V. K. Menshikoff.—p. 337.
88 *Method of Isolating Toxins, Especially Tetanus Toxin. E. S. London and V. M. Aristovsky.—p. 341.
89 *Method of Specific Concentration Applied to the Ferments of the Pancreas. E. S. London and E. P. Pakhotina.—p. 342.
90 Operative Treatment of Prolapse of the Rectum. V. R. Braitseff.—p. 342.
91 The Civilization and Medicine of Ancient Assyria and Babylonia. P. V. Modestoff.—p. 346. To be continued.
92 Cholesterolemia and Its Pathologic Importance. V. N. Kuznetsoff and S. S. Khalatoff.—p. 349.
93 The Physiologic Bases for Electrocardiography and Its Clinical Significance. M. M. Gubergritz.—p. 354. Conclusion.

87. **Cheese in Infant Feeding.**—Menshikoff describes striking results in infant feeding with curds, cheese curds (*tvorog*),

after serious disturbance from too exclusive carbohydrate and salt-containing foods (soups and broths). He gives the full details of seven cases of this type. One child of 19 months, for example, weaned at the twelfth month, had signs of rachitis, with pale, doughy skin, weak pulse, subfebrile temperature, languor and apathy, and cold hands and feet, with diarrheic stools, with mucus content, averaging ten passages a day. There was no albuminuria. Pressure on the ankles left a deep pit. All other feeding was stopped and nothing allowed but rice water with five tablespoonfuls of cheese to the liter as the daily amount. After two days the stools lost their diarrheic character and there were only two passages a day. Then a quarter of the fluid was given in the form of cow's milk, and at once the diarrhea returned, four watery passages a day. The milk was stopped after two days, and the diarrhea subsided. The general condition had much improved by this time, the hands and feet keeping warm. The edema then was gradually thrown off, the weight dropping, and by the end of the week there was no further evidence of the dropsical tendency. Then very slowly and gradually the ordinary diet was resumed, adding to the rice water and cheese small amounts of acorn coffee made with milk, yolk of egg, bread, etc., so that by the end of the month the weight had increased from the original 7,600 to 7,700 gm. notwithstanding the intervening loss of 1,000 gm. as the dropsy was thrown off. The case illustrates the extreme caution necessary in resuming milk, after conditions have been righted under the cheese.

The work issues from the clinic for children's diseases at the University of Kazan, and Menshikoff theorizes to explain the mechanism of this benefit from the cheese with such severe upset of metabolism. He adds that the absence of the salts in the whey of milk, and of carbohydrates, on the one hand, and the predominance of albumin make this method of feeding especially advantageous when there is diarrhea from excessive fermentations in the bowels. In acute upsets of the salt metabolism, with edema in the subcutaneous tissues, any food containing salts and carbohydrates is directly contraindicated. Under the restriction to cheese the dropsy promptly disappears, the tolerance for food is increased, and the normal functioning of the tissues is restored. After the edema has disappeared, food containing salts and carbohydrates can be resumed without bringing back the previous disturbances. The weight drops as the edema subsides, but this loss in weight is not accompanied with collapse and is highly desirable. As there is no further intake of salts on the cheese diet, the source of the edema is removed and there is no return of the edema on resumption of the ordinary diet. One of another group of typical cases of which the details are given was that of a child of 6 months with pronounced atrophy and other indications of nutritional disturbance from too exclusive carbohydrate feeding. It had been taken from the breast four months before and had been fed on milk diluted 2:1, milk gruel and biscuit. It weighed only 4,690 gm. and had long been having ten diarrheic green passages a day, with much gas, and the child was very restless. It was then put on milk diluted with gruel, 1:2, with 4 per cent. sugar. The diarrheic stools continued, and the child was losing rapidly in weight. The next day it was given rice water to 900 c.c. a day, with one dessertspoonful cheese to each 200 gm. By the next day the stools were compact and there was no further loss of weight. In four days the weight had risen to 4,620 gm., and the child seemed quiet and to feel well. Then the diet was changed to 300 gm. milk; 600 gm. of the rice water; six dessertspoonfuls cheese, and 3 per cent. sugar. The stools continued normal, and the weight in nine days had risen to 4,900 gm.

An older child, 2½ years old, had been eating at the regular table but was debilitated by diarrhea for two months and nervous, with attacks of convulsions, and chilliness. After failure of the ordinary measures, he restricted the diet to the rice water with a tablespoonful cheese to each 200 gm., allowing the child as much of this as it cared to take; it took 1,250 gm. per day. By the tenth day the bowel functioning seemed to be normal; during the last week the diet had gradually been enlarged to include bouillon, chops and baked

apples. There were no further convulsions and the child seemed in excellent health, having regained nearly its former weight by the end of the second week. In conclusion he expatiates on the advantages of cheese as inexpensive and readily accessible to all, and not requiring clinical supervision. He has repeatedly ordered it for dispensary children. He warns, however, that when the debility from the drain of the diarrhea has reached an extreme degree, so that the child would be unable to stand deprivation of salt from the food, this method of feeding is contraindicated.

88. Isolation of Tetanus Toxin in Pure Form.—See Current Comment, this issue.

89. Isolation of Ferments of Pancreatic Juice.—See Current Comment, this issue.

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- 94 Modern Spiritualism. II. G. van Rijnberk.—p. 272.
- 95 Leonardo da Vinci's Anatomic Drawings. A. J. P. van den Broek.—p. 277.
- 96 *Gunshot Fractures of the Femur. L. M. Metz.—p. 284.
- 97 The Hat as Cause of Baldness. K. G. F. Sloos.—p. 299.
- 98 Infection of Internal Ear and Meninges After Fracture of Base of Skull. F. H. Quix.—p. 302.

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- 99 The Sensation of Pain in Man and Animals. (Voor en tegen proeven op levende dieren.) G. van Rijnberk.—p. 349.
- 100 *Sensory Metameres in Cat Hind Leg. (De bouw en overdekking der achterpootdermatomen bij de kat.) S. de Boer.—p. 359.
- 101 *Depressions in the Skull as Symptom of Rachitis: Tri-Bounocephaly. C. A. J. Quant.—p. 371.
- 102 Case of Sporotrichosis. J. K. W. Kehrner.—p. 386.
- 103 Deterioration with Age of Scopolamin Solutions. H. Bolten.—p. 390.

96. War Fracture of the Femur.—Metz relates his experiences in this line when with the Netherlands ambulance in Silesia where he had seventy cases in his charge. He applied extension by driving a nail into the femur or tibia in thirty-five cases, and never witnessed anything suggesting infection entering through the nail hole.

100. Segmental Sensory Innervation of the Hind Leg of the Cat.—De Boer is instructor at the University of Amsterdam and first assistant at the physiologic laboratory. He has previously published research on the segmental innervation from the thoracic portion of the spinal cord. He here reports similar research on the lumbar and sacral cord, defining the segments in the hind leg of cats, and reproducing the dermatomes in drawings. He never found them alike in any two cats, so he speaks only of averages, not normal standards.

101. Depressions in the Skull as Sign of Rachitis.—Quant called attention some time ago to a transverse and a vertical depression in the occipital bone which he found in 60 per cent. of the cases of rachitis examined. These depressions seem to develop more readily with skulls inclined to be long rather than broad. Lying on the side of the head during early infancy seems to increase the chance for this T-shaped depression. It was found in the mild as well as in the severe cases of rachitis, and it may be the first to appear of the signs of rachitis and the last to disappear. This may aid the practitioner in the diagnosis of rachitis. Above and on both sides of the depressions, the skull bone has the normal curve, but, owing to the depressions, the bone looks as if it bulged abnormally on each side and above. This is the reason why this skull anomaly has been called tri-bounocephaly, the three-hill skull, from the Greek term *bounos*, "hill." To detect the depressions on the living child, the head is bent over backward to relax the muscles. The horizontal depression can be most easily determined; drawing the fingers down along the scalp, to the side of the median line, the fingers sink into the transverse depression. There can be no doubt about the gully, as he calls it, as it lies above the point of attachment of the muscles. The finding of the transverse depression is usually enough; the existence of the other may be surmised. In his experience they were always associated. His roentgenogram of one case shows distinctly the long and wide transverse depression and the perpendicular groove with the "three hills" to right, left and above the T. The findings were distinct in 60 per cent. of forty-five rachitic children examined and less distinct in an additional 18 per cent.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 18

CHICAGO, ILLINOIS

NOVEMBER 3, 1917

THE SECTION ON GASTRO-ENTEROLOGY AND PROCTOLOGY

RETROSPECT AND PROSPECT *

DWIGHT H. MURRAY, M.D.

SYRACUSE, N. Y.

The American Proctologic Society was formed in Columbus, Ohio, in 1899, with twelve charter members. It has maintained its position and regularity of meetings with success and benefit since that time. Prominent among the charter members will be found such names as Matthews, Tuttle, Pennington, Cooke, Adler, Beach, Evans and Earle. To this original coterie of men many honorable and conscientious workers have since been added.

The American Gastro-Enterological Association was formed about the same time. This association has maintained a regularity of meetings and position since the year 1897. Prominent among the founders were such men as Aaron of Detroit, Benedict of Buffalo, Einhorn of New York, Hemmeter of Baltimore and Stewart of Philadelphia. Dr. Stewart was elected first president, and Dr. Aaron was the first secretary, which office he held continuously for fourteen years. To these pioneers many have been added, so that this association is quite representative. Among these I gladly mention some of the ex-presidents and others of prominence well representing the type of men who now compose that organization: Stewart, Meltzer, Bettmann, Friedenwald, Cannon, Sawyer, Kauffmann, Stockton, Morgan, White, Jones, Lockwood, Bloodgood, Finney, Meyer and Bassler; and many others deserve to be mentioned.

Samuel J. Meltzer of New York was president in 1904 and 1905, and his two presidential addresses on the subjects, respectively, "Our Aims" and "The Men We Lost" were instrumental as introspective agents in building the society up to the splendid organization that it finally came to be. One of the best things that Dr. Meltzer ever did for the benefit of the association was to create a committee on admission whose duties consisted in investigating and scrutinizing the moral and scientific standing of each applicant.

As time went on, the course of events proved that societies of specialists, while pleasurable to their own members, did not offer much for the advance of their subjects to the rank and file of the profession. To meet as a small body, one specialist reading a paper to others, served a very minimum benefit, because, first, the good that such a society could bring about was limited, and secondly, it could not fulfil a service or

play a large part in correcting the lack of knowledge in others owing to deficient experience, limited opportunities, and the lack of special courses of instruction in gastro-enterology and proctology in most of the medical colleges in this country.

The mutations of time have changed the status and practice of gastro-enterology and proctology from a condition of well-merited criticism to one of honor and distinction, and it is for this reason that the American Medical Association established a section recognizing these two fields of work. In its establishment there were only two dissenting votes, and we wish to extend our thanks to the House of Delegates of the American Medical Association for its considerate and complete action. It is now for us to justify their faith by showing superior quality of work in this section, which I am sure will be done. There have been pathfinders in the past, and we are the founders or establishers of the advancement today. I predict that this section will be second to none in point of importance and attendance, and that eventually it will be the second medical section in point of interest.

There is no one thing that at a stroke has done more to remove these fields from the hands of quacks, commercialists and the reproach of the past than the establishment of this section. Having been given the responsibility, and no responsibility comes without obligation, we accept both and intend to do our part, for we know that what we do will be broadly spread before the profession, and we are willing to be judged accordingly. We further recognize that all beginnings are difficult, and that the success of this section depends on our own exertions and the good will of all.

We hope that gastro-enterology and proctology will be especially taught in our medical schools, that the students of the future will at least have such fundamental knowledge of these fields that the public will be benefited thereby, and that when any member desires further knowledge, this section will be the annual mouthpiece to teach the things that should be known.

We hope our meetings will stimulate additional research, because there is much to be done. In the endeavor to be fair to both gastro-enterology and proctology, and considering our future section work as a whole, the following subjects are suggested for elucidation. There is much still to be learned about the effects of pyorrhea on the gastro-intestinal tract. Research work in connection with saliva has been neglected of late years. Should there not be a rearrangement of the classification of gastric conditions? What is the true etiology of gastroduodenal ulcer? Why is the stomach more often affected by cancer than any other internal organ? Do we know all we should about so-called precancerous lesions? Is the medical treatment of stomach and intestinal conditions known and

* Chairman's address, read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

undertaken by the rank and file of the profession as it should be?

There is much of gallbladder pathology yet to be learned. Intestinal stasis is still being debated, pro and con, both as to its etiology and as to the proper treatment. What about bacterial flora in connection with intestinal toxemia? What is the cause of many chronic colonic conditions, to which likewise may be added changes in the mucous membrane of the rectum? Is the treatment of hemorrhoids a medical or a surgical question, and to what extent? What is the best service we can render in the treatment of the colon and rectum? What are we doing with pruritus ani, vulvae and scroti? There are also the roentgen-ray and the laboratory sides; abdominal conditions accompanying diseases of other organs, and so on almost ad infinitum.

It seems to me that during our discussion of the symposiums much can be said that would be of great benefit to the military service and the life of the boys in the Army as to the care of their digestive and eliminative tracts. Advice along this line could come from no more competent body of medical men than are in this section of the American Medical Association, and I believe it would be pertinent, notwithstanding the fact that we shall have many good physicians as officers of the Army, and without doubt they would welcome such advice. Nothing could make for greater efficiency in our Army than the keeping of the gastro-enterocolonic tract in a normal condition. Possibly the offering of such advice at the present time may be too late, but I would recommend the appointment of a committee of five to formulate rules for the care of the gastro-intestinal tract. Such committee should deal especially with nutrition and elimination, and submit its report to the general committee of national defense, if it is found that the medical advisory board would welcome such advice, with the recommendation that a copy be placed in the hands of every soldier or his medical officer.

We have much to do in the line of research work, as well as considerable work of instruction. While congratulating ourselves on the formation of this section, let us enter into its future with a spirit that will bring the greatest good to the greatest number.

Controlling Malaria.—In cooperation with the U. S. Public Health Service, under the general supervision of the late Dr. R. E. von Ezdorf and his assistants, an experiment was conducted by the International Health Board of the Rockefeller Foundation at Crossett, Arkansas, in the practical control of malaria. The experiment was based on mosquito control without major drainage operations. It consisted of draining and regrading of natural streams so as to secure rapid off-flow, the filling of bottoms, the digging of ditches, the removal of accumulated vegetation and the systematic use of oil and other larva-killing substances. As an indication of the results of these experiments, during the last six months of 1915 there had been 2,100 malaria calls on physicians in Crossett; during the last six months of 1916, there were 310 calls. In October, 1915, there were 600 calls; in October, 1916, there were 46 calls. In December, 1915, there were 100 calls; in December, 1916, only 4 calls. In Lake Village, 103 homes on plantations in the vicinity of the town were selected and divided into four groups to which different methods of prevention were applied. In the first group, control was based on screening; in the second, on prophylactic doses of quinin; in the third, on a combination of the two measures; a fourth group was kept under observation as a negative control without the use of any measures. The experiment has been completed but the results have not yet been announced.

"TRUTH ABOUT INTRASPINAL INJECTIONS IN TREATMENT OF SYPHILIS OF NERVOUS SYSTEM"

A REPLY

JOHN A. FORDYCE, M.D.

Professor of Dermatology and Syphilology, Columbia University,
College of Physicians and Surgeons

NEW YORK

An address by the chairman of the Section on Nervous and Mental Diseases, Dr. Bernard Sachs,¹ was read at the Sixty-Eighth Annual Session of the American Medical Association entitled "Truth About Intraspinal Injections in Treatment of Syphilis of the Nervous System."

If the statements contained in that article are accepted by the medical profession as a final and correct judgment of this new therapeutic procedure, an enormous amount of harm will result in that numerous victims of syphilis of the nervous system will be deprived of their only chance to regain health and economic efficiency. The attempt to discredit the value of serologic examination of the spinal fluid as a diagnostic procedure and guide to treatment should not be permitted to gain credence without a word of protest. In the address in question there are several statements that are entirely at variance with the experience of my colleagues and myself, who have employed the method over a period of years in the manner we consider technically correct. We have seen numerous patients, treated for months intensively by salvarsan given intravenously with little or no clinical improvement, entirely relieved of tabetic pains, crises, bladder symptoms and sexual impotence, and with a marked improvement in their ataxic gait after the institution of intraspinal treatment. The following clinical histories and serologic findings illustrate the contention that intraspinal treatment can and does accomplish much more than the intravenous method.

REPORT OF CASES

CASE 1.—A man, aged 40, with tabes, who had had a chancre eight years previously, for one year had suffered from lancinating, neuralgic pains in the legs, girdle sensation, very marked ataxia, and inability to walk farther than a city block. He was intolerant to mercury, and numerous intravenous injections of salvarsan over a period of six months produced no effect whatever. His fluid findings after intravenous treatment were: cells, 46; globulin, + + + +; Wassermann test, + + + + to 0.2 c.c.; the blood was + + + +. He then received twenty intraspinal injections. The leg and girdle pains entirely disappeared; the bladder is normal, and the sexual power has improved. He has gained 50 pounds in weight, and is able to walk 4 or 5 miles without assistance or fatigue. For three years he has been back at his work. The serologic findings in the fluid and blood became negative after the sixteenth treatment, and have remained negative for two and a half years. The patient has had no clinical relapse.

CASE 2.—A man, aged 43, with tabes, had had a chancre in 1899. For four years he had shooting pains in the upper part of the back and thighs, at times so severe that he was obliged to remain in bed for from one to three days. There were Argyll Robertson pupils; the knee and ankle jerks were absent; the reflexes of the upper extremity were sluggish, the right more so than the left; there was slight ataxia; the bladder was a little slow; there was an area of anesthesia over the left breast just below the nipple. The patient was

1. Sachs, Bernard: Truth About Intraspinal Injections in Treatment of Syphilis of Nervous System, THE JOURNAL A. M. A., Sept. 1, 1917, p. 681.

nervous and irritable, and suffered from such profound mental depression that his business judgment and activity were markedly impaired. Before coming to New York he was intensively treated with salvarsan and mercury, with no abatement in the pains or other symptoms. The fluid findings when he first came under observation were: cells, 234; globulin, + + + +; Wassermann test, + + + + to 0.4 c.c.; colloidal gold test, 2332110000; serum, —. He received fourteen intravenous and fourteen intraspinal injections, which treatment has been followed by a complete disappearance of the pains, ataxia and bladder trouble. The patient's depression has entirely lifted, he has returned to his business with renewed interest and vigor, and he is able to carry through large enterprises with his former energy. He has gained 25 pounds in weight. His fluid findings have just become negative, eight months after the beginning of treatment.

CASE 3.—A man, aged 24, with tabes, had had a chancre six years before. For three years he had had attacks of severe shooting intermittent pains in the upper and the lower extremities and in the chest. The pupils were unequal, irregular and very sluggish to light; the upper reflexes were present and equal; the left patellar and ankle jerks were very weak. The patient's sexual power and bladder were not impaired. He had had twenty-two injections of salvarsan besides several years' treatment with mercurial inunctions and injections when he came under my care. At this time the blood was negative. A lumbar puncture revealed: cells, 34; globulin, +; Wassermann test, + + + + to 0.8 c.c.; colloidal gold test, 1123210000. After combined treatment of six intravenous and six intraspinal injections the fluid became negative. The pains for which the patient sought relief disappeared after the third intraspinal treatment.

CASE 4.—A man, aged 40, with cerebrospinal syphilis, had had a chancre in September, 1915, followed by secondaries for which he received immediately ten injections of salvarsan at weekly intervals, reinforced and followed by weekly injections of mercury over a period of nine months. In December, 1916, when he was first seen, he complained of lancinating pains all over the body, and occipital headaches. The pupils were unequal and irregular, the left sluggish to light, the right reacting promptly. The biceps, triceps, and radial reflexes were slightly more active on the right side. The knee and Achilles jerks were equal and normally active. A lumbar puncture made, Dec. 15, 1916, revealed: cells, 10; globulin, +; Wassermann test, + + + + with 1 c.c. Twenty-three intravenous injections were followed by some amelioration in the pains and headaches, but no change in the fluid other than a negative cell count. Ten intraspinal treatments brought about a complete cessation of the symptoms and a normal fluid.

CASE 5.—A man, aged 30, with cerebrospinal syphilis, had had a chancre in 1906. Six years before I saw him he had a left external strabismus and facial palsy. When first seen in January, 1916, he showed the residua of these paralyses. All the reflexes on the right side were more active than on the left; the pupils were unequal, irregular and fixed to light; the bladder and the sexual power were normal. The patient was suffering from headaches and severe pains in the lower extremities. The blood was + + + +; the spinal fluid showed 148 cells; globulin, + + + +; Wassermann test, + + + + to 0.8 c.c.; colloidal gold test, 1123310000. After twenty-one intravenous injections of salvarsan, besides weekly doses of mercury, the cells were reduced to 9 and the globulin to + +; the Wassermann test was unchanged; the headaches disappeared, but the leg pains remained. The patient was then placed on a course of intraspinal injections, of which fourteen were given along with fourteen more intravenous treatments. The biologic results have been completely negative for three months. The pains, which were such a refractory symptom, left the patient after the sixth intraspinal treatment, and have not recurred.

CASE 6.—A woman, aged 38, with syphilitic meningitis, gave no history of syphilis. In September, 1915, she developed symptoms of meningitis with severe occipital headaches and epileptiform seizures. The blood was + + + +. She was treated intensively by her physician with salvarsan intra-

venously and mercury, but without amelioration in her condition. When she came under my care in March, 1916, the spinal fluid revealed: cells, 86; globulin, + +; Wassermann test, + + + + with 1.0 c.c.; colloidal gold test, 1123200000. At this time she was placed on the combined intravenous and intraspinal medication. To the first two treatments she reacted with a chill, rise of temperature, nausea and vomiting. The reactions, however, grew less after subsequent injections until she was able to take them without any after-effect. Four months from the beginning of treatment, and after the fifth injection, the Wassermann test on the fluid was negative, the cells numbered 17, and the globulin was +. The patient received three more intraspinal injections, after which only a trace of globulin persisted. The headaches disappeared entirely after the second injection, she was able to resume her family and social activities, and her whole physical condition improved markedly; her weight, which had been down to 89 pounds, increased to 100 pounds. Slight epileptiform attacks recurred at rare intervals for eight months and then left her free. A lumbar puncture, made July 11, 1917, revealed: cells, 3; globulin, very faint trace; Wassermann test, negative; colloidal gold test, negative. The blood was negative. In all she had eight intravenous and eight intraspinal injections.

It does not require the experience of a trained neurologist to convince these patients that their condition has been changed from hopeless invalidism to comparative good health. The advocates of intraspinal therapy have never claimed for the method that it should be used to the exclusion of the intravenous method, nor have they claimed that the choroid plexus is impermeable in all cases, and that remedies introduced intravenously could not reach the cerebral or spinal tissues. On the contrary, it has been repeatedly stated that many cases of syphilis of the nervous system are favorably influenced or cured by this method. In support of this statement I have cited cases in which such results were obtained, and again to emphasize the fact record the following:

CASE 7.—A man, aged 32, with tabes, had had the initial lesion fourteen years before. There had been tabetic symptoms for four years with lancinating pains, loss of coordination, most pronounced ataxia, impotence, and impairment of rectal and vesical control. There were Argyll Robertson pupils; the deep reflexes were absent. The serum was + + + +. The spinal fluid, Feb. 10, 1912, revealed: cells, 34; globulin, + +; Wassermann test + + + + to 0.2 c.c. The treatment consisted of fifteen salvarsan injections intravenously, and inunctions and injections of mercuric chlorid. The patient has been free from pain for three years. His bladder is still a little slow, and his sexual power has not returned. His ataxia, which was such a prominent symptom that he was hardly able to walk across the room, is now scarcely perceptible, and he frequently walks from 5 to 10 miles a day. The serologic findings, Aug. 30, 1917, were: serum, —; spinal fluid: cells, 2; globulin, —; Wassermann test, — with 2 c.c.; colloidal gold test, negative. This patient, who on account of his physical disability in 1912 was obliged to resign his position and was unable to work for two years, has during the past two years resumed his occupation, which he follows with zest and enjoyment.

CASE 8.—A man, aged 43, with tabes, had had a chancre twenty years before. Two years before he had double vision. When seen in January, 1911, his pupils were slightly irregular, but reacted fairly well to light and accommodation. The knee and ankle jerks were absent; the reflexes of the upper extremity were diminished, the left more so than the right. There was slight hypesthesia to pain and touch over the lower limbs. He was exceedingly nervous, and complained bitterly of his neuralgic pains. The serum was + + + +. The first lumbar puncture was made in November, 1912, and revealed 14 cells; globulin, + +; Wassermann test, + + + + with 1 c.c. The serum was negative. Treatment consisted of ten intravenous injections of salvarsan and several courses

of mercury. There was a complete regression of the pains, which had been such a pronounced symptom, and of his nervousness and irritability. A second puncture made four years later revealed a normal spinal fluid. The blood has continued negative, and the patient reported recently that he felt perfectly well and never had a recurrence of his former unpleasant symptoms.

CASE 9.—A man, aged 29, with cerebrospinal syphilis, had had a chancre five years before, and sexual impotence for two years. The left pupil was slightly larger than the right, and both were sluggish to light; the knee jerks were hyperactive, the left more so than the right. Otherwise the examination was negative. The serum was negative; the spinal fluid: cells, 46; globulin, ++; Wassermann test, ++++ to 0.6 c.c. Treatment consisted of twelve intravenous injections of salvarsan and several courses of mercury and mixed treatment. The sexual power gradually improved. The blood and the spinal fluid have been negative for three years.

In such patients there are no indications for intraspinal injection unless they become intolerant to arsenic (sensitization) by the occurrence of skin eruptions, or develop nephritis or hepatitis. Should the latter complications occur, we have in intraspinal treatment a reserve method of great value. Intraspinal medication is indicated when the clinical symptoms and serologic findings are unchanged after a fair trial of intensive intravenous treatment. I have repeatedly

symptoms by intraspinal treatment, after the failure of intravenous treatment, that, theoretically, it was impossible for such benefit to have taken place. They smile at theory in the light of accomplished results.

Certain patients in the early florid stage of syphilis during intensive salvarsan and mercury treatment show symptoms indicating invasion of the nervous system. The spirochetes enter the fluid and produce meningitis or endarteritis with resulting pupillary changes, monoplegias, optic or auditory neuritis, etc. This early invasive power of the spirochetes probably indicates a strain different from the usual one. The remedies cannot be given in sufficient concentration through the blood stream to counteract the spinal fluid invasion. Treated in the usual manner, these patients either die from the intense meningitis or become candidates for paresis or tabes or other types of cerebrospinal syphilis.

Twenty years ago I saw a woman with a chancre of the upper lip who developed less than six months after the infection a very intense syphilitic meningitis which was followed by unconsciousness and death. Dr. Reasoner² reported a case of syphilitic meningitis which appeared within six months after a primary lesion and ended fatally three months later.

Intraspinal treatment begun at this time acts with infinitely more rapidity than in older infections, and

FINDINGS IN CASE 10

| Date | Cerebrospinal Fluid | | Colloidal Gold Test | Serum |
|----------|---------------------|----------|---------------------|------------|
| | Cells | Globulin | | |
| 10/31/16 | 944 | ++++ | to 0.2 c.c. | 5555542100 |
| 11/24/16 | 90 | ++++ | to 0.4 c.c. | 4444430000 |
| 12/ 6/16 | 31 | +++ | to 0.6 c.c. | |
| 12/16/16 | 30 | ++ | to 0.8 c.c. | |
| 12/30/16 | 30 | +++ | to 1.0 c.c. | 1133320000 |
| 1/12/17 | 50 | ++ | to 1.0 c.c. | 1123310000 |
| 1/27/17 | 28 | ++ | to 1.0 c.c. | 1123210000 |
| 2/10/17 | 20 | + | to 1.0 c.c. | |
| 3/ 3/17 | 21 | ± | with 1.0 c.c. | 1123100000 |
| 3/24/17 | 18 | ± | with 1.5 c.c. | |
| 4/14/17 | 8 | ± | with 2.0 c.c. | 1112210000 |
| 5/19/17 | 8 | trace | with 2.0 c.c. | 0000000000 |

Treatment 10/31/16-5/17/17: 6 intravenous injections salvarsan, 11 intraspinal injections salvarsanized serum (Swift-Ellis, fortified with 1/5 to 1/2 mg.), 18 injections mercury.

seen patients who have had from thirty to forty injections of salvarsan, with a negative blood but strongly positive fluid and clinical symptoms of nervous system involvement. Only a few days ago I saw a young man whose infection was two years old, who complained of pains in the legs and had beginning Argyll Robertson pupils. He had received thirty-two injections of salvarsan, over 100 injections of mercury, and many inunctions. The blood was negative. Examination of the fluid revealed: cells, 24; globulin, ++; Wassermann test, ++++ to 0.4 c.c.; colloidal gold test, 1233100000. In these cases it is assumed that the choroid plexus does not permit the remedy to enter the fluid. This assumption is supported by the rapid improvement that follows intraspinal injections. When the blood Wassermann test is negative and the fluid test positive it is probable that interchange between the two fluids does not take place. Experience has taught me in such cases that the intraspinal treatment is the one of choice and is followed by results unobtainable by any other. Dr. Sachs' arguments as to positive pressure in the cerebral capillaries, the short contact of remedial agents with foci of disease, and the slow circulation of cerebrospinal fluid are interesting physiologic observations, but have little value in discrediting the results achieved. The logic of results accomplished must always supersede theoretical reasons why they could not occur. I could not convince my patients who have been cured or relieved of their

offers the only chance of cure and prophylaxis of the later degenerations. Such a case I had the opportunity of treating last year :

CASE 10.—A man, aged 45, developed an initial lesion in April, 1916. The Wassermann test when he came under observation, April 26, 1916, was ++++. He was immediately placed under treatment, and never developed any secondary cutaneous lesions. He had weekly injections of salvarsan and mercury. October 1, while on a business trip, he became very nervous and restless and felt nauseated. A few days later his right arm became numb, and for several days he had a transient aphasia. Previously he had had mild generalized headaches for about two weeks. He returned to New York in a few days, and a physical examination revealed a weakness of the right side of the face. The deep reflexes were very active, more so on the right side. The pupils were equal, and reacted promptly to light and accommodation. The outlines were very slightly irregular. On puncture there were found: cells, 944; globulin, ++++; Wasserman test, ++++ to 0.2 c.c.; colloidal gold test, 5555542100. The accompanying table illustrates the rapid subsidence of these strongly positive findings under the treatment employed.

METHODS OF DIAGNOSIS AND TREATMENT

A proper conception of the syphilitic infection and the development of an efficient therapeutic procedure cannot be expected from physicians who see only the late degenerative effects of the disease. The intra-

2. Reasoner, M. A.: Early Death from Cerebral Syphilis, with Successful Rabbit Inoculation, THE JOURNAL A. M. A., June 17, 1916, p. 1917.

spinal method should not be condemned because it fails to cure advanced paresis. Little can be expected from any method (intraspinal, subdural or intraventricular) in paretics who have reached the stage when institutional treatment is demanded. The future of such patients lies in the hands of physicians who can recognize the early beginnings of the malady and grasp the possibilities of early prophylactic treatment. When cerebral atrophy is present and the entire brain is permeated with spirochetes and their resulting lesions, the most to be hoped for is a modification or temporary arrest in the progress of the disease.

Serologic examination of the fluid in all cases of early syphilis often reveals paresis in its incipient stages when it is amenable to a therapeutic attack. Unless we are to continue hopeless before such cases and watch the slow mental deterioration of the patients, we must employ all the means at our command to ascertain when and how the pathologic process begins and use logical and efficient treatment at the proper time to combat it. The teachers of syphilis in our medical schools must constantly emphasize the possibility of early nervous system involvement and formulate the methods of diagnosis and treatment. In this way and in this way only can we hope to limit the number of cases of cerebrospinal syphilis.

The symptomatology of syphilis of the nervous system is well defined after permanent changes have taken place and the question of relief is more or less uncertain. Early examination of the spinal fluid anticipates future degenerative changes, and permits the use of remedial agents at a time when they can be most effective. To deny the value of spinal fluid examination or to state that it reveals no more than a careful physical examination deprives the unfortunate patient of an accurate insight by the physician into his condition and the institution of efficient therapeutics. The advocates of intraspinal therapy have never claimed that degenerated cords could be restored by any method of treatment. It has been demonstrated, however, that the meningitis which precedes and causes such degeneration can be reached and cured, and further degeneration prevented. In such cases improvement in the clinical symptoms proceeds uniformly with the improvement in the spinal fluid. A patient with tabes whose fluid shows a positive Wassermann reaction with an increase in lymphocytes and globulin can be assured that his symptoms, like pain, crises, etc., may be relieved or cured and the further progress of his trouble arrested. It is true that in some cases the posterior nerve roots may be partially degenerated or compressed in such a manner by sclerotic tissue that pain may persist after all the findings are negative. These are exceptional cases and by no means the rule.

The statement by the author of the paper in question that claims are made for the intraspinal method by men whose chief interest was centered on a change in the Wassermann reaction, in a reduction in the cell count and in a change in the globulin reaction in the cerebrospinal fluid, rather than a change in the clinical condition of the patient, is a severe reflection on the intelligence of such men, and is entirely unwarranted by the facts. The patients are truly the first consideration, and the real object of medical art is to relieve suffering and cure disease. Unless these objects are kept in view, medicine is of purely academic interest and has little concern for the invalid. I have always advocated the close correlation of clinical and laboratory work, and for that reason have developed and con-

ducted a serologic laboratory in which an attempt has been made to eliminate the discrepancies and contradictory reports which are so confusing to the pure clinician. In case the laboratory report does not correctly interpret the clinical diagnosis, an effort is made to ascertain the correctness of the laboratory report or to review or correct the clinical diagnosis. The latter is no more infallible than the former, as we are frequently able to show by laboratory findings that the clinician may be in error. To belittle or deny the value of laboratory investigation in syphilis of the nervous system disregards entirely the careful work of the past, which has thrown so much light on diagnosis and indications for treatment, or as a guide to treatment, and on the nature of the early invasion of the nervous system by the spirochetes.

I agree with the writer that in many particulars the advantages of the intraspinal method have been grossly exaggerated. It has been demonstrated to me very clearly by long continued intravenous and intraspinal therapy that paresis in the stage which comes to the neurologist cannot be cured by any method. Its course is, however, modified more rapidly, and longer periods of remission are secured by intraspinal treatment than by any other. It is questionable, however, if this delay in the downward course of paresis is an advantage to the patient or his family.

The writer's sweeping assertion that the same biologic changes in the fluid have followed intravenous treatment, or repeated lumbar punctures, or the introduction of the patient's nonsalvarsanized serum, I must absolutely deny. I have followed in my own laboratory numerous cases of spinal fluid examination in which no change occurred after the introduction of nonsalvarsanized serum. These spinal fluids were sent for examination and reported on without knowledge by the serologist, Dr. Jagle, as to their origin. I should like to have the author show me a single case in which the Wassermann reaction in the spinal fluid has been influenced by nonsalvarsanized serum or repeated lumbar punctures. The cytology of the fluid may be changed by repeated lumbar puncture, but the other phases are not so influenced. This was demonstrated in my clinic last year where patients were treated over a period of five months by the Ravaut method, that is, the addition of salvarsan direct to the spinal fluid. Excepting variations in the cell count, the fluids remained unchanged. The same patients are now being treated with the combined Swift-Ellis-Ogilvie method with very definite results both clinically and serologically. As regards intravenous treatment, it has never been denied that the same fluid changes may not be brought about in certain cases. Those who uphold the advantages of intraspinal treatment maintain and have demonstrated beyond any doubt that in cases not influenced by intravenous treatment the intraspinal treatment yields positive results. This is the entire contention, and not that one method or the other can accomplish similar results in unrelated cases.

CORRESPONDENCE OF CLINICAL SYMPTOMS AND FLUID CHANGES

Dr. Sachs states again that there is absolutely no correspondence between a change in the cerebrospinal content and the condition of the patient. To one who approaches the subject with an open mind and is willing to accept evidence, I can demonstrate at least a hundred cases in which there is a very direct relationship between the various phases in the cerebrospinal

fluid and the patient's condition. Among them are more than thirty patients with tabes who have been cured of all their distressing symptoms, who have gained in weight and strength, and have regained business and professional activity. Their entire outlook on life has been changed. All these patients presented before treatment positive findings in the fluid. A number of them have been punctured from one to three years after all treatment was discontinued, and now show normal fluids. These patients may be definitely regarded as cured, as far as any further degenerative change is concerned. Ten patients with optic atrophy after one to two years show enlarged or stationary visual fields, and now have normal fluids; whereas before treatment all the phases were positive, including a cell count of from 24 to 150. The examinations of the eyegrounds and visual fields in these patients were made by ophthalmologists whose statements cannot be doubted.

In early syphilis with active meningitis, the symptoms rapidly subside with improvement in the pathologic fluid. In paresis and preparetic conditions a temporary remission may occur which is not indicated in the fluid excepting in the cell count and sometimes the globulin. In other cases, cerebral disintegration proceeds rapidly while the biologic condition improves. An active meningitis in these cases is influenced by treatment and registered in the fluid examination; but the deeper lesions progress as indicated in the failing mental powers. I could demonstrate many cases of paresis and taboparesis in which the Wassermann reaction remains persistently positive after two or more years of intravenous and intraspinal injections; but observations like these should not discredit established facts and lead to the rejection of the invaluable information that is afforded by this kind of investigation. We have learned that a fixed or persistent positive Wassermann reaction in the higher dilutions indicates in the majority of cases a potential paresis. Such observations properly interpreted support rather than detract from the value of the biologic tests.

In tabes, excepting in abortive forms and the terminal stages of long standing cases, in meningitis and meningo-endarteritis, the clinical symptoms correspond fairly closely with the serology, receding or advancing with corresponding changes in the fluid. Improvement in the Wassermann and globulin reactions may appear slowly and show the results of treatment long after the clinical picture improves.

The relationship of the Wassermann reaction to skin and visceral lesions is analogous, for large nodular skin lesions may entirely disappear after a short treatment, while the serum reaction shows positive for a much longer time. We persist in treatment until the reaction is modified or becomes negative, to guard against a possible relapse. The same sequence is encountered in the central nervous system; namely, a marked improvement in symptoms, persistence in the Wassermann and globulin reactions, a relapse after the discontinuance of treatment, then further treatment, until finally a negative fluid is obtained, with no further relapses. We have seen this succession of events so frequently that we urge treatment until we obtain negative findings or are convinced that the persistence of a positive Wassermann reaction in the high dilutions of the fluid with a paretic curve indicate approaching paresis.

No consistent or permanent results will be achieved in the treatment of syphilis of the central nervous system until the correlation of the clinical symptoms and

biologic changes are appreciated by the physician under whose care these patients come. A correct and comprehensive grasp of the problem will come only to the one who has the opportunity over a period of years patiently to study and correlate the clinical as well as the laboratory side of the question. It would be unfortunate, indeed, for the victims of syphilis of the central nervous system if the views of Dr. Sachs as to the value of spinal fluid examinations were to prevail and our diagnostic and therapeutic methods revert to the time before Nonne showed the great value of such examination in disease of the central nervous system.

EXAMINATION OF THE FLUID

A systematic fluid examination in all stages of syphilis has thrown much light on the time when infection of the fluid occurs. It has indicated the probable time when the spirochetes are deposited in the cerebral tissues and in the spinal fluid which later cause paresis and tabes. It has given us a working hypothesis that offers hope to these unfortunate patients and enables us to anticipate the degenerative stages. A general appreciation of this theory of the nervous system infection will do much to lessen the number of incurable paretics and tabetics, and relieve our public and private institutions of the enormous expense of caring for them. As a result of accumulated experience, I have learned to place vastly more reliance on spinal fluid examinations in determining the progressive or stationary character of the infection and the prognosis that can be offered the patient, than from the objective or subjective manifestations that these patients present.

Among our tabetic cases we find a group which shows little or no change in the spinal fluid, while presenting typical Argyll Robertson pupils and changes in the deep reflexes. These cases we look on as abortive or rudimentary tabes in which the process has cured itself or has been influenced by the previous treatment that the patients have received. There is, of course, here no indication for intraspinal injections. In other words, the fluid must show pathologic changes before we are justified in introducing our remedies by this channel. The same argument applies to optic atrophy. If we find a relatively high cell count with other phases positive, we assume that the meningitis which has involved the optic tracts or nerves may be influenced by the treatment employed.

IMPORTANCE OF PROPER TECHNIC

The criticism and opposition to the method are largely due to the unfortunate results that followed the employment of the Ravaut technic, that is, the introduction of from 1 to 5, 6 or more milligrams of neo-salvarsan added directly to the spinal fluid. A number of cases so treated have come under my observation with a traumatic myelitis causing bladder and rectal paralysis and with, in some cases, complete and permanent paraplegia. We have gradually learned, however, the tolerance of the cord to the remedial agent, and have evolved a technic that is free from the dangers mentioned. We have learned that low tabes with advanced degeneration will tolerate only the smallest doses, or is best treated by the original Swift-Ellis method. In high tabes or when the degeneration is of light grade, and in paresis, relatively larger doses can be used and at more frequent intervals. We have learned, too, that less irritation is produced and more benefit follows if we permit about 20 or 25 c.c. of fluid

to accumulate in the receptacle attached to the spinal puncture needle and then add our salvarsanized serum to it. In this way it is diluted before entering the subarachnoid space. Two objects are accomplished by this procedure: first, the minimum of irritation, and second, the withdrawal and medication of a larger quantity of spinal fluid. If we medicate a larger amount of the spinal fluid, we believe in replacing it that it will reach more readily the more accessible perineuronal lymph spaces. Our results in optic atrophy and in cerebral meningitis support this supposition.

It is needless to say that the proper employment of a procedure so highly technical as this one requires the aid of trained assistants and a well equipped laboratory. It requires the judgment gained by experience as to the dose to be used and the intervals that should elapse between them. Rest periods between courses of injections are also important, so that we may properly estimate the clinical and serologic improvement. During the past three or four years we have given hundreds of injections with no deaths and with no more serious symptoms than those that follow an ordinary lumbar puncture. Many patients prefer the intraspinal treatment to intensive intravenous treatment, as the constitutional reaction is generally less marked. In cases treated intravenously in the intensive manner mentioned by Dr. Sachs, I have seen severe and fatal forms of generalized exfoliative dermatitis, persistent forms of gastro-enteritis, nephritis and obstinate cases of jaundice due presumably to fatty degeneration of the hepatic cells. The intraspinal treatment can be used without subjecting patients to these dangers, and aside from the advantages of the method and properly selected cases it is a valuable reserve treatment in patients who have lost their tolerance to salvarsan intravenously or who have developed arsenic dermatitis, nephritis or hepatitis. In acute cases of early meningitis it is the method of choice.

CONCLUSIONS

1. In tabes, certain types of cerebrospinal syphilis like meningitis, meningo-myelitis, meningo-encephalitis and in optic atrophy with positive findings in the fluid, intraspinal treatment succeeds in relieving or curing the conditions after failure of intravenous and other treatment.

2. It is the only procedure that can be employed after the intravenous treatment fails or when the patient develops an intolerance to arsenic.

3. With proper technic and experience, it is less dangerous than intensive intravenous treatment.

4. In paresis with stigmata of degeneration, the most to be hoped for is temporary arrest of the encephalitis. There are borderline cases of meningo-encephalitis which simulate paresis and which are curable by the treatment in question.

5. The criticism of the method is based largely on the results following imperfect technic and by its employment in cases without clear indications afforded by spinal fluid examination. Aside from these reasons, it has been condemned after short and imperfect trials. In some cases the existing lesions are activated by early injections and cured by persistence in the treatment.

6. The author's statement that it is regrettable that changes in biologic findings should be made the criterion of the efficiency of any therapeutic method is

unfortunate from the standpoint of the patient as well as the investigator. With the exceptions noted in the body of the article, there is an intimate relationship between the clinical symptoms and the fluid findings. It is not difficult to select individual cases in which the Wassermann and globulin reactions are unchanged after prolonged treatment; but conclusions based on such exceptional cases are one sided, unfair, and fail entirely to interpret or correlate the fundamental principles involved. If reliance is placed on clinical improvement alone as a criterion of the action of our remedies and the fluid changes disregarded, few, if any, permanent cures will be achieved, and sooner or later the patient's condition will relapse. There is as much reason for basing the efficiency of a therapeutic procedure on the changes in the biology of the fluid as there is in using the blood Wassermann as a test of the value of treatment of syphilis in general. If we were to discard the positive knowledge acquired in the past few years as a result of systematic examination of spinal fluids in syphilis, we should have vague ideas as to the time the fluid is infected, no clear conception of the difference between active and abortive tabes, and no method of differentiating early paresis from conditions that simulate it. Neurasthenic states, headaches, phobias, vague changes in mentality, crises, or impairment in the sexual function are constantly overlooked or wrongly diagnosed by the pure clinician. Arteriosclerosis, chronic alcoholism, and diabetes may cause symptoms easily mistaken for the syphilitic syndrome.

7. The future of the syphilitic individual and the hope of anticipating or arresting the incurable degeneration is largely dependent on early and systematic examination of the spinal fluid.

8 West Seventy-Seventh Street.

ROENTGENOGRAPHIC EXAMINATIONS OF THE URINARY TRACT

REVIEW OF A SERIES OF ABOUT 500 CASES *

E. W. CALDWELL, M.D.

NEW YORK

This paper presents the results (some more and some less completely) obtained in 500 consecutive roentgenographic examinations of the urinary tract occurring in private practice. These cases were referred by 230 different physicians or surgeons, and it has been impossible to obtain full clinical records of all of them.

It will be appreciated that the accuracy and the extent of the clinical observations made by so large a group of men will vary considerably, and that the data derived from them cannot compare with the information which may be obtained from a hospital in which all of the work is done by a comparatively small group of men accustomed to working together.

In a few of the examinations, pyelography was combined with the ordinarily roentgenographic examination; but the number of these cases is small, and they have not been considered in this series. In a few cases our own records are incomplete, and these have been rejected from the series. Sometimes our records have been borrowed and not returned. There remain 455 cases of which we have fairly complete records of the

* Read before the Section on Genito-Urinary Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

roentgenographic reports. No case has been rejected from the list in which it is even suspected that an error was made in the roentgenographic diagnosis.

In practically every case, the report of the examinations was made from the roentgenograms alone and without taking into consideration the clinical history, the symptoms or the urine investigation. The results are, therefore, what may be obtained with the roentgenograms alone, not aided by pyelography and without any clinical help.

It must be obvious that some of the errors recorded might have been avoided had we used the combined method, and some of the cases reported doubtful or indeterminate would probably have been reported positive had we been in possession of the clinical data. On the other hand, it is likely that in a certain number of the doubtful or indeterminate cases, the possession of the clinical data might have led us into positive statements which would later have proved incorrect.

In order to allow sufficient time for subsequent observation, no examinations made later than Dec. 31, 1916, are included. All examinations in this series were made during 1914, 1915 and 1916, a period in which the technic was practically the same as that of today. The results, therefore, represent fairly what may be expected under present conditions from roentgenographic examinations alone. Before the beginning of the war, the photographic materials available were much more reliable than now, and the accuracy of results obtained in these examinations was somewhat greater.

In order to check up the results of the roentgenographic examinations and to obtain clinical data, the following questionnaire was recently mailed to every physician or surgeon referring a case in this series:

Date of roentgen-ray examination:

1. Was the roentgen-ray examination helpful to you in diagnosis?

2. Has the patient been operated on?

3. What did operation disclose?

4. Result of cystoscopy, if any:

5. Were calculi passed?

6. Did urine contain: (a) Blood? (b) Pus? (c) Tubercle bacilli?

7. Were symptoms due to lesions outside of urinary tract: (a) Appendicitis? (b) Oophoritis? (c) Salpingitis? (d) Colitis? (e) Gallstone? (f) Other causes?

8. Any additional information bearing on the accuracy of the result of the roentgen-ray examination:

The results of the roentgenographic examination of the whole 455 cases have been tabulated and are presented here, but we have succeeded in obtaining clinical data in only about 290 of these cases and some of these replies are incomplete. We have, however, accepted no reply which does not give a satisfactory answer to the question regarding the presence or absence of calculus.

The chief thing sought in these examinations is to determine the presence or absence of calculus. In the 455 cases of which we have complete records of the roentgenographic examinations, calculi were reported in 119 cases. In 314 cases no calculi were reported, and in twenty-two cases there were suspicious shadows which we reported as doubtful. The plates of some of these doubtful cases presented shadows which could be explained either by urinary calculi or

by extra-urinary calcareous bodies. In all of these doubtful cases it was recommended that additional examination be made with the opaque ureteral catheter in the ureter, but in most of them this procedure was declined as unnecessary. In a few of the doubtful cases, the plates were not satisfactory because of incomplete preliminary clearing out of the digestive tract. Whenever possible, additional plates were made to correct these defects, but there remain some cases in which it was impossible to obtain an additional examination. In more than half of the unsuccessful and doubtful cases, we could not make the examinations as complete as we desired.

Of the 119 cases in which calculi were reported, twenty-two presented two or more calculi. The total number of calculi reported was 158. Of these, thirty-eight were in the left kidney; thirty-seven in the left ureter; thirty in the right kidney; twenty-eight in the right ureter; nineteen in the bladder, and six in the prostate. Of the 119 calculus cases, forty-nine were proved correct, either by operation or by the passing of calculi. In the remaining seventy of these cases we have been unable to obtain definite information that the calculi have actually been seen. We have regarded no case as proved unless the calculi have been recovered.

We have been unable to obtain reasonable evidence that there was any error in the diagnosis of calculus in any of these 119 cases reported positive. Of the doubtful cases, calculi have been demonstrated by operation in two cases and by passing of stone in three cases. In the remaining seventeen, we have no information as to calculus, but other probable causes for the symptoms have been reported in most of these.

Of the 314 cases in which the roentgenographic examination was reported negative for calculi, stones have been subsequently passed in five cases. In two cases stones were removed by operation. We have, therefore, seven proved errors in the series of 455 reports, a percentage of about 1.5 of the total number of cases examined. Perhaps it would be more accurate to reckon this percentage as 2.4 per cent. of the 290 cases in which we were able to obtain satisfactory replies to our question blank.

The more I have worked on these tables of statistics, the more I have been impressed with the impossibility of obtaining absolute accuracy. There are doubtless some errors in the clinical records that have been kept. Another source of error which has been difficult to avoid is that in several cases in which the report of the roentgenographic examination was negative, we were told that stones had been removed by operation, but on more careful investigation it was found that the calculi were passed or removed by operation prior to the time of the roentgenographic examination. This difference in the date was in some cases overlooked by the attending surgeon, who reported us in error, when in reality no mistake was proved.

Comparisons have frequently been made between the expert statistician and various kinds of liars, always to the disadvantage of the statistician. Since preparing this paper, my sympathies are all with the statistician.

While the chief function of the roentgen ray in examinations of the urinary tract is to determine the presence or absence of urinary calculus, other useful

or interesting information is incidentally obtained. In many of the cases reported some information was given as to the size, outline, position or density of the kidney shadow. In this series there were reported such anomalies as sixty-two in size of kidney, seventeen in outline, fifteen in position and thirteen in the density of the kidney shadows. In a few of these cases the abnormalities of the kidney shadow were proved to be connected with a pathologic condition of the kidney.

In the course of these examinations many other calcareous bodies were shown in the neighborhood of the urinary organs. In this series we have reported eighty cases with phleboliths, ten with calcified mesenteric glands, three with intestinal concretions, and seven with gallstones.

Pathologic conditions of bones and joints are frequently observed in the course of examinations of the urinary tract. In this series there were reported forty cases of osteoarthritis and five cases of other disease of the bone or joint. It seems likely that in a few of these cases, disease of bones or joints was the cause of the symptoms; but we are unable to obtain accurate data as to the number.

Anomalies in the development of the lumbosacral region are not uncommon. While these anomalies may be of only academic interest, they are shown perfectly well in roentgenographic examination of the urinary tract, and I think they should always be noted, since they may occasionally be proved to have an important bearing on the symptoms. In some of these cases it was found that one or both transverse processes of the fifth lumbar vertebra were enlarged and articulated with the sacrum and ilium. This anomaly is commonly described as sacralization of the fifth lumbar vertebra. We have noticed that a number of these patients presented the symptom of persistent pain in the back after some strain or unusual exertion, when no other cause could be found to account for the symptoms. This pain has been most frequent in cases in which there is unilateral sacralization. The pain is usually felt on the side opposite the sacralization.

In another class of anomalies, of which ten are reported in our list, there was incomplete union of the first sacral vertebra with the rest of the sacrum.

In some of these cases there were six vertebrae without ribs, between the twelfth dorsal and the sacrum. In others there were only four vertebrae in this region without ribs.

The answers to some of the other questions in our blank are given below. In answer to the first question as to whether the roentgen ray was helpful in diagnosis, 216 replied "Yes," and forty-four "No." In the remainder no answer was given. On looking over these replies we are impressed with the fact that the answer to this question was purely a subjective matter and depended somewhat on the weather or the state of digestion of the person answering. Many answered the question in the affirmative when our report of the roentgen-ray examination was negative and seemed to me of no value. In other cases in which the roentgen-ray examination gave much definite information as to size, number and position of calculi, the reply was that the roentgenographic report was not helpful.

The answer to Question 2 of our blanks showed that of the 290 patients concerning whom we have clinical data, seventy-two were operated on and 190 were not operated on. In forty-three cases cystoscopic exami-

nations were made, and in 202 cases no cystoscopy was made. Calculi were passed in twenty-two cases, and in 229 cases it was reported that no calculi had passed.

The replies showed also that of the negative cases symptoms were accounted for by appendicitis in six; by ovaritis or salpingitis in six; by colitis in one; by gallstones in seven, and by other causes in nine cases.

In 242 cases the urine examination showed blood, and in 247 cases pus was shown.

In the forty-nine cases in which calculus was proved by operation or by passing the stone, the urine examined showed blood and no pus in seven cases; pus and no blood in two cases; both pus and blood in thirteen cases; neither pus nor blood in three cases, and in six cases no report. Of the remaining seventy cases reported positive for calculus, but not proved by operation or passing of stone, two presented blood and no pus in the urine; two pus and no blood; ten presented both pus and blood; three neither pus nor blood, and in forty cases there was no report. Of the five cases in which the roentgen-ray examination was doubtful, but in which the presence of calculi was proved, both pus and blood were found in the urine of two; one presented blood only, and one had no pus or blood and on one there was no report. Of the doubtful cases not proved positive, two had both pus and blood; three pus only; two blood only, and five neither pus nor blood, and five were not reported. Of the cases in which the roentgenogram was negative, nineteen revealed blood only; twenty-five pus only; fifty-four both blood and pus, and sixty-eight no blood or pus.

It will be observed that of the cases in which the presence of calculus was proved, about 52 per cent. presented both blood and pus in the urine. In these cases only 12 per cent. presented neither blood nor pus in the urine, and of those cases reported negative, nearly 41 per cent. presented neither pus nor blood.

The preparation of the data in this paper has impressed me with the difficulties of obtaining complete statistics of cases occurring in private practice, but I trust the results given will not warrant the usual uncomplimentary classification of the statistician.

I find that the number of our errors in the diagnosis of urinary stone is about twice as large as I had supposed, but the percentage is still smaller than that which is reported from examinations made in various hospitals or clinics. It is possible that if all the errors could be known, the percentage would be much higher; but I doubt it. A higher percentage of accuracy should be expected in private practice than in hospital or dispensary work. The success of the roentgen-ray examination for urinary stone depends largely on the intelligent cooperation of the patient. The average hospital or dispensary patients, especially those who speak some unknown foreign language, cannot be depended on to cooperate thoroughly in the success of the examination. They are very prone to breathe or to move during the exposures. In private practice more time is usually given to these examinations, and more plates are made. The economy practiced in most hospital roentgen-ray departments undoubtedly results in the sacrifice of accuracy. The duplication of plates and the use of the stereoscopic methods are not commonly employed in hospitals, and these procedures undoubtedly lessen the number of errors.

It is possible that the mode of life of some of the foreign population which forms a bulk of certain dispensary patients conduces to the formation of uric acid or urate calculi which are not readily demonstrated by roentgenograms. A small percentage of error must be expected even under the best conditions, but we should remember that there is no absolutely infallible method of diagnosis of urinary stone.

480 Park Avenue.

CLINICAL DIAGNOSIS OF LITHIASIS OF THE UPPER URINARY TRACT *

EDWARD L. YOUNG, JR., M.D.

Genito-Urinary Surgeon to Outpatients, Massachusetts General Hospital
BOSTON

If in this symposium the word "clinical" is to be used in distinction from "roentgen-ray" diagnosis, I shall have to throw up the sponge at once, because the absolute diagnosis of stones in the kidney or ureter without the use of the roentgen ray is impossible. A stone may be present anywhere in the upper urinary tract, either without giving any sign or symptom of its presence, or on the other hand, it may present any of a great variety of signs and symptoms such as would point to any of the various urinary troubles, or even such as would strongly suggest a diagnosis far removed from the urinary tract. Then again, a patient may present what we have been pleased to call a "typical" story of renal colic, bladder irritability, etc., and even show pus and blood in the urine, and yet no stone be present. This is nicely shown in a table by Eastmond as given by Keyes. In a series of eighty cases, sufficiently suggestive of stone to require roentgenographic examination, only twenty-three were positive, and of these, only eight patients complained of the so-called typical symptoms. On the other hand, of the fifty-seven which showed no stone, forty-four did have typical symptoms and in addition, thirty showed either pus or blood, or both, in the urine. In fact, according to this table, there is a better chance of finding a stone if the symptoms are indefinite than if they are typical, as only 24 per cent. of the latter had calculi, while 40 per cent. of the former were positive.

In a recent study by O'Neil of 273 cases in the Massachusetts General Hospital in which a preliminary diagnosis of nephrolithiasis was made, the same discrepancy was revealed between the original diagnosis and the real lesion. One hundred and thirty-three of these were house patients, and of this number, twenty-eight were proved to have no stone. Of these, no diagnosis could be made in four cases. The remaining showed a variety of lesions: Hydronephrosis, kinked ureter, movable kidney, and pyelitis were present eight times, while nephritis, appendicitis, gallstones, arteriosclerosis, abdominal glands, vesical calculus and chronic lead poisoning accounted for the rest. Of the 140 cases which got no farther than the outpatient department, more careful study showed only twenty-five with positive findings. The final diagnosis in the remaining 115 cases was as follows: Orthopedic lesions, such as back strain and sacro-iliac strain, accounted for thirty-six; no demonstrable

lesion could be found in seventeen; genito-urinary lesions, including nearly every diagnosis, covered twenty-seven, while the rest were scattered far and wide from constipation to syphilis, and from hernia to tabes. Nearly every one who has written anything on this subject gives the same story.

From these two tables it seems that symptoms in themselves are merely suggestive at best and may even be misleading. A careful urinalysis likewise may lead us astray, but almost always in one direction. The presence of abnormalities may suggest a urinary lesion which is really not present, but a persistently normal urine in the presence of stone is more uncommon, although still to be reckoned with. In 150 cases in which the urine was carefully examined, Cabot reported persistently negative findings in twenty-one; of these, fifteen were ureteral stones and six renal. It seems almost needless to emphasize the fact that in the female, only a catheter specimen has any value, and that a centrifuged sediment should always be examined even in the absence of albumin.

A good roentgenogram is at the same time our best evidence as to the presence or absence of a stone, and likewise the stumbling block most likely to lead us into trouble, for implicit faith in roentgenography, without the confirmation of other means of diagnosis, will often carry us into needless, even disastrous operations; for the misleading evidence most often presented is the presence of a shadow very suggestive of stone, but which in reality has nothing to do with the urinary tract. The percentage of failure to show a stone which is present is very small if the case is in the hands of a good man, and is variously stated to be from 6 to less than 1 per cent. If the roentgenogram reveals a shadow which, in view of other attendant signs and symptoms, probably represents a stone, it still must be proved by means of stereoscopic plates taken with an opaque catheter in the ureter. A single plate is of value, but occasionally a calcified gland may lie in front of the ureter or kidney in such a way that without stereoscopic plates we cannot discover that it is not at all connected with the urinary tract. If the shadow is in the kidney region, two plates taken, one during quiet expiration and the other at the end of forced inspiration, answer much the same purpose.

If the ureter catheter meets an obstruction in the ureter at a distance from the bladder corresponding to the distance on the plate, and other characteristic signs and symptoms are present, the diagnosis is almost certain, but not quite. Cabot speaks of two cases in which a tuberculous gland in the mesentery of the large intestine caused pressure on, and obstruction to, a ureter with dilatation above. In such a case, stereoscopic plates and obstruction to a catheter will fail to make the diagnosis. The use of a wax-tipped catheter, in the hope that any stone present will make its mark, is likewise doomed to failure. But the injection of the ureter above the obstruction, and the demonstration of a dilatation, will show the need of operation to relieve pressure, and in spite of our inability to make an absolute diagnosis in these cases, we are consoled by the thought that operation is necessary. In case a stone is in that portion of the ureter opposite the sacro-iliac joint, it has been demonstrated by Dodd and Cabot that it may fail to show in the roentgenograms even though it is of considerable size and density. In these cases, a careful study with the wax-tipped catheter is necessary, and likewise an injection of the ureter above the obstruction is often of value,

* Read before the Section on Genito-Urinary Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

provided the obstruction is not too great to allow the passage of fluid. The latter procedure, which was condemned as being unsafe a few years ago, is today rendered nearly if not quite harmless by the use of either silver iodid emulsion or thorium. There is finally a small group of patients who have suggestive symptoms, a roentgenogram showing a shadow which might be a stone low in the ureter, with a normal or only slightly abnormal urine, and a ureter opening which will not admit a catheter. Cabot reported two such cases, and I have seen one since. In the last case, I cut the ureter opening freely with the operating cystoscope and still failed to get a catheter in more than a quarter of an inch. A wax-tipped catheter showed no marks, but as I have, on other occasions, failed to get anything conclusive when the catheter met a stone head on, I did not consider it good negative evidence. Operation failed to show a stone, and though some stenosis was apparently present, it did not seem enough to have entirely blocked a ureter catheter, or to have caused the symptoms.

With a shadow in the kidney region, the wax-tipped catheter is still less to be depended on, since a stone in any one of the lower calices will not be touched by a catheter, and accordingly no record will be left on the wax.

Some authors speak of the use of collargol injected into the pelvis and rendering visible a stone previously invisible. Although I have tried this method, using silver iodid emulsion instead of collargol, and have seen it tried several times, I have never seen it work.

Thus we see that in order to make an accurate diagnosis even of the presence or absence of a stone, we must use all the means at our command; but when we have done this, it is not enough, for the best interest of the patient demands that we should likewise find out the following facts: (1) the presence or absence of another kidney together with its functional ability; (2) the amount of damage done in the kidney having the stone, and (3) the position of the stone in the kidney. In order to do this, the use of other tests, as well as those already spoken of, is necessary. Urinalysis will disclose the presence or absence of any gross damage by its appearance, odor, amount of pus and albumin, and a stained sediment and culture will reveal the type of infection, if any. As stone and a negative urine are perfectly compatible, the presence of the latter is of value only in showing the absence of any damage or infection.

Cystoscopic examination will reveal the presence of another ureter opening which is functioning, and the passage of a catheter will allow the demonstration of the presence or absence of infection and the functional capacity of the well kidney. It is often important, especially in those cases in which previous examination indicates that operation is going to be difficult, to know as accurately as possible in which calix the stone is situated. This can be told very well by having one roentgenogram followed immediately by another, without moving the patient, and with the pelvis injected for the second picture. The second roentgenogram gives us also valuable information as to the amount of destruction of the kidney that has taken place. In fact, it may be the only thing which gives us a real indication of this damage. For even a large calculus pyonephrosis may not show on urinary examination the amount of pus we should expect, and because the presence of a stone can cause a reflex inhibition on the functional capacity of the kidney, a very

low red test cannot always be relied on to prove the amount of damage it suggests. But when a roentgenogram reveals several stones at the lower pole of the kidney and then a second roentgenogram with the pelvis injected shows not only a grossly dilated lower calix but also a thinning of the cortex at the upper and middle calices, we may consider a nephrectomy the probable operation of choice. In those cases which present a single calix much enlarged and the cortex over it thinned as shown by the roentgenogram, with pelvis injected, we can be confident that a small nephrotomy opening will be our best mode of operation. But even with these procedures, a sufficiently accurate diagnosis as regards the condition of the kidney cannot be made to justify our promising to take out the stone and leave the kidney, as I have had one or two patients demand. Since a destroyed kidney may shut down around a single large stone, not only is the amount of pus very small, but the roentgenogram with injected pelvis discloses no gross dilatation of the pelvis, even though it is absolutely abnormal.

DIFFERENTIAL DIAGNOSIS

In the genito-urinary clinic of the Massachusetts General Hospital, it is fairly common for a patient to be referred with diagnosis of stone, with pain or colic typical in character and with pus and albumin in the urine, whereas a careful examination reveals tender, distended, nodular, seminal vesicles, no pus from the kidneys, and a negative roentgenogram. Treatment of these vesicles cures the stone. Two or three patients have volunteered the information when a finger was pressing on the vesicles, that "there is the pain now." I thought this was conclusive until a short time ago when I examined a patient who volunteered such a statement and found on roentgen-ray examination the shadow of what proved to be a large ureteral stone about half an inch from the bladder opening on the side corresponding to the one tenderest on pressure. Generally the colic of seminal vesiculitis is lower down in the back than the renal colic, and follows the crest of the ilium in a more characteristic fashion.

From a review of these cases of mistaken diagnosis it is evident that the appendix has been the greatest sufferer when error has been made. That a certain number of appendixes must inevitably be sacrificed in case of doubt is due to two facts too well known to require comment: 1. An acute suppurating appendix may be present without a corresponding amount of tenderness and rigidity. 2. A considerable amount of microscopic blood may be present in the urine, due to the pressure of an acutely congested appendix on the ureter. In cases of doubt, therefore, the appendix should be removed if for any reason it is not possible to take the time, or the apparatus is not at hand, to make a more accurate diagnosis. I have recently known a case in which a very good surgeon did delay operation in case of doubt with a resulting fatal peritonitis, so that I am sure it is much better to take out an innocent appendix than leave a guilty one. But the same thing cannot be said for other intra-abdominal lesions which do not require an immediate decision, and certainly it seems not only inexcusable but almost criminal to subject any person to operations such as are shown by the following two cases. The first patient, who showed five stones in the right kidney, had at the first operation a dilation and curettement. At the second operation the right ovary was removed and at the third operation the left ovary was removed. The sec-

ond patient had (1) an operation for gallstones, though the gallstones were not found; (2) an appendectomy and a resection of the right ovary, and (3) a ventral fixation of the uterus. Not until eight years after the first operation was it discovered that a stone only three-quarters inch in greatest diameter was blocking the right ureter.

The cases that are complicated by orthopedic lesions are among the most interesting and likewise the most difficult to straighten out because it is seldom that an orthopedic surgeon cannot find postural strain, ptosis, or flatfoot; but whether the real diagnosis be urinary or orthopedic the patients may present themselves to either surgeon.

In the series of cases at the Massachusetts General Hospital previously spoken of, thirty-six cases in which the first diagnosis was renal stone showed orthopedic lesions, of which postural strain and abnormality of the fourth and fifth lumbar vertebrae made up fourteen, the remaining being spread among flat-foot, ptosis, scoliosis, hypotrophic arthritis of the spine, back strain and sacro-iliac strain. In four of these cases the urine was remarkably abnormal; in spite of a negative roentgenogram it seemed difficult to attribute all of the trouble to the orthopedic diagnosis, and it was thought possible that a small stone had been present and passed before the patient was seen. In twenty-four cases there were urinary symptoms, and of these cases the urine was normal in fifteen, so that nothing in the urinary tract could have been the cause of these symptoms. Moreover, some of these patients were relieved of their urinary difficulties when their orthopedic troubles were corrected. The relation between an abnormality of the back and urinary frequency is not at all understood and, indeed, very seldom recognized; but it certainly does occur, and when accompanied by pain and perhaps a suspicious roentgenogram it may lead us far astray. The following case is a good example: Miss X came for relief of urinary frequency and pain low in the left side, sometimes coming on in attacks. A diagnosis of ureteral stone had been made but never proved. The urine was normal; cystoscopic examination revealed a slight reddening around the left ureteric orifice, and the ureter would admit only a No. 5 catheter, but that perfectly freely. No stone could be demonstrated. The orthopedic consultant found marked postural strain, and after the use of proper support and exercises, the frequency and pain both disappeared.

CONCLUSIONS

No single piece of evidence, or combination of evidence, is sufficient to make an absolute diagnosis of a renal or ureteral stone. All chance of mistake should be excluded by using ureter catheters, wax-tipped catheters, stereoscopic plates, and roentgenograms with injected pelvis.

In all cases with indefinite symptoms, such as recurrent or chronic pain in the abdomen or back, even when a definite orthopedic abnormality is present, careful, repeated examination of the urine should be made, including a microscopic examination of centrifuged sediment, regardless of the presence or absence of albumin. In the female, such examination is of value only when the urine is obtained by catheter. Whenever operation is considered in any one of this group of cases, roentgenoscopy in addition to the foregoing examination is necessary.

87 Marlboro Street.

A CLINICAL STUDY OF LITHIASIS
BASED ON A SERIES OF ONE HUNDRED AND
NINETY-EIGHT CASES *

HENRY G. BUGBEE, M.D.
Fellow of the American College of Surgeons
NEW YORK

In urinary lithiasis our plan of action depends entirely on an analysis of the individual case, and the degree of our success in the treatment will be proportionate to the completeness of our understanding of the pathology presented.

An analysis of 198 cases which I have studied in hospital and private practice forms the basis for certain deductions relative to the formation of urinary calculi, the clinical picture presented, and a general outline of treatment.

Of the 198 cases, 111 were in males, 87 in females. Excluding the cases of calculi of the lower urinary tract, 12 of which occurred in females, there were 73 males and 77 females with calculi of the upper tract.

These figures are at variance with recorded statistics. The usual larger proportion of males is probably due to the fact that more women with urinary symptoms consult the gynecologist than the urologist, and a fair comparison could not be obtained.

INCIDENCE ACCORDING TO AGE

| Age of Patients | No. of Cases |
|--------------------|--------------|
| 1 to 9 inclusive | 1 |
| 10 to 19 inclusive | 3 |
| 20 to 29 inclusive | 32 |
| 30 to 39 inclusive | 55 |
| 40 to 49 inclusive | 43 |
| 50 to 59 inclusive | 29 |
| 60 to 69 inclusive | 28 |
| 70 to 79 inclusive | 5 |
| 80 to 89 inclusive | 2 |
| Total | 198 |

The relatively large number of patients past middle life presented vesical calculi.

In the formation of urinary calculi, two predisposing factors have stood out most prominently. These are (1) a gastro-intestinal disturbance, and (2) disturbed drainage along the urinary tract. The question seems to be more one of body elimination than one of intake.

The most important pathologic condition of the gastro-intestinal tract in this relation to lithiasis is some degree of stasis. The causes of stasis can be ascertained only by a study of the entire alimentary tract.

Through intestinal stasis, the chemistry of the blood supplied to the kidney is altered and bacteria in large numbers enter the urinary tract.

The effect of disturbed drainage of the urinary tract is most easily studied in the bladder. The rapidity with which decomposition takes place and calculi form when residual urine accumulates, we have all noticed in cases of vesical obstruction with retention. There is no reason why the same action does not take place in the kidney.

Interference with kidney drainage is most often due to abnormal mobility. The mobility may be slight and still cause a kinking at the ureteropelvic junction if the ureter is fixed. Of the 77 females showing calculi of the upper urinary tract, in 51 the calculi were on the right side, in 22 on the left, while 4 were

* Read before the Section on Genito-Urinary Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

bilateral. In 39 of the right-sided cases, and 11 of the left-sided, a certain degree of mobility, interfering with drainage, could be demonstrated.

As all ureteral calculi are probably renal in origin, they may be grouped together in this consideration.

In the males, twenty-eight were right-sided, thirty-eight left-sided, and five bilateral. Unfortunately, in but few of these cases was the renal mobility ascertained, but in several it was strikingly marked. One patient presented a pelvic kidney, and several others showed a well-marked prolapse. Abnormal mobility will no doubt be demonstrated more frequently in males if more careful examinations are made. Palpation which fails to reveal the lower pole of the kidney on deep inspiration does not exclude this possibility. Better muscular development in the male interferes with palpation. Recently, during the examination of a patient, a kidney which could not be palpated on deep inspiration dropped to the brim of the pelvis while the patient was standing erect.

Three patients with renal calculi gave a history of injury. One patient presented a calculus with hypernephroma.

The symptoms presented by renal calculi may be of so slight a nature as to pass unnoticed for many years, as in the following cases:

CASE 1.—A man, aged 33, had had a vesical calculus removed three years previously. He came for consultation for vesical irritability, suspecting another vesical calculus. Investigation disclosed a branching calculus completely filling the pelvis and calices of both kidneys. The patient positively refused operation, saying he had had no pain or discomfort.

CASE 2.—A woman, aged 65, entered the hospital with the diagnosis of appendicular abscess. A definite mass was palpable in the lower right quadrant. An examination of the bladder revealed an obstruction of the right ureter with thick pus. On dislodging the plug in the ureter, and by gentle pressure on the abdominal mass, 16 ounces of thick, foul-smelling pus were evacuated through the cystoscope. Exploration of the abdomen showed a calculus the size of an orange in a shell of a kidney.

How long the calculus had been present in these cases, and in many similar ones, one cannot say. I recently removed a calculus from the left kidney pelvis of a man, aged 34, who was sent to me to be treated for a chronic urethritis. There were no symptoms referable to the kidney, although the kidney pelvis was so surrounded by lymph exudate and fat that the calculus resembled the stone in the center of a peach. The vesical irritability entirely disappeared after the removal of the calculus.

Pain is the most constant symptom of renal calculus, and was present in some form in thirty-five of forty-three patients. In renal calculi the pain was never severe, except when the calculus was small and located in the pelvis or in a calix, so as to interfere with the urinary flow, thus increasing intrarenal tension.

A dull ache localized in the costovertebral angle was the most typical symptom, but was not constant, and was evidently due to local infection. Radiation along the course of the ureter was present in seven cases in which the calculus was located at the ureteropelvic junction. Other radiations noted were to the opposite kidney region, chest, right lower quadrant, testes, thigh, and entire back. Invariably the larger the calculus, the less severe the pain, and in eight cases only vesical symptoms were present. In four of these cases the kidney had gone on to almost com-

plete destruction. Tenderness in the costovertebral angle or anteriorly in the right upper quadrant was elicited in thirty-two cases, and the kidney was palpable in only eighteen. Roentgenograms were positive in all but two of the cases of renal calculi. In these two a diagnosis of an obstruction at the ureteropelvic junction was made, and at operation a calculus was found. The character of the urine was found in sixteen cases to be of no aid in establishing a diagnosis of renal calculus, while in the remaining twenty-seven cases blood and pus cells were found in varying quantities. Profuse hematuria was present in four cases. Colon bacilli were found in thirty-one cases, staphylococci in four. In two bilateral cases the entire renal cavity was filled with phosphatic deposit.

If a calculus does not increase in size too rapidly, it passes from the kidney into the ureter, and in its passage through this channel may give rise to a clear-cut picture of renal colic, or to a greater variety of symptoms than any other abdominal condition.

Of 150 cases of calculi of the upper urinary tract, 107 were ureteral calculi, and while they were found lodged at almost every point, from the ureteropelvic junction to the vesical orifice of the ureter, eighty-six were lodged in the lower 12 centimeters, and sixty-five of these in the last 6 centimeters. The symptoms in these cases extended in duration from a few hours to fifteen years.

The young woman whose condition is next described furnishes a typical case.

CASE 2.—A woman, aged 21, twelve hours before admission to the hospital, was seized with a sharp pain in the right lumbar region, accompanied by vomiting and shock. The pain soon radiated to the groin. The following morning the pain was most severe in the right lower quadrant, and there was an urgent desire to urinate. Urine was scanty. Examination of the bladder revealed edema about a functionless right ureteral orifice. A ureteral catheter encountered an obstruction 2 cm. from the bladder. A roentgenogram revealed the catheter in contact with a small shadow. The ureter was dilated and a small calculus removed with ureteral forceps, with complete relief and no return of symptoms.

CASE 3.—A woman, aged 44, for fifteen years had had pain in the right side of the abdomen, not localized. She complained of indigestion, constipation, flatulency, painful menstruation, and frequent burning urination. She had had a nephropexy, an appendectomy and a ventral suspension; the right ovary had been removed, the bladder irrigated, and medical treatment given, with no relief. Investigation showed a calculus lodged in the right ureter, at the pelvic brim, with pyelonephritis. Removal of the calculus gave partial relief of symptoms.

Between these two extremes were all types and degrees of abdominal symptoms, but pain was a fairly constant factor in all cases of ureteral calculi.

Eighty-six of the 107 cases of ureteral calculi gave a history of pain on the affected side, 4 of referred pain on the opposite side, 65 had a definite colic, and 45 had had from two to eleven attacks; 35 gave a history of having previously passed calculi.

Of the 65 cases of calculi lodged in the last 6 centimeters of the ureter, 56 complained of urinary symptoms.

Cystoscopic examination revealed the calculus lodged in the mouth of the ureter in 4 cases. Edema about the orifice was present in 47 cases. A deflection of the stream of urine from the ureteral orifice was noted in several cases in which the calculus was lodged in the intramural portion of the ureter. The urine showed pus cells or blood cells in 81 cases;

was normal in 22 cases. Crystals were noted in 18 cases; colon bacilli showed a growth in 62 of 78 cases in which a bacteriologic examination was made.

In 75 per cent. of the cases a definite obstruction, partial or complete, was evidenced by passing ureteral catheters and bougies. In 11 cases the calculus could be located by palpation through the vaginal vault and in four males by rectal palpation.

No roentgenograms were taken of 16 patients who passed calculi subsequent to the cystoscopic manipulation. In the remaining 78 cases a roentgenogram was made with opaque catheters or bougies in position. A positive plate was obtained in 56 cases. The 22 patients not showing a shadow passed calculi following manipulation. These calculi were all small, and were either phosphatic or uric acid stones. A collection of crystals causing a definite colic was present in six cases. A complete obstruction was encountered in each case, and was relieved by intra-ureteral manipulation.

I have made it a practice for the past five years to boil the catheters and bougies, thus rendering the bougie soft enough to pass through almost any kink, or to coil about a calculus. Often the tip of the bougie is bent so that it is hooked, and by passing the bougie, twisting it as it advances, the calculus, which would often otherwise be passed by, is encircled by the bougie. In this manner, with stereoscopic roentgenograms to eliminate extraneous shadows of phleboliths, calcareous glands, atheromatous patches, enteroliths and gallstones, a diagnosis may be made in two thirds of our cases. In the remaining third, a ureterogram, the calculus being coated with collargol, or the employment of wax-tipped catheters, may be necessary, and all methods may be negative.

I have no doubt that in some of our cases which were passed by as negative, with ureters free to a No. 7 F. catheter, with negative urine and roentgenograms, a calculus may have been lodged in a sacculatation of the ureter which has since caused symptoms. I am inclined to believe that the wax-tipped catheter should be used more frequently in these negative cases, and it is wise to have all patients report for subsequent examination.

A differential diagnosis between ureteral kinks, urinary tuberculosis, renal tumor, and stone often may be difficult, and may be made only by repeated examinations.

Calculi in the lower ureter may cause symptoms so like appendicitis that it has almost become routine to pass a ureteral catheter in all cases of right-sided pain. Pelvic disease and acute intestinal lesions in connection with calculus in the lower ureter, gallstone colic, acute gastric and intestinal conditions, must be excluded in calculi lodged in the upper ureter and kidney. This should always be possible with the means at hand, although the possibility of the presence of more than one lesion should be borne in mind.

The treatment of calculi of the upper urinary tract can now be laid down on definite principles.

A renal calculus remains in the kidney and increases in size, acting as a menace to the kidney and to the patient, or it passes into the ureter. If it remains in the kidney it should be removed, unless there is contraindication to operation from the condition of the patient, or of the opposite kidney, and the sooner it is removed the better. By its remaining, more or less of the kidney will be ultimately destroyed. When the kidney destruction is advanced, as proved by pyelo-

gram and functional tests, or when many calculi are present throughout the kidney, a nephrectomy may be necessary, as in four of the cases of this series. In cases of large branching calculi the kidney may have to be split, as in two cases. The remaining cases can be relieved by pelviolithotomy.

If the calculus passes into the ureter, and does not enter the bladder after manipulation with ureteral catheters, bougies, and dilatation of the lower ureter, it should be removed. That the majority of ureteral calculi will pass, certainly after manipulation, is proved by this series. Ninety-two of 107 calculi lodged in the ureter were passed subsequent to or removed by cystoscopic manipulation. Only fifteen were removed at operation.

Calculi should not be allowed to remain in the ureter too long. Stricture of the ureter, or damage to the kidney from back pressure and infection, will often be the result. The sooner the patient is seen after the initial attack of colic, the better the chance of assisting the passage of the stone.

While all methods of manipulation and injection have been applied, dilation of the lower ureter and manipulation of the calculus with catheter and bougies, in an attempt to loosen and change the axis, was deemed of advantage. There is no doubt that this is worth repeated attempts. Several calculi have been followed with roentgenograms in their descent after manipulation, showing the advance of the calculus with each attempt. This process has been repeated as many as eight times, but the first few attempts will usually be successful if the calculus is going to pass. An attack of colic is often brought on at the end of the manipulation, and denotes that the calculus has shifted its axis and is obstructing the ureter. Large quantities of water will supply the pressure above, and the stone will be passed.

A method which has proved successful, even in as large a calculus as the one exhibited (3.5 by 1 cm.), is to hook the end of the ureteral bougie and twist the bougie as it is advanced along the ureter, coiling it about the calculus and then applying traction. A calculus was extracted two weeks ago in this manner. This patient had undergone a ureterotomy for a calculus one quarter the size, lodged at the pelvic brim. A fistula resulted which healed only after inserting an indwelling ureteral catheter, which was left in position for ten days. A diverticulum formed at the point at which the calculus had been lodged. Twelve calculi have since formed in this pouch, descended into the lower ureter, and have been extracted with ureteral forceps, or passed after intra-ureteral manipulation.

How large a proportion of these ureteral calculi would have passed had nothing been done, it is impossible to say; but it is probably fair to assume that 50 per cent. would have been recovered. Only six patients giving a history of ureteral colic, negative at examination, returned with a history of subsequent attacks and passing a calculus.

Fifteen of the calculi removed at operation were approached extraperitoneally, and one transperitoneally.

There were two deaths out of the forty-three patients operated on for renal calculi, both caused by uremia, in bilateral phosphatic calculi. The operation in each instance was undertaken against advice. One patient with ureteral calculus died six weeks subsequent to operation. The cause of death could not be ascertained.

In this review of 198 cases of lithiasis, several points are worthy of note with regard to the forty-four cases of vesical calculi. A definite history of renal colic, with relief of pain without passing the calculus, was given in fourteen cases, and in the remaining thirty it was found that the bladder was the seat of an infection and was carrying residual urine. The cause of the retention was prostatic obstruction in the males, and cystocele in the females—a rather convincing argument that infection and urinary stasis play an important rôle in their formation.

The diagnosis of vesical calculus should be simple. Seldom is it impossible to pass a small cystoscope into the bladder and make a diagnosis by sight. A roentgenogram, in the absence of a cystoscopic examination, is often sufficient.

Of the forty-four cases, the calculi were crushed and evacuated in thirty-three, and removed by cystotomy in eleven cases. Litholapaxy is still an important procedure in cases not requiring an operation on the bladder or prostate, and when supplemented by the use of the cystoscopic lithotrite, should be the method of choice more often than it is.

Prostatic calculi, the result of long-standing prostatic infection, were found in three cases. The diagnosis was easily made by palpation. Undoubtedly they are occasionally overlooked, the diagnosis of malignancy being made. More frequent roentgenograms in patients giving prostatic symptoms of long standing might disclose more cases of prostatic calculi. The treatment is by prostatectomy.

One case of calculus in the seminal vesicle was noted, and a renal calculus with a clear history of colic followed by retention showed the calculus lodged in the prostatic urethra. This was dislodged with forceps applied through the endoscopic tube, and was passed by the patient.

RECAPITULATION

Intestinal stasis is an important predisposing factor in the formation of urinary calculi. Urinary stasis and infection are immediate predisposing factors. Renal mobility plays an important rôle in this consideration.

Renal calculi may be single or multiple; small or large; unilateral or bilateral; located in the cortex, the pelvis or a calyx; or they may be branching, completely filling the cavity of the kidney.

Local symptoms may be absent, slight, or acute. Physical signs may be absent or definite. A diagnosis of the presence of a calculus should be made by cystoscopic and roentgenographic methods. Contact of the tip of a roentgen-ray bougie will verify the diagnosis in many cases of renal calculi, but may have to be supplemented by pyelograms, not only to locate exactly the stone in the kidney, but also to show the extent of kidney destruction. Data so obtained make it possible to outline the operative procedure which will result in a cure, and after-care may prevent recurrences.

Ureteral calculi are common. They may give rise to indefinite abdominal symptoms, or to typical colic. Fifty per cent. of ureteral stones will pass; 75 per cent. will be passed following intra-ureteral manipulation, which consists in dislodging the calculus and dilating the ureter below.

Vesical calculi are comparatively rare, owing to earlier diagnosis and the better treatment of vesical

obstructions. When found, they are smaller than formerly, owing to the earlier diagnosis, and can often be removed by litholapaxy, unless a prostatectomy is necessary.

Prostatic calculi should be suspected in long-continued prostatic suppuration. They should be diagnosed early and removed by prostatectomy.

40 East Forty-First Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. CALDWELL, YOUNG, JR.,
AND BUGBEE

DR. HENRY K. PANCOAST, Philadelphia: After Dr. Caldwell's numerous references to the unquestioned value of the roentgen diagnosis of urinary calculus, all must agree that a roentgenographic study should be made in every case in which calculus is suspected. A careful examination should be made of the entire tract, for the reason that a stone may not be where it is suspected, may be on the side opposite to the symptoms, or there may be calculi on both sides. In the second instance the stone may not be found, and in the third, the patient's life may be endangered by operation if only one kidney or ureter has been examined. Even though a calculus shadow is found only on the side opposite to the symptoms, a small uric acid stone or one hidden by bony structures may be present and missed and be accounting for symptoms.

When one considers the numerous sources of error it is remarkable that the percentage is so small, as Dr. Caldwell has stated. Most of them have already been alluded to in the papers, but a few have not. The most important and most frequent is careless or faulty preparation of the patient. Adequate preparation means the withdrawal of food for nearly twenty-four hours before the examination, complete evacuation of the intestinal tract to eliminate both fecal contents and gas, and the withdrawal of drugs, especially in pill or tablet form. Possibly salol is the worst offender. Of course, foreign bodies in the intestinal tract other than pills form a small percentage of sources of error. Dark moles on the back constitute a well known source. Phleboliths in the pelvic veins are extremely troublesome and cannot always be eliminated even by the ureteral catheter and stereoscopic plates. Calcified mesenteric glands frequently give trouble, especially when near the renal region.

The last essayist mentioned fecaliths, and when these are in an inflamed appendix close to or adherent to the ureteral region they may be misleading clinically and roentgenographically. In one instance a dermoid cyst containing a single tooth and pressing on and obstructing a ureter led us to a diagnosis of a ureteral calculus because of the tooth shadow in the ureteral line. Finally, many stones, especially uric acid calculi, may be hidden by the bony parts or may not be seen in very stout persons.

DR. W. F. BRAASCH, Rochester, Minn.: Because of this obscurity of symptomatology the following rules have been made at the Mayo Clinic:

Roentgen-ray examination is made (1) when abdominal pain is not definitely localized; for example, in the gall-bladder, the appendix or the pelvis; (2) when, though the pain is definitely localized in these organs, there is pus or blood or a past history of pus or blood in the urine, and (3) in the absence of abdominal pain, if there is a past history of pus or blood, or if microscopic pus or blood is found in the catheterized specimen.

The leaded catheter is of value in the diagnosis of ureteral calculus only when the calculus is 2 cm. or more away from it and when it is in close apposition and cannot be passed beyond the calculus. When the leaded catheter is in close apposition to a suspected ureteral shadow it is of little diagnostic value. Nor does a stereoscopic examination help much, because, even though the stereoscopic examination reveals that the leaded catheter is a centimeter distant from the shadow, it does not mean that the shadow is extra-ureteral.

In such doubtful cases a more exact method of interpretation is available in the ureterogram. This method should be employed only when others have failed, and when the introduction of the catheter is not obstructed. The use of the ureterogram is restricted because the procedure is not without danger. Any fluid injected beyond an obstruction, whether it be boric acid solution, silver or thorium, will cause damage to the parenchyma of the kidney unless drained out. If an opaque medium is injected beyond an obstructing stone in the ureter, a great deal of trouble will result in a small percentage of cases, so much so that the kidney may have to be sacrificed. Therefore, a ureterogram should usually not be made unless the catheter can be passed beyond the shadow and the injected fluid can be removed. Of the various solutions, thorium is undoubtedly the best, because with careful technic it can be removed. The catheter should be allowed to remain for a few minutes after washing out the renal pelvis.

Pyelography has also proved to be a valuable method in the diagnosis of shadows situated in the renal area. It may be used more freely in the pelvis of the kidney because the fluid is seldom obstructed by a stone. Further, pyelography is of value not alone in the diagnosis of shadows in the kidney, but also in the localization. Those of you who have had experience in searching for a stone in a large, congested kidney will appreciate any effort made by the diagnostician to localize exactly any small shadow in the kidney.

DR. HERMAN L. KRETSCHMER, Chicago: The stereoscopic pictures with shadowgraph catheters are of value in a certain percentage of cases. The stereoscope will show in a certain number of cases a definite interval between the suspicious shadow and the catheter. I agree with Dr. Braasch that in some cases the stereoscope will not help out. In those cases the ureterogram is in perfect order. In the doubtful cases it would be well to use some silver salt instead of the thorium in making the ureterogram. Kümmel in Hamburg first called attention to the fact that shadows were made more positive by silver salts.

Dr. Bugbee's statement, I think, was a little bit too conservative when he said that about 50 per cent. of these stones can be passed or removed by noncutting operations. The percentage is much higher. Probably all of these ureteral stones which have not remained in the ureter so long as to produce a stricture can be worked down or passed by the use of papaverin and oil injections. Thus far I have been rather successful. The idea of Dr. Bugbee of turning the catheter around the stone and pulling it out is rather unique. I wish in closing he would tell us just how he curls the catheter around the stone.

The point has been emphasized several times that the entire urinary tract should be roentgen rayed. Frequently patients have just one part of the urinary tract rayed and they are operated on after a diagnosis made from one picture. I have in mind two patients who had been operated on elsewhere and a kidney removed, and they have calculi now in the remaining kidney. It would be interesting to know whether they had bilateral stones in the first place, or whether the remaining stone has formed in the kidney since operation.

DR. ABRAHAM HYMAN, New York: In a series of seventy-four cases of ureteral and renal calculus we have had 10 per cent. of negative roentgenograms. In vesical calculus more than 61 per cent. of the stones failed to show. A large number of these negative roentgenograms were in prostatics, which probably accounts for this high percentage. In thirty-four of the seventy-four cases of ureteral calculus the ureteral catheter was obstructed at the site of the stone, and in 50 per cent. of these cases there was a considerable difference in the output of indigocarmin; it was either absent or considerably diminished.

As regards the wax tipped catheter, it was of considerable value in but one case. In this patient, a rather stout woman, there were three negative roentgenograms. She had pus in the urine and radiating pain in her side. The wax tipped catheter showed distinct scratch marks on two occasions.

During the past few years three patients have been operated on in the service for renal calculus in which most of the findings were considered positive. The Roentgen ray demonstrated distinct shadows in the renal region. Unfortunately, the symptomatology and the ordinary methods of examination were thought to be so characteristic that other methods, such as pyelography, the wax tipped catheter and stereoscopy, were not employed. At operation there was no calculus to be found in any of the three cases. In two, we could distinctly feel retroperitoneal calcified glands which undoubtedly cast the shadows. In the other case the symptoms were found to be due to a twisted ovarian cyst. This was not discovered until the patient returned to the hospital six months later, complaining of the same symptoms. She was operated on and a twisted ovarian cyst was found.

Concerning urinalysis, we have had a few cases of renal and ureteral calculus in which the urine examination was entirely negative—no pus or red blood cells—so one cannot rely absolutely on negative urinary findings.

DR. JAMES W. HUNTER, Norfolk, Va.: As a roentgenologist I have made about 1,200 examinations. Three cases were most remarkable. A man of 45 whose only complaint was night sweats showed no emaciation and had no cough. An examination of his right kidney showed the most beautiful growth of dumb-bell and mushroom kidney stones that I have ever seen and its removal effected a complete cure. A woman presented all the typical symptoms of kidney colic. The kidney was negative, but at the ureteral orifice was found a shadow typically cigar shaped. Cystoscopic examination and the passage of a bougie showed that the shadows coincided. She was operated on by a prominent surgeon and nothing was found. She was examined about a year afterwards in consultation with another surgeon. The same symptoms and the same shadow were found. On operation nothing whatever was found near the ureteral orifice. The ureter was dilated and inflamed. The cigar-shaped calculus was found in the pelvis of the kidney. When the woman was up and about the calculus would descend to the lower end of the ureter, but when she remained in bed it worked back up to the pelvis. This woman is well now.

DR. H. A. FOWLER, Washington, D. C.: It has been definitely brought out that there are no pathognomonic signs or symptoms of stone in the kidney or ureter. A stone may be present in the kidney without giving rise to any symptoms whatever, either on the part of the kidney or of any other organ.

On the other hand, there may be no signs or symptoms referable to the kidney itself, the seat of the disease, but the symptoms are entirely abdominal, or referred to some abdominal organ. This has been shown by the statistics of Braasch and Cabot particularly.

The demonstration of the presence of a stone in the ureter or the kidney is only the first step in the diagnosis. It is important that the diagnosis should be made complete. That means, first, the location of the stone. Is the stone in the kidney, in the pelvis, in the calices or in the ureter? Is there more than one stone? Is the stone in the upper or lower pole? If we can locate the stone definitely in this way the operative procedure is simplified and the trauma resulting from operative interference is reduced to a minimum. Instead of doing as the general surgeon has been doing in the past, exploring the kidney by making a wide section, if we know where the stone is situated we can make a small incision through the capsule over the stone and extract it through the small incision. This means much less trauma and a much simpler operation.

It has not been my experience to meet with as large as 12 per cent. of cases in which no blood or pus was found on repeated examination of a centrifuged specimen of urine. I was taught to believe that in the majority if not all cases of stone in the kidney or ureter if repeated examination of a centrifuged specimen was made blood would be found, and that has been my experience. I recall only one case, that of a stone in the upper calyx of the kidney, in which repeated examinations failed to show the presence of a few red blood

cells. There is no reason to doubt his statistics, but I simply mention my personal experience.

DR. G. G. SMITH, Boston: In regard to Dr. Fowler's point about the presence of blood in the urine, I have lately noticed that in the routine examination of urine specimens from patients in the women's genito-urinary outpatient clinic at the Massachusetts General Hospital we have had an almost constant report of a few red blood cells, and that has happened so often that it has made me feel that in a thoroughly centrifuged specimen examined by a conscientious, thorough house officer a few red blood cells will almost always be found. I should like to hear some opinions on that. Some of these patients whose urine showed the red blood cells certainly had nothing wrong with the genito-urinary tract that we could discover in any other way, and there were too many of those cases showing red blood cells and nothing else for one to say there was a stone which could not be detected.

I have injected papaverin into the ureter once in each of four cases of ureteral calculi. In two cases the calculi were passed two weeks after the injection. The other two patients, the last time I saw them, had not passed their stones.

DR. A. M. WOSE, Syracuse, N. Y.: Recently six exposures of a calculus in the bladder were made, with negative findings. Examination with the cystoscope readily showed the calculus. This caused a little controversy with the roentgenologist, and in order to appease him I suggested after the extraction of the stone that I would be glad to make a little investigation with this calculus on a plate with the electrode at a distance of 18 inches. He did that, with negative findings. After that I suggested that he take a picture of his hand with the calculus on the hand, with the electrode 18 inches above, which he did, and there was no shadow of the calculus. Then I said the investigation ought to be chemical. It proved to be a pure uric acid stone.

DR. V. D. LESPINASSE, Chicago: In this connection I should like to report some work that has a bearing along this line. I started out to determine the changes that occur in the kidney following obstruction from a stone. I found that complete obstruction caused very rapid and severe changes. When the obstruction was partial the changes came on slowly and involved the ureter primarily. From that it was changed over to a clinical problem. By introducing a little stick of wood it was found that we could obtain a dilatation of the ureter, beginning at the lower end, and as time went on, going up to the kidney and ultimately involving the kidney; but it takes from ten to twenty days before any change occurs in the pelvis of the kidney. In that time there will be a dilatation of the ureter to about two to three times its normal diameter. Then after this work was done on the animals it was changed over and this little plug was adapted so that it could be introduced through the cystoscope and applied at the clinic. The plug was made from a small piece of laminaria with an opening through it. Inserted through the cystoscope and left in place, the plug swells. The opening in the plug also swells, so that if it is a No. 6 when it goes in, in an hour or two it swells to a No. 15, varying somewhat. The urine trickles through the hole and the ureter begins to dilate above the plug. The procedure is painless. Our clinical experience with it so far has been limited to one case in which there was a stone about a third of the way down the ureter and two stones in the kidney. We put the plug in place and left it there for a day, and the day following the man passed his stone. Then we sent him out to ride the roads in a well known automobile which the doctors commonly use and he shook the two stones into his ureter. He came back and we put the plug in his ureter again and he passed the two stones.

DR. B. S. BARRINGER, New York: I should like to report just one unusual pyelogram result which misled us a great deal. The patient came to the Bellevue Hospital with symptoms of stone. A roentgenogram was made and a nest of three or four stones was found just above the crest of the ilium. We cystoscoped him and found an inflamed bladder and two ureters, and we injected thorium into the suspected kidney pelvis, with the result that we had a beautifully

dilated pelvis up under the ribs. The thorium was plainly outlined, and the nest of stones down about 3 inches from this dilated kidney pelvis with no connection between the two. We thought he had double ureters and a double renal pelvis and that we had missed one of the ureters on cystoscopy. At the operation we looked for two ureters but did not find them. We found a large, dilated pelvis with a stone at the lower end. The thorium probably had not had time enough to diffuse through the entire pelvis.

DR. J. E. BURNS, Baltimore: About 30 per cent. of the calculi are missed in the plain roentgenogram. I have already called attention to the fact in several publications that the ureteral calculi missed in the plain roentgenograms are brought out by the thorium solution, either by the adhesive qualities of the solution or by its comparative density, or by the fact that the thorium solution is absorbed by the calculi. We have used this solution since its introduction in the Brady Clinic about two years ago in, I suppose, 400 cases. We have seen no ill results in any case. None of the cases have shown any necrosis or any destruction of renal parenchyma due to retention, which latter occurs very rarely, if at all.

It is essential that the solution be allowed to flow in while the roentgenogram is being made, so that the pelvis and ureter may be fully dilated. On repetition of the roentgenogram in such cases it might be well, in order to insure complete distention of the pelvis, to lower the head of the table and allow the solution to flow in by gravity. If the first attempt is not good, and if the ureterogram is not clear in the lower portion, the position, of course, should be reversed, and it will be found in practically every instance that the ureteropyelogram will be satisfactory.

Another important thing in the diagnosis of ureteral calculus is to employ the wax-tipped catheter. This, together with the pyelogram and the plain roentgenogram, is employed as a routine measure in the Brady Clinic.

DR. A. J. CROWELL, Charlotte, N. C.: I do not believe the presence of blood in a centrifugalized specimen of urine obtained by ureteral catheter means as much as some would seem to think. It is difficult, yes, almost impossible, I believe, to get urine with the ureteral catheter without getting some blood in a centrifugalized specimen of urine thus obtained. The presence of pus, of course, is a different thing. Personally I do not lay much stress on the presence of blood, but the presence of pus is very significant.

Just a little off the subject, and yet brought out by Dr. Bugbee in his paper, is the removal of stone from the ureter by the use of the ureteral catheter. About three years ago while endeavoring to remove a recently impacted stone from the ureter it occurred to me that it would be common sense to inject cocain or novocain into the ureter to deaden the sensation and thus allow the ureter to relax and assist the stone to pass out. This procedure was carried out and the next day the stone was found in the patient's bladder. Of course, this stone may have passed if nothing had been done, but it encouraged trying the plan in other cases. Since that time I have had twenty-three or twenty-four cases and have had to operate on only two patients for the removal of ureteral stone. I am convinced now that if I had persisted then (that was in the beginning of this work) as I do now I would have removed those two. It may take a number of treatments to remove stones in this way, but I believe that every recently impacted ureteral stone can be removed in this way if we get at it in time. I removed three from one ureter but it required six or eight treatments. If we will only persist in our efforts with the cystoscope and some form of local anesthesia, I believe we will seldom fail to remove these stones.

DR. C. M. HARPSTER, Toledo, Ohio: I wish to endorse the position taken by Dr. Smith and Dr. Fowler. I believe if we make careful investigations of the urine we will, with the possible exception of a few cases, find microscopic blood. I think this is our most important diagnostic point clinically. The possible exception is in those cases in which there has been an occlusion of the ureter from impaction of the stone in the ureter or in the pelvis of the kidney; and in those cases in which there has been complete exclusion of the ureter, of

course, we would not find microscopic blood; but in my experience I have, in a large number of cases, found microscopic blood after painstaking investigation.

Another point is in regard to reflex anuria which follows cases in which there is a single impacted stone on one side. It has been my experience in those cases in which there is anuria lasting three, five, and, in one case, ten days, that we will, on careful and repeated roentgen-ray examinations, find an impacted stone on the other side. In every case in which there have been bilateral calculi reflex anuria has not been found present. In those cases, I believe, we should make repeated searches to locate the stone on the other side. One of my old preceptors, Professor Israel, laid particular stress on this point, and in two cases I believe we were able to save the patients' lives. Where there is complete anuria differentiated from nephritis, in nephritis we will at least have a teaspoonful of urine excreted; that is, we will not have in any nephritic condition a complete and absolute anuria; and so by remembering this point I was able, in two cases of ureteral calculus in which experts had made a diagnosis of nephritis with complete suppression of urine, to find bilateral ureteral calculi.

DR. EDWARD L. YOUNG, JR., Boston: Dr. Bugbee's trick of coiling a ureter catheter around a stone is a very pretty trick and a great help, provided it comes out all right. One case in connection with it might perhaps serve as a warning in the use of the procedure—a case in which a ureteral stone was hooked in that fashion, but then the fisherman was not able to bring in the fish, and for over an hour tried to get the catheter out. So I think there is a warning in regard to the use of the ureter in that condition, on account of the possibility of breaking off the catheter and also of getting the catheter up and having it caught there.

I wanted to emphasize what has been already emphasized, the indefiniteness of symptoms in the majority of cases of renal stone. Also, typical symptoms do appear, including blood and pus, without any calculus being present, and especially the symptom of pain. I think all statistics of pain in connection with calculus show that it is almost always indefinite and often misleading.

I have not looked up the cases at the Massachusetts General Hospital in regard to crossed symptoms, but I can only remember having seen two cases within a comparatively recent time, and I should like to register my opinion that a damaged kidney on one side without any symptoms, and a normal kidney on the other which seems to have the symptoms, is a comparatively rare condition. I do not mean that symptoms may not be mainly on the undamaged or slightly damaged side, but I think a normal kidney on one side showing symptoms and a damaged kidney on the other not showing any symptoms is, at least in my experience, rare.

Then the question of the removal of ureteral stones without operative procedure which has been spoken of so enthusiastically by every one today—I do not know whether we in Boston are slower than the rest of you in making a diagnosis, or less skilful in the use of the operating cystoscope, but we see large ureteral stones that I am convinced it would be impossible to remove by any method short of the open operation. Likewise, we fail to get stones of moderate size out in a percentage of cases larger than that spoken of today.



Fig. 1.—Clinoid processes nearly fused, with apparent narrowing of sella turcica in a case of diabetes insipidus.

SPINAL PUNCTURE IN DIABETES INSIPIDUS

EVARTS A. GRAHAM, M.D.

Fellow of the American College of Surgeons; Surgeon, Park Hospital
MASON CITY, IOWA

Since the discovery by Magnus and Schaefer¹ in 1901 of the diuretic action of extracts of the posterior lobe of the hypophysis, attention has been directed to that organ as an important factor in the causation of diabetes insipidus. Frank,² in an important article published in 1912, reviewed the literature then existing on the subject and made a strong plea for a consideration of the relationship between the hypophysis and diabetes insipidus. Numerous writers already had emphasized the fact that lesions of the brain which involved the vicinity of the hypophysis were often accompanied by polyuria without sugar.

Oppenheim,³ in thirty-six cases of basal syphilitic meningitis, observed polyuria in twelve. Two of these showed at necropsy a gumma of the optic chiasm and hypophysis. Kruse,³ in a study of thirty cases of bitemporal hemianopsia, observed diabetes insipidus in seven; and Spanbock and Steinhaus³ mention its occurrence in eleven of fifty cases of bitemporal hemianopsia. Polyuria associated with metastatic carcinoma involving the hypophysis or its region, secondary to carcinoma of the breast, is a fairly frequent occurrence. Cases have been reported by Simmonds,⁴ Rosenhaupt,⁵ Miller⁶ and von Gierke.⁷ Recently Sekiguchi⁸ has described two additional cases. Cushing's experiments in

1913 led him to conclude that there was a strong "argument in favor of the view that an actual disturbance of the pituitary body itself, rather than the stimulation of some predicated diuretic center in the remote third ventricle surmounting the growth, was the inciting cause of a condition worthy of the designation of diabetes insipidus." Lewis and Matthews¹⁰ in 1913 concluded from their experiments that diabetes

1. Magnus and Schaefer: The Actions of Pituitary Extract Upon the Kidney, *Jour. Physiol.*, 1901, 1902.

2. Frank, E.: Ueber Beziehungen der Hypophyse zum Diabetes insipidus, *Berl. klin. Wehnschr.*, 1912, **49**, 393.

3. Quoted by Frank (Note 2).

4. Simmonds: Hypophysis und Diabetes insipidus, *München. med. Wehnschr.*, 1913, **40**, 127.

5. Rosenhaupt, H.: *Berl. klin. Wehnschr.*, 1903, p. 893.

6. Miller, J. L.: The Relation of the Hypophysis to Certain Clinical Manifestations and the Therapeutic Applications of Its Extract, *Am. Jour. Med. Sc.*, 1916, **152**, 549.

7. Von Gierke, E.: Hypophysis und Epiphysis bei Diabetes insipidus, *Verhandl. d. deutsch. path. Gesellsch.*, 1914, **17**, 200.

8. Sekiguchi: Hypophysial Disorder in Mammary Cancer and Its Relation to Diabetes Insipidus, *Ann. Surg.*, 1916, **63**, 297.

9. Cushing, Harvey: Concerning Diabetes Insipidus and the Polyurias of Hypophyseal Origin, *Boston Med. and Surg. Jour.*, 1913, **168**, 901.

10. Lewis, D., and Matthews, S. A.: The Pars Intermedia: Its Relation to Diabetes Insipidus, *Tr. Path. Soc. Chicago*, 1913, **9**, 16.

insipidus is probably dependent on the hypersecretion of the diuretic substance of the posterior lobe which is secreted by the epithelial covering known as the pars intermedia. Falta,¹¹ however, warns against a too hasty conclusion that lesions of the base of the brain which induce polyuria do so always by mediation of the hypophysis, although he discusses at length the possibility that such may be the case.

Several cases of diabetes insipidus of which the onset occurred after a trauma to the head are in the literature. Doubtless, at least a temporary polyuria will be found to be very common after head injuries, especially basal skull fractures, if attention is more frequently directed to the output of urine. Mohr¹² has recorded a case which developed about three weeks after a basal skull fracture, and Kleeblatt¹³ has described one occurring on the third day after a similar lesion. French and Ticehurst¹⁴ also observed a case of diabetes insipidus which had its origin in a fracture (through the sphenoid). Recently I have seen a case of fracture of the skull in which the roentgenogram clearly revealed the line of fracture extending into the sella turcica (Fig. 3). During the first twenty-four hours the amount of urine passed was 40 ounces (1,280 c.c.). During the second day the total amount increased to 130 ounces (4,160 c.c.), and on the third day 110 ounces (3,520 c.c.) were passed. Two days later the total output had returned to normal. At no time did the urine show any abnormal constituent. I¹⁵ have recently reported another case in which a total output of 170 ounces (5,500 c.c.) was passed during a twenty-four hour period, following a gunshot wound of the head which severed the optic nerves, probably at the chiasm, with probable resultant injury to the hypophysis. This urine was of a specific gravity of only 1.002, and contained no sugar.

The suggestion of the hypophysial origin of diabetes insipidus led somewhat empirically to the employment of extracts of hypophysis therapeutically. Numerous cases are now in the literature reporting markedly beneficial results, especially when the extract has been given intravenously and also even when given hypodermically. Recently Hoppe-Seyler¹⁶ has reported a case of a man, aged 25, with diabetes insipidus who had no evidence of syphilis and no roentgen evidence of any lesion of the hypophysis. Hypodermic injections of hypophysis extract, however, resulted in the restoration of the amount and concentration of the

urine to normal. When given by the mouth, no appreciable effect was noticeable. The administration of atropin diminished the volume of urine, but also kept back the solids, whereas with hypophysis extract the solids appeared in normal concentration despite the marked reduction in volume. He considers that the therapeutic results are as striking as those obtained in the treatment of myxedema with thyroid extract. Konschegg and Schuster¹⁷ have also reported an instructive case in which the administration of hypophysis extract to a patient with diabetes insipidus resulted in a return of the urinary conditions and of the water intake to normal. They report that the findings here are in contrast to those obtained when the extract is administered to normal individuals. With the latter, following the injection the decrease in the excretion of water is accompanied by a decrease in the concentration of the solids.

The case reported below is of great interest, not only because it illustrates a type of diabetes insipidus probably induced by disturbance of the hypophysis through an increased pressure of cerebrospinal fluid, but also because *the relief of pressure by spinal puncture was immediately followed by a cessation of the polyuria and other symptoms.* So far as I have been able to learn from the literature, there has been only one other case of diabetes insipidus in which spinal puncture was made. That was a case reported by J. B. Herrick¹⁸ in 1912. In that case the lumbar puncture was made simply for the purpose of obtaining some spinal fluid and with no idea of improving the symptoms; but following the puncture, the amount of urine dropped from 10 liters to 1 liter, and the specific gravity correspondingly changed from 1.001 to 1.031.

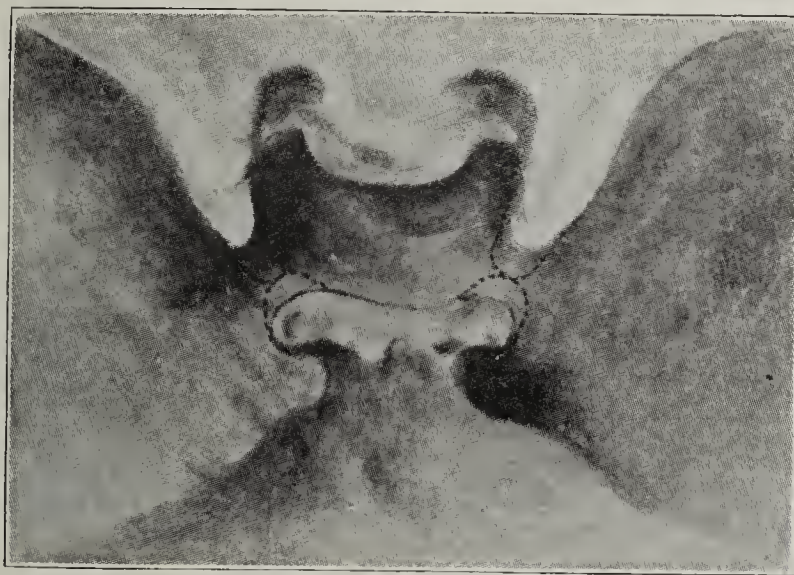


Fig. 2.—Drawing which shows that it is possible for the clinoid processes to be actually touching or fused without any actual diminution in volume of the sella turcica.

REPORT OF CASE

June 22, 1916, a man, aged 24, consulted me because of dizziness, headache, extreme thirst and the passing of enormous quantities of urine. He stated that, March 13, while at work in a cement plant, he sustained an injury to his chest as a result of being accidentally struck with an iron bar. He thinks he was unconscious for a few minutes, although he knows of no injury to the head. He stopped work and went home, but was not compelled to go to bed. A physician told him that he had a fracture of the sternum and of two ribs on the left side. He reported for work on the next evening, but was sent home again and remained away from his work until April 4. Within a day or two after the injury he noticed that he was markedly constipated so that he could hardly get a bowel movement even with cathartics. He had no headache nor dizziness until after he resumed work. Then during the first week of April, he began to notice severe headache and dizziness every day. These symptoms became progressively worse. The headache was chiefly frontal and in the temporal regions, and also sometimes "behind the eyes." It was described as resembling sharp, cutting pains, sometimes going up through the ears. Headache was always worse after

11. Falta: The Ductless Glandular Diseases, Philadelphia, P. Blakiston's Son & Co., Ed. 2, p. 322.

12. Mohr: Diabetes Insipidus nach Schädelgrundbrüche, Monatsschr. f. Unfallheilk., 1912, **19**, 362.

13. Kleeblatt: Diabetes insipidus nach Schädelverletzungen, Med. Klin., 1915, **11**, 915.

14. French, H., and Ticehurst, C. B.: Relation of Traumatic Diabetes Insipidus to Glycosuria, Tr. Clin. Soc., London, 1906, **39**, 117.

15. Graham, E. A.: Diabetes Insipidus as a Sequel to a Gunshot Wound of the Head, Ann. Surg., 1917.

16. Hoppe-Seyler: Beziehung des Diabetes insipidus zum Hypophyse und seine Behandlung mit Hypophysenextrakt, München. med. Wchnschr., 1915, **62**.

17. Konschegg and Schuster: Deutsch. med. Wchnschr., 1915, **61**, 1091.

18. Herrick, J. B.: Report of a Case of Diabetes Insipidus with Marked Reduction in the Amount of Urine Following Lumbar Puncture, Arch. Int. Med., July, 1912, p. 1.

excitement or hard muscular work. It was not always present all day. Nausea and vomiting were rarely present, but when nausea did occur, it was always worse at breakfast time. Reading always aggravated the dizziness. No disturbance in power of vision had been noted. The only relief possible from the headache and dizziness was in lying down.

Beginning with the latter part of April, marked polyuria set in. This became progressively worse up to the time I first saw him. During this time he had to get up at night to urinate, frequently as often as six times. During the day he passed urine as often as every hour or half hour. At each act of urination he passed enormous quantities of urine, without pain or burning. He never measured accurately the amount of urine passed in twenty-four hours, but he estimated it as high as 10 or 12 quarts daily. During a period of a little more than an hour while I was examining him, he passed more than a quart. His thirst was insatiable, but his appetite was poor. It was not accompanied by a craving for any special kind of food, such as carbohydrates. He thinks he lost about 25 pounds after his injury.

His previous history was negative except for measles in childhood. He denied any venereal infection. He is the father of a healthy child 1 month old. His family history likewise was of no special importance. His father and mother were both alive and well, the father at 70 years, and the mother at 66. He is one of nine brothers and sisters, all of whom are well.

The examination revealed a fairly well nourished young man who seemed bright and intelligent. Physical examination showed no abnormality of any kind. His vision and eyegrounds were examined by Dr. F. G. Murphy, who reported no abnormality. The blood was practically normal, and the systolic pressure was 120 mm. The urine was clear, slightly acid and of a light straw color. Its specific gravity was 1.001. It contained no albumin or sugar, and practically no sediment except an occasional urate crystal and an epithelial cell. A roentgen examination of the skull revealed a very marked narrowing of the upper margin of the sella turcica (Fig. 1). The distance between the anterior and posterior clinoid processes was only about 2 mm., whereas the normal should be from 10 to 14 mm. He was advised to enter the hospital for several days for examination, but he declined to do so. I then advised that he come to the hospital on the following day for a lumbar puncture and to remain for a few days later. He consented to do so; and on the following day, June 24, lumbar puncture was performed with novocain anesthesia. Immediately after the insertion of the needle into the spinal canal, fluid shot out in a steady stream for a distance of from 8 to 12 inches. Because of the sudden surprising gush, some of the fluid was lost; but a little more than half an ounce was saved. The fluid was still running in a steady stream; but because of fear of too suddenly lowering the intraspinal pressure, the needle was withdrawn. He immediately stated that his headache and dizziness were entirely gone, despite the fact that they had been pronounced before the puncture was made. He was then put to bed; but about four hours later without our knowledge or consent he got up, dressed himself, and walked home, a distance of about a mile from the hospital. On examination the fluid was found to be clear and of a pale straw color. After it was centrifuged, the sediment was found to contain only two cells (mononuclear in type) and no bacteria. It was

intended to save some of the fluid for a Wassermann test, but through a mistake in directions it was thrown away. A Wassermann test of the blood, however, was negative.

Because of the brief stay in the hospital it was impossible to make any quantitative studies of the urine; but it is interesting that during the four hours in the hospital no urine passed, the longest interval without urination since the onset of the symptoms. The subsequent history is of great interest. For the next four days after leaving the hospital he suffered with intense headache and dizziness to such an extent that he was bedridden, but the polyuria and thirst remained absent. He passed urine at this time only four or five times within the twenty-four hours. He then returned to the hospital and stayed for five days. During this time the headache and the dizziness gradually disappeared. The volume of urine passed during the twenty-four hours varied between 1 and 2 liters, and its specific gravity varied between 1.020 and 1.028. At no time did it show any abnormal constituent.

September 18, we saw the patient again. He stated then that he had been working since the middle of July. He thought he drank a normal quantity of water and passed a normal quantity of urine. Since the spinal puncture he had not had to urinate once during the night; and during the day

he passed urine only three or four times. He had gained 5 pounds since leaving the hospital, but still felt dizzy at times. He stated that in the morning he felt perfectly well, but about the middle of the afternoon began to develop a little headache and dizziness, which continued until his evening meal. Then he would feel well again. He attributed the onset of headache and dizziness chiefly to exhaustion from work.

COMMENT

The apparent chain of events in this case is probably as follows: In some unknown way the accident led to an increase in the amount of intraspinal fluid. This in turn led to symptoms suggestive of intracranial pressure, such as headache and dizziness; and the hypophysis was so affected that polyuria without sugar was induced. The immediate improvement of all the symptoms after the lumbar puncture is striking. The question of how the spinal fluid became so much increased cannot be satisfactorily answered. The roentgen-ray findings are interesting, but probably should not be taken as conclusive evidence that the sella turcica was narrowed to the extent of producing pressure on the hypophysis. Although the normal distance between the anterior and posterior clinoid processes varies between 10 and 14 mm., it is possible for the processes to be actually fused without any appreciable change in the volume of the sella and without any symptoms of pressure, as repeatedly verified at necropsy. Figure 2 shows how, owing to the roughly hexagonal form of the sella turcica in the horizontal plane, the clinoid processes may be actually fused without producing any diminution in volume of the sella. The case here reported tends to support the view of the relationship existing between disturbances of the hypophysis and diabetes insipidus.

An immediate striking relief of symptoms has been obtained by the performance of spinal puncture.

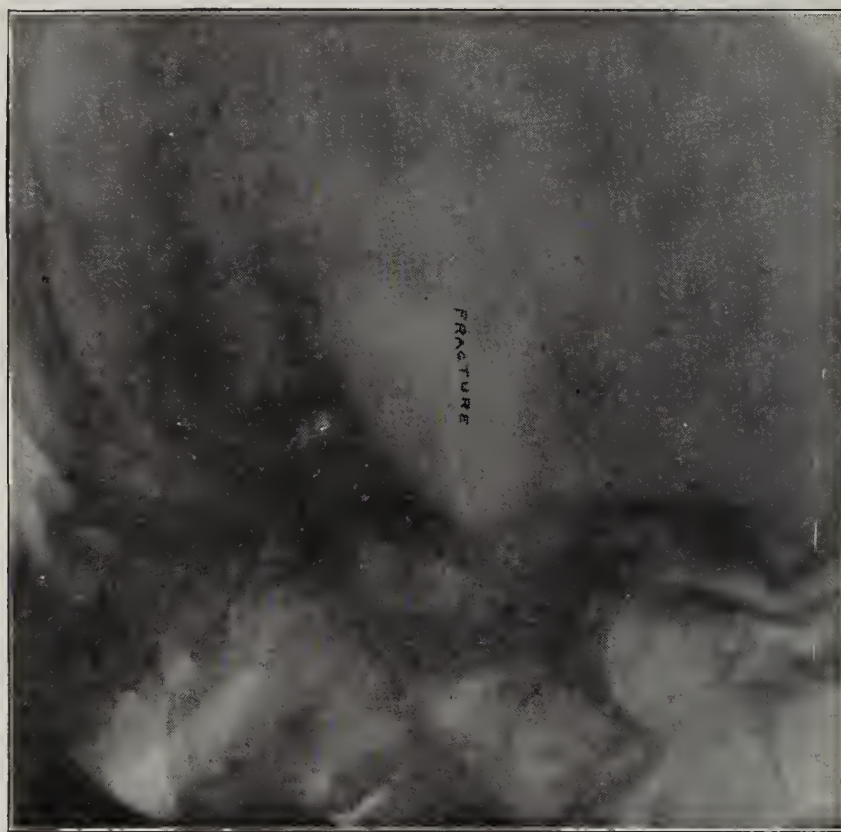


Fig. 3.—Fracture of skull apparently extending down into sella turcica, and accompanied by marked polyuria.

ANAL AND RECTAL FISTULA *

J. RAWSON PENNINGTON, M.D.

CHICAGO

In a preliminary report¹ before the American Proctologic Society, at the Detroit meeting, June, 1916, on "Anatomic and Bacteriologic Findings of the Ano-Rectal Region," I called attention to the sinuses and diverticula in this region. It was announced that cocci, and other forms of bacteria, had been found in their walls and contents, and the possible relation to focal infections was pointed out. Since I desire to emphasize the relations between these sinuses and diverticula, and anal and rectal fistula, the present communication is necessarily elementary and textbook-like in character.

A fistula is an infected artificial channel between the skin and the serous or mucous membrane of a normal cavity, or between two normal cavities. It has two or more openings. A sinus, often confounded with a fistula, is an infected artificial channel connecting the skin or mucous membrane with an abnormal cavity. It has, as a rule, one opening only.

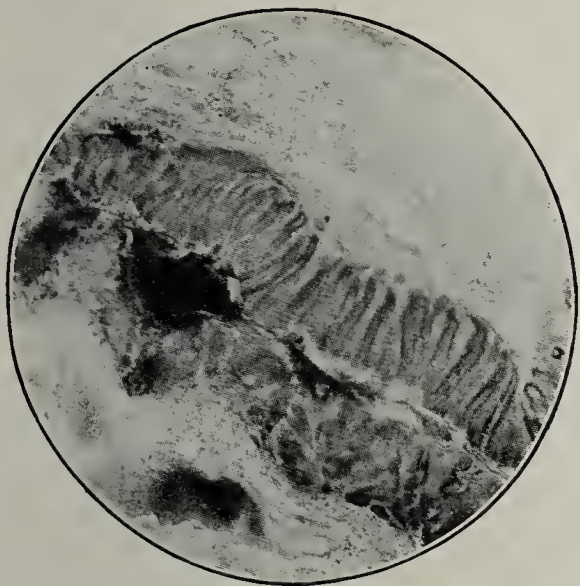


Fig. 1.—Photomicrograph of an infected rectal sinus. The infection has broken through the sinus wall and extended into the surrounding tissues. Compare Fig. 2.

ETIOLOGIC FACTORS

The principal causes of fistula are predisposing (embryologic, traumatic, etc.), and exciting (bacteriologic) conditions.

Embryologic Causes.—The sinuses and diverticula to which I have just referred come under this classification. These sinuses I first noticed many years ago when investigating the structure of the rectal valves, and I referred to them in a paper in *THE JOURNAL* as "epithelial glands."² Later, I frequently noticed the apertures of the sinuses and diverticula during the course of various operations on the lower bowel, and pointed them out to my classes from time to time.

Not long ago, in a patient with hemorrhoids, one aperture was so prominent that a probe was inserted into the lumen for considerable distance. This aroused renewed interest in the subject. Specimens were collected, given to the Medical Research Laboratory of Chicago, and investigations commenced from embryologic, bacteriologic and histologic standpoints.

When the literature was looked up it was a great surprise to find that these sinuses³ and diverticula had been described by Hermann and Desfosses nearly forty years ago. Some years later they are alluded to in Quénu and Hartmann's book on "Surgery of the Rectum." Since then they have been ignored by all

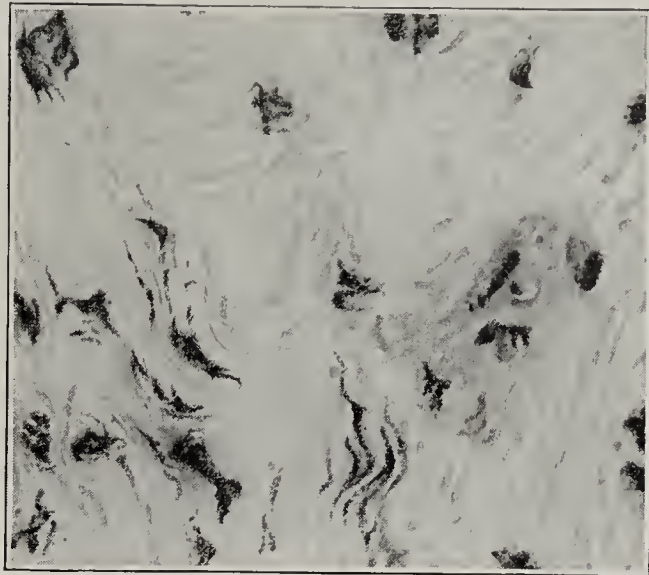


Fig. 2.—Microscopic drawing of a field in Figure 1. It contains colon bacilli, staphylococci and other micro-organisms.

textbooks on diseases of the rectum and those on medicine and surgery. The only reference I have been able to discover of late years is in an article by Johnson.⁴

It is not clear why they have been ignored, unless it is because they have had no pathologic possibilities attributed to them. Yet, as will be seen by Figures 1 and 2, and by clinical experience, they are an exceedingly important factor in disease processes in the rectum itself, primarily, and in constitutional conditions, secondarily.

That an important anatomic fact could, in this scientific age, be disregarded or lost sight of for many years, after being placed on record, and then, without knowledge of its former discovery, be rediscovered and found to be of great importance as a disease-



Fig. 3.—Photomicrograph of a normal rectal sinus in a child 1 day old. The wide mouth of the sinus opening into the rectum should be noted. This sinus extends through the mucosa and submucosa to the circular muscle fibers. In some instances they terminate in mucous glands.

producing factor, is almost unbelievable. However, this anatomic finding, when resurrected, proves to be a vital etiologic factor in the causation of fistula and

* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Pennington, J. Rawson: *Tr. Am. Proctol. Soc.*, 1916, p. 38.

2. Pennington, J. Rawson: *New Points in the Anatomy and Histology of the Rectum and Colon*, *THE JOURNAL A. M. A.*, Dec. 15, 1900, p. 1520.

3. Hermann and Defosses: *Compt. rend. Acad. d. sc.*, Paris, 1880, 40, 1301.

4. Johnson: *Am. Jour. Anat.*, March, 1914.

other diseases of the rectum, with their metastatic sequelae.

Traumatic Causes.—In this group is included any mechanical injury leading to the formation of a fistula, or that perforates the rectum, connecting it at once with the skin by means of an artificial channel.



Fig. 4.—This sketch is from Ball's book on "Diseases of the Rectum." It shows one internal and numerous external fistulous openings, and doubtless is intended to suggest the formidableness of a fistula. Yet, the gravity of a case, all things being equal, depends much more on the position of the internal than the number of external openings.

Other Pathologic Conditions.—In this list of conditions I refer to proctitis, cryptitis, constipation, hemorrhoids, fissure, stricture, ulceration and other rectal conditions, which favor the invasion of the sinuses and diverticula and perirectal tissues with pyogenic organisms (Figs. 1 and 2). Such conditions constitute a prefistula stage or period, and aid and abet in the development of the infection stage of fistula.

Exciting Cause.—It has been definitely proved that bacteria are the exciting cause of fistula. The rectal sinuses and diverticula serve as catch-basins or traps for the bacteria (Fig. 3). Here they give off toxins, which aid in producing irritation, to be followed by congestion, inflammation and their escape into the surrounding structures, where they are either encapsulated or lead to an abscess.

Should they produce an abscess, it will continue to enlarge, and the pus to burrow in the direction of least resistance until it finally makes its way through the skin or mucous membrane, forming an internal or external rectal sinus; or, by way of the skin

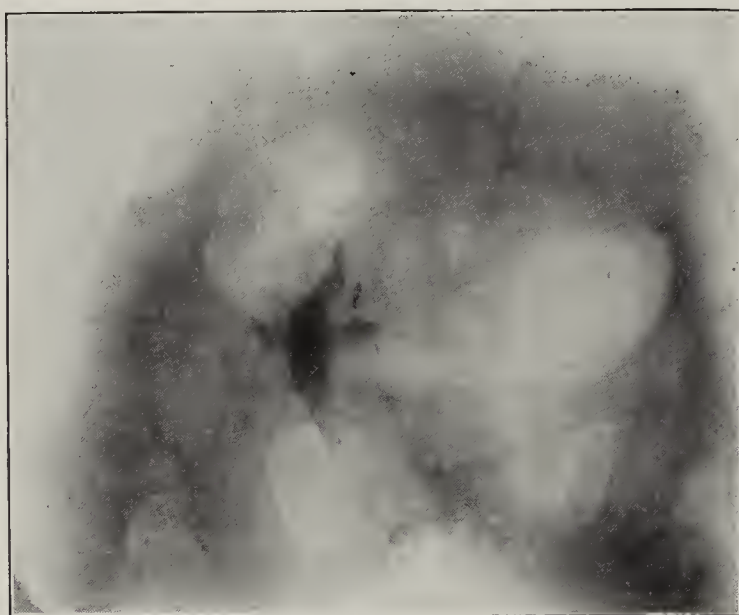


Fig. 5.—Roentgenogram of an anorectal fistula with numerous tracts and external openings. The internal opening is in the posterior quadrant. The patient had been operated on three times by different surgeons. Necrosis of the sacrum, which had been overlooked, was the primary cause.

and mucous membrane simultaneously, which forms an infected artificial communication between the skin and a normal cavity, as the rectum or other viscus. Such a channel is known as a fistula.

STAGES IN THE DEVELOPMENT

There are four stages of development, namely, (1) the prefistula stage; (2) the stage of infection; (3) the abscess stage, and (4) the fistula stage.

1. The prefistula stage antedates the stage of the infection, which leads directly to the formation of a sinus or a fistula. A careful examination will show that a very large percentage of fistulas, if not all, are secondary diseases, and that they are preceded in their development by other rectal diseases. From the standpoint of treatment, this is the most important period.

2. The infection stage begins with the invasion of the tissues by pyogenic organisms (Figs. 1 and 2), and continues until the formation of an abscess is inevitable. Authorities tell us that a fistula is due to an abscess; they also state that an abscess is caused by bacteria. Then, is not infection the cause of the fistula, and the abscess one of the stages in its development?

3. The abscess stage commences when suppuration is inevitable, and ends when the pus begins to discharge. It matters not whether this discharge is brought about by rupture of the tissues or otherwise. The location of the abscess depends on the position of the atrium of invasion; to what point the sinuses or



Fig. 6.—Roentgenogram of an abscess occurring in the superior pelvirectal space, taken on the third day after it had been opened. It was cured with injections of bismuth paste. No fistula followed.

diverticula and the lymphatics lead; the relation of the fascial planes, and the nature of the infection.

4. The fistula stage begins with the discharge of pus, and ends when the fistula is cured.

CLASSIFICATION

Custom and usage have divided fistulas⁵ into two principal varieties, namely, complete and incomplete. The incomplete variety is still further subdivided into blind internal and blind external fistulas, neither of which, however, according to the foregoing definition, is a fistula. Each in reality is a sinus, one an internal and the other an external rectal sinus. Complete or true fistula should be classified, according to the anatomic location of the internal opening, into anal fistula, or fistula-in-ano (the internal opening being located in the anus); ano rectal fistula (with the internal opening located in the junction between the rectum and anus); and rectal fistula (when the internal opening is in the rectum proper). Complex, watering-pot, multiple, horseshoe, and other so-called varieties of fistula are simply expressions of com-

5. Pennington, J. Rawson: Rectal Fistula, New York Med. Jour., Oct. 16, 1915.

plexity, multiplicity, position or shape of one or the other of the foregoing divisions, or a combination of them.

GRAVITY

The gravity of the case, all things being equal, is governed by the position of the internal opening. A rectal fistula with a single tract, and with one opening in the rectum is much more formidable than an anal fistula of the horseshoe or some other variety, with two or more openings in the anus and twenty-five, forty, fifty, or more openings on the buttocks (Fig. 4). The number of external openings has but little to do with the relative gravity of the case.

DIAGNOSIS

The diagnosis of an external rectal sinus—"blind external fistula"—is usually made when an internal opening cannot be demonstrated either by a probe or by injecting water, a solution of methylene blue, peroxid of hydrogen, or other substances, through it and into the bowel. These tests, however, are not infallible. Angulation of the tract may prevent the probe from entering the bowel, while necrotic tissues, or a kind of "trap-door" arrangement along the fistulous channel, may prevent the injection from passing through the

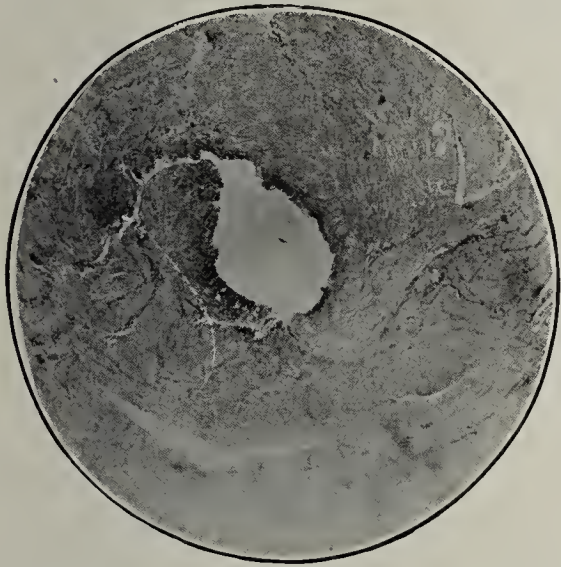


Fig. 7.—Photomicrograph of a cross section of a fistula and its pyogenic membrane. It reveals numerous sinuses extending off from the main tract, and shows why incising the fistulous tract and making Salmon's back-cut so often fail to cure.

channel. The roentgen ray in combination with subnitrate of bismuth ointment, is a valuable aid in the diagnosis of fistula (Fig. 5).

TREATMENT

This is preventive (prophylactic and abortive), curative (injections, incision, ligature and excision with immediate suture) and palliative.

Prophylactic.—A careful examination usually elicits the fact that practically every person who has fistula has, or has had, some other form of rectal disease. These conditions favor the invasion of the perirectal tissues by micro-organisms, which may be followed by an abscess and a fistula. If persons were instructed how to keep the rectum clean and in a sanitary and healthy state, and did so, fistula would become much less frequent. Since the number of cases of fistula may be greatly reduced by instruction and preventive medicine, is it not our duty as proctologists to launch a campaign for the prevention of this stubborn affection?

Abortive Treatment.—The time to abort a fistula is during the abscess stage. If the abscess is opened early and the abscess wall not interfered with in any way by means of instruments or drugs, but the cavity freely drained and gently filled with subnitrate of bis-

moth ointment, and this treatment repeated when indicated, the fistula will, as a rule, be aborted (Fig. 6). Do not forget that too much interference with an abscess has caused many a fistula.

Injections.—I have had most excellent results in the treatment of some cases of fistula by first cleansing the

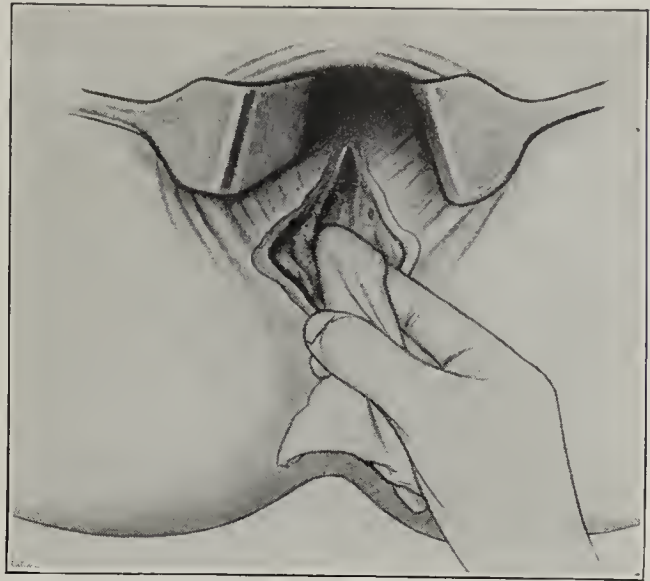


Fig. 8.—Schematic illustration of a fistula incised and the rectum held widely open with retractors. The necrotic tissue is being removed with a piece of gauze, and sinus openings may be seen in the pyogenic membrane.

tracts with neutral solution of chlorinated soda, and then injecting them with subnitrate of bismuth ointment.

Incision.—Passing a grooved director through and simply incising the fistulous tract or tracts and the tissues distal to it, and allowing the wound to heal by granulation has been and still is almost universally employed in the treatment of this disease. Tuttle,⁶ however, says that "In 2,196 cases operated on in general hospitals by surgeons, less than 45 per cent. of them were even claimed to have been cured." As he failed to state the technic employed, is it not reasonable to suppose that at least 95 per cent. of them were operated on by the incision method either with or without Salmon's back-cut, and that crevices or sinuses similar to those shown in Figures 7, 8 and 9 were not discovered and removed, and that they continued to

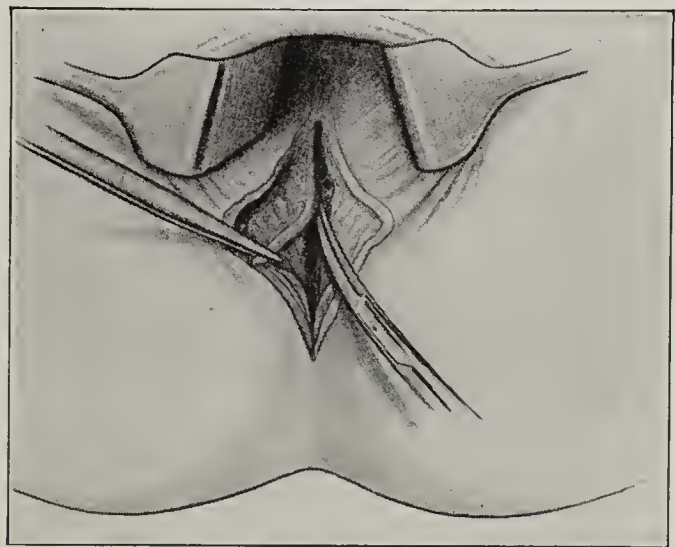


Fig. 9.—Schematic illustration of removal of the pyogenic membrane after the fistula has been incised.

reinfect the operated field? We believe this to be the reason because: (1) it is the method employed by nearly all operators, and (2) simply slitting up a fistulous tract and not removing the "pyogenic membrane," when it can be done, is certainly not good

6. Tuttle: Diseases of the Rectum.

surgery. Moreover, such procedures necessarily prolong the time of recovery and increase the amount of scar tissue, which may lead to malignancy. Such a case recently came under my care.

Excision with Immediate Suture.—A blunt-pointed director is passed through the fistula and into the rectum. The end in the rectum may or may not be hooked out through the anus. Then, either the tissues resting on the instrument are cut through and the

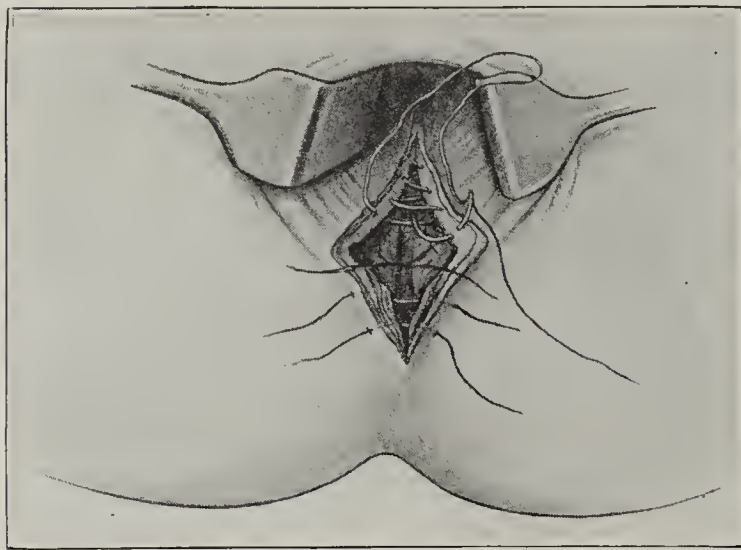


Fig. 10.—Schematic illustration showing the method of closing the mucous membrane, the sphincter and the deeper tissues, and the skin.

so-called "pyogenic membrane" dissected out (Fig. 9), or the membrane is dissected out, leaving it threaded on the director. The probe should be used with the utmost gentleness, or a false passage may be made, defeating the purpose of the operation. After the incision of the intervening tissues and the removal of the "pyogenic membrane," care should be taken to locate and remove any offshoots or side channels, since all infected tissue must be removed and the wound disinfected before closing.

Closing the Wound.—Care should be taken that all bleeding is controlled before the wound is closed, otherwise a hematoma may form and prolong, if not defeat the benefits of the operation. Suturing the wound is sometimes very difficult to accomplish. First, I usually close the incision in the mucous membrane, from its termination within the rectum to the skin, with continuous catgut suture (Fig. 10), then the severed sphincter or sphincters and the deeper tissues with interrupted buried catgut sutures (Fig. 10). Finally, the skin and fascia are united with interrupted silk-worm gut (Figs. 10 and 11). After the wound is closed, one should attempt no such stunts as pulling the mucous membrane down over the wound and stitching it to the skin, or covering the lines of suturing with collodion dressings, as advised in some textbooks. The wound should be dressed with iodoform or plain gauze and a T bandage applied. I usually direct that the bowels be moved at the end of the third or fourth day with an injection consisting of about 1½ pints of water, in which from 30 to 40 grains of inspissated ox-gall have been dissolved.

31 North State Street.

ABSTRACT OF DISCUSSION

DR. WILLIAM M. BEACH, Pittsburgh: The history of fistula is one of infection. Very seldom does the proctologist see the acute stage of fistula; that period is usually managed rather indifferently by the general practitioner until the abscess breaks. It were more fortunate to the patient to subject him to surgical measures early in order to avoid the

formation of fistula. Fistula has two or three origins: first, the tubercle bacillus, and second, the *Bacillus coli-communis*, mixed with pyogenic cocci. The persistence of a fistula depends on reinfection, and the pictures shown today explain how that is possible and may convert a simple tract into a complex one.

The extent of a fistula depends on three things: first, on the size of the original abscess; the ischio-rectal fossa containing fat offers little resistance to the invading bacteria and the abscess is limited by its capacity. The pelvirectal space makes a large abscess possible; second, the extent of the fistula will depend on the degree of patency of the external or internal opening. A draining tract will not extend; third, it depends on the virulence of the infecting micro-organism. Fistulas are not by any means always due to the tubercle bacillus, as is popularly supposed, but all sorts of micro-organisms are found in these processes, and they are frequently very destructive of tissues.

The treatment involves the principle of drainage. The internal opening should be located, and is usually found between the ental and ectal sphincters; if the tract runs up the bowel, it is usually submucosal and can be incised with impunity and without fear of incontinence.

DR. A. E. CHACE, New York: I think Dr. Pennington has missed the real point in the relationship which lies between the intramuscular sinuses and ischio-rectal abscesses, which I brought out in a paper before a New York medical society last winter. These intramuscular sinuses not only go down, as he has shown in the slides, just to the muscle, but actually into it, and in some instances almost pierce the muscle, thereby accounting for the path of infection from the rectal mucosa, through the muscle, into the ischio-rectal fossa. I have no doubt that Dr. Pennington has seen the beautiful illustration of the sinuses extending into the muscle in Hermann and Defosse's original work. If he will go still further and look at the beautiful wax models by Dr. F. P. Johnson of intramuscular sinuses, he will see how well this point is illustrated. There is no question but that they are the cause, in many cases, of ischio-rectal abscesses. We all have about our anal canals at least several of these long, blind sinuses which are potent of inflammatory reaction.

DR. R. W. JACKSON, Fall River, Mass.: There are two phases of fistula work of which I want to say a word. The first is on the diagnostic side. A large majority of the cases are unmistakably associated with the rectum in cause or sequence, but too many are not, or are not plainly so. There are many which originate in extra-intestinal foci, such as lesions of bone and joints, uterus and adnexa, or genito-urinary tract, but which often empty near the anus and lead to false diagnosis by the average attending practitioner. I would call attention to the value of colored solutions (methylene blue and the like) injected into the external openings, this to be followed immediately by proctoscopic or sigmoidoscopic examination to locate the point of emergence, if any, into the gut, that is, the site of an internal opening. And further, the patients should urinate immediately after such injection to show possible communication with the urinary tract; and here I use the word "immediately" advisedly, for it must be recollected that the methylene blue so injected may be absorbed and appear in the urine later by the



Fig. 11.—Photograph taken two weeks after the operation. It shows the operative field and the fistulous mass that was removed. One sinus extended to Poupart's ligament and another involved the scrotum, which was opened during the dissection, the testicle dropping out. The wound was closed after the method shown in Figure 10. The patient made a permanent recovery.

hematogenous route. The great value of bismuth paste injected, not for therapeutic but for diagnostic purposes, ought also to be enlarged on. The paste should be thin to reach easily the limits of all side tracts, and the main tract should contain simultaneously a probe passed to its limit. Then the picture shown by roentgenograms, provided they are taken in stereoscopic form, is often graphic indeed, a bismuth finger pointing directly at the primary focus of trouble, particularly if that be osseous. Flat, nonstereoscopic pictures have no such value. I have found these procedures invaluable in some work a description of which has already appeared in print.

The second phase is on the therapeutic side, and I would call attention to it by asking a question. Is there not a field in the surgical therapeutics of the highly septic processes about the anus and rectum for the use of the sodium hypochlorite solutions? The technic of their use must of necessity be imperfect as compared with the exact methods in use in military surgery, yet, though I am only just beginning to employ them, I believe they hold promise.

DR. FENTON B. TURCK, New York: As I understand it, this paper is presented to emphasize the idea of removing the lining wall of the fistula and the surrounding round cell infiltration by operative procedure. The fistulous tract is nothing but the result of the formation of an avenue of escape for the products of infection. The walls of the fistulous tract, and likewise the surrounding tissue, are infected. Dr. Pennington proposes to remove the products of infection from the entire infected area, bringing the fresh tissues together by suture, with the hope of obtaining primary union, as Dr. Smith proposed to do in the eighties. The objection claimed as the result of clinical experience is that many of the cases do not permanently heal because of retention of infected material. If a small drainage of silkworm gut is used, would there still be danger of reinfection, especially if the sodium hypochlorite infiltration method is used?

DR. B. GRUSKIN, Chicago: I shall discuss this paper from the point of view of a laboratory man interested in infection and immunity. It occurs to me that Dr. Pennington has done valuable work by calling our attention to the infections of the lower bowel. For years we have been becoming more appreciative of the infections due to the tonsils, the teeth, etc. It has been proved that such conditions as arthritis, rheumatism and other disturbances are the result of infection from those regions; but never have we thought of the fact that the lower bowel, being more exposed to micro-organisms than any other part of the body, if it should by some pathologic condition become irritated, would certainly offer the most favorable field for infection. Dr. Pennington's experiments were carried out in my laboratories, and I especially appreciate that it took an enormous amount of labor and study for Dr. Pennington to come to his conclusions, and I deem it my duty to call the attention of the profession to the importance of these researches, which will in the future throw more light on so many of the so-called idiopathic conditions.

DR. DWIGHT H. MURRAY, Syracuse, N. Y.: I do not believe the rectum is any more liable to infection than any other part of the body because of the material that goes through it; that is, if normal; but, because of our careless habits we may through constipation, by using the rectum instead of the sigmoid as a reservoir for feces, become autointoxicated and lose our power of resistance against infection. With a normal condition of the colon and rectum we should not have infection.

DR. LOUIS J. HIRSCHMAN, Detroit: In regard to the diagnosis of a fistulous tract, we have heard about the injection of colored solutions. Colored solutions run out of the tract. By reinjecting bismuth paste just before operating on a patient the contrast of the yellow bismuth against the red flesh is far more definite and much more satisfactory than a stain of methylene blue solution or black permanganate solution. Even while operating the watery solution runs out while the bismuth remains in situ and may point out something overlooked.

With regard to the remarks of Dr. Turck, most of us have always advocated the excision of the whole fistulous tract. Nine or ten years ago I called attention to microscopic sub-

mucous tracts and I advocated excision of the whole tract for that reason, and I have had no reason to change my procedure since. I believe I have had good results because I excised the whole tract.

Dr. Pennington spoke of the fistula being incised, curetting out the cavity well and packing. I have tried to curet the tract and realized the fallacy of this very soon. It cannot be done; it must be excised. Every proctologist feels that, I am sure. I am disappointed to hear that Dr. Pennington is still sewing up fistulas. I thought we had all forgotten about that in infected tracts. I want to congratulate Dr. Pennington on the case he showed in which the patient got well without further trouble. I think it is impossible to sew up an infected tract without great danger.

DR. J. RAWSON PENNINGTON, Chicago: I was glad to hear Dr. Chace say that he had done some original work on the rectal sinuses, and that he had read a paper on the subject before a medical society last winter. As he has not published his paper, he could not expect the profession to know about it.

I was surprised to hear Dr. Hirschman say that he thought we were through with sewing up fistulas, and that he would like to see a photograph taken six months from now of the patient whose picture was thrown on the screen. I might say that I saw the patient four or five years after the operation and that he was still well.

In a large percentage of the cases I dissect out the fistulous tract and close the wound because it unquestionably gives the best results, and there is less likelihood of incontinence. Evidently, Dr. Hirschman is not familiar with the technic for excising a fistula and closing the wound. If he will follow the suggestions laid down in the paper I think he will succeed and be greatly pleased.

THE VALUE OF MAKING LEUKOCYTE COUNTS ON THE URINE IN INFECTIONS OF THE KIDNEY*

HERMAN L. KRETSCHMER, M.D.

Urologist, Presbyterian Hospital; Genito-Urinary Surgeon,
Alexian Brothers' Hospital
CHICAGO

During the past three years we have been controlling all cases of renal infection, including tuberculosis, that have been admitted to the Presbyterian Hospital, by making leukocyte counts on the urine. It has seemed to us that this was the only way one could obtain definite and exact information relative to the severity of the infectious process, and furthermore, it has been giving us an idea of the improvement in the patient's condition while under treatment.

The idea of making leukocyte counts on the urine is not a new one. Its routine use, however, in the control of urinary infections, hand in hand with bacteriologic controls, I do not think has become an established procedure. I am not familiar with any clinic or laboratory that employs the leukocyte count on the urine as a routine in its daily work, so that I believe the statement is justified, that, as a rule, this procedure is very rarely, if ever, employed in routine clinical work. Just why this should be is not clear, for it is hard to see how one can do accurate work and get along without its use as a control of the progress made in cases of urinary infection that are under treatment.

This method is particularly valuable for informing us of the progress made in cases of infection of the renal pelvis which are being treated by pelvic lavage.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

As a rule, indefinite terms, such as "more or less," and sometimes plus signs are used, when referring to the amount of pus present in the urine. In a general way, these terms, being relative, may suffice. Nevertheless, they are open to the criticism that they are not accurate and one cannot tell from time to time the exact amount of progress the patient has made. There can be no question that when one wishes to carry out more accurate work, the use of plus signs, as well as the indefinite terms at present in general use, is most unsatisfactory.

In the treatment of cases of pyelitis by pelvic lavage, one can tell absolutely whether or not the patient is making progress by a comparison of the leukocyte

superior to the use of more or less indefinite terms. This method, technically, is just as accurate as is the counting of the leukocytes in the blood. In view of the fact that the blood volume is constant, the normal number of leukocytes in the blood per cubic centimeter is practically constant. The urinary leukocyte count will naturally vary with the urinary output and is subject to certain variations. The count will be high or low in direct relation to the urinary output.

In order to make our counts as nearly as possible under the same conditions, our patients are instructed to drink 6 ounces of water two hours before and 6 ounces more one hour before the urine is to be examined. Just before taking the first glass of water,

TABLE 1.—RESULT OF TREATMENT IN CASE 1

| Date | Leukocyte Count | | | Cultures | | | Treatment | Remarks |
|----------|-----------------|-------|---------|----------|---------|---------|--|---------------|
| | Right | Left | Bladder | Right | Left | Bladder | | |
| 11-15-15 | 360,000 | 240 | 220 | Sterile | Sterile | Sterile | 5 c.c. 10 per cent. protargol; pelvic lavage | |
| 11-29-15 | 88 | 308 | 5,280 | Sterile | Sterile | Sterile | 5 c.c. 10 per cent. protargol; pelvic lavage | |
| 12- 5-15 | 4,000 | 3,850 | 44 | Sterile | Sterile | Sterile | 5 c.c. 10 per cent. protargol; pelvic lavage | |
| 12-14-15 | 24 | 13 | .. | Sterile | Sterile | Sterile | 7 c.c. 1 per cent. silver nitrate; pelvic lavage | |
| 12-18-15 | ..... | .. | 16 | ..... | ..... | Sterile | ..... | No cystoscopy |
| 12-26-15 | ..... | .. | 16 | ..... | ..... | Sterile | ..... | No cystoscopy |
| 1-11-16 | ..... | .. | 35 | ..... | ..... | Sterile | ..... | No cystoscopy |
| 1-23-16 | ..... | .. | 63 | ..... | ..... | Sterile | ..... | No cystoscopy |

TABLE 2.—RESULT OF TREATMENT IN CASE 2

| Date | Leukocyte Count | | | Cultures | | | Treatment |
|----------|-----------------|------|---------|----------|---------|---------|---|
| | Right | Left | Bladder | Right | Left | Bladder | |
| 5-21-15 | 638 | 254 | 690 | B. coli | B. coli | B. coli | Pelvic lavage, 1 per cent. silver nitrate |
| 6-16-15 | 260 | 126 | 300 | B. coli | B. coli | B. coli | Pelvic lavage, 1 per cent. silver nitrate |
| 9- 3-16 | 90 | 80 | 100 | B. coli | B. coli | B. coli | Pelvic lavage, 1 per cent. silver nitrate |
| 9- 4-16 | 49 | 40 | 77 | B. coli | B. coli | B. coli | Pelvic lavage, 1 per cent. silver nitrate |
| 9- 9-16 | 40 | 35 | 115 | B. coli | ..... | B. coli | Pelvic lavage, 1 per cent. silver nitrate |
| 10-12-16 | .. | .. | .. | B. coli | B. coli | B. coli | Pelvic lavage, 1 per cent. silver nitrate |
| 10-27-16 | 32 | 20 | 44 | B. coli | Sterile | B. coli | Pelvic lavage, 2 per cent. silver nitrate |
| 11- 6-16 | 3 | 8 | 20 | Sterile | Sterile | B. coli | Pelvic lavage, 2 per cent. silver nitrate |
| 11-14-16 | .. | .. | 154 | ..... | ..... | B. coli | |
| 11-20-16 | .. | .. | 11 | ..... | ..... | Sterile | |
| 11-22-16 | .. | .. | 8 | ..... | ..... | Sterile | |
| 11-24-16 | .. | .. | 20 | ..... | ..... | Sterile | |

TABLE 3.—RESULT OF TREATMENT IN CASE 3

| Date | Leukocyte Count | | | Cultures | | | Treatment |
|----------|-----------------|------|---------|-----------------|-----------------|-----------------|---|
| | Right | Left | Bladder | Right | Left | Bladder | |
| 10-16-16 | 165 | 55 | 880 | B. coli, staph. | B. coli, staph. | B. coli, staph. | Pelvic lavage, 1 per cent. silver nitrate |
| 12- 7-16 | 99 | 33 | 220 | B. coli | B. coli, staph. | B. coli, staph. | Pelvic lavage, 1 per cent. silver nitrate |
| 12-22-16 | * | * | * | ..... | ..... | ..... | Pelvic lavage, 1 per cent. silver nitrate |
| 12-30-16 | 8 | 0 | 0 | Sterile | Sterile | Sterile | Pelvic lavage, 1 per cent. silver nitrate |

counts made each time the ureters are catheterized. In several instances we have noticed a transitory rise in the leukocyte count after the patients were treated with silver nitrate. We take it that this transitory increase in the number of cells was due to the medication. In many instances, the amount of fall in the leukocyte count from time to time following each treatment has been very striking, as will be illustrated in the case reports.

This method may be criticized as being inaccurate and containing the possibilities of error. Doubtless there are many factors which have a direct bearing on the volume of the urine. Nevertheless, it is surely much more accurate than no method at all, and far

that is, two hours before cystoscopy, the patient voids, so that the bladder at this time is empty.

In the cases to be reported in this series, the counts were made on specimens obtained from the right and left kidneys through the ureteral catheter and from catheterized bladder specimens. In a few instances, only the bladder urine was counted, after the kidneys were free from infection and pus.

If each count is made under the same conditions and compared with each previous count, I believe that this method has a distinct value in showing the improvement made from one examination to the next. This can be seen by referring to the case reports.

TECHNIC OF MAKING THE COUNT

In making the leukocyte counts, the urine is not centrifuged. The specimen is vigorously shaken so as to have the leukocytes and the urine well mixed. Toison's solution is drawn to the 0.5 mark and then urine is drawn to 11. This is agitated and a drop of fluid placed on a blood-counting chamber, covered with a cover glass, and the leukocytes are counted in the usual way.

knee. This was followed a few weeks later by a similar condition in the other knee. Since then the patient has suffered from arthritis, growing worse gradually. About three years ago the patient began gradually to have urinary disturbances. He was obliged to void about four times every night and sometimes more. There was a burning pain in the urethra. On admission the patient urinated every half hour during the day. He has had pyuria for several years. The cystoscopic examination showed a generalized cystitis. There were many flakes of mucus adherent to the bladder wall.

TABLE 4.—RESULT OF TREATMENT IN CASE 4

| Date | Leukocyte Count | | | Cultures | | | Treatment |
|----------|-----------------|-------|---------|----------|----------|---------|---|
| | Right | Left | Bladder | Right | Left | Bladder | |
| 6-22-16 | 1,122 | 1,244 | 1,476 | B. coli | Negative | B. coli | Pelvic lavage, 1 per cent. silver nitrate |
| 9-28-16 | 1,704 | 242 | 143 | B. coli | Negative | B. coli | Pelvic lavage, 1 per cent. silver nitrate |
| 11-16-16 | 132 | 22 | 187 | Sterile | Sterile | Sterile | Pelvic lavage, 2 per cent. silver nitrate |
| 11-28-16 | 123 | 18 | 187 | Sterile | Sterile | Sterile | Pelvic lavage, 2 per cent. silver nitrate |

TABLE 5.—RESULT OF TREATMENT IN CASE 5
FIRST ADMISSION

| Date | Leukocyte Count | | | Cultures | | | Treatment | Remarks |
|---------|-----------------|-------|---------|----------|-------|---------|-----------|--|
| | Right | Left | Bladder | Right | Left | Bladder | | |
| 1- 5-15 | | | 1,240 | | | B. coli | | During the patient's first stay in the hospital she was examined by cystoscope only once; no urine was obtained from the left catheter |
| 1- 7-15 | 3,520 | ..... | 1,370 | B. coli | ..... | B. coli | ..... |  |
| 1-17-15 | | | 161 | ..... | ..... | B. coli | ..... |  |
| 1-18-15 | | | 64 | ..... | ..... | B. coli | ..... |  |
| 1-19-15 | | | 350 | ..... | ..... | B. coli | ..... |  |
| 1-20-15 | | | 27 | ..... | ..... | B. coli | ..... |  |
| 1-20-15 | | | 91 | ..... | ..... | B. coli | ..... |  |
| 1-21-15 | | | 33 | ..... | ..... | B. coli | ..... |  |

SECOND ADMISSION

| | | | | | | | | |
|---------|-------|-------|-----|---------|----------|---------|---|---|
| 5-10-15 | | | 88 | | | B. coli | Pelvic lavage; 2 per cent. silver nitrate | |
| 5-12-15 | ..... | ..... | 770 | ..... | ..... | B. coli | | |
| 5-13-15 | ..... | ..... | 153 | ..... | ..... | B. coli | | |
| 5-17-15 | 48 | 33 | 100 | B. coli | B. coli | B. coli | | |
| 5-24-15 | 15 | 22 | 13 | B. coli | Negative | B. coli | Pelvic lavage; 2 per cent. silver nitrate | Pelvic lavage; 2 per cent. silver nitrate |
| 6- 1-15 | 30 | 28 | 40 | Sterile | B. coli | B. coli | Pelvic lavage; 2 per cent. silver nitrate | |
| 6- 7-15 | 26 | 54 | 42 | Sterile | Sterile | Sterile | Pelvic lavage; 2 per cent. silver nitrate | |
| 6-19-15 | 11 | 27 | 22 | Sterile | Sterile | Sterile | Pelvic lavage; 2 per cent. silver nitrate | |

TABLE 6.—RESULT OF TREATMENT IN CASE 6

| Date | Leukocyte Count | | | Cultures | | | Treatment | Remarks |
|----------|-----------------|------|---------|----------|---------|---------|---|---------------------|
| | Right | Left | Bladder | Right | Left | Bladder | | |
| 12- 8-16 | 451 | 80 | 1,100 | B. coli | Sterile | B. coli | Pelvic lavage; 1 per cent. silver nitrate | No cell counts made |
| 12-12-16 | ... | .. | ..... | Sterile | Sterile | Sterile | Pelvic lavage; 1 per cent. silver nitrate | |
| 1- 4-17 | 0 | 0 | 0 | Sterile | Sterile | Sterile | Pelvic lavage; 1 per cent. silver nitrate | |

* Cultures lost.

As an example of the results obtained by this method, I wish to present the histories of a few cases which have been selected at random from our records of cases of pyelitis which have been treated by pelvic lavage and in which the degree of infection was controlled by making routine leukocyte counts.

REPORT OF CASES

CASE 1.—J. S. F., man, aged 40, on whom a diagnosis of pyelitis with arthritis was made, had begun to have trouble six years previously with a painful swelling of the right

Ureteral catheterization was easy and without obstruction. Examination of the urine revealed the presence of pus in the bladder and in the right and left kidney urines. All cultures have remained persistently sterile.

The result of the treatment and its effect on the leukocyte count may be seen at a glance by referring to Table 1.

CASE 2.—Mrs. E. H., aged 28, on whom a diagnosis of colon pyelitis was made, had had bladder trouble for many years. She had been married nine years. On her honey-

moon she had an attack of cystitis, with severe burning pain on urination. At this time she also had frequency, so that she was obliged to rise several times during the night. She had occasional attacks of chills and fever which had been attributed to malaria and to her appendix. She complained of pain on the right side both in front and in back. Four and a half years ago, during an acute attack of pain on the right side, her appendix was removed. She was told that it was not diseased. Cystoscopic examination proved the bladder to be negative. Catheterization of the ureters was easy and without obstruction. The urine showed the presence of pus in both right and left kidneys and in the bladder. Cultures showed *Bacillus coli*. The roentgen-ray examination was negative for calculi. The treatment was pelvic lavage.

CASE 3.—Mrs. Dr. F., aged 28, on whom a diagnosis of pyelitis during pregnancy was made, dates the onset of her present trouble from the sixth month of her pregnancy. It was accompanied by severe pain in the right side and in the back. The pain gradually grew worse and was followed by a rise in temperature. The patient had several attacks of chills and fever. Her temperature varied from 95.2 to 103 F. between 1 a. m. and 8 p. m. The patient had her appendix removed for a similar attack of pain before she was married. Cystoscopy revealed a mild cystitis. Ureteral catheterization was easy and without obstruction. The urine from the right and left kidneys and from the bladder showed the presence of pus and a mixed infection of *B. coli* and staphylococci. The patient was given four treatments of pelvic lavage with silver nitrate.

CASE 4.—Dr. L. R. F., a man, aged 38, whose case was diagnosed as pyelitis, was operated on in January, 1917, for hemorrhoids. Following catheterization, cystitis developed, accompanied by frequent urination and pain. The urine was examined and pus and *B. coli* were found. The roentgen-ray examination was negative. Cystoscopy showed the following: The bladder was negative. Double ureteral catheterization was easy and without obstruction. The urine from the right and left kidneys and from the bladder showed the presence of pus. The right kidney and bladder urines showed *B. coli*. The left kidney was sterile. The patient was treated by pelvic lavage with silver nitrate.

CASE 5.—Mrs. F. P., aged 27, whose case was diagnosed as colon pyelitis, complained of frequent and burning pain on urination, chills and fever, and pain in the right lumbar region. Severe backache at night began about three weeks ago, which was relieved by lying on something hard. The urine became irritating and she was obliged to urinate every few minutes, both day and night. At this time she began to have chills which were followed by a rise of temperature. For a few days previous to this she had had two severe chills each day. A steady backache had been present for the last three weeks. The roentgen-ray examination was negative for stone. Cystoscopy showed the right ureter edematous and swollen. The left appeared normal. A mild degree of cystitis was seen at the base. Ureteral catheterization revealed no urine from the left kidney. That from the right side contained pus and *B. coli*. At the subsequent examinations there was no difficulty in obtaining the urine from the left kidney. The patient was given the usual pelvic lavage treatments.

CASE 6.—Mrs. E. L. H., aged 41, on whom a diagnosis of pyelitis following pregnancy was made, was suddenly seized, one month after her last pregnancy, with an attack of high fever, associated with chills and sweating. Her temperature varied from 100 to 102.5 F. There were no bladder symptoms. This attack of chills, fever and sweating lasted for sixteen weeks. During this time the urine showed the presence of pus and *B. coli*. The second attack occurred last fall, when the patient was suddenly seized with severe chills and fever, associated with severe pains in the back and lumbar region. The roentgen-ray examination was negative for stones. Cystoscopic examination showed the bladder negative. Bilateral ureteral catheterization was easy and without obstruction. Pus and *B. coli* were found in the bladder urine and in the urine from the right kidney. The left kidney urine was sterile. The patient was treated by pelvic lavage.

CONCLUSIONS

1. This method is of distinct value in showing the improvement made from time to time while the patient is under treatment.
2. It can be carried out without any trouble or inconvenience to the patient.
3. No conclusions can be drawn from a single count. The value of the method must depend on making each count under exactly the same conditions.
4. This method should be considered from a standpoint of comparison.

122 South Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. MARTIN KROTOSZYNER, San Francisco: While I have no experience with comparative quantitative determination of leukocytes present in renal urines, I have for a number of years employed their comparative qualitative estimation for diagnostic purposes in bilateral renal lesions. From the difference in the shape, outline and size of leukocytes and their nuclei, valuable conclusions are feasible in many instances on the nature and extension of the bilateral process, and it is fair to assume that by these means Dr. Kretschmer's method might gain materially in diagnostic significance.

DR. W. C. QUINBY, Boston: Dr. Kretschmer has added one more method to our armamentarium. It is undoubtedly one of value, and can be performed by the clinician. Although I have not investigated the leukocyte count in the urine, I have followed such cases by the bacterial count. The urine of patients under treatment by pelvic lavage has been examined at intervals of about a week in the bacteriologic laboratory. The culture is plated and the number of colonies which grow in a given length of time counted. This can be done with a good deal of accuracy, and, to my mind, is probably better in estimating the progress of a case under lavage than counting the leukocytes. I concede, however, that counting the leukocytes is of real value if a competent bacteriologist is not available.

DR. GEORGE A. WYETH, New York: I should like to ask Dr. Kretschmer what he considers the normal.

DR. H. L. KRETSCHMER, Chicago: About ten to fifteen.

INSOLUBILITY OF SOFT GELATIN CAPSULES *

EXPERIMENTS SHOWING THAT SOFT CAPSULES ARE RELATIVELY INSOLUBLE IN THE STOMACH

F. W. DERSHIMER, M.D.

Director of the work of the International Health Board in British Guiana

At all times, and at the present time especially, it is of great importance to both physician and patient that all drugs be administered in a form that is easily digested and absorbed. Sometimes, however, in our efforts to make medicines pleasing to the palate of our patients, we may succeed too well, with the result that the coatings protect the drugs not only from the action of the saliva, but from the gastric and enteric juices as well. Recent experiments seem to prove that soft gelatin capsules do this very thing.

In September of last year, a local firm offered us some thymol at a very attractive price, stating that they were able to quote so low a price because the thymol had been ordered before the war. Examination of the samples showed that for some reason the drug had been put into soft capsules. To test their solubility several of the capsules were put into a pepsin

* The experiments on which this paper is based were conducted with the support and under the auspices of the International Health Board of the Rockefeller Foundation.

solution that had been slightly acidified with dilute hydrochloric acid. A hard capsule was placed in some of the same solution as a control and both were incubated at body temperature. The hard capsule broke in four minutes and had completely dissolved in twenty-one minutes. After twenty-four hours, the soft capsule showed no signs of dissolving beyond a slight softening of the outer surfaces. The offer was rejected and nothing more was thought of the matter, it being supposed that this lot of capsules had become insoluble, for some unknown reason, but that others would be satisfactory.

Recently, however, our attention was again drawn to the matter by a memorandum from the Malaya Board of the International Health Board. They reported that soft gelatin capsules, furnished by a reputable United States drug firm, were not easily soluble either in digestive solutions or in the alimentary tract. On comparative test, those capsules containing oil of chenopodium removed an average of but 77.5 per cent. of the hookworms present, while equal doses of the same oil, when removed from the capsules before administration, caused the expulsion of 97.9 per cent. of the hookworms. In other words, the capsules decreased the efficiency of treatments by more than 20 per cent.

Thinking that it might be possible that certain drugs affected the solubility of the capsules adversely, we

SUMMARY OF RESULTS OF EXPERIMENTS

| Kind of Capsules | Time Required to Release Contents When Placed in Acidified Pepsin Solution at Body Temperature |
|--|--|
| Hard gelatin capsules | 4 minutes |
| Soft gelatin capsules supplied by two different firms. | 3 hours 50 minutes |
| Soft gelatin capsules supplied by two other firms | Not released after 24 hours |

then tested some capsules containing hexamethylenetetramin. It may be remarked that there is no apparent reason why a drug that is so nearly tasteless, even when given in solution, should be put into capsules of any sort. They were offered in the local market in that form, however. Several of the capsules were placed in a similar solution to the one used in our first experiment. After having been incubated at body temperature for twenty-four hours they had not dissolved.

We then tested a number of soft capsules containing oil of chenopodium. These were manufactured in the United States by two reputable firms other than the one from which the Malaya Board obtained its supply. Our results were similar to those of the Malaya Board, an average of three hours and fifty minutes being required for the capsules to dissolve sufficiently to release the oil. In all cases the hard capsules used as controls dissolved in about the same time as stated in connection with the first experiment. We were not able to test the capsules by administration, as we use oil of chenopodium in but few cases here.

These experiments seem to indicate that drugs should not be administered in soft gelatin capsules, as supplied at present, with any hope that they will act efficiently.

Tongue Evidence of Infanticide.—In a case mentioned in the *Clinica Ostetrica* L'Latte was able to detect by oblique illumination the regular imprint on the tongue of the child of cloth fibers corresponding to the cloth wrapped around the child.

QUININ AND UREA IN THE TREATMENT OF HEMORRHOIDS

SUPPLEMENTARY REPORT *

E. H. TERRELL, M.D.

RICHMOND, VA.

At the meeting of the American Proctologic Society in Detroit, in 1916, I read a paper advocating the use of quinin and urea in the treatment of internal hemorrhoids. At that time, although a few favorable comments were made on the paper, there was apparent a feeling of distrust on the part of some of those present. Since then, however, several members of the society, and many others, have written me of the good results obtained by the method described. It has been very gratifying to learn that others are getting equally as satisfactory results as I have been claiming.

In my previous paper 128 cases were reported. During the past twelve months, I have used quinin and urea in the treatment of 185 cases, making a total to this date of 313 patients on whom I have used the remedy. As in the previous report, I include only those cases in which some definite knowledge of results is known. There have been quite a number of patients who received one or more treatments and then disappeared for reasons unknown to me. These are not included in this report.

During the year, about 20 per cent. of the cases of hemorrhoids examined were found to be complicated by polypi, hypertrophied anal valves, fissures, etc. If the complication was such that it could be removed in the office under local anesthesia, this was done, and the hemorrhoids were treated afterward. In those cases requiring a general anesthetic to get rid of the complication, the hemorrhoids were excised at the same time. There have been quite a number of such during the year, but they have no place in this report and are not included.

Quinin and urea should not be used in inflamed, strangulated or external piles, but is a specific in that large class of chronic internal hemorrhoids, the chief symptoms of which are protrusion and bleeding. A hemorrhoid that is badly ulcerated and bleeds freely will seldom bleed again after the first treatment. To those who have a prejudice against all forms of treatment other than operative, and I know there are many such, I would suggest the use of quinin and urea solution to tide over the bad surgical risks, made so from excessive hemorrhoidal bleeding. You will be surprised how quickly the hemoglobin index will improve.

About 50 per cent. of those with protrusion are relieved of this symptom immediately after all the tumors have received one injection. With those situated lower in the anal canal, the prolapse will disappear gradually, although a marked reduction will be noticed from the beginning of treatment. Soon after a hemorrhoid is injected with quinin and urea solution, it loses some of its flexibility and becomes more or less fixed, when it can be felt very plainly with the finger introduced into the anus. This lessening of mobility accounts in many cases for the sudden relief of prolapse, for a noticeable diminution in the size of the tumors does not begin for several days after treatment. In a few days, a hemorrhoid that has been injected with a solution of quinin and urea has a

* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

glazed appearance, and is very much paler in color. A fibrosis with local anemia of the parts has been produced. On account of the fibrosis, the blood vessels are constricted, and, since the parts are denied the usual amount of nourishment, an atrophy is the result. Although the question is open to criticism, I believe this is the manner in which a cure is produced.

I have experimented with various strengths of solution in some of my cases, and have finally come to the conclusion that 5 per cent. is approximately the right strength for the average case. Sometimes if a hemorrhoid seems resistant to treatment, as occasionally it does, I use a 10 per cent. solution with better results.

It is my custom to inject one hemorrhoid each succeeding day until all are treated; but, if the sphincters are relaxed, there is no objection to treating two or more hemorrhoids at one time. After all the hemorrhoids have received a treatment, the patient is asked to return once a week until a cure is effected, which takes about six weeks for the average case. At these visits, treatments are alternated from one side to the other, that is, the piles on the right side are injected at one visit and those on the left at the next, so that each hemorrhoid is treated once every two weeks, which, I think, ordinarily is often enough. There is no attempt made to dilate the sphincters, nor do I draw the hemorrhoids down, as is advised by some operators. Personally, I think a Brinkerhoff anal speculum is the instrument of choice in bringing the tumors into view. It is small, conical in shape, and very easily introduced. The pile selected for treatment is cleansed with an antiseptic solution, preferably iodine and alcohol. Enough of the quinin and urea solution is then injected into the pile to slightly distend it. The needle must be very small, and should be inserted at a point as far away from the skin margin as possible, the slide in the speculum being used as an aid in doing this. The injection should be made through and not into the mucous membrane; otherwise a slough is likely to occur. During the course of treatment there are no restrictions whatever placed on the patient. He is allowed to proceed about his business as usual.

Most of those who come to me for the treatment of hemorrhoids are more or less constipated, and since the latter condition most often precedes and is the cause of the former, I deem it necessary that the treatment of both be taken up at the same time. Eliminating appendicitis, bile tract infections and other like intra-abdominal conditions as causes, I have been greatly surprised to find how easily many cases of long-standing constipation are relieved. Most patients while under treatment for constipation need encouragement more than all else, and visiting the physician at regular intervals for six weeks or so, while under treatment for hemorrhoids, offers an excellent opportunity for this. At the same time, other measures deemed necessary are used. Relief from constipation, when possible, is a decided aid in the treatment of the hemorrhoids, and no doubt lessens greatly the likelihood of a recurrence.

The question of whether or not the treatment is painful has been asked many times. From the standpoint of both physician and patient, this is important. Any so-called ambulatory or nonoperative treatment for hemorrhoids that causes pain, or is likely to put the patient to bed, is a failure. An anesthetic and operation is far preferable, if such is to be the case. In fact, on general principles, I am not opposed to operations for hemorrhoids, if properly done. On the

other hand, if hemorrhoids can be cured with no more than a slight discomfort and with no loss of time from business, I think it a decided step forward in the treatment.

In properly selected cases of hemorrhoids, treated with quinin and urea, as outlined, rarely does a patient complain of pain during or following a treatment. If the work is done carefully, gently, and without haste, 90 per cent. of the patients will not know when the injections are made. During the past year, in treating 185 patients, three have had pain due to complications, which I will describe. In one of these there occurred an edema of the skin below the point of injection, and it was apparently quite painful for two days. I think the injection was made too near the skin line, a danger I advised against in my last paper. In the second, there developed during the course of treatment a well marked fissure, which necessitated excision. This may have been a coincidence, but I am inclined to believe it was the result of infection from treatment. In the third, there occurred a small marginal abscess a short time after the first visit. After incision and drainage it soon healed, when treatment of the hemorrhoids was continued without further trouble. A complication, such as one of the above occurring now and then, serves to remind the operator of the necessity of a more careful technic.

During the year, every patient treated by the method described has been cured. It is fair to state, however, that among this number there were a few resistant to treatment, sometimes as long as twelve or fourteen weeks being required for a complete disappearance.

In another group, five or six in number, a hard, fibrous hemorrhoid would persist after the others, softer and varicosed, had disappeared. Such a condition is usually anticipated at the first visit, if the examiner is experienced, and a careful inspection is made. The patient should be told at this time that it will be necessary to excise the hard growth, which may be done before or after the softer hemorrhoids are gotten rid of by quinin and urea. In most of the cases with this complication, unless very slight, I have advised an operation at the hospital, when a complete removal of all the hemorrhoids is done.

The treatment of hemorrhoids by the injection of quinin and urea appears simple, and it is; but a thorough knowledge of rectal diseases is essential if one expects uniformly good results. Most important of all is a realization of the class of cases to which it is suited, and its limitations. I hope no physician will attempt to use the remedy until these ideas are thoroughly grasped.

105 North Third Street.

ABSTRACT OF DISCUSSION

DR. COLLIER F. MARTIN, Philadelphia: Thirteen years ago I read a paper on the "Injection Treatment of Hemorrhoids" before the American Proctologic Society. I have used the injection treatment for seventeen years, and hundreds of patients have been injected, not with phenol (carbolic acid) or quinin and urea hydrochlorid, but with a 50 per cent. proprietary phenol solution. It seems to make little difference what solution one uses, providing one gets the local inflammatory reaction with subsequent absorption, and providing the solution does not produce undue complications. None but internal hemorrhoids are to be injected. These may be readily recognized, as they always are covered with mucous membrane, and are found above the anorectal line. Internal hemorrhoids are innervated by sympathetic fibers only. The spinal sensory nerve supply is distributed to the anal skin

and tissues below the anorectal line. In other words, the injections are made only in a practically painless area.

Dr. Terrell gets good results because he knows the rectum, its pathology and its anatomy. He knows what tissues to avoid, and what symptoms to expect. The method is valuable in the hands of a man who takes the trouble to find out how to use it, and how to avoid complications. In the hands of an untrained practitioner, it is decidedly dangerous, and not to be recommended for general use. I have tried the solution Dr. Terrell recommends, but have experienced a little more trouble, probably because I did not stretch the sphincter muscles prior to starting treatment, depending on the anesthetic qualities of quinin and urea hydrochlorid to lessen the tendency to sphincter spasm. This year I reported a case of anaphylaxis occurring from the use of quinin and urea hydrochlorid. This does not condemn the solution, but should make us careful in our selection of patients.

DR. A. E. CHACE, New York: I do not think I ought to let this paper go by without a word of caution from a very young man, and a plea for real surgery in hemorrhoids. I have seen several hundred of these operations and, fortunately, only two deaths that could be attributed directly to the operation. The first was performed by means of a so-called sterile water anesthesia in the clinic. That man got a gas bacillus infection along the perineum, scrotum, thighs, and the anterior abdominal wall sloughed off before he died. The second operation was performed after the injection of quinin and urea. The prostatic plexus seemed to be first involved in the infection; there were abscesses in the liver, and death was of course caused by pyemia. Those are only two cases, it is true, but, just a word of caution: This is not a procedure that is without danger, and few procedures around the rectum, where it cannot be disinfected, are free from danger unless we have perfect drainage.

DR. D. C. MACKENNY, Buffalo: I agree thoroughly with Dr. Terrell. I have used this method a great many times in cases of tuberculous and old people, in whom one would not want to operate, and the results were all that he claimed for the treatment.

DR. GEORGE B. EVANS, Dayton, Ohio: I listened to Dr. Terrell's paper last year with not a great deal of favor and would deem myself an ingrate today if I did not rise and make an apology to him in public. On May 28 and 29 I had the pleasure of being the guest of Dr. Terrell and witnessed his work on ten or twelve patients. Unfortunately for me, none of those patients received the first injection. They were all patients who had received one, two, three, four or five injections. I also had the opportunity of being out in his waiting room. He did not know who was out there and the patients did not know I was a physician, and I listened to those patients tell what a good fellow Dr. Terrell is. They thought I was a patient. I asked them if there was any pain, and if one was laid up after the treatment, and I got a negative answer in every instance. I was there free hand and I watched this work carefully, and I want to say that I am convinced that he is doing good work and that these patients are cured. I have not only seen him inject these patients, but with his permission have examined a number of them.

DR. EMMETT H. TERRELL, Richmond, Va.: The case reported by Dr. Chase in which infection and death followed the injection of hemorrhoids is unfortunate. I think a man doing this work should be careful of his technic. The hemorrhoids must be cleaned off with an antiseptic solution and the work done with as much care as if he were doing a surgical operation. If the work is done properly there will be few complications. Of course, we are working in an area difficult to clean, and there is always a possibility of infection.

Preventive Medicine in Turkey.—The whole problem of preventive medicine in Turkey is practically untouched. It involves the changing of a whole country from a backward, unprogressive one, where filth and disease make it a real menace to the world, into a clean, liveable country, one which might become progressively a real resource to the world's civilization.—A. R. Hoover, M.D., *The Survey*.

AUTOINTOXICATION IN CHRONIC CONSTIPATION *

HORACE W. SOPER, M.D.

ST. LOUIS

The group of symptoms generally recognized as attributable to intestinal toxemia is too well known to require recapitulation. *A priori*, the most striking fact that presents itself is the great similarity between the symptoms referable to focal infection and those of intestinal toxemia. This analogy at once suggests that the toxemia associated with chronic constipation may have a bacterial origin. In other words, that an infectious agent is present in the intestine itself. This view is supported by the recent work of Lynch and McFarland,¹ Satterlee,² Sailer,³ Smithies,⁴ Turck,⁵ Barclay,⁶ and others. As a contribution to this phase of the subject I⁷ have recently reported a series of cases of pus infection of the rectum and lower colon as revealed by proctosigmoidoscopy.

Clinicians have long maintained that constipation per se could not be considered a disease entity, and have pointed out that persons in good health may defecate once or twice a week without resulting subjective or objective symptoms. However, the vast majority of individuals do develop symptoms when the bowel function is inadequate. In the symposium on intestinal stasis at the recent meeting of the American Gastro-Enterological Association, Einhorn, Smithies, Lynch, Draper and others emphasized the view that a diseased intestine is really necessary for the production of symptoms incident to chronic constipation. It appears that the question of absorption of toxic material depends on the integrity of the intestinal wall.

When confronted by a case that presents symptoms that we have learned to attribute to autointoxication, our first duty is to search for foci of infection. Investigation must be made of the teeth, tonsils, nasal sinuses, genito-urinary system, and of the intestine itself, not neglecting the rectum and lower colon. When the search is conducted thoroughly, we shall find that our cases of idiopathic autointoxication will diminish in much the same manner that the term neurasthenia is now applied to a constantly decreasing number of patients. In some cases, however, the most careful search will fail to reveal a focus of infection. Even here we may presume that changes have occurred in the mucosa that at present are not determinable by our diagnostic methods. Turck's⁸ suggestion that venous stasis in the wall of the intestine may produce an increased permeability to the passage of bacteria is plausible.

* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

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2. Satterlee, G. R.: Chronic Intestinal Stasis, *Am. Jour. Med. Sc.*, 1916, **152**, 727; *THE JOURNAL A. M. A.*, Dec. 9, 1916, p. 1729.

3. Sailer, Joseph: Three Cases of Colon Infection, read at the meeting of the American Gastro-Enterological Association, May, 1917. To be published.

4. Smithies, Frank: Chronic Intestinal Stasis and Its Associated So-Called Toxemia, *Surg., Gynec. and Obst.*, 1916, **22**, 57.

5. Turck, F. B.: Diseases Produced by the *Bacillus Coli Communis* in the Intestine: Etiology, Diagnosis and Treatment, *Internat. Clin.*, **11**, 30.

6. Barclay, Harold, and McWilliams, C. A.: Intestinal Stasis, *Am. Jour. Med. Sc.*, June, 1916, p. 822.

7. Soper, H. W.: The Mucosa of the Rectum and Sigmoid as a Focus of Infection, *Boston Med. and Surg. Jour.*, May 31, 1917.

8. Turck, F. B.: Intestinal Venous Stasis; Diffusion of Bacteria and Other Colloids, *Boston Med. and Surg. Jour.*, **176**, 663.

We must admit that toxemia may result from chemical changes in the intestinal contents. In this connection the phenomena of anaphylaxis as exhibited by food sensitization must be borne in mind.⁹

Abnormal metabolism of the food protein is a factor to be considered in the production of intestinal toxemia. This aspect of the question is well stated by Brown,¹⁰ who says:

Back of the mechanics of digestion lies a problem far more complicated, far more difficult to solve, the problem of congenital or acquired hypersensitivity to certain stimuli; the question of the overproduction of certain toxic substances, their chemical nature and their possible specificity, and various other questions involving more definitely physical factors, notably absorption and osmosis.

Brown's cases showed marked improvement on a low protein diet. In my own work I have often noted the good effects produced in certain cases of toxic headaches by sharply limiting the protein and reducing or omitting sugar from the dietary. Patients of this class usually present excessive indicanuria, much colonic flatus, and frothy fermentative feces. Moreover, they are, as a rule, in the habit of consuming large quantities of cane sugar. Possibly the presence of an excess of sugar may be a factor in determining the defective digestion or utilization of the food protein in susceptible individuals. Apropos of the carbohydrate element, the work of Pemberton¹¹ is especially interesting. He produced good results in cases of rheumatoid arthritis by a radical reduction of the carbohydrate in the dietary.

Besides bacterial infection, disturbances in the mechanics of digestion, and aberrant biochemical processes, we must consider a fourth important factor in the development of toxic conditions, namely, the central nervous system. Disturbances of metabolism are frequently encountered in the observation of the functional psychoses, particularly the manic depressive type. One such case deserves special mention. A patient whom I have observed in conjunction with Dr. Frank R. Fry, for the past three years, developed during the depressive phase, glycosuria, acetonuria, and indicanuria. In the intervals between the attacks, the urine is entirely free from these substances. Numerous cases could be cited in support of the contention that toxic states may arise primarily as a result of disturbances in the central nervous system, that they are frequently evanescent in character, and that they disappear regardless of the form of treatment instituted. I emphasize the nervous element in these cases particularly as a warning against giving credence to reports of cures, especially operative results, in patients of the manic depressive type. Milder forms of psychic and somatic disturbances are also elements of importance in the consideration of the etiology, symptomatology and treatment of intestinal toxemia.

The indiscriminate use of cultures of the *Bacillus bulgaricus*, now so much in vogue as a remedy for auto-intoxication, is open to serious objections. Even in carefully selected cases its value as an adjunct to treatment is questionable. The prevailing impression in regard to its therapeutic worth is probably due to the great food value of fermented milk. Another reason for its popularity is that it offers a remedy that

the busy doctor may use without subjecting his patient to the ordeal of a carefully adjusted regimen.

The researches of Herter and Kendall,¹² Raehe,¹³ Rettger,¹⁴ Horton,¹⁵ Hull¹⁶; Einhorn, Wood and Zublin,¹⁷ and Rosenberg,¹⁸ and others have shown the fallacy of attempts to secure the implantation of the *Bacillus bulgaricus* in the intestinal tract. Furthermore, they have demonstrated that diet is the most important factor in determining the character of the bacterial flora.

From the standpoint of economics, the loss in this country must be enormous, when we consider the large expense incurred in the production and distribution of cultures of the *Bacillus bulgaricus*.¹⁹

The daily use of purgatives is contraindicated, since they disturb the normal peristaltic rhythm. Moreover, the practice of flushing the colon by drugs or the use of water enemas is objectionable, because such procedures result in the reduction of the contents of the colon to a liquid or semiliquid state, a condition that probably facilitates the absorption of toxic material. I have made frequent sigmoidoscopic examination of such cases and have found that the mucosa is constantly coated by a layer of thin fecal matter. The same condition is present in many cases of chronic diarrhea—cases which exhibit marked symptoms of intestinal toxemia. In these cases we have a real "stasis," different from the usual conception of an accumulation of a large mass of fecal matter, but a retention probably much more injurious to the mucous membrane of the bowel.

CONCLUSIONS

1. Treatment should be directed against any existing infectious agent.
 2. Reliance should not be placed on the *Bacillus bulgaricus* as a corrective agent.
 3. The regular use of cathartics and water enemas must be avoided.
 4. An initial radical change should be made in the dietary in an attempt to alter the bacterial flora.
 5. The problem of the restoration of colonic function may demand the employment of all our therapeutic resources, medicinal, dietetic, hygienic and surgical.
- Wall Building.

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13. Raehe, A. H.: A Study of the So-Called Implantation of the *Bacillus Bulgaricus*, *Jour. Infect. Dis.*, 1915, **16**, 210.

14. Rettger, L. F.: The Influence of Milk Feeding on Mortality and Growth and on the Character of the Intestinal Flora, *Jour. Exper. Med.*, 1915, **21**, 365.

15. Rettger, L. F., and Horton, G. D.: A Comparative Study of the Intestinal Flora of White Rats Kept on Experimental and Ordinary Mixed Diets, *Centralbl. f. Bakteriologie, Orig.*, **73**, 362.

16. Hull, T. G., and Rettger, L. F.: The Influence of Milk and Carbohydrate Feeding on the Character of the Intestinal Flora, *Jour. Bacteriol.*, 1917, **2**, 47.

17. Einhorn, Max; Wood, Francis, and Zublin, Ernst: Ueber den Einfluss der Milchsäure-Bazillen auf die Darmflora, *Arch. f. Verdauungskr.*, **16**, Part, 3, p. 300.

18. Rosenberg, Ernst: Kritik des Yoghurt und die Indikationen für seine Anwendung, *Arch. f. Verdauungskr.*, **15**, Part 4, p. 458.

19. Manufacturers of the tablets and liquid cultures do not state in their literature that the fermentation of milk can be carried on simply by reserving a small portion of the fermented milk as a "yeast" to be added to the milk instead of using a tablet each time. I know of many housewives who successfully ferment the milk in this manner and who rarely resort to the tablet or liquid culture.

Husband and Wife—Remedy of Wife for Sale of Opium to Her Husband.—Where the disabilities of coverture are removed and the statute gives every person a right to damages for detriment suffered from the unlawful act of another, a woman, it is held in the South Dakota case of *Moberg v. Scott*, L.R.A.1917D, 732, may, under the statute and a common law, recover damages for loss of consortium and support through the unlawful sale of opium to her husband.

9. Longcope, W. F.: Susceptibility of Man to Foreign Proteins, *Am. Jour. Med. Sc.*, 1916, **152**, 625.

10. Brown, T. R.: Clinical Investigations on Intestinal Auto-Intoxication, Especially as Regards the Question of Specificity of Toxin, *Am. Jour. Med. Sc.*, 1916, **152**, 845.

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ENTEROCOLONIC CONDITIONS IN CHRONIC CONSTIPATION *

GRANVILLE S. HANES, M.D.
LOUISVILLE, KY.

The fact that constipation has been and is under continuous discussion shows conclusively the lack of perfect knowledge emanating from any source. In this paper I shall include stasis and obstipation under the general term of constipation.

No doubt there is an element of truth in the various explanations of constipation, but it may be safely asserted that many of these explanations require further elucidation. In dealing with this question the surgeon and the general practitioner are apparently arrayed against each other, but, as a matter of fact, the views of both contain much that is true. The great difficulty is for us to see every phase of this immense subject.

In the first place, some thought must be given the more elementary aspects of the question. The whole scheme of alimentation provides for the onward progress of the ingested food; at some points it is retarded, while at others it passes with considerable rapidity. Wherever the ingesta are normally retarded, we are most likely to find increased delay in the progress of the intestinal contents; therefore, it is at those points that we note the greatest tendency to constipation.

Since provision has been made for the food to pass easily through the lumen of the small intestine, we do not frequently find here conditions which give rise to constipation. The character of the food ingested, and the conditions controlling the intestinal, hepatic and pancreatic secretions, together with certain varieties of catarrh do, however, have some influence in the production of constipation. The hepatic secretions, catarrhal inflammations and foods must not be considered lightly in this connection.

The first portion of the intestinal tract where we observe stagnation of the contents is in the terminal ileum. At this point there exists an anatomic obstruction which materially retards the onward progress of the ingesta, the muscle fibers of the terminal ileum being thickened and thus offering greater resistance than the intestine above.

The next point offering obstruction is the ileocecal junction, the lumen here being diminished and also further constricted by circular muscular fibers which permit more perfect control of the ileocecal opening.

CAUSATIVE FACTORS IN CONSTIPATION

In the large intestine are found the chief causes of chronic constipation, the cecum and ascending colon being concerned either directly or indirectly in a large percentage of cases in which patients complain of this symptom. Many reasons may be adduced to explain the frequent stagnation in the right colon.

1. The anatomic arrangement of this segment of the colon is such that it naturally retards easy progress of its contents. The large intestine from the cecum to the sigmoid becomes progressively smaller, the variation between the two extremities being approximately three to one. Thus it may be seen that material forced from the cecum toward the sigmoid will require a pressure from behind many times greater than if the lumen were not diminished.

2. The watery elements of the material emptied into the cecum are rapidly absorbed by the cecum and ascending colon. Because of the obstruction at the hepatic angle, the decrease in the colonic lumen, and the denser consistency of the feces, considerable force is required to propel the ingesta downward into the sigmoid.

3. A most potent reason for stasis in the cecum and ascending colon, and one which is generally overlooked or ignored, is the tightly contracted muscles controlling the terminal outlet of the intestinal tract. Not only are these powerful muscles in a state of tetanic contraction, but there is often sufficient irritation in the rectal and sigmoidal walls to cause an unnatural contraction, thus materially diminishing the normal capacity of these organs for the reception of feces. In every case of chronic constipation it is imperative that these organs be thoroughly investigated. At the time of operation for some rectal lesion, doubtless we have all noted both the sigmoid and rectum filled with water and feces, notwithstanding that a purgative had been administered twenty-four hours previously, and an enema not more than two or three hours before the operation. Again, we frequently hear patients say their "bowels are paralyzed," meaning that when they have a desire to defecate they cannot command sufficient force to expel the feces from the rectum and sigmoid. There is no paralysis in such cases, but on the contrary there is a spasticity which cannot be overcome by normal efforts.

4. There must be a normal balance of intracolonic pressure for defecation to occur normally. If there are contracted segments from irritation and the lumen is thus diminished, there must result a tendency to constipation. On the other hand, if the mucosa of the entire large intestine is actively inflamed, the walls become thickened and contracted, the lumen is materially diminished, an excessive amount of mucus is secreted, the feces are forced onward without time for absorption of the watery elements, and we then have the other extreme, namely, diarrhea.

5. Not infrequently the entire colon is found much larger than normal. Under such circumstances it is easy to understand that a given amount of material cannot pass through the colon with average rapidity when the lumen is large and the walls are unable to contract down on the contents. If the colonic lumen is comparatively small, which of necessity means thicker and more powerful muscle fibers, the contents will be propelled more certainly and effectively. The muscle fibers in the dilated colonic wall are attenuated and weak and, therefore, cannot contract on and move its contents forward with an equal degree of certainty.

6. It must also be conceded that a long transverse colon and redundant sigmoid present a physical condition more difficult for nature to cope with than when these parts of the bowel are of average normal length.

7. It seems useless to add that any growth in the intestinal lumen may cause obstruction and constipation, such as cancer, etc. Of course, as stated in the beginning of this paper, we include under the term constipation those conditions often referred to as stasis and obstipation.

With the feces in a liquid state a great deal of obstruction must be present to prevent fairly easy progress through the colon to the terminal outlet; it is the hard and formed fecal material which passes with difficulty along its course. We can readily under-

*Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

stand how much more easily patients expel thin and unformed feces from the rectum than when the excreta is formed and hard; and the same holds true of the passage of fecal material along any portion of the intestinal tract.

I wish to remark at this juncture that the condition just mentioned is one of great importance. Many surgeons have performed colostomies in one way or another modifying to a greater or less degree certain points in the technic of the operation, and the patients had little difficulty in control through the artificial opening. The surgeon at once concluded that the modified technic in his operation was responsible for the excellent artificial control. Whatever that modification may have been, no technic has ever been devised whereby colostomy may be done and have any degree of satisfaction in artificial control, with the colonic contents in a liquid state. On the contrary, so far as control is concerned, almost any colostomy will be a success with the fecal contents well formed while passing through the transverse and descending colon.

The same deception applies to destruction of the sphincter muscles in operating for rectal cancer, etc. With the colonic contents dry and formed when passing downward through the sigmoid and into the rectum, any control at the terminal outlet by the sphincter muscles can scarcely be necessary. Owing to the deep hollow in the sacrum, and the provision made by the sigmoid for retaining the feces, exit is delayed until forced forward by the accessory muscles of defecation, aided by peristalsis.

Attention is called to the foregoing facts because they illustrate more forcibly than any other argument I could present, the importance of understanding the difference in the amount of power required to move forward the colonic contents in liquid and solid forms.

8. In addition to the foregoing causative factors in constipation, it is my opinion that there is no element which plays a more important rôle than that of bacterial life. The organisms are so numerous, they thrive and multiply under so many varying circumstances, that it is impossible with our present understanding of germ life to properly estimate their full influence as causative factors either directly or indirectly in the production of constipation. The intestinal tract is so constructed that there is the least possible tendency for friction or the adherence of material to the mucosa. The greatest possible provision has been made for the easy movement of the ingesta by the polished epithelial surface of the mucosa, with the production of abundant mucus, which is unequaled as a lubricant.

The first effect that bacteria produce as a causative factor in constipation is an inflammatory reaction in the mucous membrane. The superficial cells become roughened by granulations, which has a marked effect in retarding the progress of the intestinal contents because of the disposition for material to adhere to the roughened surfaces. Many patients would be affected with pronounced constipation, when the mucous membrane is in this chronic state, were it not for the production of an abundance of mucus which compensates for this defect. When inflammation is active and mucus is produced in large quantities, and when the irritation is sufficient to cause contraction of the intestinal wall, we have the other extreme, namely, diarrhea. As will be mentioned later, a large percentage of constipated individuals give a history of having had, a number of years previously, an attack of some acute

inflammatory disease involving the intestinal mucosa. These inflammatory areas are what might be considered the direct influences of bacteria on the intestinal mucosa.

The second influence of bacteria as factors in the production of constipation is on the musculature of the intestinal wall. As already suggested, the effect of very active bacterial life on the intestinal mucosa, whether there be ulceration or not, with the irritation of the nerve endings in the mucous membrane, the exaggerated contraction of the muscular wall, and an abundance of mucus, all taken together, produce diarrhea or dysentery. When there is gradual subsidence of the irritating effect of bacterial life on the tissues, then the intestinal walls begin to relax, the overstimulated mucous glands contract and produce a diminished amount of mucus, and the epithelial cells become granular from the chronic infection present. This stage, though months or years may have elapsed since the initiation of the infection, may be the beginning of chronic constipation. As the musculature relaxes under the influence of bacterial infection, with consequent increasing dilatation of the intestinal wall, an increased atrophy of the mucous glands, and also an increased granulation of the diseased epithelial cells, the constipation becomes more pronounced. We must recognize, however, that the degree and type of bacterial activity extends over, and may be responsible for, an infinitely wide range of varying symptoms.

The infection may be confined to comparatively narrow limits in the intestinal tract, or it may include the entire large intestine and the lower portion of the ileum. It may never invade the intestinal serosa, or it may produce extensive veils, bands and adhesions. The infection may be very mild and affect the epithelial cells of the mucous membrane only to a small degree, or it may affect the mucosa and the musculature and not the serosa. The character and activity of the germ life may be exceedingly mild or very severe. While some authors deny the existence of such a type of constipation as that recognized as spastic, it is true that certain types of irritation do exist wherein segments of the colon contract with unusual force and thus act as a source of mechanical obstruction to the progress of fecal material.

I have under observation at the present time a patient who has this condition in a most exaggerated degree. With the patient placed in the inverted position there is no difficulty in seeing one tightly contracting ring after another as the sigmoidoscope is introduced into the pelvic colon.

Again, the infection referred to often extends to the tissues of the anal outlet, and, as I have previously stated, it is at this point where we observe the most pronounced contractions to be found anywhere along the entire alimentary tract. In my opinion more stasis is produced in the large intestine and the terminal ileum by spastic contraction of these muscles than by any other factor entering into the etiology of constipation.

It is so seldom that examinations are made of the rectum, or rather the muscles controlling the rectal outlet, that it is quite impossible to estimate the magnitude of this phase of the subject. When due consideration is given this question it will be recognized that every abnormally contracted sphincter muscle is pathologic, and is a factor tending toward the production of constipation. The muscles may be very much hypertrophied and tightly contracted, and yet the

patient may not complain of constipation. Under such circumstances, however, there are compensatory conditions existing higher in the intestinal canal whereby the contents are rendered either especially thin, the mucosa is unusually well lubricated, or some exaggerated lesion is present.

I will state that the chronic types of infection found at the rectal outlet are in some instances the most obstinate benign conditions that we have to contend with from the standpoint of effecting permanent relief, and this point should be borne in mind in all cases.

I have been especially interested in the source of these infections which play such an important part in constipation. It has been my observation that almost all of them have their origin in early infancy where the digestive apparatus remains deranged for a long period, or in some acute intestinal disease, such as typhoid fever, amebic infection, so-called flux, hookworm disease and other forms of infection. These attacks may have occurred years previously, yet it is significant when we note the large number of persons who have constipation and who give such histories.

Other enterocolonic lesions noted in constipation, with which you are familiar, and which have been extensively discussed during the last few years are veils, bands, adhesions and allied conditions. While these may be important factors in a certain number of instances, doubtless their significance has been greatly overestimated. In other words, there are many cases of obstinate constipation in which veils or bands are present, but if the other causative factors were removed and the veils allowed to remain, the patients would be completely relieved. Without making extensive reference to the cause of these bands and adhesions, it appears most logical that they are the results of bacterial activities, having their origin in the intestinal lumen during typhoid fever, amebic infection, flux and other inflammatory conditions. It seems to me that proof beyond peradventure has been established showing the relationship between these accessory tissues and the various infections just mentioned.

It is surprising to note the number of patients who complain of pain simulating appendicitis, in whom there is a previous history of acute intestinal infection followed, perhaps years later, by constipation, indigestion and other conditions resulting from bowel inactivity. At operation the blood vessels in the serous coat overlying the colon and appendix are found engorged, adhesions and veils are present, and the appendix is removed without subsidence of the constipation and pain. These facts show the intimate relationship between the infection, constipation, bands, veils and other results of inflammation.

I wish to refer briefly to the question of ileocecal insufficiency. That there is more frequently a reflux of the cecal contents into the ileum than was formerly supposed cannot be doubted. In a very large number of patients it has been found that one out of six has ileocecal incompetency. An ingenious operation has been devised for the correction of this defect, but it has not been satisfactorily proved that the method always gives permanent relief. If stasis in the cecum and ascending colon is the chief factor in producing ileal regurgitation, then it is evident that the cause of the stasis should be determined and relieved.

I have referred to the powerful influence of the tightly contracted, irritable and hypertrophied muscles controlling the rectal outlet, the dry condition of the colonic mucosa and the other conditions recognized as

factors in the production of constipation. If these conditions exert as potent an influence as suggested; and there can be no doubt that they are important forces in producing stasis in the right colon, then it would be logical treatment to remove the cause, after which it is more than probable the ileocecal defect would be corrected. I think this is a point at least worthy of consideration.

In conclusion, I wish to emphasize that we, as physicians, should view this subject in its broadest sense. We will be able in this way to glean the facts necessary for a comprehensive understanding of the question much more successfully than by studying it from a narrow and contracted standpoint.

RECTAL CONDITIONS IN CHRONIC CONSTIPATION *

ALOIS B. GRAHAM, A.M., M.D.
Captain, Medical Reserve Corps, U. S. Army
INDIANAPOLIS

Prima facie, nothing appears easier than the diagnosis of chronic constipation. Nevertheless, in not a few cases, it may be an exceedingly difficult task to determine accurately the etiologic factor. Many cases are due to mechanical causes which, not infrequently, are never recognized or even suspected. With the improved modern methods of examination at our command, physical, gastric analysis, examination of the stool, roentgenology, and proctologic examination, to which is added the clinical subjective signs and symptoms, an accurate diagnosis can and should be made in the majority of cases.

No case of chronic constipation is diagnosed correctly or should ever be treated as such, until a thorough proctologic examination has been made. The rectum, in many cases, is found distended with feces, the patient not experiencing the slightest sensation of its presence and having no desire whatever for stool. This rectal stasis may be atonic in character, or it may have its origin in definite rectal conditions. If atonic, it usually has its onset early in life. Repeated and prolonged inattention to the calls of nature, such as indolence, absolute disregard, and even resistance, obtund the nerves of the rectum so that they do not respond to stimulation. Murray attributes this loss of the sense of rectal pressure to "carelessness, ignorance and laziness."

Rectal conditions, as a rule, are easily diagnosed by a thorough proctologic examination. This examination, by itself, is insufficient, and, in many cases, will not determine positively that the constipation has its origin in rectal conditions. I cannot emphasize too strongly the fact that identically the same rectal conditions may cause chronic constipation in one patient and yet have no appreciable influence in retarding the excretion of feces in another. If repeated digital examinations of a patient who has been given neither medicines nor enemas reveal a large amount of feces in the rectum, this alone should cause us to be suspicious of a rectal stasis. If the rectum is found to be almost or quite empty, we should feel reasonably certain that the constipation is due to delay higher up; and yet, we should not overlook the possibility of the

* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

delay higher up having its origin in some rectal condition. In many cases, roentgenoscopy as applied by a skilled roentgenologist, which implies careful fluoroscopic study and many roentgenograms showing the passage of the barium meal through the alimentary tract, is the only method of examination at our command by which we can ascertain with any degree of precision or absolute certainty that constipation is of the rectal type. If rectal stasis is diagnosed, the presence or absence of rectal conditions is easily determined by a proctologic examination. Such a diagnosis enables us to assume a more positive attitude as to our ability to cure the constipation by correct treatment of the real etiologic factor.

In ulcerations, acute or chronic, of the anorectal region, defecation is frequently voluntarily inhibited from fear of the pain produced in the act. The sphincter muscle is in an irritable state, and the presence of feces in the rectum apparently excites it to frequent and prolonged contractions or spasms, with a resulting hypertrophy that may cause actual obstruction. Matthews holds that many cases of constipation are the result of spasm or hypertrophy of the external sphincter muscle, and in cases in which it has been cured by hemorrhoidectomy, the real benefit has been derived from the divulsion of this muscle. Hypertrophy of the levator ani muscles, according to Gant, may result from chronic pelvic, uterine, vesical and rectal diseases, and by contracting the sides of the rectum, may induce constipation. I have never encountered a case of chronic constipation that could be attributed to this condition. Hypertrophy of the circular muscular fibers of the intestine at the juncture of the sigmoid and rectum may also be a causative factor. This is a very rare condition, and it is not easy of diagnosis.

The rectal valves of Houston have been the cause of much discussion. That they are at times abnormally developed, that they can and do become hypertrophied, and that they may and do obstruct or impede the fecal current cannot be denied. However, my own findings have not been such as to enable me to corroborate the statements of surgeons of longer and much larger experience, that these valves are a very frequent cause of constipation. Hirschman says:

Patients with so-called constipation who have run the whole gamut of cathartics; enemata, massage, dietetics, electricity, osteopathy, and Christian Science, have not been relieved until they have had proper proctologic examination and the enlarged rectal valves which were discovered relieved by valvotomy.

In every case of chronic constipation, the valves of Houston should be studied.

Hemorrhoids, both external and internal, may cause constipation, especially when they are inflamed or thrombosis has occurred in them. The real causative factor in such cases is the hypertrophy of the sphincter muscles, the result of constant irritation and spasm. Hemorrhoids may also attain such a size as to block or obstruct the anal canal.

Intra-intestinal tumors, such as polypi, adenomas, papillomas and fibromas very seldom attain sufficient size to retard or obstruct the excretion of feces. I recall two cases in which constipation was the result of a rectum practically filled with polypi. When complicating other rectal conditions, such as anorectal ulcerations or hemorrhoids, these intra-intestinal tumors must be reckoned as a possible etiologic factor

in constipation. So long as polypi remain well up in the rectum, patients, as a rule, are not aware of their existence. When they prolapse, they may cause sphincteric spasm and hypertrophy. Prolapse of the rectum, especially when the upper portion becomes invaginated into the lower and protrudes through the anus, may cause obstipation.

Stricture of the rectum, cicatricial or malignant, always causes more or less obstipation. If well advanced there may be a combination of obstipation with a nagging, teasing diarrhea.

In fecal impaction, rectal in type, there may be a constant desire to go to stool, with an inability on the part of the patient to evacuate the mass. The levator ani and sphincter muscles may be injured. As a result of frequent and long continued spasmodic contractions, they may become hypertrophied to such an extent as to be the cause of chronic constipation after the fecal impaction has been removed.

Foreign bodies in the rectum may cause obstipation, and the symptoms are practically the same as those of fecal impaction. The foreign bodies may have been swallowed, introduced into the rectum by accident or for the purpose of concealment, or for the relief of certain symptoms.

Extrarectal conditions, such as enlarged prostate, stone in the bladder, urethral stricture, uterine and ovarian tumors, uterine displacements, pelvic inflammatory diseases, perineal lacerations, rectocele, and deformities of the coccyx are not infrequently the primary cause of the rectal type of chronic constipation.

Retroversion of the uterus, by its pressure on the rectum, may cause a partial obstruction of the fecal current, or by interfering with the normal muscular movements, diminish its expulsive force. The same is true of a heavy uterus or a large uterine fibroid, an impacted myoma, or an ovarian tumor growing between the leaves of the broad ligament and complicated by pelvic adhesions, so that it cannot move freely. Severe puerperal parametritis may involve the rectum to such an extent as to constrict its lumen even to complete occlusion.

Rectocele, as a rule associated with cystocele and prolapsus uteri, the result of extensive lacerations of the perineum involving the triangular ligament, rectovesical fascia, and anterior portion of the levator ani muscles, may render defecation impossible without manual reduction of the prolapsed parts. Hemorrhoids and other rectal conditions are not infrequently the result of these relaxed conditions, and tend to aggravate the constipation.

Gant reports two cases in which there was an orange-sized opening 2 inches above the anus, with a pouch which passed downward and backward, displacing the coccyx posteriorly; also two cases in which there was congenital absence of the coccyx, with bulging posteriorly of the lower rectum. Constipation was the result of these conditions. Sacrococcygeal tumors, and deviations of the coccyx, especially when the lower segments are fixed and project inward at a right angle with the sacrum, may be the cause of delay in the excretion of feces.

Stone in the bladder, urethral diseases and enlarged prostate may produce sphincteric spasm, with subsequent hypertrophy and constipation.

Enemas are an excellent occasional resource and of undoubted value in selected cases. In the majority of cases, however, the daily routine practice of introducing large quantities of fluid, often irritating in char-

acter, is not only injurious, but tends to aggravate, rather than to relieve or cure the constipation. John Burne, in his treatise on the causes and consequences of habitual constipation, published in 1840, says:

Previous to the great intercourse which has taken place between France and England since the peace, lavaments were looked upon with disgust and horror, and had recourse to only on extraordinary occasions. Now they are in common use. As a means of obviating habitual constipation they are employed by some persons daily, with the effect of exonerating the large intestine more or less. However efficient they may, in this respect, appear to be, I have found from long observation that they are not free from very great objection. In the first place, they do not continue to relieve the bowels fully and freely for any length of time. In the next place, they do not dispose the bowels to resume their natural action, but, on the contrary, render them more confined. In the third place, they wash off the mucus from the intestine, which is followed by a degree of irritation and an unpleasant sense of heat, very similar to that which occurs after washing the hands in water simply. In the fourth place, the feces become more scybalous and hard under their use. And lastly, the individual does not feel the comfort or conviction of having had his bowels fully relieved, on which account he is often induced to resort to a second lavament on the same day. Lavaments fail in completely obviating or curing habitual constipation.

In every case of chronic constipation, the anus, perineum, buttocks and genital organs should be inspected and palpated, and any abnormality of these parts which might cause sphincteric spasm, occlude the anus, or in any way interfere with the excretion of feces, should be carefully noted.

Digital examination is next in order, and since most rectal pathology is to be found within the first 2 inches from the anal outlet, it is our most valuable method for detecting rectal, and even extrarectal, conditions, which, alone or together, may be responsible for delay in the passage of fecal matter. Much unnecessary suffering is the result of hurried digital rectal examinations. When the sphincters are so sensitive or tightly contracted as to prevent digital examination being accomplished without great pain to the patient, Hirschman advises dilation of the sphincters by means of local anesthesia.

Internal inspection of the anus, rectum and sigmoid is demanded in every case, and is made with the patient either in the knee-chest, the knee-shoulder, or the Sims' position. Such an examination enables us to diagnose accurately a pathologic condition involving these parts. It is essential that the rectum shall have been emptied of feces before this examination is begun. Force should never be employed in the introduction of the anoscope, proctoscope or sigmoidoscope, and it requires not a little practice in order to introduce these instruments properly and painlessly.

The treatment of chronic constipation implies the treatment of the various conditions that cause it. Rectal conditions, either alone or complicated by extrarectal conditions, are frequently the cause of deficient or retarded fecal movements. Chronic constipation is not infrequently the cause of hemorrhoids, ulcerations, excoriations, sphincteric spasm and hypertrophy. No matter whether the rectal conditions are the cause or the result of chronic constipation, their appropriate treatment, medical or surgical, is clearly indicated if a cure of the constipation is to be effected.

When the fecal stasis is the result of an atonic rectum, I have secured the best results from direct stimulation by means of mechanical dilatation, such as has

been recommended and practiced by Turck, McMillan, Teachnor and Hirschman. Regarding this treatment by direct stimulation, John Burne, in his interesting treatise on constipation, published seventy-seven years ago, says:

The bougie may, I think, be had recourse to with advantage more frequently than is customary in the treatment of habitual constipation, and some of its consequences. A bougie of moderate size introduced into the rectum and allowed to remain some minutes has been found on withdrawal to be followed by an action of the bowels. Employed for this purpose, it should be introduced 8 or 9 inches, so as to arrive at and dilate the upper part of the rectum, which, according to O'Beirne, is always contracted and in a state of spasm. The most convenient time for its employment is before rising in the morning, and its use should be persevered in daily by the patient himself.

CONCLUSIONS

1. No case of chronic constipation is diagnosed correctly or should ever be treated as such until a thorough proctologic examination has been made.

2. The same and identical rectal conditions may cause constipation in one patient, and have no appreciable influence in retarding the excretion of feces in another.

3. In many cases, proctologic examination alone will not determine positively that constipation has its origin in rectal conditions. It must be supplemented by a careful roentgenographic and fluoroscopic study of the alimentary tract. Such a diagnosis insures the patient correct treatment and satisfactory results.

4. Rectal conditions are frequently the primary causative factor of chronic constipation. On the other hand, constipation may be the cause of various rectal conditions. Whether the cause, or the result, of chronic constipation, the appropriate treatment of rectal conditions is essential if a cure is to be effected.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. SOPER, HANES, AND GRAHAM

DR. HENRY ILLOWAY, New York: I fully concur in the statement that whatever value the Bulgarian bacillus has lies only in the fermented milk, its carrier, when that is permissible, and that it offers a remedy to the busy practitioner who is not familiar with all the intricacies of diets.

This matter of autointoxication is so harped on in the medical journals that most physicians have become convinced that every ailment, great or small, has its origin in the intestinal canal. The manufacturers of drug combinations have not been slow to seize on this, and circulars with reports of cases full of the horrors of autointoxication, with big headings and thick type, "*Clean up, Clean out,*" are showered on us daily.

We have had a whole series of morbid conditions thrown together into one bag, as it were, and labeled chronic constipation. Constipation may be a morbid entity, or it may be merely one of a group of symptoms of an underlying pathologic condition. When constipation is due to a fissure of the anus, or to abnormal development of hemorrhoidal tumors, or when it occurs in the course of cancerous disease of any part of the intestinal canal, it is not proper to call the case one of chronic constipation. The constipation is only one of a group of symptoms, which, if carefully studied, will disclose to us the pathologic condition that gave rise to it. When we speak of chronic constipation as a morbid entity, then we can mean only that form of constipation usually spoken of as habitual constipation, the consequence of an atony of the intestinal muscles.

The authors of the papers have not set forth the precise symptoms by which they diagnosticate the autointoxication due to chronic constipation. It is, however, just these details

that would enable us to judge what they regard as auto-intoxication. Symptoms are susceptible of varying explanations.

DR. DUDLEY ROBERTS, Brooklyn: The gastro-enterologist needs to know more of proctology and vice versa. Auto-intoxication is the fad of the day. While there are normally sensations arising from the filled sigmoid and rectum and a sense of well being attending satisfactory defecation, the hypochondriacal individual makes too much of such sensations. I am of the opinion that the symptoms that arise from stasis in the distal colon are largely pressure phenomena associated with hypochondria. I doubt that they are toxic. When infection of the part is added, it is quite another story.

Stasis in the right half of the colon, on the contrary, does, it seems to me, at times result in toxemias. What the toxic substances are and why they get to and through the liver we do not know. Our work on this subject will be unsatisfactory until we have a test of blood or urine that is more than slightly suggestive. Clinically we have such conditions. These individuals may or may not be constipated. Even in cases with diarrhea one sees long stasis in the right half of the colon. Dr. Soper has spoken of the infections of the colon; and while they may no doubt play a part, I do not feel that they represent more than a small group. I think that we shall find one of the most profitable fields for study in the anaphylactic group. From my experience I am convinced that, in some cases at least, stasis in the terminal ileum and cecum is responsible for the sensitization we see in some individuals. There is some reason for believing that some of the chronic arthritic groups are truly toxic rather than infectious. In addition there are cases such as were described by Satterlee. I feel that in these cases one should accept as a last resort the explanation of symptoms as due to intestinal intoxication, and then only when abnormal stasis in the ileum or right half of the colon can be clearly demonstrated. We must not lose sight of the fact that there are many possibilities of auto-intoxication from disturbances of metabolism in the liver, in the muscles and other tissues. We must always keep in mind the possibility of abnormal glandular activity as a cause of so-called intoxications. On the whole, I am inclined to the opinion that while in a small proportion of cases we have to deal with a true intestinal toxemia, the tendency at present is greatly to exaggerate its frequency and importance.

DR. WALTER A. BASTEDO, New York: Among the causes of constipation Dr. Hanes included the diminution in the size of the colon from above downward, the lower part of the colon having only one third the lumen of the upper part. But I do not think that this in the slightest degree is a factor in producing constipation. The small intestine passes the food residue along at a rapid rate and empties it into the cecum quickly, because it has a special form of peristalsis; but, fortunately for us, the same kind of peristalsis does not take place in the colon, and ordinarily the food residue takes many hours to get down into the pelvirectal reservoir. In the process the contents lose much bulk, and there is no evidence that the tapering lumen is in any sense an obstruction.

In working with the intestines of animals one can make a considerable obstruction, particularly to the small intestine, and still, if there is peristalsis, observe the feces perfectly well pass the obstruction, the kink, or even a moderate weight put on the intestine. Indeed, a kink often straightens through peristaltic action, and unless it makes an anatomic stricture of marked degree, or spasm resulting from irritation, it is unimportant as a cause of constipation.

I believe that heredity is a very distinct factor in making "kinds" of bowels. I have known a family in which three members had the appendix removed; also two cousins, making five appendixes of blood relations. In all five the appendix was retrocecal. This was known as a constipated family, yet each member who had the appendix removed has become free from constipation. In another instance I saw a grandmother who had achylia gastrica, the daughter also had achylia, and the young granddaughter of 18 years had achylia. On the other hand, the grandfather, as shown by the roentgen ray, had a very redundant colon, a large sigmoid, and a movable

cecum which crossed the sigmoid. The daughter had the same kind of colon, and the granddaughter has that kind of colon now. The grandfather, the daughter and the granddaughter have shown a severe degree of intestinal poisoning, but the grandmother, who has the achylia gastrica but not the redundant colon and cecum mobile, has never shown intestinal poisoning and is now a very old woman. I think that heredity from the two grandparents made a bad outlook for the two generations below.

DR. JOSEPH C. BLOODGOOD, Baltimore: I think perhaps it may be of interest if, in a few words, I give you, as a surgeon, my experiences with lesions of the colon other than cancer, of which perhaps the larger group covers a condition associated with chronic constipation and what may accompany that; that is, leaving out all the cases in which, from a cross examination, there is no pathologic condition of the colon—no colitis in the sense of an ulcer, no organic stricture the result of an ulcer, no multiple polypoid tumors, no diverticulitis, no appendicitis—at least outside of the appendix in the region of the cecum—but a patient with chronic constipation and following, with its duration, other symptoms. I do not believe this is a single disease; I feel that it is a terminal disease. I want to impress that on you. My experience is that in the beginning I operated on more patients than I have in the last two years. I think my entire number is sixty, and in the last two years I have had two. Now, what is the explanation of that? In the first place I have never proceeded to an operation in any of these cases unless the patients were referred to me by medical colleagues who told me that they had done everything they could and wanted some help from surgery. Now, why has that taken place? One explanation is that there are more well trained gastro-enterologists in the clinic. This is absolutely true in my clinic, because, until a few years ago, we had no department at Johns Hopkins, or associated with me at St. Agnes, but since we have had such a department the men in my own room see more patients and operate on less.

Is all the credit due to the gastro-enterologists, or is there another element? I feel there is another element. Even if we cannot agree with Lane, and feel that some of the surgery, much of the surgery, or even all of the surgery of this type of colon lesion of the past has not been justified, nevertheless he has given to the colon, not only to the profession but to the public, more publicity than any other method of treatment.

DR. EMMETT H. TERRELL, Richmond, Va.: It is absolutely essential for success in the treatment of constipation to be able to distinguish between conditions due to general causes and those resulting from obstruction. At times it is easy, but frequently an examiner is called on to exert all his ingenuity to define these cases. I find that a great many people are constipated because they think they are constipated. By that I mean that they are so in the habit of taking pills each night on retiring that they never give the bowels a chance to move naturally. If these people can be induced to stop the use of laxatives for a short time, with the proper regulation of their diet and the administration of a little petroleum oil, a great many cases will respond readily and without trouble.

I should like to refer for a moment to a condition commonly called mucous colitis. In these cases, while there are frequently several movements of the bowels in twenty-four hours, the patients are really constipated. The ordinary remedies which have been suggested for the treatment of mucous colitis in my hands have been absolutely worthless, and, in fact, I think irrigations of the rectum and the colonic flushings with various medicinal substances do more harm than good. I hesitate to suggest a remedy which has been found very beneficial because I cannot explain its action. I refer to the administration of large doses of bile salts.

DR. JEROME MEYERS, New York: I have followed the subject of intestinal auto-intoxication for a number of years and believe it is a mistake to speak of auto-intoxication. It is better to use the term indicanuria. The most important causes of indicanuria are improperly digested protein, the colon bacillus, constipation, with injury to the intestinal mucous membrane, possibly a lack of detoxifying power of

the liver, and possibly the reaction of the intestinal contents, whether acid or alkaline.

I was interested in Dr. Soper's mention of sugar in auto-intoxication. Sugar does not give indican, but indolacetic acid in the urine. I followed this for a number of years, but obtained no practical results either in treatment or the examination for this acid in the urine.

With regard to protein decomposition and the colon bacillus, in fully fifty cases I have obtained results with the Bulgarian bacillus. I cannot agree with the gentlemen who hold that this treatment is of no value. Together with a low protein diet, I have seen it repeatedly clear up the most marked indicanuria in one to three weeks. One can expect no results unless a live bacillus is used and its use is persisted in for at least three weeks. The more ptotic the intestines are, the more difficult it will usually be to clear the urine of indican.

One other consideration is of importance—the intestinal mucous membrane itself, not only through possible gross defects, allowing indican to reach the portal blood, but the escape of indican through physiologic changes in the membrane, either of osmotic pressure or acidity or alkalinity. Protein decomposition is an alkaline process. It is interesting that the use of the *Bacillus bulgaricus*, which causes an acid reaction, should cause a diminution in the amount of indican. Again, in the use of Carlsbad or Vichy salts, both of which are strongly alkaline, I have been highly interested to note that whether the protein were restricted or not, or whether *B. bulgaricus* were given in conjunction or not, the amount of indican in the urine, even though the patient felt better, was never very materially decreased, and might even be increased.

DR. MARTIN E. REHFUSS, Philadelphia: We know the roentgen ray gives a so-called cast of the interior, and absolutely nothing regarding the chemical functions of the bowel, stomach or any of the organs. Today we are in a position in which we need methods of precision. One of the matters recently investigated was the question as to what actually exists chemically in the bowel, and the method of obtaining samples for analysis. Diagnosis is based on the examination of a test meal, the roentgen ray and physical examination. By suitable apparatus it is possible to remove material from different parts of the bowel and demonstrate the changes in the bowel itself. We know the cecum is rich in bacterial mediums. The observations on this are too numerous to mention. This has been borne out in examinations of a number of Lane's cases seen in Paris and in this country. None of Mr. Lane's patients are in perfect condition for any length of time. The curious thing is that the material removed from different sections of the bowel is different. I do not know the explanation of this phenomenon, but as one continues to irrigate the bowel one can demonstrate unquestionably the difference in the intestinal liquid. One can fill up the colon with liquid and cannot outline the dulness because almost invariably there is air in the bowel. Therefore, that method must give way to the method of palpation which differs with the degree of retention in each individual case. As the bowel is emptied the material will change and get lighter in color, and suddenly there may be found a large amount of putrid material, darker in color. Then again, for a half hour one may obtain nothing. We have used this procedure in several hundreds of cases but are not yet prepared to say what method is best for examining the specimens after removal. We simply examine the specimens from different levels microscopically. Although a half hour's irrigation frequently gives nothing, we then get material which may contain cellulose, leaving no doubt in our minds whatever, as to the fact that material is from high in the bowel; then we get another type of material. We use on an average from 6 to 8 gallons of liquid, and never introduce the rectal tube beyond 4 inches in the bowel, because further introduction is difficult. All the cases have been proctoscoped. Most of the problem remains to be solved, and until we do this we cannot possibly realize what auto-intoxication means.

DR. W. L. CHAPMAN, Providence, R. I.: We have been talking about auto-intoxication and have been told a number

of times that there is no such thing. The painstaking labors of many clinicians and chemists have either been forgotten or discounted. Not once have natural methods of cure been mentioned. There are many cases of hard-working, sedentary people who have to be careful in their diet, but let them browse around on a farm for a few weeks, live out of doors, swim, play tennis, or work in a garden, and they can eat all sorts of indigestible things and "get away with it." Take the poor dyspeptic shop girl and give her two or three weeks in the country and see how her digestion improves!

We see many cases in which the abdomen sags, and by simply exercising the abdominal muscles the abdominal tone is restored and the first thing one knows the bowels will act without any medicine at all. Physical therapeutics will do much.

Every patient who comes to the gastro-enterologist should have a complete physical examination beginning with the teeth. The nose and throat men take out the tonsils because they are carriers of infection, leaving decaying teeth which should be removed at that time. If not competent to extract teeth, a dentist should be in attendance, thereby saving the patient the trouble of another anesthetization, which in children is difficult to obtain. Again, it is not beneath the dignity of a surgeon to clean up the mouth after an abdominal operation, or have it done.

Every patient should have a complete roentgenologic study of his entire gastro-intestinal tract. Until one has this one knows nothing about the orientation; whether the colon goes in a straight line or is soldered to the bladder by adhesions. If the patient is to be operated on all the important points should be recorded for the surgeon.

DR. MILTON J. LICHTY, Cleveland: Gastro-intestinal auto-intoxication, nervous headaches and the uric acid diathesis are things talked about in my office by my patients, who know practically as much about them as I do. If we could get rid of some of this talk it would save time and also help the patients. I really believe that what Dr. Bloodgood mentioned with regard to the relation of the internist, the gastro-enterologist, to the surgeon is the thing which is going to help us out. There is no doubt whatever in my mind that many of the cases of so-called neurasthenia or constipation years ago were nothing more or less than surgical conditions, and yet we find now that they are not. The teeth and tonsils have just been mentioned. In addition to the teeth and tonsils, we have Jackson's membrane, retrocecal appendix and surgical conditions of the rectum, as well as the surgical appendix to account for symptoms. I want to remind you that the first attempt must not be considered as final. I have a record of three patients who said their appendixes had been removed, but the constipation persisted, and on a second operation the appendix was found there still making trouble.

DR. THOMAS CHARLES MARTIN, Washington, D. C.: I wish to call attention to three mechanical factors: the proctoscope, the patient in the knee-chest posture, and the rectum. The rectal valve is a factor in the production of organic obstipation. The hypertrophied valve becomes obstructed to a further degree, rectitis resulting, with infiltration; fixation results, establishing annular stricture, further contraction, and then the establishment of a tubular stricture of the rectum, the foundation being a normal stricture of the rectal valve resulting in symptoms of obstipation. We have the same form with a congenital condition.

Another form of obstruction is that due to angulation of the sigmoid flexure on the rectum. The proctoscope would indicate the obstruction within the rectum. The roentgenogram will only show such a condition as this when the picture is stereoscopic. We must be able to get the third dimension—the depth—shown by the use of the stereoscopic method of taking roentgenograms. One point already made must be emphasized: the importance of training the muscles on the front of the abdomen.

DR. J. A. RUBEN, Pittsburgh: In considering the part the colon plays in this question, let us for a moment examine the anatomic position this section of the alimentary canal occupies in the abdominal cavity as revealed to us by the

fluoroscope. As Dr. Chapman has said, it is only by the aid of the roentgen ray that we can accurately study these parts. The following may be found:

1. A normal condition; that is, ascending colon to liver, transverse colon above umbilicus to spleen, and descending to the sigmoid. In chronic constipated cases this condition is rarely found.

2. Prolapse of the ascending colon over the cecum. The transverse colon, starting from the pelvis, passes up to the spleen and turns a sharp angle to form the beginning of the descending colon.

3. Complete prolapse of the transverse colon, which lies on the pelvic floor with the hepatic and splenic flexures at about the level of the anterior superior iliac spines. Between these extremes there are innumerable variations.

The next question anatomically is whether this colon in its abnormal position is freely movable and can be pushed into normal position or is adherent. A movable colon may functionate fairly well even when in an abnormal position, but I have not as yet found an abnormally placed colon bound down by adhesions that was able to do so.

DR. G. REESE SATTERLEE, New York: There are five points which I wish to bring up—three old and two new ones. First, the education of the patient is an important thing. Patients now find that their cases have been wrongly diagnosed as neurologic when they are really intestinal. In fact, these patients are able to make a better diagnosis than some of the physicians, and send their friends to the gastro-enterologist.

The second point is that intestinal toxemia can be made more simple if classified into putrefactive cases, absorption of amins and diseased conditions of the colon.

Third, familiarity with the roentgen ray, not the technical side necessarily, but with the reading of the plates and with the fluoroscope, ought to be a part of the training of every internist and gastro-enterologist.

Fourth, a chemical blood examination is necessary in any patient on a diet, and carbohydrates should not be given to patients who have a high blood sugar.

Finally, I find that autogenous forms of vaccines are most efficient, and employing them often relieves us from the trouble of using massage and other measures, and in addition affords a chance to study the patient's anaphylaxis. It is essential to obtain the feces for culture after catharsis in order to get cultures from the cecocolon. I have secured satisfactory results in this way.

Trained Nurses in France.—It is not so many years since European physicians publishing their "Impressions of America," in their home medical journal always paid amazed tribute, if not in the first paragraph, at least on the first page, to the "American trained nurse." In France, the quarters appropriated to the nurses in the tradition-bound hospitals were not such as to invite the gentlewoman class to take up nursing as a profession. All this has now been done away with, and even before the war excellent training-schools for nurses were well under way. The Assistance Publique, the centralized organization of all the charity hospitals and asylums in the Paris district, has now a fine new building as the training school for nurses to serve in the institutions caring for the sick poor. This new building is located in the maze which forms the great Salpêtrière hospital, founded in 1656 as an asylum for beggars. The new training school was inaugurated in 1907 and gives a three year course. The graduates pledge themselves to serve for three years in some of the institutions in charge of the Assistance Publique, after which they are free to take up private nursing. But those that remain with the Assistance Publique are entitled to a retiring pension. Before this hospital was founded, however, a training school for nurses recruited from the ranks of gentlewomen was founded, practically at her own expense, by Mme. A. Fould, in 1905. This school is said to be a model, and attractive in every respect. It gives a two year course, and the nurses pay about \$20 a month during the first year. Other well equipped and well managed schools were founded about the same time by Miss Chaptal and others. One is now affiliated with the new Edith Cavell hospital school.

Clinical Notes, Suggestions, and New Instruments

ROENTGEN PLATE ILLUMINATOR, GIVING A PERSPECTIVE VIEW

J. J. SINGER, M.D., ST. LOUIS

Instructor in Clinical Medicine, Washington University Medical School

A roentgen-ray machine is no better than its plate when viewed in an illuminator; consequently, the better the illuminator, the better the value of the roentgen-ray machine.

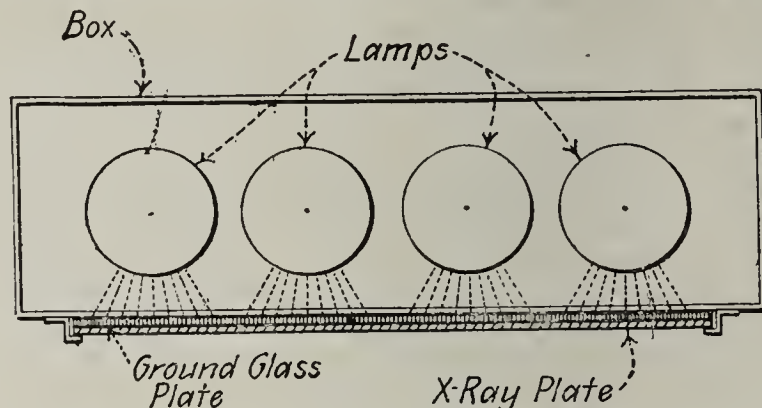


Fig. 1.—Top view of ordinary illuminating box.

Figure 1 is the top view of the ordinary illuminating box, with the lights directly back of a ground glass plate. This plate then becomes a source of light, emitting light rays of equal intensity through the roentgen plate. It will be necessary here to call attention to the fact that a roentgen plate

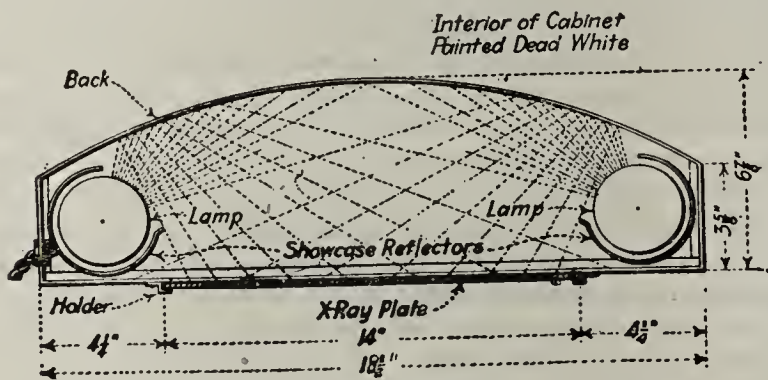


Fig. 2.—Top view of box described by the author.

represents in black and white the obstruction to the roentgen rays as they penetrate the body; therefore, the plate represents an uneven distribution of rays caused by the varying densities through which the roentgen rays must travel; in other words, the plate has been produced by uneven light.

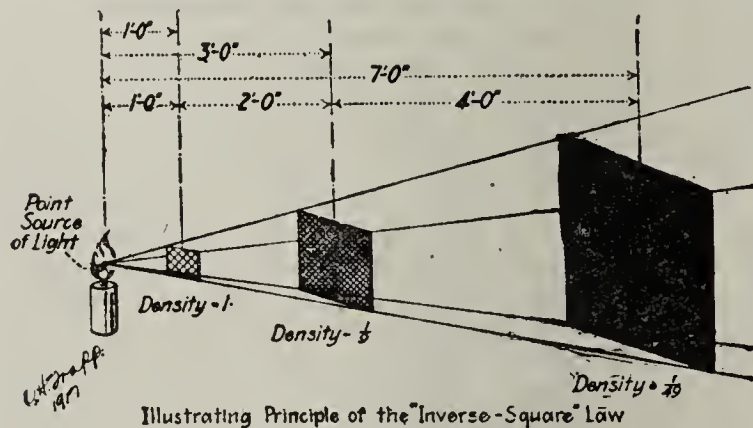


Fig. 3.—The principle of the "inverse square law."

Figure 2 is the top view of my box, in which a light is hidden on each side, the rays being reflected from a curved back, as indicated. It will be noticed that there is no ground glass plate to distribute the light evenly, the rays penetrating the plate according to the strength of the individual rays.

The center of the roentgen plate is lit up by rays of considerable length and consequently of weaker strength, and owing to this fact a weak illumination is produced in the center of the plate, which accounts for the perspective view.

In Figure 2 are given exactly dimensions best suited to my illuminator.

Figure 3 illustrates the principle of the "inverse square law." One can readily see from this drawing that the penetrating power of the light wave becomes rapidly weakened, that is, inversely as the square of the distance from the source.

Figure 4 gives a perspective view of the box, which is made of sheet tin, iron or steel, with a curved back.

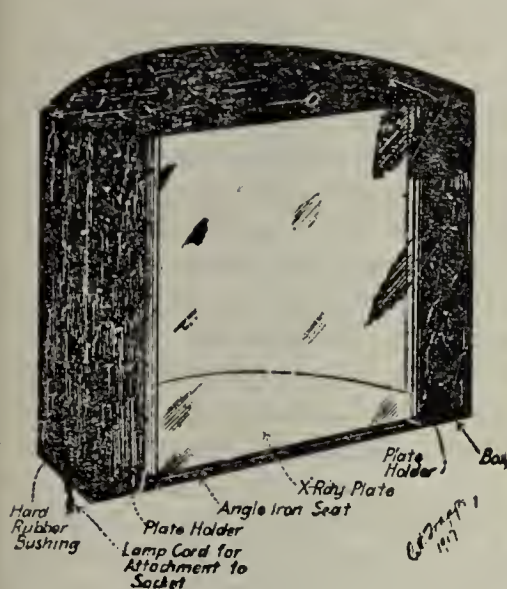


Fig. 4.—Perspective view of the box.

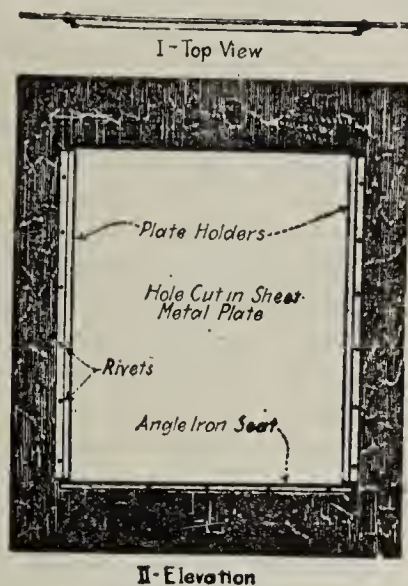


Fig. 5.—Adapter for smaller plates.

Figure 5 shows an adapter for smaller plates, the outside dimensions of the adapter being 14 by 17 inches. The inside opening can be made for any size plate desired.

The box is being used with satisfaction at the tuberculosis clinic in Washington University Medical School.

While there are other boxes being used that have indirect lighting, I do not know of any box in use that resembles the one I have described.

CONCLUSIONS

1. The box is simple, portable, light and cheap. Any mechanic is able to construct one.

2. The perspective effect of this box depends on a proper interpretation of the physics of light waves.

3. A roentgen plate should be unevenly illuminated, just as the plate was originally produced by an uneven light.

Carleton Building.

DEVICE FOR ROENTGENOGRAPHIC LOCATION OF BULLETS AND OTHER FOREIGN BODIES IN WOUNDS

SINCLAIR TOUSEY, A.M., M.D., NEW YORK

Localization by means of roentgenography presents no difficulty in the case of a finger. Here there are distinct landmarks, and it is easy to take two pictures in planes at a right angle to each other. If we employ a ray vertical to the plate at the supposed position of the foreign body, the latter is so near the plate that no correction is required for the slight lateral displacement of its shadow if not exactly at the spot where the ray is normal. In many other situations, however, two pictures at a right angle are either impracticable or inadequate, owing to the thickness of the part, the absence of very accurate bony landmarks, and often the great distance of the foreign body from the surface. The exact depth at which the foreign body is located is the difficult problem.

The methods of localization now in use fall into two groups: (1) the McKenzie-Davidson type, and (2) a method to which no distinctive name is attached. My new device is a modification of the latter type.

DETAILS OF METHOD

Apparatus Required.—1. A piece of galvanized iron netting measuring 8 by 10 inches, with meshes one-eighth inch square, the wire being of such a thickness that there are seven meshes to the linear inch. 2. A single distinctive lead marker like a small ring. 3. A set of lead numbers. 4. Facilities for

moving the roentgen tube laterally a measured distance after the first exposure. 5. A stereoscopic plate holder for the exceptional cases in which two exposures should be made on separate plates.

Manipulation.—The distinctive lead marker is fastened to the skin at a point where it will be in contact with the center of the plate during the exposure. The position of this marker is indicated on the skin with an indelible pencil. The plate, covered by the wire netting, is laid on the table. The lead serial number is invariably placed over the lower external corner of the plate. The same number should be marked on the skin with an indelible pencil. Lead markers R and L (right and left) will be of occasional service. For the thigh or any part of the head or trunk, the anticathode is placed at a distance of 21 inches from the plate; it is displaced laterally 3 inches after the first exposure. For the forearm or leg the distance from the anticathode to the plate is 14 inches and the lateral displacement 2 inches. Each subdivision of the wire mesh (one-seventh inch) that the image of the foreign body is displaced corresponds to one-half inch distance from the plate to the foreign body when the exposures were made. If this distance is considerable, one must bear in mind the fact that the foreign body is located in a direction from one image to the corresponding position of the anticathode, not necessarily in a direction vertical to the plate. Each exposure should be of the same intensity and duration as for a single picture whether the exposures are made on the same or on separate plates.

The advantage of this method lies in the small space required for the apparatus and in the absence of any mathematical calculation.

850 Seventh Avenue.

AN ELECTRICALLY HEATED CONSTANT TEMPERATURE WATER-BATH FOR SEROLOGIC WORK *

OSCAR T. SCHULTZ, M.D., CHICAGO

For serologic work a constant temperature water-bath is a necessity, and a bath heated and controlled by electricity has manifest advantages over any other kind. While there are several electric water-baths on the market, they are not entirely satisfactory, either because the size is excessive in comparison with the available working space, or because the

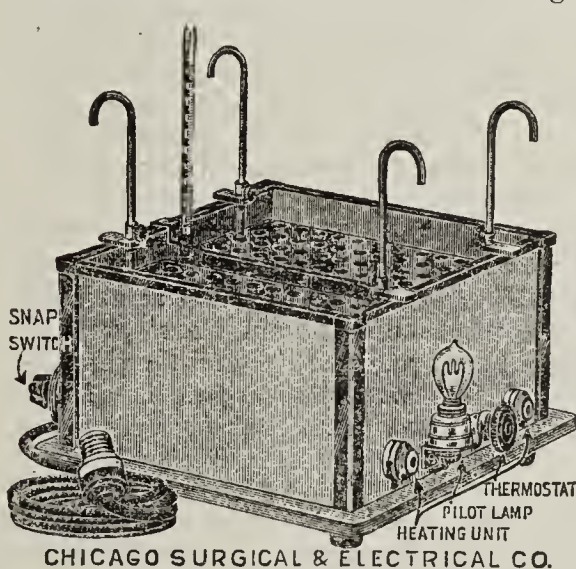


Fig. 1.—Water-bath with two test tube racks.

test tube racks, each measuring $8\frac{3}{4}$ by 4 inches and $2\frac{3}{4}$ inches in height, and each with a capacity of forty-eight tubes of the 3 by $\frac{3}{8}$ inch size, as shown in Figure 2. These racks are suspended by adjustable supports from the sides of the bath in such a way that the tubes can be submerged to any desired depth. To overcome the waste of space which is one of the features of a circular bath, this bath is made square in shape, the inside dimensions being 9 by 9 inches and 5 inches in depth. The bath is made of No. 19 sheet

* From the Nelson Morris Memorial Institute for Medical Research of the Michael Reese Hospital.

copper, the inner surface of which is tinned. Outside of this is a layer of hair encased in building paper, and this in turn is covered by transite (a mixture of asbestos and Portland cement) three-sixteenths inch thick. With this insulation there is no appreciable loss of heat from the sides or bottom of the bath. The total thickness of the wall is five-sixteenths inch.

The bath is heated by two replaceable units placed in copper tubes 1 inch in diameter at the bottom of the bath, the tubes being entirely surrounded by water. Regulation of the temperature is effected by a removable, pencil type, bimetallic thermostat, also placed in a copper tube one-half inch in diameter at the bottom of the bath between the heating units. The latter are so wound and connected that one half of each unit, controlled by a single snap switch, may be thrown out of the circuit as soon as the desired temperature is reached. The remaining half of each unit, which is entirely independent of that portion of the system for rapid heating, is controlled by the thermostat, and serves to maintain the uniform temperature desired.

The advantages of the bath described are neatness of appearance, compactness, and absence of bunglesome attachments.

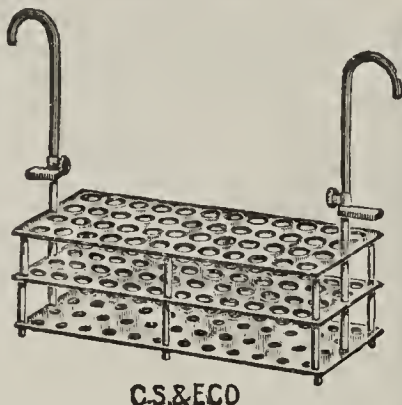


Fig. 2.—Test tube rack.

A CASE OF GAS EMBOLISM

EDWARD VON ADELUNG, M.S., M.D., OAKLAND, CALIF.

A man, with advanced pulmonary tuberculosis of the lungs, and extensive pleuritic adhesions, was given nitrogen injections in an attempt to induce pneumothorax.

The treatment was begun at 3:15. The manometer failed to register oscillations so necessary for safety. This fact, however, was unfortunately disregarded, and from 15 to 20 c.c. of gas were allowed to flow slowly into the left thorax. In two or three minutes the patient complained of "cramp" in the right leg. He was turned over, on the supposition that the "cramp" was due to position, strain or compression. The operator's attention was then distracted for a moment, and when he again looked at the patient he noticed that the head rotated to the right, that the right arm and leg were paralyzed, and that the patient was unconscious. The eyes were turned to the right, the skin was pale, and the veins stood out prominently over the right shoulder and arm. Gas embolism was immediately recognized, and the following treatment was begun, after discontinuance of the nitrogen inflation:

A hypodermic or camphorated oil (0.2 gm. of camphor) and a hypodermic of 2 c.c. of whisky were given. Then 10 c.c. of blood were withdrawn by syringe from the right arm. Hot wet cloths were applied to the head, chest and abdomen.

The pulse was small, the blood pressure 100, and the respiration and pulse regular. There was slight cyanosis of the ears and fingers. The knee tendon reflex was active. Presently the eyes began to roll. The pupils were moderately dilated.

After forty minutes the patient was able to move his right leg and arm, and he gradually improved. In forty minutes after the onset he was able to answer questions, but he was still dazed. He did not complain of pain. Fifty minutes after the onset, he was much improved, regaining control of the right arm. At 4:10 he was smiling and laughing, but was not feeling natural, and he had slight numbness in his right arm.

The patient was put in a hospital bed for observation, and the next morning the numbness had disappeared. As he felt quite well, he went home.

This case is placed on record to illustrate the need of guidance by the manometer in the induction of pneumothorax. As the notes were dictated during the time of the accident, they are accurate as far as they go.

1206 Broadway.

Military Medicine and Surgery

THE MILITARY ORTHOPEDIC RECONSTRUCTION HOSPITAL

LEO MAYER,* A.M., M.D.

NEW YORK

In England, under the direction of Sir Robert Jones, and in Canada, through the Hospitals Commission, organized effort is being made to reclaim the crippled soldier. In Germany, a similar movement was initiated by Professor Biesalski, secretary of the Organization for the Care of Cripples and of the Orthopedists' Association. In France, a layman, the mayor of Lyons, Monsieur Herriot, laid the foundation by establishing a school for crippled soldiers. In each of the belligerent countries, the necessity for intelligent care of those crippled by the war has been appreciated, and means, more or less adequate, have been found to meet it.

I wish to emphasize the importance of what is called the orthopedic reconstruction hospital. Of the soldiers unfit for further military service—the blind, those suffering from internal diseases, the psychopathic and the crippled—the first three groups can be cared for by an extension of the existing hospitals and institutions. For the crippled soldier, however, no institution exists that can properly care for his particular need, since he not merely requires medical treatment, but must frequently be equipped with an artificial leg or a brace, instructed in its use, and shown how to earn his livelihood despite the physical disadvantage under which he labors.

The injuries which tend to cripple may be divided into six classes:

1. Amputations, of which we can unfortunately expect a large number since, despite modern conservatism in surgery, the high explosives used in the present war, all too frequently produce a type of wound that necessitates sacrifice of the limb.
2. Bone injuries, malunited and ununited fractures, and cases of chronic osteomyelitis due to sequestrums or foreign bodies embedded in the bone.
3. Joint lesions. These may be contractures, due to long continued immobilization or to injury in the neighborhood of the joint, bony ankyloses, due to extensive obstruction of the joint, or painful joints due to inequality of the articular surfaces, foreign bodies, or to disease.
4. Nerve injuries, either complete division of the nerve, or embedding in scar tissue.
5. Division of the tendons.
6. Static deformities of all types.

Characteristic of these six groups is the lengthy post-operative treatment required in almost all instances. For instance, to discharge a patient with a musculo-spiral paralysis from a hospital immediately after the operative wound has healed is to leave the task half finished. The patient must be given effective after-treatment—massage, electricity, and the proper splint—if the operation is to result in a return of function. Or take the case of a patient whose flexor tendons in the palm have been divided by a bullet. The operation is almost certain to be a failure if adequate postoperative exercises are not carried out under the eyes of a

* From September, 1914, until February, 1917, orthopedic surgeon to the Red Cross Base Hospital "Am Urban," Berlin, Germany.

competent physician. Even those who have suffered amputation are not ready for an artificial limb immediately after the wound has healed, but the stump must be hardened and must reach a constant form before the proper prosthesis can be applied. Learning to use the artificial limb also requires time, since, particularly in the case of an artificial hand, its use is a fine art. To give a patient an artificial hand, with instructions to go ahead and use it, is like presenting a man with a violin and telling him to go ahead and play it.

Thus from the very nature of the injuries, the orthopedic reconstruction hospital has to include departments which in times of peace are not thought of in connection with medical institutions. The operating room and the ward must be supplemented by the workshop, the agricultural school and the business college. The vocational department serves numerous important purposes. In the first place, it affords the most rational and effective means of exercising joints and muscles, stiffened and weakened by long continued disuse. The Zander exercises, which have hitherto been in vogue, are exceedingly irksome for the patient and uninteresting to the physician. To the soldier, naturally depressed by a long drawn out recovery from a severe wound, the therapy should not only be directed toward physical recuperation, but should also give a psychic stimulus. Few things appeal to a man more than manual work in the carpenter shop or in the smithy, and the interest in the product of his labor will frequently enable him to perform movements that would otherwise be impossible. Thus, for instance, I recall in particular the case of a 6-foot petty officer whose right shoulder had been stiffened by an extensive periarticular gunshot wound. After the wound had healed, he was exceedingly depressed because he maintained he could no longer continue at his trade. After three weeks in the carpenter shop, under careful medical supervision, beginning with light work, such as varnishing and gradually progressing to the heavier—hammering, sawing, etc.—he had regained at least 75 per cent. of the normal movement of the shoulder and, still better, his psychic condition had become normal. He was now convinced that he could remain a carpenter.

In other instances the workshops are particularly important in training those who have undergone amputation. The first reaction of a man who has lost a limb is the sensation of hopeless crippleddom. He is usually convinced that he will have to retire and live on his pension or at best eke out a living by a porter's or janitor's job. My experience, however, has been that practically every such patient can continue in his own vocation or in one allied to it. Amputation of the hand does not prevent a man from continuing to be a carpenter, smith, brace-maker, bookbinder or farmer, since with practice the lower arm stump acquires sufficient dexterity to replace the amputated hand. In the crippled children's hospital, with which I was associated, we had a 16-year-old apprentice who, despite amputation of the right hand, had become an expert brace-maker. This lad acted as instructor to soldiers with a similar type of amputation, and within two months taught them to work with a skill and enthusiasm equal to his own. When the amputation has occurred above the elbow, the problem is much more difficult. Here recourse must be had to an artificial limb. Many men can, with the aid of a suitable prosthesis, such, for instance, as the Siemens-Schukert

arm, continue at the previous occupation. If the amputation has occurred near the shoulder, or if the arm has been disarticulated, it is, however, extremely difficult to handle the usual tools of carpenter, smith or cobbler. Then the patient must be trained in an allied branch. The carpenter, for instance, may become a foreman or he can learn to be a piano polisher, since in this trade practically all the work is done with a sweeping motion of one arm. Those who have suffered amputation of a leg require comparatively short training before they realize their fitness to continue in their old occupation. For them a few ingenious devices, such as the cobbler's bench with mechanical device to hold the shoe in place with a strap, are of great advantage. To all patients who have been equipped with artificial limb or with brace, the workshop affords ample opportunity to test the efficiency of the apparatus.

To the hospital the workshops are a distinct economy and a convenience. No need for plumbers, glaziers, bookbinders, printers or carpenters, when all this work can be done in the shops conducted by the hospital itself. Particularly advantageous is the brace-maker's shop. Even in times of peace the number of expert brace-makers hardly suffices for the need of the orthopedist. In times of war, when the number of maimed multiplies with tremendous rapidity and when the number of brace-makers diminishes because of conscription, it is practically impossible to supply the needs of crippled soldiers unless adequate provision is made for training men in this complicated handicraft. With two or three skilled men in charge of the shop, the soldiers with a mechanical turn can be taught one branch of the craft, and those with experience in leather work—saddlers and cobblers—can be taught another, so that in time skilled workers can be supplied.

As a necessary adjunct to the vocational department is the employment bureau. It is manifestly unfair to discharge a crippled man who has risked his life in the service of his country without helping him to secure a position of maximum advantage to himself and to the community in whose service he has been crippled. Here is opportunity for the hospital to cooperate with the state employment agencies.

It is distinctly advantageous to include the vocational department in the hospital instead of establishing separate institutions for it. Time is gained, the method is more economical and, above all, vocational work can be begun at the psychologic moment. The treatment of gunshot wounds of the extremities involves in almost all cases a lengthy after-treatment. During this time, while the patient is under medical supervision, vocational work should be begun. The physician, to whom the patient naturally looks as guide because he, far more than any other, has the patient's confidence, helps overcome the inertia which the crippled are almost certain to feel. Having workshop and hospital ward in the same institution helps build up an *esprit de corps* which it is difficult to secure in any other way. Of course, a necessary condition to the success of such a hospital is the character of the medical director. He must not only be a well trained orthopedic surgeon, but he must have a social conscience and be interested in the individual needs of each one of his patients.

The vocational work should include not only shops but also courses in farming and dairying, business courses, culture courses, training for civil service examination, etc. For every man, no matter what his previous calling has been, the hospital should offer

some means of instruction that will enable him, despite the physical disadvantage he has suffered, to leave the hospital a more productive member of the community than at the time of his enlistment.

It would be unwise and unjust to leave work of such importance to local control or to private initiative. The national government itself in its war program must include not only the equipment of its armies and its hospitals for treating wounds in the acute stage, but also the adequate medical, vocational and social care of the crippled soldier. Under the direction of Major E. G. Brackett, this work has already been begun. The movement deserves the hearty support both of the medical profession and of the entire community.

41 West Eighty-Third Street.

DIGITALIS THERAPY AND THE PRESENT SHORTAGE IN DRUGS

ROBERT A. HATCHER, M.D.

Professor of Pharmacology and Materia Medica, Cornell University
Medical College

NEW YORK

The following brief review of the present status of the materia medica of the digitalis group and its relation to therapeutics has been prepared at the request of Prof. Julius Stieglitz, chairman of a committee on synthetic drugs, appointed by the National Research Council, because of the present want of many preparations of this group that have come into more or less widespread use.

All of the members of this group, including many crude drugs and their galenic preparations, as well as glucosidal active principles, exert a qualitatively similar therapeutic action on the heart when they are brought into the blood stream; but the various members of the group vary enormously in their activity and in the rate of their absorption from the alimentary tract.

These differences in behavior of the different members of the group have resulted in the development of faith in one or the other of the numerous preparations and specialties, and a corresponding distrust of all others on the part of those physicians who have not appreciated the importance of dosage and the several methods of administration best suited to the individual preparation in securing the results aimed at. Those who are thus left without the preparation to which they are accustomed feel the want keenly, and the present discussion is designed to point the way to relief from these conditions.

Digitalis, digitoxin, strophanthus, strophanthin and ouabain exert the same kind of action on the heart directly, and on the circulation indirectly, as previously stated in different words; but the action of digitalis and its most active principle, digitoxin, is far more lasting than that of the others. It is necessary to caution the reader against confusing "actions" and "effects" in this connection.

When an attack of acute cardiac dilatation is relieved by any member of the group whatsoever, the effect is permanent, provided the cause of the failure is not continuously active; but in various forms of chronic cardiac disease which require more or less continuous digitalis medication, the duration of effect and the duration of action are nearly the same. In such cases the duration of action and effect of digitalis and digitoxin are far greater than those of the other mem-

bers of the group, in which case the difference is overcome by increased frequency of dosage, or, what amounts to the same thing, a relatively—not actually—larger dose of equal frequency.

Digipuratum is one of those specialties that have come into wide use partly through their intrinsic value, but mainly because of a most persistent and effective campaign of adroit advertising, and it may be taken as an example of the specialties on which all too many clinicians have come to fix their sole reliance in digitalis therapy. It is certainly true, however, that while digipuratum, like many other specialties, exerts a satisfactory cardiac action, it is in no way essential, since exactly the same actions can be induced by official members of the group in the hands of any one who masters the really simple technic of administration.

In all cases requiring digitalis therapy, digitalis itself in the form of the powder, the tincture, fluidextract, extract or infusion may be used orally with the sole exception of those relatively rare cases in which immediate relief is imperative, and which require intravenous or intramuscular administration. In such cases the typical digitalis action can be induced immediately by the intramuscular or intravenous injection of strophanthin or crystalline ouabain (so-called crystalline strophanthin, not true crystalline Kombé strophanthin, which is not commercially available).

It is necessary to call attention again to the difference between an immediate action and immediate effect, because it has long been taught, without a particle of real evidence, that the action of digitalis cannot be induced promptly. The whole range of digitalis action up to the maximum, that is, cardiac stoppage, can be induced within from five to fifteen seconds by the intravenous injection of digitalis tincture, deprived of its alcohol, or digitoxin. This simple experiment disposes forever of the mischievous claim that digitalis action is slow. The *effect* of therapeutic doses is *gradually* induced; the *action* is *immediate*. A bullet fired through the heart *acts* instantaneously; the *effect* is a fatal hemorrhage, the rapidity of which depends largely on the size of the wound. With suitable dosage, digitalis exerts its action in much less time than was formerly believed to be possible.

The action of an intravenous dose of strophanthin or ouabain is not so lasting as is that of a corresponding dose of digipuratum, but it lasts until it can be supplemented by the oral administration of digitalis.

Another fallacy that dies hard is that digitalis and digitoxin act on the vessels and cause high blood pressure, and that they are therefore contraindicated in cases in which the blood pressure is already high. This has been the greatest stumbling block in the way of the use of digitalis, next to that of regulation of dosage. Every one of the digitalis bodies acts on the vessels when enormous doses are passed directly into them, but this action is never induced by therapeutic doses. The contrary belief rests on the observation of the effects of massive doses in animal experimentation, and is not supported by any careful clinical observations or experiments with therapeutic doses.

Among the less important fallacies that have severally contributed to the distrust of digitalis and have been utilized by manufacturers to their own advantage, the following may be mentioned briefly: All drugs, preparations and active principles of this group without exception cause nausea and vomiting in overdoses through their action on the vomiting center in the medulla—not through any direct action on the

stomach; hence it cannot be avoided by any mere change in the mode of administration, or mere choice of preparation, but only by proper regulation of the dosage—and by dosage I mean the amount which actually enters the blood stream and which alone can act on the heart.

None of the drugs of this group are actively diuretic through any direct action on the kidneys. They induce diuresis solely through an improved circulation. That does not mean either a higher or a lower blood pressure in every case; it means a more effective circulation, one better adapted to the needs of the individual patient. This sometimes means an increase, sometimes a decrease, in pressure.

All digitalis galenicals, tincture, infusion, extract and fluidextract, exert the same kind of action, because they all contain all of the active principles of the drug.

All digitalis bodies without exception have the disadvantage of being absorbed somewhat slowly and irregularly from the alimentary tract. Digitalis tincture, as well as the infusion and fluidextract, are absorbed fairly promptly; strophanthus and strophanthin, ouabain, convallaria preparations, apocynum preparations, and wahoo are absorbed very irregularly. This is of prime importance, because it requires the administration of large doses of these drugs in order to insure the therapeutic effects; but rapid absorption occurs occasionally under conditions that are not understood, and severe, or even fatal, poisoning may result. The latter drugs should never be used for oral administration.

There is no difficulty in getting standardized digitalis preparations, and these do not deteriorate rapidly. Slight deterioration is not important, because the drug must always be given until a definite action is induced, and this varies with every patient; since there is no fixed dose that is applicable to different patients.

Tincture of digitalis contains only traces of fat, and that is no more disturbing to the stomach than an equal amount of other fixed oils or fats.

Granted that a correct diagnosis has been made, digitalis therapy becomes largely a matter of correct dosage, including the proper method of administration, which is nearly always oral. It is beyond the scope of this paper to consider dosage and methods of administration in detail, the present purpose being to point out to the clinician the resources that he has at his command; but he will find valuable suggestions in the following papers:

"A Clinical Study of Crystalline Strophanthin," by Harold C. Bailey.¹ In this paper the author reports most careful clinical observations with crystalline ouabain, formerly called crystalline strophanthin.

"The Toxic Actions of Digitalis on the Heart," by the same author.² This is an excellent study of the toxic actions of digitalis that frequently escape attention.

"Digitalis Dosage," by Cary Eggleston.³ This is perhaps the best recent study of the method of administering digitalis whereby prompt effects are induced after oral administration.

Fraenkel and others have published numerous papers dealing with the intravenous administration of strophanthin.

I am well aware that many readers will be inclined to deny many statements made in this brief article, but

I can only assert that they are based on careful clinical and experimental observations and are not contradicted by any recent careful studies.

[This report was submitted in manuscript to Dr. Joseph L. Miller, Major, M. R. C., U. S. Army, Camp Dodge, Iowa, and Dr. Miller writes: "I agree fully with all the statements made by Dr. Hatcher. He has expressed exactly my views on this subject."]

Dr. Richard Weil, New York, writes: "I have not only been familiar for some years with the work done in Dr. Hatcher's laboratory on the digitalis drugs, but have made practical application of much of it in my service in Mount Sinai Hospital with gratifying results. I can therefore express myself as in full agreement with the suggestions made in the present paper."—Ed.]

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

PARAFFIN FOR FILMS (SURGICAL PARAFFIN, PLASTIC PARAFFIN)

Paraffin intended for application to burns, etc., should be solid at body temperature, but be more ductile and pliable than the official paraffin (Paraffinum, U. S. P.) and be liquid at or below 50 C. A thin film when prepared and tested as described below should be pliable at or below 28 C. and ductile at or below 31 C. At body temperature (38 C.) it should be pliable, and adhere to, but permitting ready detachment from the skin.

Actions and Uses.—Paraffin for films acts mechanically. When applied to burns and denuded surfaces, it provides an air-excluding dressing which relieves pain, forming a soft, pliable splint-like covering to the wounded surfaces, keeps the parts at a relatively uniform temperature, immobilizes the epidermal tissue, and may aid in the formation of new tissue by acting as a scaffolding for newly formed cells.

Paraffin for films is used mainly in the treatment of burns. It is said to be useful in the treatment of "frostbite," "chilblains," and for covering denuded surfaces. It is also employed to prepare "paraffin-covered bandages" and to seal gauze dressings.

Dosage.—In the paraffin treatment of burns the wound, after preparatory treatment, is dried and a thin coating of either liquid petrolatum or melted paraffin for films (at a temperature of about 53 C.) is applied by means of an atomizer or brush. This is followed by the application of a thin layer of cotton and then another layer of the melted paraffin; the dressing is finished by covering with cotton and bandaging.

The melting point of paraffin for films is determined by the method of the U. S. Pharmacopoeia, IX, p. 596.

The pliability and ductility of paraffin is determined as follows: A little of the melted substance is poured on water having a temperature of about 40 C. so as to form a number of separate films. The temperature of the bath is then gradually lowered by the addition of cold water to determine the pliability and ductility. (Pliability test.) The film while immersed in water is doubled on itself and the temperature of the water observed at which the film breaks sharply on one fold. (Ductility test.) The film is stretched while under water and the temperature of the water noted at which the film breaks sharply and evenly.

A small surface of the forearm is painted with melted paraffin, covered with a thin layer of cotton, another coat of paraffin painted on the cotton, and then dressed with cotton and bandage. After one hour, the film should remain attached to the skin, showing it is adherent, but be easily removable.

STANOLIND SURGICAL WAX—A brand of paraffin for films, melting at 47 C., being pliable at or below 25 C. and ductile at or below 29 C.

Actions, Uses and Dosage.—See under general article on Paraffin for Films.

Manufactured by the Standard Oil Company of Indiana, Chicago.

1. Jour. Pharmacol. and Exper. Therap., 1909, 1, 359.

2. Am. Jour. Med. Sc., 1911, p. 1.

3. Arch. Int. Med., July, 1915, p. 1.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address "Medic, Chicago"

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SATURDAY, NOVEMBER 3, 1917

VITAMINS AND TUMOR GROWTH

Tumors in general and cancers in particular are tissues growing under special conditions. A comparison between the laws determining tumor and tissue growth will determine our knowledge of the physiology of tumors as well as of tissues. There exist similarities and analogies in the behavior of both, and there are differences either real or due to a gap in our knowledge. The differences will suggest new problems. These were the statements made by Leo Loeb of St. Louis at a symposium on cancer before the Section of Experimental Medicine of the American Association for the Advancement of Science in New York, last December.¹ It has come to be recognized in recent years that normal growth is dependent on a number of nutritive factors, the importance of which is only beginning to be understood. Thus for the purpose of growth a diet may be deficient with respect to both the quantity and the quality of its protein, to its inorganic salts, or to its total calorific content; but beside an adequate quota of these components, there is recognized the necessity of certain as yet unidentified substances now popularly known as vitamins.

So far as known at present, the vitamins which are essential to growth, and without which life cannot even be maintained over a reasonably long period, are furnished to the organism with the diet. They do not seem to be produced *de novo* in the animal body. Benedict and Rahe² have accordingly investigated the question whether tumor cells, like somatic cells, are dependent on a supply of vitamins from outside sources, or whether tumor cells possess a power of synthesis of vitamins. If the latter supposition should be correct, then, the investigators state, we should have a fundamental difference between tumor and body cells, a difference as great in this respect as between plant and animal cells. The former of these synthesize vitamins; the latter have never been shown to do so. If tumor cells possess the power of vitamin synthesis, then they

have indeed a unique and tremendous advantage over ordinary tissue cells.

Obviously, as Benedict and Rahe further remark, this question is an important one worthy of detailed study. The relation of diet to the growth of tumors has frequently been investigated in the past. The novelty in these new researches consisted in comparing the growth of the same strain of tumor in experimental animals, in the diet of which, in one group, no more vitamin was supplied than was necessary barely to maintain the animals without growth, whereas, in the other group, the ration was sufficiently rich in vitamin to facilitate liberal growth. The authors argue that, if on the diet deficient in vitamins the animal plus the tumor increases in weight, approximately in accordance with the weight of the tumor, it is obvious that the latter tissue is independent of an outside source of vitamin so far as its growth is concerned, since a quantity of vitamins is supplied in the food that will suffice for the maintenance only of the animal's original tissues. If, on the contrary, the tumor grows, but the total weight of the animal plus the tumor remains unaltered, then we are justified in concluding that the tumor is dependent on vitamin from outside sources, and that, through increased avidity, it is able to appropriate the vitamins of the host's tissues to its own uses, so that a given quantity of the host's tissue is practically transformed into tumor tissue. In this event there would be no appreciable change in weight in the animal, though the tumor might conceivably grow to a considerable size before the death of the host. Another possibility would be that during the growth of the tumor, the weight of the animal would increase more rapidly than could be accounted for by the growth of the tumor. In this instance we should have to assume that the tumor produced a growth-promoting substance that escaped into the circulation and affected the growth of the host.

The animals on both groups of diets—those comparatively deficient in vitamins as well as those richer in these substances—readily developed tumors after appropriate inoculations. But, on the vitamin-restricted diets, the total weight of the animals failed to exhibit any increase, despite the development of tumors equivalent to about one third of the total body weight. The very rapid growth of tumors under conditions that completely prevent the growth of body tissue indicates the remarkable avidity that tumor cells may show. Benedict and Rahe tentatively assume that tumors, like the somatic cells, are thus dependent on growth stimulants from outside sources, either from the food or from the tissues of the host. Their experiments show, furthermore, that even a very rapidly growing experimental neoplasm does not liberate into the circulation any substance that may act as a stimulant to body growth in the absence of growth-promoting vitamins in the diet.

1. Loeb, Leo: Tissue Growth and Tumor Growth, *Jour. Cancer Research*, 1917, **2**, 135.

2. Benedict, S. R., and Rahe, A. H.: Studies in the Influence of Various Factors in Nutrition on the Growth of Experimental Tumors, I, *Jour. Cancer Research*, 1917, **2**, 159.

THE HUNGRY INFANT

The problems of alimentation in infancy have been greatly delayed in their solution because of a lack of objective signs and accurately established facts on which rational procedure can be based. In the adult, the subjective symptoms can be consulted; and the progress in the expert analysis of the physiologic and chemical functions has reached a stage of considerable precision. Hunger and appetite, the responses of the digestive glands to various types of stimuli, the movements of the successive segments of the gastro-enteric tract, and other factors are now understood with considerable accuracy.

It requires little argument to indicate the difficulties that beset the student of the comparable questions in the case of the infant, in which the personal factor of cooperative intelligence is lacking and the technical hindrances to experimentation or instrumentation are obviously great. Yet certain items of information are plainly needed in the routine of infant feeding. It is important, for example, to have a defensible basis on which to determine the periods between the successive administration of food, or to know whether difficulties in nursing have an alimentary background, so to speak. Two years ago, Carlson and Ginsburg¹ made a noteworthy contribution to the analysis of the hunger sense in the new-born by actually demonstrating the hunger contractions of the stomach in these infants. It was thus shown that, as in adults, contractions of the empty stomach cause the hunger sensation, but occur with even greater intensity in infants. The "pangs of hunger" are associated with the rhythmic contractions of the stomach wall. As one writer has expressed it, impulses set up by these contractions and carried to the higher centers are, in the normal consciousness, recognized as hunger. These impulses produce secondary effects, such as restlessness and irritability. However, he adds, the prime factor in the desire for food depends not on the basis of distress due to the contractions of a hollow viscus, but on "the memory processes of past experience with palatable foods." This psychic factor is appetite, and its absolute distinction from the physical factor, hunger, must be kept in mind.

The studies of Carlson² and his co-workers have been corroborated in the Department of Pediatrics at the University of Minnesota by Taylor,³ who has further shown that still greater hunger contractions occur in the stomachs of the prematurely born. In the adult, in general, the taste of salt, sour, bitter or sweet, or the chewing of agreeable, disagreeable or indifferent substances all produce temporary inhibition of

the gastric contractions. The chewing of palatable foods by the adult when hungry causes an inhibition, made more lasting by the flow of appetite juice in the stomach. Local stimulation in the mouth is almost invariably inhibitory. Food in the stomach likewise stops the hunger contractions, this form of inhibition being less transitory than that from the mouth. Taylor³ has now found that inhibition of the hunger contractions from the mouth does not occur in young infants. Inhibition of the hunger contractions from the mouth in older infants is present only as the result of stimuli that the babe has learned to associate with food. It does not occur with substances which produce equally strong sensory impressions but are not considered by the infant as food. Inhibition from the mouth is psychic in character. On the other hand, reflex inhibition from the presence of food in the stomach is present in infants of all ages, though it may be developed only partially in young infants.

There is a widespread belief that the crying infant is hungry. Taylor has expressed the view that hunger is not an immediate cause of crying in a normally developing breast-fed baby, so long as the periods between feedings are not unduly protracted. In his own words, neither the hunger contractions themselves nor the increased irritability due to them are ordinarily immediate factors in the production of crying. Young infants sleep throughout strong contraction periods. Older infants often do the same, and are frequently quiet even from twelve to sixteen hours after a feeding. Mental factors produce crying at a very early age. And the fact that crying ceases when food or water is administered may mean only that the infant's attention is diverted to the performance of a pleasurable act.

Some time ago, Ginsburg, Tumpowsky and Carlson⁴ reported the average time between nursing and the appearance of hunger contractions to be two hours and forty minutes, with a minimum of two hours and twenty minutes, and a maximum of three hours and thirty minutes. Under like conditions, Taylor has observed that the average time required for the development of hunger in healthy infants gaining in weight and receiving a known sufficient amount of food is, in premature infants under 1 month, one hour and forty minutes, with a maximum of two hours and twenty minutes and a minimum of forty minutes; in full term infants under 2 weeks, two hours and fifty minutes, with a maximum of four hours and a minimum of two hours; and in infants from 2 weeks to 4 months, three hours and forty minutes, with a maximum of four hours and thirty-five minutes and a minimum of three hours and twelve minutes.

One might be inclined to utilize these data in determining the ideal interval that should elapse between

1. Carlson, A. J., and Ginsburg, H.: Contributions to the Physiology of the Stomach, XXIV, The Tonus and Hunger Contractions of the Stomach of the New-Born, *Am. Jour. Physiol.*, 1915, **38**, 29.

2. Carlson, A. J.: The Control of Hunger in Health and Disease, Chicago, 1916. The Stomach in Hunger, editorial, *THE JOURNAL A. M. A.*, Feb. 8, 1913, p. 448; The Gastric Movement in Hunger, Sept. 27, 1913, p. 1044; The Call of the Empty Stomach, Oct. 4, 1913, p. 1300; New Facts About Hunger, July 11, 1914, p. 169; Stomach Bitters, Jan. 2, 1915, p. 58.

3. Taylor, Rood: Hunger in the Infant, *Am. Jour. Dis. Child.*, October, 1917, p. 233.

4. Ginsburg, H., Tumpowsky, I., and Carlson, A. J.: The Onset of Hunger in Infants after Feeding, *THE JOURNAL A. M. A.*, May 29, 1915, p. 1822.

feedings. It appears, however, that it is only in normal babies, receiving well tolerated food in sufficient quantity, that the development of hunger waits on the emptying of the stomach. In the case of infants with chronic disturbances of alimentation, hunger contractions may occur long before the stomach is emptied. Consequently, Taylor remarks, their presence is not in itself an indication that the stomach is ready for food. Another current view that has been upset by further observations of Taylor⁵ concerns the response of the secretory apparatus of the stomach to the process of feeding. Contrary to what has been found in adults, there is no appetite or psychic secretion of gastric juice in the young infant.

THE VITAL CAPACITY OF THE LUNGS—ITS SIGNIFICANCE IN DISEASE

The vital capacity of the lungs is the expression applied to the volume of air that can be expired after the deepest possible inspiration. Among the factors affecting the vital capacity are the age, sex, height, weight, the size and flexibility of the thorax, and the state of physical training of the individual. Recent measurements made at the medical clinic of the Peter Bent Brigham Hospital in Boston furnish the following standards for the vital capacity of the lungs of normal men: for men over 6 feet tall, 5,100 c.c.; between 5 feet 8½ inches and 6 feet, 4,800 c.c.; between 5 feet 3 inches and 5 feet 8½ inches, 4,000 c.c. In women of the same heights it is about one fifth less. When compared with these standards, the vital capacity of healthy persons very rarely falls below 90 per cent. of the normal standard, although it may rise considerably above the normal. According to the Boston data, the most important factor inducing extreme variation in the vital capacity of normal subjects of similar size appears to be athletic training. The average vital capacity of ten highly trained athletes was 120 per cent. of the normal standards. The increase of vital capacity had persisted in some of them for several years after strenuous exercise had been last indulged in.

Although this feature of respiration has been measured in literally thousands of persons, the determination of its magnitude has found a limited application at best in relation to pathologic conditions. Peabody and Wentworth⁶ at the Harvard Medical School have found, in a study of a variety of diseases, that the tendency to dyspnea corresponds closely to a decrease in the vital capacity of the lungs. This is not true of the anemias; and in diseases in which dyspnea is not a prominent symptom the vital capacity is usually within the normal limits, although general weakness and old

age may cause a slight decrease. Patients with heart disease afford the typical illustrations of the close relation between the vital capacity and dyspnea. Peabody points out that the essential difference between normal subjects and patients with heart disease with regard to the production of dyspnea is not that cardiac patients are necessarily more sensitive to any given stimulus to the respiratory center, but that they cannot stand so great a stimulus. Cardiac patients become dyspneic easier than normal subjects because they are unable to meet the rising stimulus to respiration with an adequate increase of pulmonary ventilation. The limitation of the depth of breathing is thus an important factor in the production of dyspnea in patients with heart disease.

Peabody and Wentworth have found further that compensated patients, who do not complain of dyspnea on exertion, have a normal vital capacity. Patients with more serious disease, in whom dyspnea is a prominent symptom, have a low vital capacity, and the decrease in vital capacity runs parallel to the clinical condition. Changes in the clinical condition are usually associated with changes in the vital capacity. As a patient improves, his vital capacity tends to rise, and as he becomes worse, it tends to fall.

Among the obvious causes of decrease in vital capacity are pleural effusion, emphysema and ascites. The distention of the pulmonary vessels, owing to an insufficiency of the heart, has also been suggested. If this is true, then, as Peabody and Wentworth propose, the determination of the vital capacity of the lungs may be of value as an early sign of cardiac weakness. Finally, in giving quantitative information as to the tendency to dyspnea, such estimations have a practical value and incidentally give some indication of the actual clinical condition and reserve power of the patient.

FACTORS AFFECTING THE GERM CONTENT OF MILK

As we have stated before, the modern demand for sanitary milk of a higher grade inevitably involves an increased expenditure in labor and equipment appropriate to bring about the desired results. In the interests of economy, it is imperative, therefore, to provide dependable information regarding those factors which are especially responsible for the supply of satisfactorily clean and wholesome milk. Obviously, it would be an extravagant folly to incur unnecessary expense in connection with items that cannot at best contribute anything to the improvement of the milk supply; whereas every effort must be made to safeguard a food as important as is milk, at every step in its production, whenever the possibility of deterioration unquestionably exists.

The quality of milk from the sanitary standpoint is at present judged essentially on the basis of its chem-

5. Taylor, Rood: Hunger and Appetite Secretion of Gastric Juice in Infants' Stomachs, *Am. Jour. Dis. Child.*, October, 1917, p. 258.

6. Peabody, F. W.: Clinical Studies on the Respiration, III, A Mechanical Factor in the Production of Dyspnea in Patients with Cardiac Disease, *Arch. Int. Med.*, September, 1917, p. 433. Peabody, F. W., and Wentworth, J. A.: Clinical Studies of the Respiration, IV, The Vital Capacity of the Lungs and Its Relation to Dyspnea, *ibid.*, p. 443.

ical composition and its germ content. The latter in particular has come to be regarded as an index of cleanliness and wholesomeness. The limit of bacterial contamination permissible has been fixed by law in many communities. Says Professor Harding of the University of Illinois:

No matter what is our personal judgment regarding the wisdom of such bacterial standards, the legally constituted authorities having thus established these limits of bacterial content, the burden rests on the producer and the retailer to observe them. When adjusting their business methods to such variable limits as those mentioned above, it is important that the dairymen have fairly accurate knowledge of the relative importance of the various dairy operations upon the germ content of the milk.

It is widely believed and insisted on for the guidance of dairymen that the construction and condition of the cow stable plays a very important part in the production of sanitary milk. The ubiquitous inspector is continually emphasizing the influence of barn conditions, so that large expenditures are continually being made by dairy farmers to meet the supposed necessities for securing recognition in the retail market. These features obviously cannot fail to add more or less to the item of cost in the production of milk—an item which should be cheerfully borne by the consumer if the expenditure is fully justified. It is surprising, therefore, to learn from investigations made in a large number of ordinary dairy barns by two of our prominent experiment stations that, when the influence of the utensils employed is excluded, the dairy barns themselves exert little measurable influence on the germ content of the milk.¹ Perhaps too little attention has been paid in the past to the utensils as a source of contamination. Competent dairy bacteriologists now tell us that, even under wide extremes in barn conditions, it is possible to produce milk with a germ content of less than 10,000 bacteria per cubic centimeter when the utensils are properly prepared.

Harding remarks that the mistaken impression respecting the relative importance of barn conditions in connection with germs in milk should not be taken as a criticism of health officials. Such officers are charged with the protection of the public health. When the facts are available, they utilize them. When exact information is lacking, they must proceed in accordance with their best judgment even though they recognize the fallibility of such judgment. Furthermore, as Prucha and Weeter¹ remark, this result must not be construed as a defense of dirty barns. They simply point to the fact that the large numbers of bacteria commonly found in milk do not have their origin in the barn. The findings of these recent investigations, substantiated by a series of independent investigations, cannot fail to be helpful to sanitary authorities, and may serve to readjust certain unnecessary economic burdens.

THE COMPOSITION OF MILK FATS

The ordinary fats are regarded by chemists as glycerids; that is, compounds of glycerol (glycerin) and fatty acids. It must be borne in mind that as they occur in nature the fats and oils are never single chemical substances; indeed, they are seldom composed entirely of glycerids. Just as up to only a few years ago the proteins of nature were commonly considered as a class in their biologic functions, and distinctions between different types of proteins were rarely if ever made in a physiologic sense, so fats have until the present time been dealt with groupwise in practically all considerations of their nutrient or biologic significance. We know today, however, that the rôle of individual proteins in the organism depends on their digestibility and on the character of the amino-acids which they can yield. Certain of the amino-acids, like tryptophan, seem to be far more indispensable, for instance, than others like glycocoll, so far as their production from the dietary proteins is concerned.

May not some similar point of view be applicable to that somewhat heterogeneous group of glycerids known as fats? In any fat or oil there is a mixture of several glycerids, with varying quantities of cholesterol or substances related to it, and often free fatty acids or soaps as well. These considerations, Leathes¹ remarks, show that the number of compounds of fatty acids which have to be dealt with in biologic chemistry, and for which we have no single comprehensive name, is very large; and also that the precise constitution of any one such compound may, even when it is not complicated by the presence of phosphoric acid, be difficult to determine; whereas, when this complication does exist, the difficulty is bound to be greatly increased. In fact, at present these more complicated compounds of the fatty acids are among the most obscure of those with which animal or vegetable chemistry has to deal, more obscure and indefinite even than many of the proteins in human diet.

Evidently, in the case of the fats, the first point of attack in the move toward progress must consist in a better understanding of the nature and proportions of their constituent fatty acid groups. And no fats appear to be more worthy of elaborate analysis and study than those which go to make up part of milk, the prototype of perfect foods. The glycerids of a very large number of fatty acids occur in nature, and the possibilities of their mixtures and combinations must consequently be manifold. We can only agree with a recent student of the subject who remarked that no problem presents greater difficulties to the analyst than the quantitative separation and determination of a mixture of fatty acids, and the acme of difficulty is reached in the case of the most complicated mixture of fatty acids which is found in butter fat. For this reason, investigators have mostly been content to limit their

1. Prucha, M. J., and Weeter, H. M.: Germ Content of Milk, I, As Influenced by the Factors at the Barn, Bull. 199, Illinois Agr. Exper. Station, May, 1917.

1. Leathes, J. B.: The Fats, London, 1913.

attention to the determination of various more or less well defined groups of acids, such as steam-volatile, or water-soluble, or unsaturated acids, etc., whereby naturally only a very imperfect record of the variations in composition has been obtained by the research to date.

In a general way it has, of course, long been known that the mixture of glycerids of the fatty acids occurring in milk, and spoken of as butter fat, differs conspicuously from the other fats likewise rich in olein, palmitin and stearin by yielding more butyric acid (the volatile acid to which the odor of rancid butter is said largely to be due) and less stearic acid than other food fats. We heartily welcome, as a conspicuous step in advance, the investigation of the distribution of the fatty acids in the milk fat of the cow and the sheep, carried on by Crowther and Hynd² in the Institute for Research in Animal Nutrition at the University Department of Agriculture, Leeds, England. They state that there is clear evidence that the only acids present in more than minimal proportions are the unsaturated acid, oleic acid, and the eight saturated acids of the acetic series, representing the members with an even number of carbon atoms from C_4 to C_{18} , namely, butyric, caproic, caprylic, capric, lauric, myristic, palmitic and stearic acids.

The new values for butyric acid (4.3 per cent. for cow's milk fat and 6.5 for sheep's milk fat) are higher than those usually given. The presence of a very considerable content of lauric acid (about 5 per cent.) was firmly established, so that, as the English investigators state, the usually accepted idea that only traces of lauric acid are present in butter fat must be modified. They further find that palmitic acid is present in much smaller proportions than usually assumed, while myristic acid is more abundant. The content of stearic acid, regarding which there has likewise been considerable debate, was found to be 3.4 per cent. for cow's butter fat and 4.4 for that of the sheep. About two fifths of the total fatty acids consist of oleic acid.

The more precise appreciation of the nature and quantities of these various fatty acid groups which can be liberated by the digestive processes for absorption from milk, cream or butter may pave the way for a better understanding of the rôle of fats in the economy. In any event, the complex mixture conventionally termed "fat" is revealed in the case of the milk product as a source of a considerable number of definite compounds. Thus the relation of fats to their antecedents in metabolism, the precise mode of the degradation of fats when they furnish energy to the body, and the origin of intermediate stages of fat catabolism which sometimes crop out as pathologic products—these and other problems come appreciably nearer to an intelligent solution when the substrate involved is clearly understood.

Current Comment

MEDICAL RESERVE OFFICERS AND ORDERS TO ACTIVE DUTY

"How soon shall I be called on to report for active duty?" This question and the uncertainty of its answer has been probably the most trying experience of the civilian physician who has accepted a commission in the Medical Reserve Corps. This uncertainty began on the day on which the commission was accepted because on that day the newly made medical officer realized that he had become subject to call, and must be ready to respond. There was a time in the early weeks of the war when medical reserve officers were ordered out on very short notice, often giving them only one or two days in which to close up their personal affairs. Some physicians, aware of this condition, even gave up their offices, practically closed their business, or made arrangements which they would not have made had they not presumed that they would be ordered out very shortly. These emergency conditions have now passed. No such uncertainty rests on the man who accepts a commission today, for the Surgeon-General's Office has announced that members of the Medical Reserve Corps will be given at least fifteen days' notice before being ordered into active duty. It is quite possible that even more than fifteen days will be given those who require more time in which to arrange their affairs.

THE NEW YORK CATSKILL WATER SUPPLY

The formal dedication, October 12, of the great Catskill aqueduct should not pass without notice in these days of absorption in warlike activities. It is not a question merely of the gigantic features of the undertaking from an engineering standpoint: a storage reservoir that can hold 132,000,000,000 gallons of water; an aqueduct 120 miles long starting at 610 feet above tide line and dropping to 1,114 feet below sea level when it passes under the Hudson River; a delivery capacity of 500,000,000 gallons daily; the cost to date of about \$140,000,000; there is also the fact that this greatest of all water systems supplies a water probably as pure and free from all liability to produce disease as any in the world. The best expert advice in the country on sanitation has been obtained and acted on. A carefully prepared and controlled watershed, full utilization of the natural purification effected by extensive storage, filtration, aeration and chlorination have all been brought into play to create a high degree of safety and potability. No stone has been left unturned to make the new Catskill supply, what it probably really is, the best large water supply in the world. It is pleasant to learn that the whole undertaking has been carried out in a spirit of the highest citizenship.

"The construction of the Catskill aqueduct, covering a period of ten years, affords a model of honest, clean, and efficient municipal government in which every citizen should take pride. It is being finished within the original estimate of expense, and is a commendable example of municipal economy. It has been completed within contract time, with-

2. Crowther, C., and Hynd, A.: The Distribution of the Fatty Acids in the Milk Fat of the Cow and Sheep, *Biochem. Jour.*, 1917, **11**, 139.

out a labor strike, and is a tribute alike to the commission which directed the work, the contractors who carried it out, and the workmen who labored faithfully to build it. In its inception it was fostered by citizen bodies having the public interests at heart, and in its execution it had their invaluable support. It is a testimony of what disinterested civic spirit in cooperation with faithful public officials can accomplish."¹

The *Engineering News-Record*, Oct. 11, 1917, has this to say:

Among the great dams of the world now stand, as a result of the water board's work, the Ashokan and the Kensico. The Hudson River and the Narrows siphons are the only two of their kind, while the many miles of aqueduct—in tunnel, cut-and-cover and steel pipe siphon—are without precedent, capacity and length both considered, in water-works records. All of this work, involving an expenditure of millions, has been kept free from suspicion of the honesty of any one connected with it, and from ugly controversy about the capability of the designers or the quality of the work; and this in a city where political contests have been fought bitterly, and where many efficient heads have been removed because principles were upheld. The engineering bureau has kept out the inefficient; has successfully resisted the onslaughts of those who might have sought improper advantage, and has given to the city a set of structures which experts have pronounced excellent in the highest degree.

"THE BASE HOSPITAL AND THE ICE MACHINE"

Some months ago, under the above title, we commented on the fact that one local Red Cross organization had refused to approve the appropriation of money for the purchase of an ice machine by a base hospital. The directors could see little use for an ice machine as part of the equipment of a base hospital. Now, far be it from us to take the credit through that little comment for the sequel, but it is very interesting to note in the *Official Bulletin* for Wednesday, October 24, that the Red Cross War Council has appropriated \$70,200 for ten portable ice making plants for use in connection with the Red Cross base hospitals in France. The appropriation was made at the request of the American Red Cross Commission to Europe. So the base hospitals will now have their ice machines.

DEATH OF REVERE OSLER

In announcing the death of Sir William Osler's only son in the issue for September 8, THE JOURNAL stated that Revere Osler had been wounded while on active duty in France, and was taken to England for treatment, where he died. Recently Dr. D. L. Moore of Columbus, Ohio, sent to THE JOURNAL a quotation from a letter dated September 21 written by a nurse in one of the American hospital units in France. She said: "One of the saddest things that happened during our stay in Belgium was the death of Sir William Osler's only son. He was brought to our station one night with a bad chest wound, a perforating wound in the intestines, and an injured thigh. Drs. Brewer and Darracks got Dr. Crile, who was in a station back of us, and also Dr. Harvey Cushing, who was near, in consultation. Major Darracks, with whom I worked,

did the operating, Major Brewer assisting, Dr. Crile giving a direct blood transfusion, and Dr. Cushing consulting generally. Everything was done that could have been done in any hospital, but the boy died several hours later. He was in the Royal Field Artillery service." A letter has just been received from Sir William Osler, dated Oxford, October 7, from which we quote: "My son Edward Revere was wounded in the chest and abdomen by a shell August 29, was taken to the Casualty Clearing Station, at which my good friends George Brewer of New York, and George Crile were stationed. Darrack of New York operated and Crile transfused. His life-long friend Harvey Cushing was also with him. Everything possible was done, but he died about twenty hours later. Many of my friends would be glad to know of this." It is gratifying to the thousands of American friends of Sir William Osler that when his son was mortally wounded the best medical and surgical skill was available, and especially that this skill rested in old-time American friends of both the father and the son.

BACTERIA AND VITAMINS

It is evident, Lusk writes, that the science of nutrition includes something more than the production of energy from fat, carbohydrate and protein. There must be certain salts and certain qualities of protein in the diet, and there must be minute amounts of vitamins. The food hormones, which are present in small amounts in various natural foods of both animal and vegetable origin, are essential to "the harmonious correlation of the nutritive functions." They have already entered into the popular literature of nutrition. This is highly appropriate; for although these as yet unidentified components of the diet are present in very small amount in most foods, healthy life seems to be impossible for any considerable time without them. Even among plants, with their large synthetic powers, growth seems to be influenced by factors similar to the food hormones of animal nutrition, if one may judge from the researches of Bottomley in England. He believes that vitamins or comparable hormones may be destined to play an important part in the cultivation of vegetable foodstuffs. And now come the bacteria to claim the need of such hormones. In an investigation on the chemical factors involved in the growth of the meningococcus, conducted at Cambridge by Dr. Dorothy Lloyd,¹ the vitamins have found recognition. We are told that the primary cultivation of the meningococcus in vitro is possible only in the presence of certain accessory growth factors (the so-called vitamins) present in blood, serum, milk and other animal fluids, and probably present also in vegetable tissues. These accessory substances are described as substances that are moderately heat stable. The vitamins are not the sole feature leading to success in cultures. The presence of suitable amino-acids is equally important; but these have already begun to be recognized as the appropriate bacterial pabulum.

1. Weekly Bull., Dept. of Health, New York City, Oct. 13, 1917, p. 324.

1. Lloyd, Dorothy J.: On Vitamins, Amino-Acids, and Other Chemical Factors Involved in the Growth of the Meningococcus, Jour. Path. and Bacteriol., 1916, **21**, 113.

Medical Mobilization and the War

NEWS FROM A FOREIGN BASE HOSPITAL

U. S. Army Base Hospital No. 3 (Harper, Detroit)

Major Angus McLean, director of Base Hospital No. 17, Harper Hospital, Detroit, now United States Army Hospital No. 3, writes from France: "We have a fine hospital here of 600 beds, and are enlarging it to a 1,200 bed hospital. The hospital is located in the vicinity of the American troops. There are about fifty American patients here now. The following is a list of our staff as at present constituted: director, Angus McLean; assistant directors, Majors P. M. Hickey, H. N. Torrey, and George E. McKean; Capts. L. G. Hirschman, E. C. Cullen, Rolland Parmeter, W. D. Ford, Robert Owen, James Breaky, John C. Dodds, William E. Spitzley, A. Stirling, Alfred LaFerte, T. K. Gruber; Lieuts. Duncan Campbell, E. J. O'Brien, Fred Buesser, C. B. Lockwood, B. H. Larson, B. B. Belt, L. J. Cushman, H. Gregory; dentists, Earl Barkley and William T. Shannon."

PATRIOTIC PHYSICIANS OF MURPHYSBORO

Dr. Charles Molz of Murphysboro, Ill., writes that Murphysboro is a city of 9,000 people, and that of the seventeen physicians in the city, thirteen have taken the examination for the Medical Reserve Corps. Of the remaining four, two were too old, one a lady, and the other was physically disqualified. Of the thirteen physicians who applied, nine were accepted and four were rejected. Six of the nine are now on active duty.

UNITED STATES DENTAL SCHOOL IN PHILADELPHIA

Announcement is made that the Surgeon-General has ordered the establishment in Philadelphia of a school for training in oral surgery and plastic reconstruction of the face and jaws of men who have been maimed in the war. Twenty-five or thirty recently appointed officers of the medical reserve service will be detailed for didactic and laboratory study at the institution. Dr. Wilmer Krusen, director of public health and charities, has agreed to afford facilities in the dental wards of the Philadelphia General Hospital for clinical demonstrations, and has offered his office in city hall for meetings of the teaching board. Dr. Charles R. Turner, dean of the Evans Institute of Dental Surgery, will have charge of the organization of the teaching staff. He will be assisted by Dr. Herman Prinz of the institute in selecting the staff. Lecturers and operators from other medical and dental schools of Philadelphia, who are specialists in oral surgery, will become members of the staff.

NEWS OF THE TRAINING CAMPS

At Fort Riley

The campaign for the sale of liberty bonds in the Medical Officers' Training Camp at Fort Riley was a marked success. Six hundred and eighty-seven medical officers subscribed for a total of \$95,000; the total for the camp was \$213,000, an average of \$73 per man. The total for the post was \$6,000,000.

Equitation at Fort Benjamin Harrison

The real meaning for the concentration of energy in the training camps for medical officers is beginning to come to the surface. Physical conditioning has been in progress from the first, and still continues. How necessary it is to "be fit" is best evidenced by the test of endurance needed for "equitation," for "periods in the trenches," for "gas mask exercise," and for all the advanced military work now in progress. Very few of the doctors before the training in "setting up exercises" and the "fours right" and "fours left" drills could have stood up under the fatiguing work of the present.

At the medical officers' training camp at this post the A. B. C.'s have been well learned, and the actual work needed in campaign, as developed by the present war, is well under way. Not the least of this is horsemanship.

You may wonder at this assertion, believing, as do many, that cavalry no longer is needed. Even though cavalry is not conspicuous at present, it still exists, and must have

medical officers attached to its units. Likewise, in the artillery, only the heavy type of gun is moved by motor. Most of the guns are horse-drawn, and those artillerymen who do not ride on the guns go horseback. Thus, here, too, the regimental surgeons must know how to ride. As a matter of fact, all surgeons in the Army are classified as mounted officers, and, therefore, must know the essentials of horseback riding. Not only is it necessary for the medical officer to be able to "stick on" an ordinary horse, but he must be familiar with the art of the care of the horse, and blanketing, saddling and bridling must be mastered.

The students on duty here have a most excellent advantage in this connection. It happens that there are a goodly number of fair horses for our use, and, better still, both the instructor and his assistant are expert horsemen. Hence, equitation, a part of the course which all must take, finally becomes a pleasure.

"You may think it is fun to teach civilian physicians to sit and stick on horseback; it is *not*." That was the remark of the assistant teacher in equitation when I asked him what he thought of his job. An active cavalry officer for seven years, but now a physician and medical officer, he felt the responsibility that rested on him, yet his natural humor was expressed when he remarked, "I cannot but think vividly of Don Quixote and his Rosinante when I see the equitating medicos."

All joking aside, here is what is actually being undertaken and accomplished: Under the supervision and tutorship of Major H. McC. Snyder, M. C., U. S. Army, himself a most accomplished horseman, and his assistant, Lieut. V. C. von Unruh, M. R. C., U. S. Army, who served as a cavalry officer for seven years in one of the European armies, the doctors are taken out for lessons in horseback riding from 1 to 5 o'clock every afternoon. At the picket line they find 130 horses standing, waiting in awe, and most assuredly in humor, for of this horses possess an abundance. Here the doctors are taught to fold the saddle blanket, to put it on the horse's back, to put on the saddle, tighten the cinch, measure the proper length of stirrups, and bridle their mounts. Next comes the difficult task of mounting, which feat must be mastered before the ride begins. Mounting inside the picket line is forbidden, and the horses must be "led out" to the line that forms for the start of the ride. When at last, after many trials and tribulations, with fractious horses loath to leave their feed boxes, the embryo cowboys are in line, the critical eyes of teacher and assistant inspect the squad. Here a blanket is put on wrong side out. "Unsaddle and put it on right" is the order. There a cinch is artistically woven with a beautiful figure-of-eight between the rings—truly a testimony to this surgeon's accomplishment in bandaging. Off must come that cinch, and on it must go correctly and quickly—mayhap, against the loud protestations of the doctor, who has "saddled a hundred horses," and thinks that the cavalry drill regulations may be improved vastly by his wise and valuable suggestions. Some cinches have been drawn so tight that the poor horse, when the doctor mounts, feels a constricting shortness of wind and there is a bolt and a kick, a jump and a lunge, and the poor "doc" kisses the sod, not from choice, but of sheer necessity. The saddle of another is so loosely cinched that, on mounting, the reserve corps surgeon gives a clear exhibition of "reversion to type." The saddle slides down on the left side of the horse, and the lieutenant or captain, or perhaps the major, hangs nervously holding on to pommel, saddle, stirrup and reins. You could not tell, on a bet, whether that struggling mass of living tissue was a doctor or his quadrumanous prototype of man.

When some eager enthusiast forgets to keep off the horse until the order to mount is given, he is usually taught his lesson by the horse, which sticks to the line like glue and refuses to advance. Instead of responding to the rider's "clucks," he bolts, rears and kicks until Mr. Caballera becomes detached from his *Equus caballus*. All that is left in such an emergency is to regain possession of that home-loving critter and "lead out," amidst the jeers of the waiting line of horsemen.

"Prepare to mount," "Mount" is commanded. All except three doctors manage somehow to climb to the Olympian heights of their saddles. Three unfortunates, however, now perform a veritable rococo minuet with their horses, circling around and around, *vis-à-vis* and *dos-à-dos*, until some kind orderly helps to hold the mount, and at last the seat is gained. "To have and to hold," the poet said—and this same thought was mine when I saw how easily a medico will part from his horse—almost as easily as the proverbial man from his money.

"Forward—March," and the squad moves on to the practice grounds, there to be divided into groups of from twelve to fifteen men, so that each may receive individual instruction in the use of thigh, knee, stirrups, reins and last, but not least, of the glutei. Some of the latter get "burned" because of stirrups too short, and many are the complaints on the following day. The lessons continue, however, and so do the "burns." Once a "burned one" was sent home, and on reaching the picket line a commiserating soul asked, "What's the matter, Doctor?" "Well, Doctor, you see, it's this way: My blisters broke, and so I had to come home."

The initial exercises mastered, the squad goes out for a cross-country ride—aye, more than this—to jump ditches and hurdles! All goes according to program, until some captain's horse bolts and races wildly for home, at a furious gallop, with half the squad following helplessly in his wake. No pulling on reins, no "Whoa, boy," no bracing hard in stirrups is of any avail. Mr. Horse has seen the leader's example, and now has his nose homeward set. Off they go like the phantom hunt, even the hounds at their sides gathering from along the roadway as the wild chase passes on.

On some other occasion a "medic" approaches the teacher with a broad smile hiding his face: "Oh, I can ride quite well, I've been on horseback all my life." (And he is 50 now.) Teachers are wise to such presumptuous assertions, and, of course, delight in giving this kind a special opportunity to prove his claims. When, a little while later, the command comes: "Gallop—March," Mr. Wise Horseman's arms flop like an eagle's wings, and his glutei imitate the steam engine's piston-head. Ah, yes, such "physical sitting-up" exercises do prove painful from more than one point of observation.

However exhilarating and fascinating the trip may have been, much of the joy evaporates when, on arriving back at the picket line, the order goes out to dry your horse with straw and, when dry, curry and brush him clean. How the ambitious rider now wishes he had curbed his desire for that last gallop which started the sweat on his horse. The horse, however, must be dried and cleaned, and, with firm resolves to stick to a walk as long as possible on the next ride, the doctor gets back to camp to satisfy their ravenous appetites.

After all is said and done, our "medics" really like horseback riding. When their temerity has been subdued, and they have become accustomed to horse and saddle, they make quite a different picture. At the end of the four weeks' course in this work, although not expert horsemen, the students have learned how to ride.

NEWS OF THE CANTONMENTS

Thirty-First Division, Camp Wheeler, Macon, Ga.

The camp is undergoing an epidemic of measles. Every regiment brought in measles, and in some the disease has spread until several hundred cases have occurred. But three cases have been followed by pneumonia, and in no case has death or any serious permanent result followed.

Thirty-three cases of pneumonia have occurred in this camp with but one death. A careful, detailed record is kept of every case with the hope and expectation that tabulation and study of these cases will throw much light on this fatal disease.

Colonel Duncan spoke at a meeting of the Chamber of Commerce, Friday, called for the purpose of combating prostitution in Macon. Those who took part in the meeting were of one mind as to driving out street walkers and cleaning up malodorous hotels. The colonel addressed the Red Cross chapter the same evening.

Shortage of overcoats, blankets and heavy uniforms is believed to have been a factor in the recent increase in sickness.

The commissioned medical personnel of the Third Division is almost complete. Half a dozen medical men are now here, caught by the draft net. They will be examined for commissions.

BASE HOSPITAL NOTES

With seven wards of the 500 bed hospital incomplete and unoccupied, 642 patients are being well cared for tonight, just nine days from the opening.

As is to be expected in a new camp, measles and venereal diseases comprise a large majority of the cases, there being 271 of the former and 135 of the latter.

There is one case each of diphtheria, cerebrospinal meningitis and varioloid, and twenty cases of pneumonia.

The admissions are already well over the 900 mark.

The commanding officers' quarters were burned on the night of the 24th, and it required strenuous efforts on the part of the corps to save the hospital; but not a patient was injured or even disturbed. Before the ashes were cold, rebuilding began.

The enlisted men have met the situation as soldiers should, and have done the work, though there are no nurses to help and the corps itself consists of only 126 men, being about seventy short. This shortage was supplied today by drafting on the field hospital for men; the Nurse Corps is expected soon.

The base hospital subscription to the Liberty Loan was the highest per capita of any organization in the division, and entitled to first place in review; but officers and men were too busy to attend.

ONE HUNDRED AND SIXTH SANITARY TRAIN

At the Division Review, with the organizations rated according to their per capita subscriptions to the Liberty Loan, the sanitary train occupied the position of honor on the extreme right of the division. With a commissioned personnel of thirty-four and enlisted strength of 378, the total per capita subscription per man was \$65.16. The total amount subscribed by officers was \$5,750, a per capita credit of \$168.82; the enlisted subscription was \$21,100, or a per capita of \$55.82. The ambulance company battalion led the train, having a few more dollars per capita to its credit than the field hospitals. The leading company of the entire train was Ambulance Company No. 121, commanded by Capt. Robert F. Ashworth, Medical Corps, Alabama National Guard. The passage in review was well conducted, alignments were accurately maintained, and favorable commendation was heard on the appearance of the medical troops in comparison with their brethren of the line.

The camp site formerly occupied by the camp hospital has been cleared and burned over. The removal of the many hospital ward tents of the field hospital companies has left a void to which, as yet, our eyes are not accommodated. Despite the size of the task we had, we frankly admit that we miss it.

On the night of the fire at the base hospital, the Florida, Georgia and Alabama field hospitals held themselves in readiness to pitch their canvas to accommodate the 400-odd patients of the base hospital, should the spread of the conflagration require it. The ambulance companies stood ready with their entire motor and mule-drawn equipage to evacuate the wards should it become necessary. Fortunately the flames were confined to the small building in which they started, and we were enabled to turn in with our minds at ease.

The work on the framing and flooring of the tents of this command is now practically completed, with the resulting increase of comfort of the men during the chilly nights.

The tremendous amount of work being thrown on the base hospital, with its inadequate enlisted personnel, has necessitated the detailing of a total of seventy-two men from the train, thirty-six from the field hospitals, and thirty-six from the ambulance companies. While this interferes, to some extent, with the maintaining of a uniform drill schedule, it is evident that the knowledge acquired by these men at the base hospital will be invaluable and tend more rapidly to complete their training as members of the medical department.

On Wednesday evening, last, the weekly social of the officers was held with its usual success. The brisk air of the evening added to the enjoyment of the dancing. Luncheon, with coffee, was served in the mess hall between dances. The orchestra of the Florida field hospital augmented by a new violinist rendered the music.

The anticipation of a roast possum dinner was destroyed by the fact that some unkind person liberated Brother Possum from his cage. Said possum was captured in a foot race by Major Job C. Patterson, director of field hospitals. The genial major must secure another animal in order to make good his repeated promise of "possum and 'taters."

The organization of ladies' committees for the procuring of delicacies for sick soldiers is progressing favorably, the idea being to concentrate especially on those men who are convalescing from serious illness.

The missing flat car has finally arrived, containing the two motor ambulances necessary to complete the full complement of one company now on hand. This now gives us twelve standard GMC ambulances and No. 13 Car, known as Spare Parts and Repair Car. The good news that another complete motor ambulance equipment is on the way has been

received. The motorcycle cars, with their "bath tubs," we understand, are also en route.

Fortieth Division, Camp Kearney, Linda Vista, Calif.

The cantonment of the Fortieth Division is located on a plateau, 17 miles northeast of San Diego. The surrounding country is sparsely settled and furnishes enough variety of contour to allow maneuvers of all kinds to be made. It is covered with a scrub brush of greasewood, sage brush and cactus. The soil is shallow, of the type known as gumbo. A few inches below the surface is a strata of hard pan impervious to drainage. All excavations in the cantonment had to be blasted. The amount of the annual rainfall in this vicinity is very limited and confined to the winter months. There are no streams or springs in the vicinity of the camp and very few wells. The water supply of the cantonment is furnished by the city of San Diego, which installed a complete pipe line, with reservoir, to take care of the cantonment. A complete sewer system was installed, with septic tanks. The garbage is removed by contract. Refuse is hauled to a designated dumping ground some distance from the camp. The climate is equable, the temperature never reaching the freezing point. Variation from noon to midnight is great, but no provisions have been made for heating the tents. The ocean is only a few miles from the camp so that fogs are often found in the early morning. The number of cloudy days is practically nil.

PERSONAL

There are several medical officers attached to the Fortieth Division who have seen active service abroad. Major W. A. Jolley served with the American Red Cross at Belgrade, Serbia, during the typhus epidemic and was present during a bombardment and capture of Belgrade by the Germans. Major J. R. McDill was sent to Germany for the American Physicians Expeditions Committee of New York in June of 1916. Major Phillip S. Chancellor was in France for several months in 1916. Lieut. Kenneth Beymer Turner was an officer in the English Expeditionary Force in Serbia. He was given a commission in the French Army after the invasion of Serbia. On the entrance of the United States into the war he returned to America and joined the army of the United States. Capt. Byron Stookey served in France with the Harvard Surgical Unit during 1915. These officers will be a great value in preparing the division for foreign service.

Forty-First Division, Camp Greene, Charlotte, N. C.

This camp is made up of militia organizations of the several Western States, to wit, Washington, Oregon, Idaho, Montana, Wyoming, New Mexico, North Dakota and South Dakota. It makes a distinctive unit, as a war factor, because many of the men served on the Mexican border. Of course there have been quite a few new enlistments since then, but a good nucleus for a fighting machine had already been started. The change from the West to the East has added "pep" to the men. All want to show what good material the West can produce to help win victory for our country.

The camp is pleasantly situated in a rolling country and mostly in cotton fields. The climate is good, and the surroundings aid to make a good training camp. All officers and men are housed in tents, with floors and sides. For heat, the Sibley stoves are used, thus making it comfortable for all.

The base hospital has an area of about 67 acres, and has buildings erected for all conveniences of patients and attendants. Major W. L. Sheep, M. C., U. S. Army, is the commanding officer, and there are thirty-one medical officers and 125 enlisted men. All those with contagious diseases, all who require medical or surgical treatment, other than those slightly ill or wounded, and those under observation are sent there. At the base hospital a staff for dental work is established, besides the regimental units, which have one or more dentists assigned to duty with those units.

Capt. John T. Rugh, M. R. C., has been assigned as instructor in orthopedic work. Lieut. Paul V. Anderson, M. R. C., is in charge of the neurologic department. Major Francis W. Palfrey, M. R. C., has charge of the tuberculosis and heart examinations. These medical officers examine the men of the division in their separate specialties, and weed out the noneffectives, all of which aids in the building of a very effective fighting machine.

Capt. Leonard A. Ensminger, M. R. C., is the medical officer assigned to give instructions to all the officers and men of the division in gas defense.

Lieut.-Col. O. G. Brown, M. C., U. S. Army, is the division surgeon. The assignment of all the medical units is made through his office, which entails an immense amount of good judgment and experience.

The sanitary train is composed of four field hospitals and four ambulance companies. Its quota is practically completed.

The percentage of sickness in the camp has been the lowest, with one exception, of all the cantonments. One death has been reported thus far from pneumonia. Meningitis has appeared in the camp; two cases were positive, one reported not positive. All the patients are recovering. Strict quarantine and other measures are taken to prevent the spread of the disease, including microscopic examinations of cultures taken from the posterior nares of all men in quarantine.

SOCIAL AND PERSONAL

Brig.-Gen. Henry Jervey and wife entertained, Saturday, October 13, from 2 until 6 p. m., for officers of the division.

Regimental bands play daily at the commanding general's headquarters from 4 to 5 p. m.

The study of French has been taken up by officers and men, and classes are held at regular intervals.

Eightieth Division, Camp Lee, Petersburg, Va.

When the last notes of Camp Lee were sent to THE JOURNAL there were 38 medical officers assigned to the base hospital and 80 medical officers in the division. Since that time 59 medical officers have reported.

With the steady increase in the number of troops at Camp Lee the increase in the medical commissioned personnel was warmly appreciated and it will considerably lighten the labors of the medical officers. There are a number of training battalions at Camp Lee as well as the regular units of the division. The medical officers attached to these battalions have been constantly busy with physical examinations and mustering and then when they see the end of this work they suddenly learn that these new troops are to be transferred to some other camp. A surgeon accompanies each group of men that are transferred, and when the medical officer returns he finds physical examinations and muster awaiting him again. Captain Williamson, Lieutenants Tunnell, Stover and Miller have recently been through this experience and Lieutenant Miller's report of his work since his arrival shows what the medical work of these battalions means. Lieutenant Miller arrived in the middle of September and began the work of completing the physical examinations. Just as he was nearing the end of his work he was assigned to assist another medical officer's unit in their mustering work. This work completed, he accompanied 600 men to Camp ——. Entrained at Camp Lee, Friday morning, Capt. Alfred Degerman in charge, and reached Camp ——. Though the skies were overcast, not so the spirits of the men, who were joyous as they marched to the training station led by the junior line officers who had labored with them for several weeks to get them in shape for movement. So diligent was this work that, amazing as it may appear, these men, mostly from the farm, workshop and mine, were transformed in this quite short period to acceptable looking and acting soldiers. Their behavior en route was excellent and the medical officers had but two unimportant cases to attend. In contrast to other troop trains reaching Camp — at or about the same date, this command was unfortunate in that there were no sleeping accommodations provided for officers or men. In addition, through failure to provide a key for the gas supply, the train was in darkness until between 8 and 9 p. m.; a station was reached where a key was procured, but in spite of these discomforts and the unfortunate inability of the supply officer to procure coffee for the men Saturday morning, they still had "kick" and were full of "pep" as they marched to the receiving station on leaving the train. Here we were met by the receiving officer and our commanding officer, relieved of further responsibility, every man responding to his name at roll call. Camp — is beautifully situated, just 13 miles from — with a fine approach of improved road. While we were favorably impressed with the camp, we all voted Camp Lee, Va., "Premier," and were not loth to return, arriving at Camp Lee, Va., on Tuesday.

Eighty-Fourth Division, Camp Zachary Taylor, Louisville, Ky.

SOCIAL WORK FOR SOLDIERS

Since the number of men on the streets of Louisville has been increased by the soldiers in the cantonment at Louis-

ville, the civic bodies have again begun the agitation in favor of the establishment of public comfort stations in the downtown district. The importance of these stations was emphasized by the Louisville Commercial Club, during the presidency of Dr. Henry E. Tuley, but succeeding city administrations have plead limited finances as an excuse for not erecting one or more stations. It is now pointed out that the daily population of Louisville is about one fifth more than at the beginning of the war, caused by the presence of the soldiers and the visitors brought to Louisville. The opening of the new Soldiers' Club House, at 619 Fourth Street, a four-story building, with all conveniences, will greatly aid but not meet the demands for such stations.

A special detail of officers clad in private's uniforms set out on Saturday for the purpose of securing information as to whether soldiers are securing intoxicating liquors, and in a general way investigating all form of vice. Col. C. F. Crain, provost-marshal, is endeavoring to limit both bootlegging and pandering in the outskirts of the camp reservation and in the city.

The Sick Soldiers' Cheer-Up Club is a new organization composed of the wives and daughters of out-of-town officers stationed at Camp Zachary Taylor. The club made its first visit to the camp base hospital and brightened the day for many a sick and convalescent soldier with gifts of flowers, fruit, cakes, cigarets and matches.

THE BASE HOSPITAL

At present, there are about fifteen wards occupied, three isolation, four medical wards, four genito-urinary, two surgical, one eye, and one nose and throat. There are about 400 patients in the hospital. Of these there were fifty-five measles, nineteen mumps, twenty-eight pneumonias and one cerebrospinal meningitis. There have been two deaths from pneumonia and one from streptococcic cerebrospinal meningitis. The medical staff is preparing to use the pneumococcus serum Nos. 1, 2, 3, 4 as soon as it can be sent from Washington, D. C. They are also examining for meningitis carriers and are planning to use in them the prophylactic treatment with meningococcic vaccine.

EXAMINATION OF DRAFTED MEN

Capt. Philip Stewart, Paducah, in charge of the surgical service at the base hospital, examines for the general surgical conditions such as hernia, flat-foot, joint injuries and for alleged or supposed defects which make the recruit limp in drilling. There are many of these, and it requires great skill and clinical judgment to detect those suspected of malingering. Capt. Victor Meddis, Louisville, has charge of the venereal cases. A great many cases of active syphilis are rejected. A great many recruits enter the camp with acute gonorrhea. These are isolated and treated for a few days, and if no complications exist, are then assigned to duty. Tertiary syphilis patients are not discharged but treated under Wassermann control. The neurologic cases are under the charge of Major Milton Board of Louisville. The neurologic ward is well equipped with special rooms for the observation of special cases such as dementia praecox, epilepsy and the acute insanities. Major William H. Wilder, Chicago, acts as consultant to the ophthalmic division of the reviewing board, while during his absence the work is in charge of Captain Barton. A great many cases of trachoma have been found. These are promptly rejected. At one time there were forty-five cases in an isolation ward under observation. Major Frederick Menge, Chicago, is in charge as consultant of the ear, nose and throat division. During his absence this department is looked after by Capt. Lawrence Littig, Davenport, Iowa. Capt. M. J. Lichty, Cleveland, examines all suspected cases of tuberculosis. A board of tuberculosis examiners, consisting of ten officers of the reserve corps, contract surgeons, will shortly begin an examination of every accepted man in the camp, including all officers. The cardiovascular examinations have been made by Dr. Willard J. Stone, Toledo, contract surgeon. About 50 per cent. of all recruits referred for alleged disease of the heart are rejected. The remaining 50 per cent. are found fit after tests designed to show the fitness of the recruit to stand effort. A large number of hearts showing functional murmurs are accepted, while many supposed functional or accidental murmurs are found to have definite evidence of earlier infective damage to the valves or myocardium. In questionable cases the heart is examined by the fluoroscope and roentgen-ray plates are made by Captain Sprague, in charge of the roentgen-ray laboratory.

The action taken by the reviewing board as to physical fitness for service is final when approved by the division sur-

geon, Colonel Allen, to whom all papers are referred for final action. A great many letters are received from anxious parents, public officials and interested friends of him concerning the disability of certain recruits. Considering the manner in which the recruits were examined by local boards for the selective draft it is surprising that more gross errors of judgment are not found. About 3,000 cases have been referred to the reviewing board for decision, out of approximately 27,000 men in the camp. Of this number referred approximately 50 per cent. have been found to be unfit for service. The reviewing board has had some interesting cases of malingering follow certain rejections for genuine disabilities. Cases of malingering have followed rejections for pulmonary hemorrhages, nocturnal enuresis, chronic rheumatism, defective vision, and peculiar gaits.

PERSONALS

Major John Ridlon spent several days at Camp Zachary Taylor recently, during which time he gave two lectures to the medical and line officers on the care of the feet. Dr. Ridlon spent one summer at Plattsburg with the Medical Officers Reserve Corps in training there.—The officers of the reviewing board are: chairman, Major Walter Hamburger, Chicago; recorder, Lieut. Willard J. Stone, Toledo. Major Hamburger is also president of the disability board, chief of the Medical Service and member of the auditing and hospital council. The disability board has to do with the examination and discharge of enlisted men. Many new recommendations are being made by the Surgeon-General's Office to meet new war conditions.—Under Major Worthington, M. C., U. S. Army, commanding officer of the base hospital, all medical men attached to the hospital are drilling one hour a day, four days a week, and four night classes are being held a week on "Army Regulations" and the "Manual of the Medical Department of the Army."—Major-General Hale has extended the hours of leave for the drafted men to Wednesday and Saturday afternoons and Sundays. Medical officers have leave also on these days.—A wonderful service is being rendered the base hospital staff by a local organization known as the Woman's Service League in supplying needed equipment for the hospital. Ice bags, refrigerators, instruments of all descriptions, and special nurses in certain cases have been supplied on request of the commanding officer.—Steam was turned on in the officers' barracks at the base hospital for the first time on October 27. This was a welcome addition to the comfort of these hard-worked men. Pending the heating of the wards all seriously sick soldiers were sent to the soldiers' ward at the City Hospital. At the request of Major Worthington, the City Hospital Committee representing the University of Louisville recommended the appointment of Major Hamburger and Lieutenant Flexner, as members of the medical visiting staff, and Captains Stewart and Price, of the surgical staff, and Captain Sprague, visiting roentgenologist. One death has occurred at the City Hospital of a soldier from acute mania.

DISEASE CONDITIONS AMONG TROOPS IN THE UNITED STATES

Extracts from Telegraphic Reports Received in the Office of the Surgeon-General for the Week Ending Oct. 19, 1917

1. Total strength of troops988,372
Admission rate per 1,000 (disease only)annual 974
Non-effective rate (all causes) 21.6
2. National Guard—strength314,174
Admission rate per 1,000 all camps (disease only) ..annual 952.6
Non-effective rate all camps (all causes) 23.5
The following camps show admission rates for disease higher than average: Camp McClellan, 1,077.4; Camp Wheeler, 1,043; Camp Logan, 959.3; Camp Cody, 1,146.5; Camp Doniphan, 1,504.6; Camp Bowie, 1,001; Camp Shelby, 1,253.4; Camp Beauregard, 1,689.9; Camp Kearney, 1,279.5; Camp A. L. Mills, 1,221.7.
The following camps show non-effective rates (all causes) higher than average: Camp MacArthur, 36.6; Camp Logan, 29.05; Camp Doniphan, 27; Camp Bowie, 27; Camp Shelby, 38.1; Camp Beauregard, 33.9; Camp A. L. Mills, 31.4.
3. National Army—strength421,619
Admission rate per 1,000 all camps (disease only) ..annual 1,014
Non-effective rate all camps (all causes) 17
The following camps show admission rates for disease higher than average: Camp Dix, 1,091.4; Camp Lee, 1,148.7; Camp Gordon, 1,079; Camp Pike, 1,220.3; Camp Dodge, 1,098.7; Camp Travis, 3,493.7.
The following camps show non-effective rates (all causes) higher than average: Camp Dix, 17.5; Camp Dodge, 24; Camp Travis, 40.6; Camp Lewis, 25.1.

4. Venereal Disease—
Admission rate Regulars 77.8
Admission rate National Guard (Camps)annual 118.8
Admission rate National Army 146.4
The following camps, National Guard, have rates above average: Camp Sevier, 254.7; Camp Wheeler, 168.2; Camp Logan, 158.5; Camp Cody, 148.5; Camp Bowie, 153.3; Camp Sheridan, 146.9; Camp Shelby, 142.3; Camp A. L. Mills, 186.8.
The following camps, National Army, have rates above average: Camp Jackson, 367.9; Camp Pike, 629.8; Camp Funston, 174.6; Camp Travis, 486.4.
5. Number of cases of pneumonia 198
Highest number in any one camp(Travis) 41
Number of cases of meningitis 12
Highest number in any one camp(Funston) 4

6. SPECIAL DISEASES REPORTED DURING THE WEEK ENDING
OCTOBER 19, 1917

| Division | Pneumonia | Dysentery | Malaria | Venereal | Paratyphoid | Typhoid | Measles | Meningitis | Scarlet Fever | Strength of Command |
|---------------------|-----------|-----------|---------|----------|-------------|---------|---------|------------|---------------|---------------------|
| 27th, Wadsworth.. | .. | .. | .. | 35 | .. | .. | .. | .. | .. | 33,508 |
| 28th, Hancock.... | .. | .. | .. | 43 | .. | .. | .. | .. | .. | 28,545 |
| 29th, McClellan.... | 3 | .. | .. | 34 | .. | .. | .. | 2 | .. | 25,064 |
| 30th, Sevier..... | 4 | .. | 4 | 98 | .. | .. | 9 | .. | .. | 20,039 |
| 31st, Wheeler..... | 5 | 1 | 5 | 65 | .. | .. | 27 | .. | .. | 17,184 |
| 32d, MacArthur.. | .. | 1 | .. | 44 | .. | .. | 1 | .. | .. | 23,563 |
| 33d, Logan..... | 9 | .. | 16 | 61 | .. | 1 | 3 | .. | .. | 20,023 |
| 34th, Cody..... | 2 | .. | .. | 60 | .. | .. | 5 | .. | .. | 20,945 |
| 35th, Doniphan.... | 7 | .. | 10 | 41 | .. | .. | 45 | .. | .. | 21,644 |
| 36th, Bowie..... | .. | 1 | 3 | 59 | .. | 2 | 29 | 1 | .. | 20,172 |
| 37th, Sheridan.... | .. | .. | .. | 65 | .. | .. | 2 | .. | .. | 23,451 |
| 38th, Shelby..... | 7 | 1 | 3 | 52 | .. | .. | 30 | 1 | .. | 18,907 |
| 39th, Beauregard.. | .. | .. | 9 | 12 | .. | .. | 31 | .. | .. | 6,413 |
| 40th, Kearney..... | 2 | .. | .. | 7 | .. | .. | 6 | .. | .. | 8,863 |
| 41st, Greene..... | 7 | .. | .. | 16 | .. | .. | 11 | 1 | 3 | 15,553 |
| 42d, A. L. Mills.. | 4 | .. | 4 | 37 | .. | .. | .. | .. | .. | 10,288 |
| 76th, Devens..... | 3 | .. | 1 | 13 | .. | .. | 3 | .. | .. | 34,639 |
| 77th, Upton..... | .. | .. | .. | 28 | .. | .. | .. | .. | .. | 29,217 |
| 78th, Dix..... | 1 | .. | .. | 18 | .. | .. | .. | .. | 1 | 20,181 |
| 79th, Meade..... | 1 | .. | .. | 9 | .. | .. | .. | .. | .. | 18,798 |
| 80th, Lee..... | 1 | .. | .. | 51 | .. | 1 | .. | .. | .. | 30,599 |
| 81st, Jackson.... | 2 | .. | .. | 92 | .. | .. | 16 | .. | .. | 13,117 |
| 82d, Gordon..... | 2 | .. | 4 | 20 | .. | .. | 21 | .. | .. | 12,033 |
| 83d, Sherman.... | 3 | 2 | .. | 57 | .. | .. | .. | .. | .. | 32,335 |
| 84th, Taylor..... | 7 | 2 | 1 | 19 | .. | 1 | .. | .. | .. | 26,612 |
| 85th, Custer..... | 1 | .. | .. | 17 | .. | .. | 2 | .. | .. | 17,743 |
| 86th, Grant..... | 8 | .. | 1 | 15 | .. | .. | .. | .. | .. | 29,203 |
| 87th, Pike..... | 2 | 1 | 23 | 277 | .. | .. | 46 | .. | .. | 23,368 |
| 88th, Dodge..... | 14 | .. | .. | 52 | .. | 2 | 3 | 1 | .. | 23,144 |
| 89th, Funston.... | 12 | .. | .. | 135 | .. | .. | .. | 4 | .. | 40,188 |
| 90th, Travis..... | 41 | .. | 4 | 203 | .. | .. | .. | .. | .. | 32,695 |
| 91st, Lewis..... | 1 | 1 | .. | 78 | .. | .. | 3 | .. | .. | 33,779 |

| | Regulars, U. S. Army, in U. S. only, 1916 | | Regulars in U. S., week ending Oct. 19, 1917 | | Nat'l Guard, All Camps, week ending Oct. 19, 1917 | | Nat'l Army, All Camps, week ending Oct. 19, 1917 | |
|---|--|-------|---|-------|--|-------|---|--------|
| | Cases | Rate | Cases | Rate | Cases | Rate | Cases | Rate |
| Admissions, dis- eases only, an- nual rate per 1000 | | 613 | .... | 873.4 | .... | 952.6 | .... | 1014.0 |
| Pneumonia..... | | 2.59 | 22 | 5.4 | 50 | 8.2 | 99 | 12.2 |
| Dysentery..... | | 3.97 | 5 | 1.1 | 4 | 0.6 | 6 | 0.7 |
| Malaria..... | | 12.52 | 11 | 2.7 | 54 | 8.9 | 34 | 4.1 |
| Venereal..... | | 91.00 | 316 | 77.8 | 719 | 118.8 | 1187 | 146.4 |
| Paratyphoid..... | | 0.31 | 0 | 0 | 0 | 0 | 0 | 0 |
| Typhoid..... | | 0.21 | 5 | 1.2 | 3 | 0.4 | 4 | 0.4 |
| Measles..... | | 20.29 | 70 | 17.2 | 199 | 32.8 | 94 | 11.5 |
| Meningitis..... | | 0.29 | 2 | 0.4 | 5 | 0.8 | 5 | 0.6 |
| Scarlet fever..... | | 0.59 | 13 | 3.2 | 3 | 0.4 | 1 | 0.1 |

7. Deaths by causes—
- Lobar pneumonia 9
Pulmonary tuberculosis 4
Bronchopneumonia 3
Cerebrospinal meningitis 2
Appendicitis 2
Typhoid fever 2
Septicemia 2
Peritonitis 1
Dysentery 1
Miliary tuberculosis 1
Myocarditis 1
Malaria, estivo-autumnal 1
Tuberculous meningitis 1
Cerebral hemorrhage 1
Endocarditis 1
Diabetes mellitus 1
Traumatism 7
Suicide 2
Fracture of skull 1
Cause not reported 3

THE CONTROL OF VENEREAL DISEASE
IN THE ARMY

The meeting of the College of Physicians of Philadelphia, Oct. 3, 1917, was devoted wholly to a discussion of the control of venereal disease in military life. Major George E. de Schweinitz, M. R. C., presided. Before the meeting Dr. W. W. Keen presented to the college the retractor used in the operations on President Cleveland in 1893.

The Problem of Dealing with Venereal Diseases in
Great Britain

Col. T. H. Goodwin of the British Army was warmly greeted. "Estimates made by the Royal Commission on Venereal Diseases," he said, "indicate that in the larger towns in England at least 10 per cent. of the total number of inhabitants is infected with syphilis, and that gonorrhea is even more prevalent. This would mean that in London alone there are 450,000 syphilitics. Sir William Osler places this disease as third on the list of what he terms 'killing diseases.' That venereal diseases have not been adequately grappled with as have other infectious diseases is due to the mistaken policy of silence." In the Army, notwithstanding that the best methods of treatment are in vogue and that the incidence of the disease has been diminishing, it was found that in 1912 the average number of men incapacitated was 593 which, with an army of 107,000 men, represented a loss of over 216,000 working days in the year. The rate of the incidence of the disease in the Army in 1913 was 5.3 per cent. per annum; for 1916 it was 2.1 per cent. per annum. During active service the disease is more adequately dealt with than during peace. Improved methods of educating the soldier on this matter, the provision of greater facilities for recreations in cantonments, and the decrease of alcoholism have had a very considerable effect in decreasing the incidence of venereal diseases. The national council for combating venereal disease, with Lord Sydenham as president, embraces many leaders of the medical profession, representatives of the churches, and many women social and philanthropic workers in close cooperation. The aims of the council are briefly: (a) provision for education and enlightenment; (b) provision of greater facilities for treatment; (c) provision of increased opportunities for study of these diseases on the part of medical practitioners and students, and (d) promotion of legislative, social and administrative reforms.

Up to June of last year, more than 600,000 soldiers had attended the lectures given. The point of view taken by the royal commission is that it is both the duty and to the interest of the state to see that venereal disease is promptly cured. Facilities for diagnosis are organized so far as possible in connection with existing laboratories in universities and in general and county hospitals. Wards in general hospitals for indoor patients are allocated to venereal patients. For outdoor patients, evening clinics are provided. The objection to the provision of special hospitals lies in the resulting publicity. It is recommended that salvarsan should be provided gratuitously, under proper safeguards, to private practitioners for use among the poorer patients. Sir Malcolm Morris believes that under present conditions compulsory notification and treatment are impracticable. Sir William Osler would welcome notification. The conclusion of the royal commission was against this measure. "I myself am strongly in favor of the adoption of compulsory notification," said Colonel Goodwin, "and believe that with the advance of education and the recognition of the gravity of the matter, this will be enacted. The commission emphatically recommends the prohibition of all advertisements of remedies for venereal diseases, and favors the legal prohibition of treatment by unqualified persons. Some difficulty obtains, however, in securing such a law at present. I believe," he continued, "that unauthorized treatment of these diseases should constitute a penal offense. I also think that it should be the duty of a medical man to acquaint the parents of any girl who contemplates marriage with a man whom he is treating for venereal disease, and that such communication should be recognized as privileged. The wilful communication of venereal disease should, in my opinion, constitute a legal crime. While the proof of knowledge might be difficult, the measure would tend to the good of the community. This present world-wide war, apparently productive of nothing but evil, is teaching us to regard life and death as less important than the future welfare of mankind; and if such matters as adequate control of venereal diseases, world-wide prohibition of alcohol, and an increasing, instead of a decreasing, birth

rate result, it may possibly be found that, terrible as it is, it was not without some good results."

The Preventive Side of Social Disease

The next speaker, Mr. George W. Braden, of the Central Y. M. C. A. of Philadelphia, stated that the moral standards maintained in a military camp greatly affect the venereal disease ratio. A study of the Mexican border situation made by Mr. Max Exner of the Y. M. C. A. International Committee and a member of the Fosdick Commission on Training Camp Activities states that when men were kept busy with wholesome games and amusements, proper educational service was rendered and temptation removed as far as possible in nearby towns, the number of men applying for prophylactic treatment was very low. Mr. Braden cited figures from several of the camps under varying conditions which showed definitely that the incidence of application for prophylactic treatment was far less when proper recreation was provided.

Social Diseases in the Army as Affected by the Soldiers' Environment

Major William F. Snow, M. R. C., emphasized the practical details which the Army is carrying out in the prevention of venereal diseases. "As a medical profession we have not quite become convinced," he said, "that the venereal diseases are amenable to the same methods of attack that we have applied to the other communicable diseases. We are, however, on the eve of carrying this application into effect. In venereal disease we have a problem of the human carrier, and therein lies our difficulty because the carriers spread the disease through the development of habits opposed to the moral standards of the community. The circumstances connected with the control of these individuals is such that we either have to legalize their immorality or interfere with the liberty of large numbers of persons. Controlled prostitution has been found inadequate in the epidemiology of venereal diseases, to say nothing of the opposition of the public to this method. It has taken this war with the ten or fifteen years of effort and education to bring about a crystallization of public opinion to try other methods of controlling venereal diseases." Education and recreation, he believes, are the chief steps. The control of alcohol has been put forward by almost all persons interested in this problem as one of the biggest factors in the control of prostitution and therefore in the control of these diseases. The government combines these agencies in two major groups, the group dealing with education, recreation and entertainment, and the group dealing with police power with control of alcohol and the repression of prostitution. Congress has given the President and the secretary of war authority over zones around all our military camps. The secretary of war has created the Commission on Training Camp Activities, which is developing a network over this country of voluntary cooperation to do whatever can be done along these lines of effort. So far as the Army is concerned, the various commanders are finding groups in the communities who are interested in the stimulation of this effort. There will be some soldiers, however, who will expose themselves, and stations are being established for treatment, and the Army is making a special effort to render the treatment station an educational matter. Some will fail to receive treatment in time, and will develop the disease. The genito-urinary men attached to the Surgeon-General's staff will make every effort to obtain the social facts from the soldiers to make it possible to trace the carriers. In Canada there has been much encouragement felt by the cooperation of the soldiers in tracing the carriers in civil life. In order to combine all these efforts, the Surgeon-General has created under Colonel Russell a department that will devote its efforts primarily to this preventive phase of the venereal diseases. Inside the camp, certain officials will be working with the regimental surgeons in studying the cases that develop. Sergeants who are especially trained will work with the officials in ascertaining the facts without embarrassing the soldiers or making the matter appear to be a disciplinary measure. In order that such information may be used wisely, a series of officials are being appointed who will work in the extracantonment areas whose chief business will be to know the attitude of the community toward the problem, to know the health official and the other forces that may be counted on to carry through any effort to find carriers in the civil community.

Social Diseases in the Army

Col. Frederick F. Russell, M. C., U. S. Army, chief of the division devoted to laboratory work, said that syphilis and gonorrhea can now be placed with other infectious diseases

and not classed merely as moral and social problems. The Army surgeon in the United States has absolute control of the soldier inside the reservation. In time the new citizen soldier will learn that he is a part of the great world machine, and his ideal will be to keep himself in the pink of condition. We have a large number among our recruits who immediately become patients. In the old days most army posts were surrounded with evil places over which the Army had no control. At present the law gives us control of a zone surrounding each camp where the commanding officer has almost complete police power. We shall have to contend with more venereal disease in the Regular Army this winter than ever before. The third week of the draft Army showed an astonishing increase in the number of cases of venereal disease. Whether this means that these diseases are much more common among young men of military age in the civil population than we ever supposed, I do not know. Certain it is, however, that we have almost 400 per thousand, whereas our highest rate in the last twenty years in the Army has been 162. Treatment begins from the first day the men begin to assemble, and we now have hospitals full of draft men with venereal disease which they contracted before joining. The most interesting point is not of recovery but of how many days it will be before the patient is returned to his military duty. In their order, the commonest diseases in the service are venereal diseases, tonsillitis, influenza, bronchitis, diarrhea and enteritis. The Surgeon-General has had prepared a small manual on the present day methods of diagnosis and treatment of venereal diseases. We hope by means of this manual and the service of qualified specialists as consultants to standardize and develop this field of medicine, and bring home to every physician the great value of modern scientific treatment. We shall institute early treatment of venereal infection by all the so-called prophylactic methods, if possible within a few hours of exposure. We shall make frequent inspection of the troops to discover concealed cases. We shall penalize a man who develops venereal disease by taking away his pay and his liberty until he is cured. If he develops venereal disease and does not avail himself of the facilities of treatment, he will in addition be courtmartialed, and if found guilty he will be placed in confinement at hard labor. If in spite of these requirements he develops disease, he will be sent to the hospital, put to bed, and be given a course of intensive treatment until he is no longer a source of contagion to others and is well on the road to recovery. Without the cooperation of the civil practitioner, the help of the social worker and of the public as represented by the civil and state authorities, the Army surgeon will not be able to accomplish more than has been done in the past. Success depends on the earnest support of the entire medical profession of the country.

General Discussion

Dr. Edward Martin described plans for the cooperation of the civil medical profession of Pennsylvania. "We mean to have our health officials treat the man with gonorrhea and syphilis, or both, who cannot be kept under medical control, with as little respect as to his rights as they would treat one suffering from smallpox. Our state committee will recommend to the legislature that places be provided for the treatment of such patients. There is no reason why hospitals receiving state aid should not take these patients within their doors and keep them until they are no longer sources of danger, except in institutions in which girl babies are cared for. Here gonorrhea should be excluded. In every county of each state there is a subcommittee of the Council of National Defense, and before the war is over we hope to have a law by which these diseases under national restriction must be reported, and by which a person conveying them knowingly or otherwise may be liable for criminal prosecution or damages.

Major E. H. Siter stated that when the war is over and the men in the Army have seen the efficient treatment there instituted and have known the ravages made in the ranks, the great etiologic factor will, he believed, be corrected. It is not the professional prostitute who does the damage, but the casual prostitute hanging about the cantonment. The disease must be treated intensively. This cannot be done except in a hospital.

Dr. Jay F. Schamberg mentioned the recent organization at Cincinnati of the American Society for the Control of Syphilis. The membership is composed of specialists who will develop the activities along medical, legislative and educational lines, cooperating so far as possible with the American Society of Social Hygiene. "Until recently, a dose of salvarsan has cost \$4.50 an ampule, which prohibits its adequate

use with all the indigent sick. It has been impossible for those making salvarsan or its equivalent in this country to supply the drug directly to the profession because of the patent laws. The Adamson bill, however, which has just passed House and Senate, authorizes the President to license American citizens to prepare and market products patented by alien enemies, and provides for the payment of 5 per cent. of the gross receipts to be deposited in the United States Treasury until the end of the war. The Dermatological Laboratories have made application for license to distribute arsenobenzol. Over 125,000 doses of this drug have been used already in the United States. It is our purpose progressively to lower its price, that it may be freely available for the indigent sick. We propose as soon as licensed to place arsenobenzol on the market at \$1.50 to physicians, and to hospitals in larger sized ampules at such a price that an individual dose may be administered for about 80 cents. The adequate use of salvarsan on the ambulatory dispensary patients is of vital importance in the stamping out of contagious syphilis."

Dr. H. M. Christian believed that we must protect the man in the Army from the result of his own immorality, for the benefit of the service and his associates. "That which is of vital importance is prophylaxis; and I regret," he said, "that more emphasis was not placed on the prophylactic treatment of men on their return to camp. Statistics tell us that when prophylaxis is carried out as a routine, the percentage of development of venereal disease has been very small. Prophylaxis is not a compromise with evil, as so many regard it. We as physicians have no discussion here of morals; we are interested in the safeguarding—at this of all times—of the health of our Army. It is all very well to give these men instruction and entertainment, but far better to my mind to safeguard them by enforced prophylaxis."

Colonel Goodwin said in closing that he did not think the soldier is more immoral than men of the same class in civil life. We can do an enormous amount to keep him away from the opportunity of getting venereal disease, and the measure which has helped more than anything else in the Army to carry this out is the increased facilities for amusement. In this connection the Y. M. C. A., he believes, is of utmost importance.

CLINICAL CONGRESS OF SURGEONS OF NORTH AMERICA

"War Session"

SECOND EVENING

The second evening session was held in the Gold Room of the Congress Hotel, Tuesday, October 23. The meeting was called to order by the president, Dr. John T. Clark.

Symposium: Sanitation and Sepsis

THE WORK OF THE ARMY SURGEON

Surgeon-General Gorgas introduced the general subject of the work of the military surgeon. He said his personal experience in military surgery was nil; he had been in service for forty years, but during that time we had been involved only in the Spanish-American War, and since that time military surgery had been practically born over. This war has demonstrated the fact that we shall have to add enormously to the procedures that will have to be adopted before victory comes. The whole situation revolves on the question of sepsis. The endeavor of the military surgeon should be to get at the wound as quickly as possible and render it free from infection as soon as he is able. The principal rôle of the administrator will be to get the men at the earliest practicable time, and with this object in view we should have our hospitals as near the front line as possible. All our plans will be bent toward this end.

THE WORK OF THE NAVY SURGEON

Surgeon-General Braisted said it was impossible in the time allotted him to give a comprehensive idea of what had been done, or of the problems and the enormity of the task before us. He called attention to the enormous increase in the number of enlisted men in all departments of the Navy, and to the fact that the medical department must also look out for all the men engaged in the construction work for the Navy, which made the total between a fourth and a half million people for whom the Navy was responsible. There were formerly 394 medical men in the Navy; there are now 828 in the regular service, this being the full authorized

strength of the corps. They were obtained through a campaign which was instituted in the Class A men of the large medical schools of the country, and are a credit to every one. The Navy has twelve hospital units organized under and in conjunction with the Red Cross, and five small naval stations, the majority of which are rendering service. Four excellent hospital training schools are maintained by the Navy, and there are sometimes 100 men in training. Two ships are being transformed into hospital ships, and one is being built from the keel up as a hospital ship that is of a type never before contemplated in the history of the world. The Navy is well equipped in every way and able to meet every demand that may be made.

IN THE TRAINING CAMPS

Col. E. L. Munson, M. C., U. S. Army, in charge of the medical officers' training camps, told of these splendid camps that have been established for medical officers. There were approximately 500 medical men at the outbreak of the war who were capable of playing the medical war game as it should be played. The law authorized seven medical men per thousand, but experience abroad has shown that ten per thousand is better. The corps has been increased until now the doctors and dental surgeons alone outnumber the whole Army of the United States when it went to war with Spain. The Surgeon-General was confronted with the problem of training these men, and at once secured authority to establish training camps for this purpose. There are now three of these camps, besides one for negro officers and one for the Ambulance Corps. The training is at first physical, for the average doctor who comes in is in need of vigorous training to fit him for the tasks ahead. He is trained as a soldier until he can go as far as the rest in every way, and stand a full day's work beside. He must be taught how to do everything necessary, for he will have to tell others how to do it when actually in service.

Col. Munson's talk was illustrated by lantern slides and moving pictures showing the life in the camps.

MILITARY LABORATORIES

Col. F. F. Russell, M. C., U. S. Army, director of laboratory activities, spoke of the necessity of having well equipped laboratories that could be operated on the same principles that are now carried out only in the larger cities. New laboratories are now to be established at all cantonments and in general hospitals at the posts throughout the country. Those at the cantonments must be able to carry on the work of a community of from 20,000 to 50,000 people. The difficulty in securing supplies and apparatus is now being met; the principal articles have been delivered at all cantonments, and additional supplies will be furnished as rapidly as possible. A great many women laboratory workers have offered their services, and will be used as civil service employees as the need arises. Two classes of work will be done: clinical pathology for diagnosis in connection with the camp hospitals, and the routine examination for typhoid carriers, hookworm carriers and infectious diseases. The laboratories will also prepare all the vaccines and serums necessary for all the work done in the cantonments, and hope to do all the work that is now being done in the best institutions in a city. Much work has already been done in the new diseases of the war—trench fever, trench jaundice and gas gangrene. Many research institutions have offered their services, and all who have worked under General Gorgas have complete confidence in the future of the Medical Corps under his charge.

Gunshot Wounds and Their Treatment

Sir Berkeley Moynihan, Leeds, England, was sure that surgeons who were called on at the outbreak of this war to treat gunshot wounds in men coming over from France were never likely to forget their experience. They had occasionally encountered cases of suppuration, but never in the experience of medical men in our generation had cases of virulent infection like these been seen. The surgeons were scoffed at and told that they had never learned the lessons that Lister has spent his life in teaching, or, having learned them, had made haste to forget them. On reviewing Lister's books he found that he clearly distinguished in every one of his writings between the prophylactic work of antiseptics and their therapeutic values. The original idea of the antiseptic system was the exclusion of all microbes from the wounds, and the more or less successful attempt to restore wounds already septic to the aseptic state, so it was no just tribute that was brought against the surgeon when he was told that Lister had lived in vain and that aseptic surgery had fallen grievously to the ground.

Sir Berkeley described the way in which a German rifle bullet travels, and the different types of wounds made by it. The soldiers claim that the enemy uses an explosive bullet; and he said that while he knew the kaiser could use every iniquity that could possibly pay, and every kind of infamy if it pays at the moment to do it, he does not use the explosive bullet because it lacks the accuracy of aim that is present in the one he does use. One effect of the utmost importance produced by this bullet as it charges its way heavily and clumsily through the tissues, with the terrific momentum of 1,000 meters per second, is that it not only tears apart the tissues but also kills them by means of its terrific velocity. It also drives into the tissues everything with which it comes in contact; and if a bone is encountered, every tiny fragment becomes a projectile in itself and is driven into the tissues all around. These bullets have been shown to penetrate not only the body of one man but also the bodies of two, or even three, in succession. It is interesting to know that you may take the parts of one man out of the wound of another man through whom the bullet has passed. A part of a pocketbook of one man may be driven into the side of another, and the golden sovereigns in the hip pocket of one man may be removed from the buttock of the man who stood behind him. During the last two years, wounds produced by high explosives and shrapnel have increased in number. A gunshot wound depends for its qualities not only on the missile which is used but also on the man whom it meets. "It is impossible to exaggerate the intimacy of the contact between the soldier and the soil on which he is fighting." Flanders is probably the most highly cultivated region in all of France, the soil having been fertilized and refertilized for many years, with the result that the mud is of a particular bacterial malignancy. All the kinds of infection that occur in gunshot wounds are those which come from the fecal bacteria found in this soil, the streptococcus and bacillus of Welch being the most frequent. The men receiving these gunshot wounds are weary almost beyond endurance, are suffering shock, and all the circumstances both local and constitutional are in favor of a rapidly spreading infection. From a surgical point of view it is evident that there should be brought together at the earliest possible moment after the infliction of the wound the wounded man and the best surgical help that is available. This means that we want the best surgeons who are young at the most advanced point in the service to which it is safe to send them, and where they can have all the material surroundings which make for safety in surgery. The one thought should be to obtain complete closure of the wound at the earliest possible moment, either by primary or by secondary closure. Primary closure consists in excising the wound as completely as possible and in one piece, in order to avoid the reinfection of the new wound that the operator is making. This is capable of being carried out in a very large proportion of cases if the surgeons have the courage to do it, probably in 80 or 90 per cent. of the suitable cases. The principles and ideals for which to strive in badly infected wounds are to bring in larger quantities and on a rising tide the swarm of leukocytes into the wound, and perhaps to increase their activity by vaccine therapy, or to make use of the increased antitryptic power of the blood in very grave infection; and there must be complete immobilization, to prevent movements which carry poisonous bacteria into the blood.

Regarding antiseptics, Sir Berkeley said that from a military point of view the Carrel-Dakin method was an extremely difficult one to practice. Many people think a large part of the success of this method is due to the fact that the patients are received early, are placed at once under this careful, rigid technic, and are retained for long periods. The great fault of the Carrel method is that if it breaks down it fails lamentably. It has never taken hold in a wide area of the French Army, and in England has rarely been accepted as the method of choice. The Carrel method has, in his judgment—"speaking with the utmost respect of the work that Carrel has done for many years past"—achieved its greatest successes in cases in which it need never have been used. A second method was introduced by Rutherford Morrison, and has been used by him for two years. It consists in the free, mechanical exposure of all parts of the wound, the scraping away of all granulation tissue, and the removal of all dead and seriously injured portions and all fragments of bone; then the wound is dried with gauze, and "a very thin smear of what Sir Rutherford calls by the perfectly hideous name of 'bipp' is applied to all the surfaces." Bipp consists of bismuth, one part; iodoform, two parts, and petrolatum, one part. The wound is then stitched up without drainage, immobilized, and left for ten days. These patients

do amazingly well; but Sir Berkeley has found by much experience that they do equally well when he "bipps them without bipp." He has since persuaded Morrison to try treating some of his cases without bipp, and had his authority to say that they had done just as well without it as any he had ever treated with it. "With a patient sent back from France with a compound fracture, with suppuration beyond anything ever seen in civil life, these cases can be opened up, curetted, the dead bone removed, and in three weeks can be healed completely, the bone united without any antiseptic whatever having been in contact with the wound, either at the time of closure or at any other time." He thought it did not make much difference what was done to the wounds, provided there is a free, mechanical cleansing, and a careful, scrupulous, rigid technic.

In closing, Sir Berkeley said: "The question is still very open. The last thing that any one must do is to imagine that a method for treatment of wounds has finally, by the industry and immense capacity for research, been found either by Carrel or by Morrison or by Browning with his flavine compound, or by any one else. The one certain thing is that if you get your patient early, if you operate ruthlessly, taking away all dead and contaminated tissues, you will find that you can get an early and a perfect healing of that wound by first intention. And if you cannot get that early access to your patient, and see him only when a definite infection is soundly established in all parts of the wound, then again the essential thing is the free, mechanical exposure and cleansing of all parts of the wound; and having done that you may do such other things as you care to try. One method is as good as another, and no method the equal of any; but the two things that have come out from all this exhaustive inquiry and most painstaking care of patients is that the primary essential is freedom of exposure of all parts, thorough cleansing, and from first to last the most absolute immobility that you can impose on any wound of the parts. It is just as important, or more important, to immobilize as firmly and as rigidly as you can a wound of the soft parts of the body as a compound fracture of the bone."

DISCUSSION

Major George W. Crile, in discussing Sir Berkeley's paper, said that he had found practically all of his preconceptions concerning surgery to be wrong. The missiles produced the most extraordinary wounds; and the one that surprised him as much as any was that the supermud acted as a missile in itself. A high explosive shell would dive into the mud and throw the mud with such tremendous velocity that it would actually cause a penetration of the skin; and through that hole a vast amount of mud would be forced, producing a very bad type of wound, and in some instances death. He agreed with Sir Berkeley as to complete wound excision, and had found that the incision must be much larger than he had ever expected to make; but in time one gets to know that when the tissues cut in a certain way one has gone to a point at which there is a good resistance established. He reflected Sir Berkeley's opinion that physiologic resistance is the biggest single factor in the healing of the wound.

As to antiseptics, the Lakeside Unit took with it a complete outfit for carrying out the Carrel-Dakin technic, use it now in their base hospital, and have also thrown teams forward into the front area. Their experience has been practically the same as Sir Berkeley had intimated; if there is plenty of help and if well done, the wounds do beautifully. He had never seen any wounds do better than those in which a typical and perfect Carrel technic has been carried out from beginning to end without a slip. But the moment one is confronted with the problems presented in the front area, it is absolutely impossible to carry out any complicated technic. The period of contamination is the first twelve hours, and after that the wound goes into the period of infection. The patient should be operated on in the period of contamination, before infection begins. When he first heard of "bipp" there were three reasons why he doubted whether it would be good; first, it contained bismuth; second, it contained iodoform, and, third, it contained petrolatum. He was surprised to find that the patients did very well, but it is necessary to use it lightly and then give perfect physiologic rest. Like Sir Berkeley, he had found that they also do well without bipp. He was sure that the ideal antiseptic for war surgery had not been found. He thought it was true that for men who were carefully trained and taken away from all the problems of an ordinary civil existence, the work in the camp and the simple physiologic business of fighting were to the advantage of the men. These men become vigorous, and present an entirely different problem

as to infections than the average civilian. Who would think in civil life of attacking a wound in the knee joint, washing it out with salt solution, and closing it up without drainage? As a matter of fact, 70 per cent. of the wounds so treated get on without any trouble whatever. In large chest wounds of all sorts and descriptions, they open the chest widely, take out foreign bodies and remove the blood, close up the wounds tight without drainage, and nearly all of them heal without any infection. They are not dealing with the same type of physiologic resistance in the well trained, selected individuals who are soldiers as they are accustomed to deal with in the civilian population. Gas gangrene has been practically mastered by learning that it attacks principally the muscles; if they are excised there is practically no spread of the disease. It has now almost disappeared from the acute casualties. In the wounded who lie out in "No Man's Land" for two or five or ten days, it has been found that the wounds that have done best are those that contain maggots. The reason for this is that there is devitalized tissue; the maggot lives on this devitalized tissue, and if it destroys that tissue it does in time what the surgical operation does. He believed it was in the power of General Gorgas to do the greatest task of surgery for our armies if he could carry out his plan to have our hospitals out near the front so that our soldiers can be brought in early, and receive the necessary care at the hands of good surgeons. That would amount to more than all the antiseptics one could muster in all the world.

Dr. Edward Martin, Philadelphia, said they had been advised by one eminent member of the profession to take all the antiseptics and throw them into the sea, and another had advised them to raise a brood of tame maggots to take care of wounds. What Sir Berkeley had done most of them could not do; what they were after was what they could do best for the good of the Army; and the majority still believed that there was a germicide that kills the germ and that was what they were after. They are still searching for the best and least injurious. Now Dakin thinks he has found it, and he has asked Lee to make a trial of his preparation; the results have been very good. They had been taken to the gentlemen of the Army and Navy, and they had detailed Dr. Furness and Dr. Lee to carry on the research. They had selected surgeons with large hospital and industrial plants, and the reports were enthusiastic with the exception of Boston—and that was in its favor. He advised that we await the outcome of these experiments before throwing away all antiseptics and treating every wound with courage and the knife and nothing else.

Dr. E. H. Dunham said that as a result of laboratory investigations it appears that there are three things to know about an antiseptic: the speed of disinfection, the stability of the antiseptic, and the degree of concentration in which that antiseptic can be used. There are three classes of hypochlorids: the Dakin solution, chloramin-T and dichloramin-T. Chloramin-T is soluble in water, and dichloramin-T is not. There is an enormous difference in the speed of disinfection, and that is an important element. The next point was the stability of the disinfection; the chlorid antiseptics are very unstable. He explained the action of the chlorins, and in closing said that if one could have a rapidly acting antiseptic that was not so unstable that it would keep up its action for a long time, it would be a real help.

Dr. W. Estell Lee, Philadelphia, reported 7,228 cases in which dichloramin-T has been used, and said it had also been used in many war wounds in France. From this clinical experience the conclusions offered in the first report had developed into firm convictions. Their experience shows that the chlorin preparations have proved superior to all other antiseptic preparations. However, if used for any length of time, they produced marked irritation of the skin; various modifications, therefore, were tried, and the best had been that suggested by Dakin. The original solution was very unstable, and had to be prepared almost daily. It contained such a small germicidal agent that it was necessary to have it at all times in contact with the wound. It was necessary frequently to renew the solution every two hours day and night. Most of these faults have been overcome by the development of a beautiful and complicated technic which consumes a great deal of time on the part of the surgeon and nurse, and an unnecessary expense for both apparatus and dressing material. They made a search for a new antiseptic, and Dr. Dakin had asked them to try out dichloramin-T. By the use of oil as a menstruum, a large amount was brought into contact with the infection in such a manner that it was slowly infused into the tissues; and during

this period its action is in all respects equal to that of the chloramin compound. This eliminated at the start the necessity for the complicated Carrel technic. The results of these clinical tests have been the realization of Dakin's hopes.

Dr. Lee gave the results obtained in a vast number of wounds of various sorts, and showed lantern slides demonstrating the method of applying the solution and the dressings, emphasizing the economy in dressings required. By this means they are able to treat eighty patients in an hour at their clinic, and have handled 100 in an hour on certain occasions. They use less than one fourth of the gauze formerly used, less than one tenth of the bandages, and have cut down the time of healing from fourteen days to ten.

Dr. William O'Neill Sherman spoke in defense of the Carrel method, and said if the impression was allowed to prevail that antiseptics have no use there is no use in going to France. We could simply let them put on a bandage over there and send the boys home. He had spent five months in France and England, and every man in France and England was infected. Carrel's hospital was 8 miles back from the lines, but not a man was infected who had received this treatment, and there was not a drop of pus. He spoke of the work of Chutro, who had 300 beds in Paris and was using this method with good results. Dr. Sherman exhibited lantern slides showing wounds of various sorts at different stages under treatment by the Carrel method.

Evening Session, October 24

This session included the presidential address on "The Use of Radium in Gynecology," by Dr. John G. Clark, Philadelphia, and a symposium on "Military Surgery and the Specialties." The heads of the various special departments organized by the Surgeon-General's Office outlined the work that these departments expect to undertake, and described what has already been done.

Evening Session, October 25

Surgery of the Spinal Cord

Dr. Charles M. Frazier of Philadelphia read a paper on surgery of the spinal cord, dealing largely with the neurologic problems encountered. In discussing the paper, Dr. Allen B. Kanavel, Chicago, said he was well acquainted with the excellent course of instruction being given to the neurologic service, and was certain that before the war had begun for us we shall have a corps of men trained to do this work to the credit of the entire profession of America. He thought he could best discuss the subject by drawing attention to a few cases in which he has been permitted to perform a laminectomy. He showed lantern slides of several cases, and said he was convinced that the best time to operate was after the patient has recovered from shock.

Surgery of the Stomach

Major William J. Mayo, M. R. C., U. S. Army, Rochester, Minn., stated that 30 per cent. of all cancers of civilized man are in the stomach, and that this condition is uncommon in primitive man and in the lower animals, although there is no mechanical and secretory difference in the construction of the stomach. He believed that chronic gastric ulcer is not often cured medically, and is not seldom a source of cancer. He called attention to heat as a source of irritation, and was of the opinion that cancer occurs more frequently in man than in woman because man is in the habit of taking his food and beverages hotter than the average woman does. Woman sits at the foot of the table and pours the tea and coffee, serving the men of the household first and drinking hers after it has cooled somewhat. In the Chinese the same rule holds true with the rice that is eaten, for the women eat at the second table:

In closing, he said that food and drink should not be taken into the stomach hotter than can be borne comfortably in the mouth. The mouth and the throat are protected by sensitive nerves, but the stomach is not. Early diagnosis of cancer depends on the roentgen examination. The antecolic end to side anastomosis between the stomach and jejunum greatly accelerates closure. The results of operation for cancer of the stomach are now fairly good and are improving; 38.4 per cent. are cured.

DISCUSSION

Dr. A. J. Ochsner, Chicago, said we were impressed at once with the fact that a condition to which every one is exposed is an important condition in the production of this most fatal of all diseases. We have known for a long time that there is no superficial cancer anywhere which occurs

without preliminary irritation, and that this preliminary irritation gives rise to disturbed circulation. He was of the opinion that human beings are afflicted with cancer because they are manure eaters. We fertilize our soil, and in that way take unclean food into the stomach which produces an irritation. Cancer occurs most frequently at the point at which there is interference with the circulation, and he was convinced that this was a large factor in its production; and that smoker's cancer occurred most often on the lower lip because the circulation was interfered with owing to the weight of the pipe. Although we have not yet found the organism that causes it, we have found the condition that makes it possible for this agent to live successfully under these conditions. He thought we should endeavor to avoid all irritation, stop boiling our insides, and at the same time insist on having clean food to put inside the alimentary canal. He was sure that when that was done there would be an enormous decrease in the amount of cancer.

Dr. L. L. McArthur, Chicago, agreed with Dr. Mayo that irritation was a predisposing cause to cancer, and was convinced that irritation made a doorway through which the infective element finally gains access. This atrium he has called attention to in various ways. He was sufficiently neutral to call Dr. Mayo's attention to the fact that the male stomach in Germany has the same frequency of infection as the female, and yet in Germany the man sits at the foot of the table and pours the tea and has his cold. Cancer of the skin has been shown to be due to the yeast plant, and has been sloughed off from the great group known as cancer proper. He thought the great lesson to be learned was that the operation formerly considered as formidable is being lessened, and that the extent of the operation continually grows. When hearing Dr. Mayo's remarkable statistics that 38.4 per cent. were cured in the understanding of the term that for three years they have lived and were free from evidence of other disease, we are not to deduce the fact that this represents the mortality of the stomach when operated on, but only as the mortality which followed selected cases—not cases selected to improve the statistics to be presented to a medical society, but selected cases in which operation can be performed with reasonable hope of success. The diagnosis is very difficult in many cases even after the abdomen is opened, and when the diagnosis is made, even then the prognosis cannot be accurately prognosticated.

He called attention to an operation for putting the stomach at rest after operation, especially in cases of cancer of the stomach complicated with gallstones, by inserting a tube into the gallbladder and bringing it outside the abdomen. In this way the bile is prevented from getting into the bladder, salt solution can be introduced into the duodenum, the intestines can be flooded, and the patient can be made much more comfortable.

War Surgery of the Lungs and Pleura

Sir Berkeley Moynihan, Leeds, England, read an exceedingly interesting paper on this subject, recounting the experience of himself and others, from which he drew the following conclusions:

1. The approximate mortality from gunshot wounds of the chest, after the patients get into the hands of the doctors, is 20 per cent.

2. Causes of death are hemorrhage, as a rule within from eighteen to forty-eight hours, sepsis beginning after the third or fourth day.

3. Local conditions in the wounds of the chest wall and lung are in all respects similar to those in wounds elsewhere; the missiles are the same, destructive elements the same, and infective organisms the same.

4. The lung tissue is more resistant to attack than many other tissues. The opening of the cavity and the exposure of the contents add a danger of the most threatening character.

5. The chief essential in the treatment of all penetrating wounds of the chest is rest.

6. In clean wounds of the chest, rest together with dressing of the wounds of entrance and exit will lead to recovery in the great majority of cases.

7. In cases of open thorax, the earliest and most complete effort must be made to secure closure of the wound.

8. In grave cases of hemorrhage when blood escapes from the wound, the wound in the lung must be treated by suture or by plugging of the cavity from which the blood escapes.

9. When the blood is sterile and remains so, no operative procedure is necessary.

10. In cases of hemothorax in which the blood remains sterile, aspiration after the tenth day certainly hastens con-

valence and permits expansion of the lung and free movements.

11. In cases of hemothorax, whether the amount of blood is small or large, when infection takes place operation is necessary. Early operation, whether the Carrel or the Morrison method is adopted, saves many weeks of convalescence and permits functional recovery.

12. Small rifle bullets or other projectiles in the lung often cause no symptoms, and may be safely removed.

13. Large foreign bodies may cause symptoms, and in such cases they should be removed. Pieces of metal so removed, whatever the period of time has elapsed since their introduction into the wound may be, are almost always found to be infected.

ORDERS TO OFFICERS OF THE MEDICAL RESERVE CORPS

Alabama

To Atlanta, Ga., Medical Supply Depot, for duty as assistant, Capt. ROBERT E. HALE, Bellamy.

To Camp Dix, Wrightstown, N. J., for duty from Fort Oglethorpe, Lieuts. MOSES E. SHERER, Childersburg; MANNIE A. FORT, Grand Bay; FRANK H. McCONNICO, Montgomery; JOHN F. JENKINS, GILMER H. MOORE, Opelika; JULIUS F. PEAVY, JR., Robertsdale; JAMES W. BEARD, Troy; MAXWELL MOODY, Tuscaloosa; BRYANT B. EDWARDS, Union Springs.

To Camp Gordon, Atlanta, Ga., for duty from Fort Oglethorpe, Lieuts. WILLIAM C. DABNEY, Birmingham; FRANK W. YOUNG, Hartford.

To Camp Hancock, Augusta, Ga., for temporary duty, from Fort Oglethorpe, Lieut. JULIAN K. LEGARE, Forkland.

To Camp Jackson, Columbia, S. C., for temporary duty, Lieut. WILLIAM E. SHERMAN, Albertville.

To Camp Lee, Petersburg, Va., for duty, from Fort Oglethorpe, Lieuts. ANDREW L. GLAZE, JR., Athens; CHARLES W. BRASFIELD, Linden; JAMES P. VANSANT, Piedmont; DANIEL W. WARD, Tuscaloosa.

To Camp Pike, Little Rock, Ark., for duty from Fort Oglethorpe, Lieuts. SOLON W. WRIGHT, Bessemer; ORLANDO V. LANGLEY, Loachapoka; CHARLES D. MASON, Scottsboro; JAMES H. SOMERVILLE, JR., Tuscaloosa.

To Camp Upton, Yaphank, L. I., for duty, from Fort Oglethorpe, Lieuts. BEAMAN S. COOLEY, Boaz; WILLIAM A. SEWEL, Center; HORACE VAN DE VOORT, Gastonburg; WALTER E. ALLEN, Ward.

To Camp Wheeler, Macon, Ga., and report to commanding officer of the base hospital for temporary duty, Lieut. EDWARD C. HAGLER, Northport.

To Chickamauga Park, Ga., for duty from Fort Oglethorpe, Capt. WILLIAM H. OATES, Mobile; Lieut. AUSTIN F. J. BOYD, Emelle.

To Fort Oglethorpe, for instruction, Lieut. WILLIAM M. CAFFEE, Edgewater.

Arizona

To Fort Oglethorpe, for instruction, from School of Military Roentgenology, Los Angeles, Capt. WILLIAM H. SARGENT, Phoenix.

Arkansas

To Camp Dix, Wrightstown, N. J., for duty, from Fort Oglethorpe, Lieuts. MORGAN C. BERRY, Donaldson; ROBERT E. WEAVER, Hope.

To Camp Gordon, Atlanta, Ga., for duty, from Fort Oglethorpe, Lieut. IRA W. ELLIS, Monette.

To Camp Grant, Rockford, Ill., for duty in the division of ophthalmology, section of surgery of the head, Capt. JOHN H. HARVEY, Waldron.

To Camp Lee, Petersburg, Va., for duty, from Fort Oglethorpe, Lieut. JOHN B. WELLS, Scott.

To Camp Upton, Yaphank, L. I., for duty, from Fort Oglethorpe, Lieut. EDWARD R. COTHAM, Monticello.

To Rockefeller Institute, New York, N. Y., for a course of instruction in laboratory work, from Fort Oglethorpe, Lieut. JOHN C. SIMPSON, Hamburg.

California

To Army Medical School, Washington, D. C., Lieut. CLYDE E. SHEDD, San Francisco.

To Camp Greene, Charlotte, N. C., base hospital for temporary duty, Capt. GUSTAV J. BERGENER, San Francisco.

To Camp Kearny, Linda Vista, Calif., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Lieut. OSCAR O. YOUNG, Garden Grove.

To Camp Lee, Petersburg, Va., for duty in his specialty, Major JAMES R. MOORE, Los Angeles.

To Fort Bayard, N. M., for duty, Lieut. ROBERT C. KIRKWOOD, Alta.

To Fort Oglethorpe for instruction, Capt. THOMAS W. O'REILLY, Los Angeles; Lieut. ANDREW B. WESSELS, San Diego.

To Letterman General Hospital, San Francisco, Calif., for duty in his specialty, Capt. FREDERICK E. ALLEN, Hayward.

To Los Angeles, Calif., for a course of instruction in military roentgenology, Lieut. ORRIN S. COOK, San Francisco.

To New York, N. Y., for orthopedic instruction, from Army Medical School, Washington, D. C., Lieut. JOSEPH R. JONES, Yreka.

To report by telegraph to the commanding general, Western Department, for assignment to duty, Capt. HENRY E. MORRISON, Dixon; Lieut. LOUIS A. FRARY, Oakland.

To the inactive list of the Medical Reserve Corps on account of being physically disqualified for active service, from Camp Kearny, Lieut. HARRY F. WORLEY, San Diego.

Colorado

To Honolulu, Hawaii, Dept. Hospital for duty, from Schofield Barracks, Lieut. RAY L. DRINKWATER, Denver.

Connecticut

To Camp Cody, Deming, N. M., for duty in connection with orthopedic work, Capt. JAMES C. WILSON, Hartford.

To Camp Devens, Ayer, Mass., for temporary duty, Capt. FRANK P. TODD, Danielson; for duty, from Fort Benjamin Harrison, Lieut. ULRIE PLANTE, Hartford.

To Camp Gordon, Atlanta, Ga., for duty, from Fort Oglethorpe, Lieut. FRANCIS J. CARROLL, Bridgeport.

To Fort Oglethorpe, for instruction, Capt. JAMES L. MORIARITY, Waterbury.

District of Columbia

To Camp Dix, Wrightstown, N. J., for duty from Fort Oglethorpe, Lieuts. CHARLES BELL, Washington, D. C., WILLIAM O. WETMORE, Washington, D. C.

To Camp Sevier, Greenville, S. C., for duty from Fort Oglethorpe, Lieut. GEORGE Y. MacMURPHY, Washington, D. C.

To Chickamauga Park, Ga., for duty from Fort Oglethorpe, Lieuts. HOWARD W. BARKER, Washington, D. C.; HARRY M. PRICE, Washington, D. C.

To Philadelphia, for a course of instruction in orthopedic surgery, Lieut. JOEL A. TILTON, Washington, D. C.

To Washington, D. C., and report to the Surgeon-General of the Army for duty in his office in connection with the division of brain surgery, section of surgery of the head, Lieut. HARRY H. KERR, Washington, D. C.

Florida

To Camp Dix, Wrightstown, N. J., for duty from Fort Oglethorpe, Lieuts. JOHN M. WHITFIELD, Malone; HAROLD M. BEARDAL, Orlando; FRANK P. HIXON, Pensacola; DREW R. HANDLEY, Raiford; EARLE H. McRAE, Tampa.

To Camp Greene, Charlotte, N. C., for temporary duty, from Fort Oglethorpe, Lieut. GASTON DAY, Jacksonville.

To Camp Lee, Petersburg, Va., for duty, from Fort Oglethorpe, Lieuts. DWIGHT G. RIVERS, Lake City; BALDWIN S. STUTTS, Pt. St. Joe.

To Camp Meade, Annapolis Junction, Md., for duty from Fort Oglethorpe, Lieuts. HARRY C. GALEY, Key West; DANIEL B. WILLIAMS, South Jacksonville.

To Camp Pike, Little Rock, Ark., for duty, from Fort Oglethorpe, Lieut. CHARLTON C. WHITTLE, Nocatee.

To Camp Upton, Yaphank, L. I., for duty from Fort Oglethorpe, Lieuts. JOHN D. GRIFFIN, Lakeland; RICHARD LEFFERS, Lakeland.

To Camp Wheeler, Macon, Ga., for duty, Lieut. NECY L. GACHET, Century.

To Chickamauga Park, Ga., for duty from Fort Oglethorpe, Lieut. ARCHIE C. WATSON, Live Oak.

To Linda Vista, Camp Kearny, Calif., for temporary duty, from Camp Cody, Deming, N. M., Capt. RAYMOND B. McLAWS, Tampa.

To Mincola, L. I., Hazelhurst Field, for duty with the 201st Aero Squadron, Lieut. JAMES L. PENNINGTON, Fountain.

Honorably discharged from the Medical Reserve Corps of the Army on account of being physically disqualified for active service, Lieut. DANIEL M. ADAMS, Panama City.

Georgia

To Camp Gordon, Atlanta, Ga., for duty from Fort Oglethorpe, Lieuts. STEPHEN T. BROWN, Atlanta; JAMES H. BUTLER, Augusta, Ga.; WHITFIELD W. CROOK, Cuthbert; LOWNDES W. SHAW, Savannah.

To Camp Lee, Petersburg, Va., for duty from Fort Oglethorpe, Lieuts. LESLIE L. BLAIN, Marietta; HUGH W. WADE, Quitman.

To Camp Meade, Annapolis Junction, Md., for duty from Fort Oglethorpe, Lieuts. A. NATHAN DYKES, Columbus; JOHN F. BURKHALTER, Morven; HARRY C. WILLIS, Rome.

To Camp Pike, Little Rock, Ark., for duty, from Fort Oglethorpe, Lieuts. DELAMAR TURNER, Milledgeville; BURTON P. BRADLEY, Rome.

To Camp Wheeler, Macon, Ga., for temporary duty, from Fort Oglethorpe, Lieut. CYRUS K. SHARP, Arlington.

To Chickamauga Park, Ga., for duty from Fort Oglethorpe, Lieut. JAMES T. CALLOWAY, Atlanta.

To Mincola, L. I., Hazelhurst Field, for duty with the 200th Aero Squadron, relieved from present duties at this Field, Lieut. THOMAS E. BLACKBURN, Swainsboro.

To Philadelphia, for orthopedic instruction, from Fort Oglethorpe, Lieut. EVERARD A. WILCOX, Augusta.

To Rockefeller Institute, for a course of instruction, from Fort Oglethorpe, and when course is completed to return to his proper station, Capt. GEORGE A. TRAYLOR, Augusta.

To his home and return to the inactive list of the Medical Reserve Corps of the Army, on account of being physically disqualified for active duty, Lieut. JOHN W. BRADLEY, Woodstock.

Idaho

To Fort Riley, for duty, Lieut. DONALD S. NUMBERS, Parma.

Illinois

To Army Medical School, for a course of instruction, Lieuts. HENRY A. RASMUSSEN, Chicago; JOE H. ST. JOHN, Chicago.

To Camp Devens, Ayer, Mass., for duty with the surveying and printing company, from Fort Benjamin Harrison, Lieuts. FRANCIS W. McNAMARA, Chicago; EDGAR A. SMITH, Chicago.

To Camp Doniphan, Fort Sill, Okla., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. EDWARD G. SEPPLE, Chicago.

To Camp Funston, Fort Riley, for temporary duty, from Medical Officers Training Camp, Lieut. JAMES S. CLELAND, Swanwick.

To Camp Gordon, Atlanta, Ga., for duty from Fort Oglethorpe, Lieut. WALTER D. MURFIN, Vernon.

To Camp Grant, Rockford, Ill., for duty, Capt. HARRY S. GRADLE, Chicago. For duty in the orthopedic service, Lieut. PHILIP LEWIN, Chicago.

To Camp Jackson, Columbia, S. C., and report to the commanding officer of the base hospital for temporary duty, relieved from present duties at this camp, Lieut. ALFRED STOCKEN, Rock Island.

To Camp Lee, Petersburg, Va., and report to the commanding officer of the base hospital for duty in the venereal disease section. Relieved from his present duties at this camp. Capt. WILLIAM T. WILLIAMSON, Lexington.

To Camp Lewis, American Lake, Wash., for temporary duty, Lieut. HYRUM Y. RICHARDS, Chicago.

To Camp Pike, Little Rock, Ark., for temporary duty in conducting examinations in his specialty, Capt. MAURICE L. GOODKIND, Chicago; for duty from Fort Oglethorpe, Lieut. VINCENT F. KELLER, Chicago.

To Cornell Medical College, New York, N. Y., for instruction in military roentgenology, Lieut. ARTHUR E. ROGERS, Bloomington; Lieut. RUSSELL M. JOHNSON, Chicago.

To Fort Benjamin Harrison, for duty, relieved from duty at the Medical Officers' Training Camp that camp, Lieuts. WILLIAM F. GRAYSON, Granite City; MYRON W. SNELL, Litchfield.

To Kelly Field, South San Antonio, Tex., for duty Fort Riley, Lieuts. SIGURD H. KRAFT, Chicago; ROBERT C. MURPHY, Mt. Greenwood.

To Mincola, L. I., Hazelhurst Field, for duty, from Fort Riley, Lieut. ROLLEN E. HARROD, Avon.

To his home and return to the inactive list of the Medical Reserve Corps on account of being physically disqualified, Lieut. ADRIAN J. DEHAAN, East St. Louis.

Honorably discharged from the Medical Reserve Corps of the Army, Lieut. GEORGE L. SAMUELS, Alton, Lieut. THADDEUS S. PIERZYNSKI, Chicago.

Indiana

To Army Medical Service, for duty in the bacteriologic laboratory, from Rockefeller Institute, Lieut. WEIR M. MILEY, Anderson.

To Camp Devens, Ayer, Mass., for duty, from Fort Benjamin Harrison, Lieuts. CHARLES C. CRAMPTON, Delphi; RAY H. THOMAS, Indianapolis; WILLIAM R. PHILLIPS, Orange.

To Camp Dodge, Des Moines, Ia., for duty in the base hospital laboratory, from Rockefeller Institute, Lieut. ALBERT G. KINBERGER, Galena.

To Camp McClellan, Anniston, Ala., and report to the commanding officer of the base hospital for duty, relieved from present duties at this camp, Lieut. ARTHUR F. WEYERBACKER, Indianapolis.

To Camp Pike, Little Rock, Ark., for duty with the Engineer Service Battalions, from Fort Benjamin Harrison, Lieuts. WALTER McBETH, Burnetts Creek; for duty, from Fort Oglethorpe, EDWARD E. EVANS, Gary.

To Camp Taylor, Louisville, Ky., for duty with the Engineer Service Battalions, from Fort Benjamin Harrison, Lieut. MILES F. DAUBENHEYER, Buttersville.

To Camp Travis, Fort Sam Houston, Tex., for duty with the Engineer Service Battalions, from Fort Benjamin Harrison, Lieut. GEORGE L. MARSHALL, Bourbon.

To Camp Upton, Yaphank, L. I., for duty, from Fort Oglethorpe, Lieut. EDWIN W. RODENHEISER, Indianapolis.

To Gettysburg, Pa., Reorganization Camp, for duty from Fort Ontario, N. Y., Lieut. ARVINE E. MOZINGO, Tipton.

Honorably discharged from the Medical Reserve Corps of the Army, Lieut. ELMER D. MADDUX, LaCrosse.

Iowa

To Camp Dodge, Des Moines, Ia., for duty in connection with the division of oto-laryngology, section of surgery of the head, Capt. BENJAMIN G. DYER, Ames.

To Camp Grant, Rockford, Ill., for duty, Lieut. ELMER J. LAMBERT, Ottumwa.

To Camp Meade, Annapolis Junction, Md., for duty in connection with the division of oto-laryngology, section of surgery of the head, Capt. GEORGE B. WOOD, Sioux City.

To Chickamauga Park, Ga., for duty, from Fort Oglethorpe, Capt. CHARLES L. MARSTON, Mason City.

To Cornell Medical College, New York, for a course of instruction in military roentgenology, from Camp Mills, Capt. THOMAS A. BURCHAM, Des Moines; Lieut. WALTER S. CHESTER, Britt.

To Mincola, L. I., Hazelhurst Field, for duty, from Fort Riley, Lieut. MAURICE C. HENNESSY, Council Bluffs.

Kentucky

To *Camp Dix*, Wrightstown, N. J., for duty, from Fort Oglethorpe, Capt. HORACE T. RIVERS, Paducah, Ky.; Lieut. FREDERICK D. CARTWRIGHT, Bowling Green.

To *Camp Gordon*, Atlanta, Ga., for duty, from Fort Oglethorpe, Lieut. ALBERT C. BOND, Ashland.

To *Camp Pike*, Little Rock, Ark., for duty, from Fort Oglethorpe, Lieut. JAMES H. PRITCHETT, Louisville.

To *Camp Sevier*, Greenville, S. C., for temporary duty, from Fort Oglethorpe, Lieut. CHARLES L. VENABLE, Franklin.

To *Camp Taylor*, Louisville, Ky., for duty as plastic surgeon and consultant oral surgeon, section of surgery of the head, Major R. ALLEN, Hedges; to report to the commanding officer of the base hospital for duty in the surgical service. Relieved from his present duties at this camp, Lieut. JOHN B. RICHARDSON, JR., Louisville.

To *Camp Upton*, Yaphank, L. I., for duty, from Fort Oglethorpe, for duty, Capt. RICHARD W. OGILVILLE, Princeton.

To *Camp Wadsworth*, Spartanburg, S. C., for temporary duty from Fort Oglethorpe, Lieut. JOHN GALVIN, Louisville.

Louisiana

To *Camp Dix*, Wrightstown, N. J., for duty from Fort Oglethorpe, Lieut. LOUIS S. KUSHNER, New Orleans.

To *Camp Gordon*, Atlanta, Ga., for duty from Fort Oglethorpe, Lieuts. DANIEL O. WILLIS, Leesville; DANIEL W. KELLY, Winnfield.

To *Camp Lee*, Petersburg, Va., for duty, from Fort Oglethorpe, Lieut. HARPER L. CROW, Elmgrove.

To *Camp Logan*, Houston, Tex., for temporary duty, Lieut. EDWARD B. F. FAGOT, New Orleans.

To *Camp Meade*, Annapolis Junction, Md., for duty from Fort Oglethorpe, Lieuts. DAVID I. HIRSCH, Monroe; ARTHUR G. HEATH, Shreveport.

To *Camp Pike*, Little Rock, Ark., for duty, from Fort Oglethorpe, Lieut. CLIFFORD P. RUTLEDGE, Shreveport.

To *Camp Sevier*, Greenville, S. C., for temporary duty, from Fort Oglethorpe, Lieut. CHRISTOPHER L. MENGIS, Norwood.

To *Camp Shelby*, Hattiesburg, Miss., for temporary duty, Lieut. ROBERT E. WINDHAM, Merryville.

To *Camp Sheridan*, Montgomery, Ala., for duty in the laboratory of the base hospital, Lieut. JOSEPH R. D'AUNCEY, New Orleans.

To *Seattle, Wash.*, for duty in connection with the standardization of examinations, physical examining unit, Lieut. LOUIS LEVY, New Orleans.

Maine

To *Camp Devens*, Ayer, Mass., for duty, from Fort Benjamin Harrison, Lieut. ALBION E. FLOYD, Mapleton.

To *Camp Gordon*, Atlanta, Ga., for duty in the base hospital laboratory, from Rockefeller Institute, Lieut. LEON S. LIPPINCOTT, Brunswick.

Maryland

To *Army Medical School*, for a course of instruction, Lieut. JOHN C. WOODLAND, Crisfield.

To *Camp Devens*, Ayer, Mass., for duty, from Fort Benjamin Harrison, Lieut. LESLIE G. TAYLOR, Perryville.

To *Camp Dix*, Wrightstown, N. J., for duty, from Fort Oglethorpe, Lieut. HORACE B. TITLOW, Baltimore.

To *Camp Gordon*, Atlanta, Ga., for duty from Fort Oglethorpe, Lieuts. DAVID SILBERMAN, Baltimore; GEORGE M. BOYER, Damascus.

To *Camp Lee*, Petersburg, Va., for duty, from Fort Oglethorpe, Lieut. MARTIN J. HANNA, Baltimore.

To *Camp Meade*, Annapolis Junction, Md., for duty, from Fort Oglethorpe, Lieuts. ALBERT G. SINGEWALD, Baltimore; CHARLES N. BRANIN, Hagerstown.

To *Camp Pike*, Little Rock, Ark., for duty, from Fort Oglethorpe, Lieut. Percy R. Fisher, Denton.

To *Camp Sevier*, Greenville, S. C., and report to the commanding officer of the base hospital for duty, relieved from present duties at this camp, Lieut. JOSEPH P. EIDSON, Baltimore.

To *Chickamauga Park, Ga.*, for duty from Fort Oglethorpe, Lieut. GEORGE H. REINHARDT, Baltimore.

To *Rockefeller Institute*, for a course of instruction in laboratory work, from Fort Oglethorpe, Lieut. JOHN F. LUTZ, Baltimore.

Honorably discharged from the Medical Reserve Corps on account of being disqualified for active service, Lieut. EDWARD P. SIMPSON, Chance.

Massachusetts

To *Camp Devens*, Ayer, Mass., for duty in the surgical service from Fort Terry, N. Y., Capt. ISAAC S. F. DODD, Pittsfield; for duty, from Fort Benjamin Harrison, Capt. GEORGE C. PARCHER, Saugus Center; Lieuts. HENRY M. EMMONS, Boston; JOSEPH SIMPSON, Essex; DANIEL J. GENNELLY, Fall River; FRANK H. SMITH, Hadley; for duty in charge of the subsection of brain surgery, section of surgery of the head, HOMER GAGE, Worcester.

To *Camp Pike*, Little Rock, Ark., for duty, from Fort Oglethorpe, Lieuts. JOHN F. MAHONEY, New Bedford; WALTER A. JILLSON, Westboro.

To *Camp Upton*, Yaphank, L. I., for duty, from Fort Oglethorpe for duty, Lieut. JOHN J. O'DONNELL, Boston.

To *Camp Wadsworth*, Spartanburg, S. C., for duty as assistant to the chief of the medical service in the care of cardiovascular cases, Lieut. HILMAR O. KOEFOD.

To *Fort Ontario*, New York, for duty with Field Hospital No. 28, from Fort Benjamin Harrison, Lieuts. JAMES K. STODDARD, Boston; NATHANIEL W. FAXON, Stoughton.

To *Neurological Institute*, New York, for a course of instruction in his specialty, Lieut. JAMES A. GOULD, Westboro.

Mexico

To *Camp Meade*, Annapolis Junction, Md., for duty from Fort Oglethorpe, Lieut. EZRA A. LINES, Piedros Negros.

To *Fort Oglethorpe*, for instruction, from school of military roentgenology, Los Angeles, Lieut. WILLIAM B. WATTS, JR., Emplaine.

Michigan

To *Army Medical School*, for course of instruction, from Kelly Field, San Antonio, Tex., Capt. GORDON F. WILLEY, Kalamazoo.

To *Camp Custer*, Battle Creek, Mich., for duty, Lieut. EDGAR C. DUNNING, Cassapolis.

To *Camp Devens*, Ayer, Mass., for duty, from Fort Benjamin Harrison, Lieuts. FREDERICK J. BURT, Goodrich; WILLIAM H. ATTERBURY, Litchfield; IRA A. ABRAHAMSON, Negaunee; JULIUS H. POWERS, Saginaw; HUGH H. ANGLE, Snover; WILLIAM H. GALE, St. John's.

To *Camp Gordon*, Atlanta, Ga., for duty, from Fort Oglethorpe, Lieut. ARCH S. CHAPMAN, Detroit.

To *Camp Lee*, Petersburg, Va., for duty, Lieut. GEORGE G. DIXON, Detroit.

To *Mineola, L. I.*, Hazlehurst Field, for duty from Fort Riley, Lieuts. ROBERT S. IDESON, Ann Arbor; CHARLES S. BALLARD, Mason.

To *Syracuse, N. Y.*, Reorganization Camp, for duty, from Fort Ontario, N. Y., Lieuts. GEORGE M. LOCHNER, Adrian; RALPH H. BOOKMYER, Detroit.

To his home and return to the inactive list of the Medical Reserve Corps of the Army, after completion of course at Rockefeller Institute, Lieut. JOHN T. HODGEN, Grand Rapids.

Minnesota

To *Fort Oglethorpe*, for instruction, Lieut. HAROLD W. STONE, Wayzata.

Mississippi

To *Camp Dix*, Wrightstown, N. J., for duty, from Fort Oglethorpe, Lieuts. WILLIAM G. BYRD, Isola; CARLOS R. McKEE, Sandhill.

To *Camp Gordon*, Atlanta, Ga., for duty, from Fort Oglethorpe, Capt. ROBERT M. DONALD, Hattiesburg; Lieuts. JAMES Q. FOUNTAIN, Bay St. Louis; HARVEY T. CUMING, Gloster; WILLIAM S. CRANFORD, Laurel.

To *Camp Jackson*, Columbia, S. C., for temporary duty, from Fort Oglethorpe, Lieut. DRYDEN I. WALKER, Vosburg.

To *Camp Lee*, Petersburg, Va., for duty, from Fort Oglethorpe, Lieuts. GEORGE H. SPIVEY, Hollandale; JOHN W. BRANDON, Pinckneyville.

To *Camp Pike*, for duty, from Fort Oglethorpe, Capt. JAMES A. SLACK, Friar Point; Lieut. NORMAN A. McLEOD, Brookhaven.

To *Camp Sevier*, Greenville, S. C., for temporary duty, from Fort Oglethorpe, Lieut. MARCELLUS C. GARNER, Meridian.

To *Camp Wadsworth*, Spartanburg, S. C., for temporary duty, from Fort Oglethorpe, Lieut. JOHN G. BACKSTROM, Tutwiler.

To *Chickamauga Park, Ga.*, for duty from Fort Oglethorpe, Lieuts. JAMES L. PARKES, Carthage; JESSE D. WESTMORELAND, Water Valley.

Honorably discharged from the Medical Reserve Corps of the Army, on account of being physically disqualified for active service, Lieut. HASAC A. WHITE, Kirkville.

Missouri

To *Camp Dix*, Wrightstown, N. J., for duty, from Fort Oglethorpe, Lieut. EDGAR K. WELLS, Delring.

To *Camp Doniphan*, Fort Sill, Okla., for temporary duty, Lieut. REUBEN APPLEBERRY, Leadwood.

To *Camp Funston*, Fort Riley, for duty as a member of a board for the special examination of the command for tuberculosis, Lieuts. SAMUEL B. HIRSCHBERG, Kansas City; SOLON E. HAYNES, St. Louis; to report to the commanding general of that camp for temporary duty, Lieut. EVERETT R. DEWESE.

To *Camp Gordon*, Atlanta, Ga., for duty, from Fort Oglethorpe, Lieut. HENRY C. HAYS, Kansas City.

To *Camp Lee*, Petersburg, Va., for duty, from Fort Oglethorpe, Lieut. WILLIAM J. EZICKSON, Webb City.

To *Cornell Medical College*, New York, for instruction in military roentgenology, Lieut. DUDLEY E. MACKEY, Clayton.

To *Rockefeller Institute*, for a course of instruction in laboratory work, Lieut. PAUL M. KRALL, Kansas City.

To *Washington University*, St. Louis, for duty as instructor, Major VILRAY P. BLAIR, St. Louis.

To the inactive list of the Medical Reserve Corps from Fort Riley, Lieut. CLARENCE O. C. MAX, St. Louis.

Nebraska

To *Atlanta, Ga.*, Dept. Laboratory, for duty, from Rockefeller Institute, Lieut. EDWARD H. McLEAN, Omaha.

To *Camp Greene*, Charlotte, N. C., for duty as a member of the tuberculosis board, from Camp Wadsworth, Spartanburg, S. C., Lieut. WILLIAM N. ANDERSON, Omaha.

To *Camp Pike*, Little Rock, Ark., for duty from Fort Oglethorpe, Lieut. OTTO E. LONGACRE, Loup City.

To *New York*, for orthopedic instruction, Capt. JOHN M. HENCH, Omaha.

New Hampshire

To *Camp Lee*, Petersburg, Va., for temporary duty, Lieut. JOHN C. ECKHARDT, Sanbornville.

New Jersey

To *Camp Bowie*, Fort Worth, Tex., for duty in the base hospital laboratory, from Rockefeller Institute, Capt. GEORGE C. ALBEE, South Orange.

To *Camp Devens*, Ayer, Mass., for duty from Fort Benjamin Harrison, Lieuts. ARTHUR J. ELLIS, Newark; LOUIS M. SUCHOFF, Paterson.

To *Camp Dix*, Wrightstown, N. Y., for duty, from Fort Oglethorpe, Lieuts. IRVING E. CHARLESWORTH, Bridgeton; ROBERT BUERMANN, Newark; SAMUEL A. VANDEWATER, Oradell; WILLIAM T. HILLIARD, Salem; HENRY J. HARP, Sussex; CHARLES M. GRAY, Vineland.

To *Camp Gordon*, Atlanta, Ga., for duty, from Fort Oglethorpe, Lieut. CHARLES H. BALL, Hoboken.

To *Camp Jackson*, Columbia, S. C., for temporary duty, from Fort Oglethorpe, Lieut. FRANK H. PINCKNEY, Morristown.

To *Camp Lee*, Petersburg, Va., for duty, from Fort Oglethorpe, Lieuts. DAVID BERNER, Atlantic City; MICHAEL VINCIGUERRA, Elizabeth; MAURICE S. AVIDAN, Newark; WILLIAM SATTERER, Newark.

To *Camp Pike*, Little Rock, Ark., for duty, from Fort Oglethorpe, Capt. THOMAS S. McCABE, Newark.

To *Camp Upton*, Yaphank, L. I., for duty, from Fort Oglethorpe, Lieut. ELTON S. CORSON, Bridgeton; ORVILLE R. HAGEN, Paterson.

To *Chickamauga Park*, Ga., for duty, from Fort Oglethorpe, Capt. RALPH H. HUNT, East Orange; Lieuts. ARTHUR G. HILLIARD, New Brunswick; EDWARD B. ROGERS, Collingswood.

New York

To *Army School*, for duty in the bacteriologic laboratory, from Rockefeller Institute, Lieut. Manning C. Field, Brooklyn; for a course of instruction, Lieuts. LEO. E. REIMANN, Buffalo; JOHN A. RANDALL, Staten Island; ALFRED A. SCHWARTZ, New York; JOHN M. VENABLE, New York City.

To *Camp Custer*, Battle Creek, Mich., for duty in the base hospital laboratory, from Rockefeller Institute, ABRAHAM A. BRILL, New York City.

To *Camp Devens*, Ayer, Mass., for duty, from Fort Benjamin Harrison, Lieuts. THOMAS F. PATTERSON, Brooklyn; FRANCIS J. TALBOT, Niagara Falls; ROBERT KNIGHT, Seneca Falls; BENJAMIN F. COLEGROVE, Van Etten; JAMES B. FOSTER, Webster; for duty with the general construction companies, CLARENCE H. MACKEY, Lancaster.

To *Camp Dix*, Wrightstown, N. J., for temporary duty, Capt. MURRAY F. MUDGE, Johnson Creek; BENJAMIN BROD, New York; GEORGE F. HOGAN, Brooklyn.

To *Camp Funston*, Fort Riley, for duty in charge of the subsection of brain surgery, section of the head, Major MARTIN B. B. TINKER, Ithaca.

To *Camp Gordon*, Atlanta, Ga., for duty, from Fort Oglethorpe, Lieut. ADAM G. OSBORNE.

To *Camp Grant*, Rockford, Ill., for duty with the 35th Engineers, from Fort Benjamin Harrison, Lieuts. MINOR McDANIELS, Ithaca; for temporary duty, WILLIAM W. BANER, New York City.

To *Camp Jackson*, Columbia, S. C., for temporary duty, from Fort Oglethorpe, Lieut. HARRY S. FINCKE, Long Island City.

To *Camp Lee*, Petersburg, Va., for duty with the Engineer Service Battalions, from Fort Benjamin Harrison, Lieuts. FOREST R. MILDREW, Auburn; OLIVER L. STRINGFIELD, JR., Brooklyn.

To *Camp McClellan*, Anniston, Ala., and report to the commanding officer of the base hospital for duty, relieved from present duties at this camp, Lieut. FREDERICK C. DEVENDORF, Utica.

To *Camp Meade*, Annapolis Junction, Md., for duty from Fort Oglethorpe, Lieuts. HEMAN R. MARVIN, LYON MARTIN, CHARLES A. KRAUSS, Troy; for duty in the base hospital laboratory, from Rockefeller Institute, Lieut. JOHN R. BOOTH, Rochester.

To *Camp Mills*, Garden City, L. I., for duty as assistant to the division surgeon, from Fort Benjamin Harrison, Major MARION B. McMILLAN.

To *Camp Pike*, Little Rock, Ark., for duty, from Fort Oglethorpe, Capt. GEORGE E. MAURER, New York City; Lieuts. HUBER P. NEWMAN, New York City; JOHN K. NORWOOD, New York City.

To *Camp Sevier*, Greenville, S. C., and report in person to the commanding general for duty, Lieut. FRANCIS M. SHOCKLEY, Brooklyn.

To *Camp Upton*, Yaphank, L. I., for duty, Lieut. JOSEPH L. BEHAN, Brooklyn; HARRY FELDMAN, Brooklyn; HECTOR J. McNEILS, Brooklyn; GUSTAF L. NORSTEDT, Brooklyn; MAX ALEXANDER, New York; JOHN C. HUGHES, New York City; JOHN SMITH, JR., New York City; for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Walter Reid General Hospital, Takoma Park, D. C., EDWIN F. SAMPSON, New York City; for duty in connection with orthopedic work, BRAINERD H. WHITBECK, New York City.

To *Chickamauga Park*, Ga., for duty, from Fort Oglethorpe, Capt. DOUGLAS BROWN, New York City; Lieut. JAMES E. CROSSMAN, East Randolph.

To *Cornell Medical College*, New York, for a course of instruction in military roentgenology, Lieuts. MILTON I. STRAHL, Brooklyn; LOUIS B. COHEN, Jamaica; CHARLES L. McEVEETY, New York City.

To *Fort Niagara*, for duty in connection with orthopedic work, relieved from his present duties at this camp, Major FREDERICK N. C. JERAULD, Niagara Falls.

To *Fort Oglethorpe*, for instruction, from Madison Barracks, N. Y., Major HENRY L. K. SHAW, Albany; Lieut. ANTHONY W. M. MARINE, Brooklyn.

To *Gettysburg*, Pa., Reorganization Camp, for duty, from Fort Ontario, N. Y., Capt. DAYTON C. WIGGIN, Staten Island; Lieut. FRANCIS E. WEATHERBY, New York City.

To *New York City*, Physical Examining Unit, for duty as a member of the examining board, from Mineola, L. I., Lieuts. FEDOR L. SENER, Brooklyn; for orthopedic instruction, ANDREW W. MAHONEY, New York City; for orthopedic instruction, from Fort Benjamin Harrison, ISAAC REITZFELD, New York City.

To *Rockefeller Institute*, for a course of instruction in laboratory work, Lieut. WALTER P. BLISS, New York City.

To *United States Army General Hospital*, No. 1, New York, for duty, Lieut. LEWIS B. ROBINSON, New York City.

To *Walter Reed General Hospital*, Takoma Park, D. C., for instruction in tuberculosis examinations, Lieut. EDWIN F. SAMPSON, New York City.

To his home and the inactive list of the Medical Reserve Corps, from Camp Mills, L. I., Lieut. HENRY C. THACHER, New York City.

North Carolina

To *Camp Dix*, Wrightstown, N. J., for duty, from Fort Oglethorpe, Lieuts. LEIGHTON W. HOVIS, Charlotte; JAMES C. GREENE, Greenville; HENRY E. STARR, Greensboro.

To *Camp Jackson*, Columbia, S. C., for temporary duty, Lieut. JAMES S. MILLIKEN, Buffalo City.

To *Camp Lee*, Petersburg, Va., for duty from Fort Oglethorpe, Lieuts. LAWRENCE M. FETNER, Charlotte; EUGENE R. HARDIN, Clinton; NICHOLAS B. CANNADY, Lenoir.

To *Camp Meade*, Annapolis Junction, Md., for duty from Fort Oglethorpe, Lieut. JULIUS G. THOMAS, Greensboro.

To *Camp Pike*, Little Rock, Ark., for duty, from Fort Oglethorpe, Capt. WILLIAM T. CARSTARPHEN, Wake Forest; Lieuts. CHARLES E. McLEAN, Belmont; SANFORD W. THOMPSON, JR., Sanatorium.

To *Camp Sevier*, Greenville, S. C., for temporary duty, from Fort Oglethorpe, Capt. WILLIAM H. CROWELL, Whiteville; Lieuts. JAMES McP. TEMPLETON, Cary; Lieut. THOMAS B. GOLD, Lawndale.

To *Camp Upton*, Yaphank, L. I., for duty, from Fort Oglethorpe, Lieut. RICHARD B. WHITAKER, Whiteville.

To *Camp Wheeler*, Macon, Ga., for temporary duty, from Fort Oglethorpe, Lieut. THOMAS ALEXANDER HATHCOCK, Norwood.

To *Fort Oglethorpe*, for instruction, from school of military roentgenology at Richmond, Va., Lieut. FRANK R. WRENN, Siler City.

To *Rockefeller Institute*, for a course of instruction in laboratory work, from Fort Oglethorpe, Lieut. HICKMAN RAY, Raleigh.

To the inactive list of the Medical Reserve Corps, Lieut. WILLIAM E. BRACKETT, Caroleen.

To the inactive list of the Medical Reserve Corps on account of being physically disqualified for active service, Lieut. ARTHUR D. MORGAN, Scotland Neck.

Ohio

To *Camp Devens*, Ayer, Mass., for duty, from Fort Benjamin Harrison, Capt. JAMES D. PILCHER, Cleveland; Lieuts. ABRAHAM B. GROSSMAN, Cleveland; GEORGE P. TYLER, Ripley; FRANK W. PILLIOD, Toledo.

To *Camp Gordon*, Atlanta, Ga., for duty, from Fort Benjamin Harrison, Lieut. ARTHUR L. DIPPEL, Cleveland.

To *Camp Grant*, Rockford, Ill., for duty with the Thirty-Fifth Engineers, from Fort Benjamin Harrison, Lieut. JOHN D. MILLER, Cincinnati.

To *Camp Lee*, Petersburg, Va., for duty from Fort Oglethorpe, Lieuts. BENJAMIN H. GILLESPIE, Akron; to report to the commanding officer of the base hospital for temporary duty, relieved from his present duties at this camp, EMMETT FAYEN, Cincinnati.

To *Camp Meade*, Annapolis Junction, Md., for duty, from Fort Oglethorpe, Lieut. PERCY B. LONG, Copley.

To *Camp Pike*, Little Rock, Ark., for duty from Fort Oglethorpe, Lieut. JOHN R. SMITH, Cleveland.

To *Camp Sherman*, Chillicothe, for temporary duty, Lieuts. FRANK W. HICKIN, Cleveland; JOHN D. WAKEFIELD, Loveland.

To *Cleveland*, for duty in connection with the business of Base Hospital No. 4, Lakeside Hospital, Major GEORGE W. CRILE, Cleveland Heights.

To *Cornell Medical College*, New York, for a course of instruction in military roentgenology, Lieuts. ROY F. DRURY, Akron; BERNARD H. NICHOLS, Ravenna.

To *Fort Benjamin Harrison*, for instruction in tuberculosis examination, Lieut. GEORGE L. HAEFELE, Cleveland.

To *Fort Oglethorpe*, for instruction, from Jefferson Hospital, Philadelphia, Capt. RALPH W. HOLMES, Chillicothe.

To *Kelly Field*, South San Antonio, Texas, for duty, from Fort Riley, Lieut. ARZO J. PARDEE, Ashtabula.

To *Philadelphia*, for a course of instruction in military roentgenology, Lieut. GUY H. SWAN, Bellefontaine.

To *Rockefeller Institute*, for a course of instruction in laboratory work, Lieut. DAVID L. FARLEY, Youngstown.

To *U. S. Army General Hospital*, Williamsbridge, N. Y., for duty as neurologist, from St. Elizabeth's Hospital, Washington, D. C., Capt. William A. Searl, Cuyahoga Falls.

To his home and the inactive list of the Medical Reserve Corps on account of being physically disqualified, Lieut. JOSEPH H. FRAME, Highland.

To the inactive list of the Medical Reserve Corps, from Fort Benjamin Harrison, NATHAN N. MEYER, Youngstown.

Oklahoma

To Army Medical School, for a course of instruction, Lieut. WILLIAM O. FISCHER, Muskogee.

To Cornell Medical College, for a course of instruction in military roentgenology, Lieut. JAMES A. RYAN, Oklahoma.

To Camp Doniphan, Fort Sill, Okla., for temporary duty, Lieut. CLYDE F. LOY, Shawnee.

To Gettysburg, Pa., Reorganization Camp, for duty, from Fort Ontario, N. Y., Lieut. HARRY A. BRIGGS, Henryetta.

To Philadelphia, for a course of instruction in orthopedic surgery, Lieuts. JESSE B. HOLLIS, Hobart; to report to the medical supply officer, Medical Supply Depot, for duty as his assistant, CECIL BRYAN, Vian.

To Rockefeller Institute, for a course of instruction in laboratory work, Lieut. EDWARD B. BROOCKS, Shawnee.

Oregon

To Army Medical School, for instruction from Fort Douglas, Utah, Lieut. Niles P. Paulsen, Portland.

To Camp Kearny, Linda Vista, Calif., for duty in the base hospital laboratory, Capt. DAVID N. ROBERG.

To Camp Lewis, American Lake, Wash., for duty in the division of otolaryngology, section of surgery of the head, Lieut. JOHN A. STEWART, Portland.

To his home and return to the inactive list of the Medical Reserve Corps, on account of being physically disqualified, Lieut. BENJAMIN F. DEVORE, Oakland.

Pennsylvania

To Army School, for duty in the bacteriologic laboratory, from Rockefeller Institute, Lieuts. MAURICE GOLDBERG, Philadelphia; HARRY E. UNGERLEIDER, Philadelphia; WALTER E. LUNDBLAD, Sayre; CEDRIC E. FILKINS, Philadelphia.

To Camp Devens, Ayer, Mass., for duty as instructor in gas defense, Lieuts. GIBSON SMITH, York; for duty, WILLIAM E. GROVE, Johnstown.

To Camp Dix, Wrightstown, N. J., for duty, from Syracuse, N. Y., Capt. JAMES T. MADDEN, Pittston, for duty from Fort Oglethorpe, Lieuts. RICHARD O. MILLER, Erie; DAVID G. HARVEY, Huntingdon Valley; RAYMOND C. FAGLEY, Kulpmont; HENRY A. SMITH, Mechanicsburg; J. F. MARCHAND SNYDER, New Kensington; CHESTER L. BARRY, Oxford; SAMUEL H. BOYD, Philadelphia; HUGH J. DAVIS, Philadelphia; JAY D. LINTON, Philadelphia; CHARLES S. SCHAFER, Philadelphia; ASBURY C. STROUP, Philadelphia; MORRIS O. THRUSH, Philadelphia; DE LA RAY SIGNOR, Quarryville; JOHN F. ZYCHOWICS, Scranton; WILLIAM A. OSTRANDER, Smithport; HARRY S. VAN ETEN, Stroudsburg; ARTHUR J. DENMAN, Susquehanna; ABNER H. BAUSCHER, Temple; SAMUEL J. ROSE, Hapleton.

To Camp Gordon, Atlanta, Ga., for duty, from Fort Oglethorpe, Capt. JAMES K. M. PERRINE, Pittsburgh; CARL K. WAGNER, Swissvale; Lieuts. GEORGE T. McNISH, Alverton; PARKER U. WAGNER, Carlisle; CARL F. PIERCE, Greensburg; JOSEPH J. BELLAS, Lansford; WILLIAM B. SKELTON, Meadville; FRANKLIN D. BENEDICT, Philadelphia; ANDREW J. KEENAN, Jr., Philadelphia; SAMUEL STALBERG, Philadelphia; RUSSELL H. KING, Pittsburgh; WILLIAM A. WELDON, San Pedro; HARVEY B. CORNELL, Scranton; ALBERT PILKINGTON, Westchester; WILMER C. DREIBELBIES, Wilkes-Barre; for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Oglethorpe, WILLIAM W. WOODS, Monte Alto.

To Camp Greene, Charlotte, N. C., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis from Walter Reed General Hospital, WILLIAM H. HERR, Lancaster; JONATHAN M. WAINWRIGHT, Scranton.

To Camp Hancock, Augusta, Ga., for duty, from Camp Wadsworth, Lieut. WILLIAM P. BARNDOLLAR, Pittsburgh.

To Camp Jackson, Columbia, S. C., for temporary duty, from Fort Oglethorpe, Lieut. STEPHEN S. P. WETMORE, Morrisville.

To Camp Lee, Petersburg, Pa., for duty, from Fort Oglethorpe, Capt. GEORGE C. O. SANTEE, Cressona; Lieuts. WILLIAM C. HENSYL, Berwick; AUDLEY W. RICKETTS, Dempseytown; JOHN J. SWEENEY, Doylestown; SCOTT D. GLEETON, Erie; HARRY GALLAGER, Glen Olden; CLYDE L. WILLIAMS, Harmonsburg; RICHARD S. DAVIS, Philadelphia; WILLIAM O. KLEINSTUBER, Philadelphia; SAMUEL A. BELTZ, Uniontown; THOMAS R. HILLARD, Widnoon; MORGAN E. GRIFFITH, Wilkes-Barre.

To Camp Meade, Annapolis Junction, Md., for duty, from Fort Oglethorpe, Capt. JAMES C. LOGAN, Titusville; Lieuts. EDWIN S. COOKE, Philadelphia; JOHN F. GOLDEN, Dormant; JESSE C. STILLEG, Erie; FRANK P. SUMMA, Kingston; WILLIAM E. HYSKELL, Meadville; HARRY A. CARSKADDEN, Mont Alto; JAMES H. BALDWIN, Philadelphia; EDWARD GRAVER, Pittsburgh; JOHN G. STRIEGEL, Pottsville; SAMUEL A. LEINBACH, Quakertown; DAVID J. JENKINS, Scranton; JAMES L. BRENNAN, Washington; CYRUS JACOBESKY, Wilkes-Barre; LEE C. MUNDY, Wilkes-Barre; BENJAMIN H. PATTERSON, Wilkesburg; HAROLD E. HERSH, Palmerton; PHILIP S. ROSENBLUM, Philadelphia.

To Camp Pike, Little Rock, Ark., for duty, from Fort Oglethorpe, LEROY UMBURN, Albion; JAMES W. SILLIMAN, Bradenville; IGNATIUS A. BEDNARKIEWICZ, Erie; JOHN H. LLOYD, Erie;

LAWRENCE N. BREENE, Farrell; ARTHUR E. BOGART, Philadelphia; BENJAMIN WEINER, Pittsburgh.

To Camp Sevier, Greenville, S. C., for temporary duty, from Fort Oglethorpe, Capt. MATTHEW J. SHIELDS, Scranton; Lieut. GEORGE S. DEIBERT, Allentown; HEISTER V. HOWER, Scranton.

To Camp Upton, Yaphank, L. I., for duty, from Fort Oglethorpe, Lieuts. FRANK L. BAUM, Athal; JAMES R. SMITH, Erie; PAUL TIDENCE YOUNG, Erie; JOHN H. HUMES, McKees Rocks; SAMUEL H. PETTLER, New Brighton; JACOB L. ENGLE, Philadelphia; FREDERICK C. PETERS, Philadelphia; AUGUST G. HINRICHIS, Pittston; EARL C. WAGNER, Wilkes-Barre.

To Camp Wadsworth, Spartanburg, S. C., for temporary duty, from Fort Oglethorpe, Lieut. FRANK A. BRIDGETT, Philadelphia.

To Camp Wheeler, Macon, Ga., for temporary duty, from Fort Oglethorpe, Lieuts. JOHN J. HISLOP, Miners Mills; PERCY H. SHAW, Philadelphia.

To Chickamauga Park, Ga., for duty, from Fort Oglethorpe, Lieuts. THOMAS O. WILLIAMS, Brooklyn; HERBERT E. SIMRELL, Clark's Summit; ELMER HESS, Erie; RICHARD L. McNEER, Philadelphia; EDMOND R. LETT, Fallassee; MARTIN W. FREAS, United; GEORGE K. STRODE, Westchester.

To Cornell Medical College, New York, for a course of instruction in military roentgenology, Lieut. BOYD E. WILKINSON, Trevorton.

To Fort Oglethorpe, for instruction, from Jefferson Hospital, Philadelphia, Lieuts. W. LATIMER S. LANDES, Philadelphia; JAMES W. LEVERING, Philadelphia; WILLIAM H. G. MacKAY, Philadelphia; LOUIS R. WILEY, Philadelphia; JOHN E. LIVINGOOD, Womelsdorf.

To Philadelphia, for a course of instruction in orthopedic surgery, from Army Medical School, GEORGE H. FAGGART.

To Pittsburgh, for instruction in military roentgenology, from Fort Benjamin Harrison, Lieut. EDWIN P. BUCHANAN, Pittsburgh.

To Rockefeller Institute, for a course of instruction in laboratory work, from Fort Oglethorpe, Lieuts. JOHN W. GOODSSELL, New Kensington; PHILIP F. WILLIAMS, Philadelphia; ERNEST J. ATEN, Pittsburgh.

To his home and the inactive list of the Medical Reserve Corps of the Army, Capt. FREDERICK PROESCHER, Pittsburgh.

Rhode Island

To Camp Dodge, Des Moines, Ia., for duty in the base hospital laboratory, from Rockefeller Institute, JAMES HAMILTON, JR., Providence.

South Carolina

To Chickamauga Park, Ga., for duty from Fort Oglethorpe, Capt. ISADORE SCHAYER, Columbia.

To Camp Gordon, Atlanta, Ga., for duty from Fort Oglethorpe, Lieut. WILLIAM B. ACKERMAN, Walterboro.

To Camp Lee, Petersburg, Va., for duty, from Fort Oglethorpe, Lieuts. FITZHUGH P. SALLEY, Buffalo; CLARENCE D. JACOBS, Kingsree; FRANK M. HARVIN, Pinewood.

To Camp Meade, Annapolis Junction, Md., and report to the commanding officer of the base hospital, for temporary duty, relieved from present duties at this camp, Lieut. HERBERT H. HARRIS, Anderson; for duty, Lieut. LACY W. CORBETT, Bishopville.

To Camp Upton, Yaphank, L. I., for duty from Fort Oglethorpe, Lieuts. THOMAS M. MOORE, Hagood; WILLIAM J. BURDELL, Lugoff.

South Dakota

To Camp Logan, Houston, Tex., for duty in charge of the division of ophthalmology, section of surgery of the head, from Camp Gordon, Atlanta, Ga., Lieut. DENNIS F. O'CONNOR, Elkton.

To Camp Meade, Annapolis Junction, Md., for duty from Fort Oglethorpe, Lieut. ARCHIE McCALLISTER, Crow Creek.

To Kelly Field, South San Antonio, Tex., for duty, from Fort Riley, Lieut. SIGFRED ENGH, White Rock.

Tennessee

To Camp Cody, Deming, N. M., for duty in the base hospital laboratory, from Rockefeller Institute, Lieut. GEORGE L. BROWN, Memphis.

To Camp Dix, Wrightstown, N. J., for duty, from Fort Oglethorpe, Capt. OTEY J. PORTER, Columbia; Lieuts. LEON D'CASTO COTTEN, Alexandria; GUY C. ANDERSON, Eads; JOHN G. SEAY, Germantown; WILLIAM G. SAUNDERS, Jackson; FREDERICK W. LEE, Springfield.

To Camp Lee, Petersburg, Va., for duty from Fort Oglethorpe, Lieuts. WILLIAM R. BOOHER, Bristol; WILLIAM H. BALLARD, Laconia; WILLIAM D. CAGLE, Lobelville; CHARLES W. BROWN, Nashville; ROBERT L. DOSSETT, Tullahoma.

To Camp Meade, Annapolis Junction, Md., for duty from Fort Oglethorpe, Lieuts. LAWRENCE L. KELLER, Memphis; JOHN H. MORRIS, Pulaski.

To Camp Pike, Little Rock, Ark., for duty, from Fort Oglethorpe, Lieuts. WILLIAM C. SAIN, Bolivar; DAVID A. WALKER, Friendship; THOMAS H. INGRAM, Memphis; FRANCIS M. BOYATT, Oneida.

To Camp Sevier, Greenville, S. C., for temporary duty, from Fort Oglethorpe, Lieut. FLEETWOOD BRUBER, Nashville.

To Camp Upton, Yaphank, L. I., for duty from Fort Oglethorpe, Lieuts. HARRY E. HALL, Apison; E. GACOVIA MAXWELL, Darden.

To Phipps Clinic, Baltimore, Md., for intensive training in his specialty, from Fort Oglethorpe, Lieut. GEORGE A. HATCHER, Nashville.

To Washington, D. C., and report in person to the commanding officer, Quartermaster Repair Unit No. 1, for duty, from Army Medical School, Lieut. WILLIAM V. PRUETT, Brownsville.

To the inactive list of the Medical Reserve Corps from duty at Camp Wadsworth, Lieut. THOMAS W. RHODES, Whiteville.

Texas

To Army Medical School, for a course of instruction from Fort Sam Houston, Tex., Lieut. WILLIAM E. NESBIT, San Antonio.

To Boston, Mass., for instruction in orthopedic work, and upon completion of this course to return to the inactive list of the Medical Reserve Corps, Major CHARLES S. VENABLE, San Antonio.

To Camp Gordon, Atlanta, Ga., for duty, from Fort Oglethorpe, Lieut. EUGENE M. PARRISH, Dallas.

To Camp MacArthur, Waco, Tex., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Capt. ISIDORE S. KAHN, San Antonio.

To Richmond Medical College, Richmond, Va., for a course of instruction in military roentgenology, Capt. WILLIAM R. FICKESSEN, San Antonio.

To Rockefeller Institute, for a course of instruction in laboratory work, Lieut. RICHARD C. CURTIS, Temple.

Vermont

To Camp Lee, Petersburg, Va., for duty with the Engineer Service Battalions, from Fort Benjamin Harrison, Lieut. FRANK L. GILBERT, Grafton.

To Camp Vail, Little Silver, N. J., for duty with the Signal Corps, from Fort Benjamin Harrison, Lieut. WALTER F. McKENZIE, Burlington.

To Syracuse, N. Y., Reorganization Camp, for duty, from Fort Ontario, N. Y., Lieut. VICTOR P. GENGE, Newport.

Virginia

To Camp Dix, Wrightstown, N. J., for duty, from Fort Oglethorpe, Lieuts. CHARLES A. YOUNG, Gore; MERIWETHER L. ANDERSON and JAMES G. BOISSEAU, Richmond.

To Camp Doniphan, Fort Sill, Okla., for duty in the base hospital laboratory, from Rockefeller Institute, Capt. ERASMUS G. HOPKINS, Richmond.

To Camp Lee, Petersburg, and report to commanding general, Eightieth Division, for duty, relieved from present duties at this camp, Capt. HUGH T. NELSON, JR., Charlottesville; Lieuts. WILLIAM F. MERCHANT, Manassas; HARRY R. SEELINGER, Norfolk; for duty, from Fort Oglethorpe, Lieut. WILLIAM F. PASSER, City Point; for temporary duty, Lieut. CARROLL E. FOLEY, Lovettesville.

To Camp Pike, Little Rock, Ark., for duty from Fort Oglethorpe, Lieut. WILLIAM A. LUCAS, Toms Creek.

To Camp Upton, Yaphank, L. I., for duty from Fort Oglethorpe, Lieuts. OLIVER F. BLANKINGSHIP, Richmond; WALTER C. TROW, Warrenton.

To Chickamauga Park, Ga., for duty from Fort Oglethorpe, Lieut. JAMES M. DAVIS, Westboro.

To Fort Oglethorpe for duty, Major WILLIAM J. BELL, Bristow, for instruction from school of military roentgenology at Richmond, Lieuts. CHARLES L. RUDASILL and HENRY S. STERN, Richmond.

To Fort Ontario, N. Y., for duty with Field Hospital No. 28, from Fort Benjamin Harrison, Lieut. JOHN C. PHILLIPS, Portsmouth.

To Philadelphia, for orthopedic instruction, from Fort Oglethorpe, Capt. HOWARD FLETCHER, Fairfax.

To Richmond Medical College, Richmond, for a course of instruction in military roentgenology, Lieut. FREDERICK P. FLETCHER, Richmond.

Washington

To Camp Lewis, American Lake, Wash., for duty in the orthopedic service, Capt. EDWARD A. RICH, Tacoma; to report to the commanding officer of the base hospital for duty in the genito-urinary and dermatologic section of the base hospital, relieved from other duties at this camp, Lieut. ALEXANDER H. PEACOCK, Seattle.

West Virginia

To Camp Dix, Wrightstown, N. J., for duty, from Fort Oglethorpe, DENNIS B. JARRELL, Woodville.

To Camp Gordon, Atlanta, Ga., for duty, from Fort Oglethorpe, Lieut. RICHARD H. EDMUNDSON, Morgantown.

To Camp Lee, Petersburg, Va., for duty, from Fort Oglethorpe, Lieuts. FRANK J. BROSCART, Marting; CHARLES S. COWIE, Martinsburg.

To Camp Pike, Little Rock, Ark., for duty, from Fort Oglethorpe, Lieuts. CLYDE A. HARPER, Amma; REECE M. PEDICORD, Elm Grove; EMERSON MEGRAIL, Wheeling.

To his home and return to the inactive list of the Medical Reserve Corps on account of being physically disqualified for active service, Lieut. CHARLES F. MAHOOD, Alderson.

Wisconsin

To Camp Grant, Rockford, Ill., for temporary duty, Lieut. JOHN E. MULSAW, Two Rivers.

To Fort Snelling, Minn., and report to the commanding officer for duty as assistant surgeon, relieved from present duties at this camp, Capt. ROBERT M. NICHOLS, Sheboygan.

To Kelly Field, South San Antonio, Tex., for duty, from Fort Riley, Lieut. GEORGE S. DARBY, Brodhead.

To Sparta, Wis., Camp Robinson, for duty, Lieut. JOHN W. HANSEN, Milwaukee.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Chicago

Personal.—Dr. Heman H. Brown was elected president of the Michigan Society of Chicago at its annual meeting, October 27.

Hospital Contract Let.—A contract to build a new wing to the Contagious Disease Hospital was awarded, October 27, for \$374,900.

Billings Tells of Russian Experiences.—A testimonial banquet was given by the Physicians' Club of Chicago, in honor of Dr. Frank Billings, at the Auditorium Hotel, November 1. Dr. Augustus O'Neill acted as toastmaster. A silver loving cup was presented to Dr. Billings on behalf of the Physicians' Club.

County Hospital Branch.—Circulars advising voters to vote for the proposition to spend a million dollars for the erection of a Branch County Hospital at Ninety-Fifth and State streets have been sent out by the Branch Association of the County Hospital, which urges the great need for this institution.

Canadian Surgeon-General in Chicago.—Surg.-Gen. John T. Fotheringham, C.A.M.C., K.M.G., who went to France in 1914, with the first Canadian contingent, and was in active service in France until April of this year, when he was made Surgeon-General of Canada, was the guest of honor of the Institute of Medicine of Chicago at its meeting, held November 2, at the LaSalle Hotel, where he delivered an address on "Modern Methods in War from a Medical Standpoint." After the address a buffet supper was served.

IOWA

Hospital News.—The Bertha M. Parsons Building of the Iowa Congregational Hospital Association, Des Moines, was dedicated, October 23. The building is four stories in height, of brick, fireproof, and will accommodate fifty patients. The 240 acres of land adjacent to the city limits of Shenandoah, making up the bulk of the gift for a memorial hospital by Mrs. Catherine Hand, were sold, October 18, for \$65,040.

Southeastern Physicians Elect Officers.—The annual meeting of the Southeastern Iowa Medical Association was held at Fairfield, October 18. Washington was selected as the next place of meeting, and the following officers were elected: president, Dr. James S. Gaumer, Fairfield; vice president, Dr. Elias B. Howell, Ottumwa; secretary-treasurer, Dr. Carl W. Wahrer, Fort Madison, and censors, Drs. Otto A. Geeseka, Mount Pleasant; George W. Hay, Washington, and Samuel K. Davis, Libertyville.

MARYLAND

Personal.—Capt. Alexander D. McConachie, M. R. C., U. S. Army, has left for Plattsburg, N. Y., where he will be in charge of the eye, ear and throat surgical section of the base hospital. Dr. William S. Thayer, Baltimore, who went to Russia with the Red Cross unit, is in charge of the Red Cross work in Petrograd. He has seventeen men assisting him. Dr. Archibald C. Harrison, who recently underwent abdominal section at St. Joseph's Hospital, Baltimore, is reported to be convalescent. Dr. Richard F. Kieffer, Baltimore, who is on duty with a hospital unit on the western front, has recovered from a severe attack of fever.

Physicians Endorse New City Charter.—The Physicians' Civic Club of Baltimore, after a full discussion, has unanimously endorsed a movement to secure a new charter under the Home Rule Amendment. Eighteen years ago the city adopted a charter which earned for itself the title of "Baltimore's Model Charter." Today the charter is out of date. Since its adoption every city but one in the country has changed its charter, incorporating various modern features for securing greater efficiency and greater responsiveness to the will of the people. The physicians stand back of this movement, and will advocate a new charter board to study the needs of Baltimore at the election, November 6.

MASSACHUSETTS

Health Association Meeting.—The regular quarterly meeting of the Massachusetts Board of Health was held in Pittsfield, October 25. The topics considered at the meeting were "The Importance of Modern Public Health Work," "The Work of the Committee on Public Health of Massachusetts Medical Society," "Rural Sanitation," "Industrial Hygiene," "Child Conservation in Time of War," and "Rats, Insects, and Public Enemies."

MINNESOTA

Personal.—Dr. Ernest W. Cowern, North St. Paul, has been appointed physician of Ramsey County. The position carries no salary, and Dr. Cowern is the first man to be officially appointed in ten years.

Minnesota Eye, Ear and Throat Men Elect Officers.—At the annual meeting of the Minnesota Academy of Ophthalmology and Oto-Laryngology, held in St. Paul, the following officers were elected: president, Dr. Frank E. Burch, St. Paul; vice presidents, Drs. James S. Reynolds, Minneapolis, and Conrad W. Wilkowske, Chippewa Falls, Wis., and secretary-treasurer, Dr. John H. Morse, Minneapolis.

New Officers.—At the annual meeting of the St. Louis County Medical Society of Duluth, October 19, Dr. Arthur N. Collins, Duluth, was elected president; Dr. John H. Crowe, Virginia, vice president, and Dr. Charles H. Schroder, Duluth, secretary-treasurer (reelected).—At the annual meeting of the Minnesota Public Health Association, held in St. Paul, the following officers were elected: president, Dr. W. L. Beadie, St. Paul; vice presidents, Mrs. J. R. Brandrup and Mrs. A. L. Robinson; secretary, Dr. Edward L. Tuohy, Duluth, and treasurer, Mr. W. A. Laidlaw. The organization proposes to change from an association to a corporation.

Nurses and the Red Cross Seal Campaign.—In 1916, according to the *Minnesota Public Health Association Journal*, the contribution of the state to the Red Cross and to the Red Cross Seal Campaign was \$40,000. It is expected this year that it will amount to \$60,000. Through an arrangement with the Public Health Association, each town in the state selling a certain number of seals was entitled to the services of a public health nurse for a period of from one week up, depending on the number of seals sold. Sixty-four towns in 1916 had nurses under this arrangement. The services of the nurse proved so satisfactory in these communities that in almost every instance she was retained an additional week at the expense of the community. For the 1917 campaign, a nurse experienced in all branches of public health work will be furnished free for one week to any community for each 7,000 seals sold. A physician experienced in public health work will be furnished, to any community, with all necessary supplies, for one week for every 20,000 seals sold. This physician will make an intensive health survey, a sanitary survey, school, medical supervision, do infant welfare work, or all of these combined.

NEBRASKA

New Hospital.—Dr. Herschell B. Cummins has recently opened the Seward Hospital, located in the southeast part of Seward.

Lincoln Medical Women Organize.—The women physicians of Lincoln and vicinity have organized the Medical Women's Club of Lincoln, and elected Dr. Daisy M. Hansen, president, and Dr. Laura J. Brown, secretary.

Free Service to Soldiers.—At the annual meeting of the Buffalo County Medical Society, held at Kearney, October 15, it was voted to give free surgical service to men rejected for the Army or Navy of the United States because of minor defects. Dr. Charles K. Gibbons, Kearney, was elected president; Dr. Raymond L. Hart, Amhurst, vice president, and Dr. Joseph L. Bennett, Kearney, secretary-treasurer.

University Hospital Dedicated.—The teaching hospital of the University of Nebraska College of Medicine was dedicated with appropriate ceremonies, October 17, the principal speaker being Chancellor Avery of the university. The new structure, now in full operation with a capacity of 119 beds, was made possible by three legislative appropriations, \$150,000 for the building, \$65,000 for equipment, and \$100,000 for biennial maintenance.

Personal.—Dr. Maurice I. Smith, for several years connected with the department of pharmacology of the University of Michigan, Ann Arbor, has been placed in charge of the department of pharmacology in the College of Medicine in the University of Nebraska, Omaha; Dr. J. A. Kittleson of the University of Minnesota has been appointed professor of

anatomy, and Dr. S. A. Rubnitz, instructor in biochemistry. —Dr. Edwin C. Henry, Omaha, has been appointed chief surgeon of the Orthopedic Hospital, Lincoln, during the absence of Dr. J. L. Lord, in the military service.—Dr. J. W. Brendell, Avoca, fractured his wrist, October 6, while cranking his motor car.

NEVADA

State Society Meeting.—The Nevada State Medical Association held its fourteenth annual meeting at Reno, October 18 and 19, under the presidency of Dr. Raymond St. Clair, Reno, and elected the following officers: president, Dr. Henry A. Brown, Reno; vice presidents, Drs. Martin A. Robinson, Reno, and John A. Ascher, Sparks; secretary-treasurer, Dr. John L. Robinson, Reno; trustee, Dr. George L. Servoss, and delegate to the American Medical Association, Dr. William Z. Dahl, Reno.

NEW JERSEY

New County Officers.—At the annual meeting of the Salem County Medical Society, held in Salem, October 10, the following officers were elected: Dr. Henry T. Johnson, Pedricktown, president; Dr. Carey L. Lamborn, Penns Grove, vice president, and Dr. John F. Smith, Salem, secretary-treasurer.

Personal.—Capt. William J. Condon, M. R. C., U. S. Army, New Brunswick, was acquitted, October 27, on the charge of murdering John V. Piper, a student at Rutgers College. —Dr. Edward A. Y. Schellenger has resigned as a member of the board of managers of the Camden County Tuberculosis Hospital, Ancora, and Dr. Edwin C. Pechin has been appointed in his place.—Dr. R. Mills Smith, Camden, October 17, was awarded \$1,140 damages for injuries sustained in a grade crossing collision on the Atlantic City Railroad, at Gloucester.

NEW YORK

Personal.—Dr. William E. Gorton, for twenty years a member of the Corning Board of Education, and for the past seven years its president, has resigned, and Dr. E. Eugene Sullivan, Elmira, has been appointed his successor.

Medical Inspectors and Physical Educators' Association.—This organization will hold its next meeting at a place to be designated at one of the sessions of the Section on Hygiene and Physical Education of the New York State Teachers' Association at Syracuse, November 26-28. The purpose of this meeting is to elect officers for the following year and to vote on the constitution of the association.

New York City

Brooklyn Districted.—The health department, January 1, will put into effect its new method of local administration in Brooklyn. This involves the division of the city into fourteen health districts, each with an official in charge, who will report to the city health commissioner.

Microscopic Exhibit.—The New York Microscopical Society will give its annual exhibition at the American Museum of Natural History, November 3, in the evening. In addition to slides of interest in the arts, sciences and industries, there will be a demonstration by the department of health of practical use of the microscope in safeguarding public health.

Eastern Pediatric Societies to Meet.—The combined meeting of the New England Pediatric Society, the Philadelphia Pediatric Society and the Section on Pediatrics of the New York Academy of Medicine will be held in New York City, November 8. There will be clinics during the day, a dinner at the Harvard Club, and after dinner talks on the pediatrician's part in the war.

The Health Department and the Milk Problem.—Loose milk is sold in this city as it has been for years in conformity with regulations of the department of health. A statement made by the department of health emphasizes the fact that the great reduction in infant mortality in this city in recent years is to a large extent due to the general recognition that the only safe milk for babies is Grade A bottled milk. The Bureau of Public Health Education of the department of health is preparing a poster which contrasts the relative costs and food values of milk at 14 cents a quart, porterhouse steak at 35 cents a pound, and eggs at 60 cents a dozen. This shows that even at present prices milk is by far the cheapest of building foods.

Law Does Not Protect Women in New Employments.—A recent *Bulletin* of the department of health relates that an investigation of the conditions under which women elevator operators work, which has just been made by the Division of

Industrial Hygiene, shows that in some instances the conditions under which the women work are insanitary and the hours long; in one instance the night operator was on duty for fifteen hours, less an hour for midnight lunch. These investigations have brought out the fact that the state labor laws regulating the conditions of employment for women only provide for a regulation of conditions of employment of women in factories, shops and stores. The department of health intends to keep the apartment houses where undesirable conditions have been found under observation, and to find a way of safeguarding the health of these women.

Prenatal Instruction to Mothers.—A recent communication from the health department of New York City points out that if a further definite impression is to be made in the infant mortality rates it must come through concerted efforts to reduce the deaths from congenital diseases, and particularly during the first month of life. In order to further this work the health department has organized a special corps of nurses to instruct mother's in matters pertaining to home and personal hygiene, diet, etc., and all matters that will make for healthier mothers and more vigorous children and for reduction in the number of stillbirths. These nurses are assigned to a limited number of baby health stations, and the nurses in charge of the fifty-nine baby health stations throughout the city are prepared to afford similar instruction. The health department feels that the general practitioners of the city should avail themselves of this service to a greater extent than heretofore, and their cooperation is requested to the end that they notify a baby health station nurse of those cases which they believe would be materially benefited by prenatal instruction, so that the nurse may visit and instruct her.

OHIO

Hoover Back in Cleveland.—Major Charles F. Hoover of the Lakeside Hospital Unit, who has recently returned from the western war front, spoke on "The Medical Aspects of the War" before the Academy of Medicine of Cleveland, October 19.

Million for Convalescent Hospital.—The health commissioner of Cleveland has asked that the voters pass on the consideration of the use of the entire apportionment of the million-dollar hospital bond fund for the use of the new convalescent hospital at Warrensville. This, he claims, will relieve the congestion at the City Hospital and at other Cleveland hospitals, and, furthermore, will enable Cleveland to care for wounded soldiers.

Personal.—An explosion, believed to have been caused by gas, wrecked the house of Dr. Leo F. Towers, Toledo, October 19.—Dr. Rush R. Richison, Yellow Springs, has been appointed superintendent of the district tuberculosis hospital, Springfield, succeeding Dr. Henry Baldwin. The appointment will become effective, Jan. 3, 1918.—Dr. Robert C. Longfellow, Toledo, chairman of the Elk's Food Conservation Bureau, who offered his service and that of the Toledo Clinical Laboratories for government use, has been appointed a member of the county committee by the state food administrator.

District Association Meetings.—The annual meeting of the Ninth District Medical Association was held in Portsmouth, October 4. Ironton was selected as the next place of meeting. Dr. W. Wilson Lynd, Ironton, was elected president, and Dr. Ephraim E. Ellsworth, Ironton, secretary.—The Tenth District Medical Association, at its annual meeting in Mount Vernon, October 2, elected Dr. Charles D. Mills, Marysville, president; Drs. Howard E. Jones, Circleville; Charles E. Trimble, Crestline; Oscar W. Bonner, Delaware; Herbert M. Platter, Columbus; Francis W. Blake, Gambier; Amos F. Green, West Jefferson; George H. Pugh, Mount Gilead; Raymond E. Bower, Chillicothe; Argus B. Swisher, Marysville, and Blenn R. Bales, Circleville, vice presidents, and Dr. George W. Keil, Columbus, secretary-treasurer.—The Second Counsellor District Medical Association held its annual meeting and postgraduate clinic course at Dayton, September 24 to 28, under the presidency of Dr. Leora G. Bowers, Dayton. Clinics were held from 9 to 4 on each day of the session, and the following officers were elected, September 27: president, Dr. Edwin M. Huston, Dayton; secretary, Dr. Edgar L. Braunlin, and treasurer, Dr. Herbert C. Haning, all of Dayton.—The Eighth Counsellor District Medical Society, at its meeting in Zanesville, September 20, elected Dr. John G. McDougal, New Lexington, president, and Dr. Robert W. Miller, Hemlock, secretary-treasurer. New Lexington was selected the place of meeting for next year.

Cincinnati

Personal.—Dr. Harry Freudenberger has been granted a permit in the Probate Court to change his name to Philip Gath.—Dr. Allen W. Freeman assumed his duties as state health commissioner, October 1.—Dr. John M. Withrow has made a plea in behalf of the newly created State Board of Education for funds for the overhead expenses of the board, in applying the Smith-Hughes Vocational Education Tax.

OKLAHOMA

Personal.—At its October meeting, the Board of Medical Examiners of Oklahoma elected as secretary, Dr. James J. Williams of Weatherford, in place of Dr. Ralph V. Smith, Tulsa, who resigned and joined the Medical Reserve Corps.

Antituberculosis Work.—The Oklahoma Association for the Study and Prevention of Tuberculosis has selected Jewell Schevitz, who has been director of the Sanitary Survey of Union Hill, N. J., as secretary of the association, with a special duty of organizing the state for permanent antituberculosis work. Mr. Schevitz has already opened office in Oklahoma City.

PENNSYLVANIA

Glanders Epidemic.—Glanders is reported to be epidemic in Pittsburgh, where in the three weeks preceding October 11, thirty horses afflicted with the disease were shot. Watering troughs throughout the city have been ordered closed.

Cumberland Valley Physicians Meet.—At the fifteenth annual meeting of the Cumberland Valley Medical Association, held in Boiling Springs, the following officers were elected: president, Dr. Percy D. Hoover, Waynesboro; vice presidents, Drs. William C. Schultz, Waynesboro, and Henry C. Lawton, Camp Hill; secretary, Dr. John J. Coffman, Scotland (reelected), and treasurer, Dr. John C. Gilland, Greencastle.

Personal.—Dr. Samuel G. Dixon, state health commissioner, who has been under treatment in the University Hospital, Philadelphia, on account of a nervous breakdown, is reported to be improving.—Dr. Harvey L. Gerberich, Lebanon, who was operated on for strangulated hernia in the Good Samaritan Hospital, October 14, is reported to be making satisfactory progress toward recovery.—Dr. William M. Lynch, Clark's Summit, has been reelected superintendent of the Fairview Hospital for the Criminal Insane.—Dr. Adolph Koenig, Pittsburgh, has been reappointed a member of the State Bureau of Medical Directors and Licensure.—Dr. Howard W. Gibbs, Scranton, has been made surgeon in chief of the Northern General Hospital, Sheffield, England.—Dr. John B. McAlister, Harrisburg, has been appointed a member of the commission to study health insurance.

Hospital Course for War Nurses.—October 25, hospitals throughout the state were asked by the state committee of public safety to provide a special three-month training course for nurses in an effort to meet the shortage caused by the war. The appeal was made by the department of the committee devoted to the work of sanitation and medicine, and was sent to each of the principal hospitals. In urging the adoption of the plan, the appeal says:

"Such a course is offered at the University of Pennsylvania Hospital to women who do not care to enter for three years' training to become graduate nurses. Women between the ages of 21 and 42 who have completed Red Cross work in hygiene and home care of the sick are admitted to this course. They are required to spend a probationary period of two weeks in the hospital, furnish health certificates and personal references before being accepted for the three-months' work. Their work includes practical training, bed-making, serving food, caring for wards, waiting on patients in minor capacities with full opportunity being given for observing all details of hospital work.

Philadelphia

Contract Let.—The Department of Health and Charities has awarded the contract for the power plant for the Philadelphia General Hospital.

Personal.—Drs. Samuel Wolf and Rae S. Dorsett have been appointed members of the staff of the Philadelphia General Hospital.—Dr. Frank C. Hammond has succeeded Dr. Alexander C. Abbott on the board of health. Dr. Abbott has entered the federal service.

Tree as Memorial to Dr. James William White.—A red oak tree was planted in Rittenhouse Square, October 26, in memory of the late Dr. James William White, noted surgeon and author. The ceremony, arranged by the Walnut Street Business Association, was the feature of fall Arbor Day observances in this city. Edgar Fahs Smith, provost of the

University of Pennsylvania, and Dr. Wilmer Krusen, director of public health and charities, spoke at the Rittenhouse Square celebration. Eli K. Price accepted the tree on behalf of the park commission.

Recommendations Regarding Venereal Diseases.—The following recommendations adopted by the Committee on Health and Sanitation of the Philadelphia District Committee of the Pennsylvania State Committee of Public Safety have been made to the director of the Department of Health and Charities of the City of Philadelphia:

1. That for the best interests of the city, and the sailors and soldiers within its borders, prostitutes, when diseased, be isolated, efficiently treated medically, and quarantined in properly equipped hospitals until their infectious stage has subsided.

2. That a squad of women policemen be created to control street walkers.

3. Realizing the appalling fact that 90 per cent. of dispensary patients afflicted with venereal diseases quit treatment before discharged cured, it is desirable to use coercion through the cooperation of civil and medical authorities, of these moral slackers, if the indiscriminate spread of venereal disease is to be controlled. It is highly important before undertaking such action to abolish the medical imposters infesting communities, whose sole object is to lure and rob ignorant young men; therefore, the Board of Health is urged to adopt and enforce regulations which shall abolish so-called "medical museums" and advertising "specialists" and quacks. Also,

4. That the Department of Health have notices relative to the diagnosis and treatment of venereal disease prepared, stating the names of hospitals fulfilling the standard requirements, their location, dispensary and admission hours; that these notices be framed and placed in all public lavatories, saloons, theaters, hotels, industrial plants, department stores, military bases and cantonments.

5. That the venereal wards of the Philadelphia Hospital have their bed capacity increased so that that institution may properly care for infected prostitutes and misdemeanants referred from the Municipal Court and other sources.

Recommendations made to the State Board of Medical Education and Licensure:

1. That all general hospitals receiving or hoping to receive State aid financially shall maintain a separate Department of Genito-Urinary Surgery and Venereal Diseases with a recognized Staff position distinct from the Department of General Surgery.

2. That this Department shall consist of both an Out-Patient and Ward Service, prepared to receive patients afflicted with acute contagious and transmissible venereal diseases, who at the discretion of the Chief of the Genito-Urinary Department should be admitted.

3. That such hospitals be provided with the proper laboratory equipment for microscopical, bacteriological, serological or other examination and treatment of patients.

4. That in all hospitals maintaining a Department of Venereal Diseases it is advisable for the Social Service Department to provide male as well as female representatives for cooperation in tracing and controlling moral slackers afflicted with venereal disease.

VIRGINIA

Hospital Association Incorporated.—The Prince George Hospital Association has been incorporated at Hopewell with a capital of \$50,000. Dr. Johannes C. Bodow, Hopewell, is president of the association, and C. F. Cockey, secretary-treasurer.

Richmond Districted.—In order to promote efficiency of inspection, Dr. Roy K. Flannagan, chief health officer of the city, has divided the city into eight districts, with an inspector for each district. These inspectors will be under the general supervision of Chief Inspector Walter Lowry.

Personal.—Drs. Stuart McGuire, Richmond, and Thomas C. Firebaugh, Harrisburg, have resigned from the state board of health on account of entering military service. Harry T. Marshall, Charlottesville, has been appointed a member of the board to succeed Dr. Firebaugh.—Dr. C. Curtis Hudson, Danville, has been elected full-time health officer of Charlotte, N. C.—Dr. Edward T. Glover has succeeded Dr. Gray G. Holladay, Portsmouth, resigned, as coroner of Norfolk.

New Officers.—At the annual meeting of the James City County Medical Society, held in Williamsburg, the following officers were elected: president, Dr. John M. Henderson, mayor of Williamsburg; vice president, Dr. Albert M. Sneed, Toano, and secretary-treasurer, Dr. David J. King, Williamsburg. A resolution was adopted providing that each member agree to contribute \$50 a year toward the fund to be paid monthly to the wife and dependents of any member of the society who may be called into service of the country.

CANADA

Hospital News.—Mr. Horace L. Brittain of the Municipal Research Department, Toronto, has been appointed superintendent of the Toronto General Hospital for one year, Dr. Charles K. Clarke, who resigned over a year ago, continuing

as medical superintendent. The Toronto General Hospital has been running behind at the rate of \$4,000 a month, and has recently asked the city council for a grant of \$50,000. In fact, all the hospitals have been hard pressed, as they are all seeking grants from the city treasury.

New Ontario Laboratories Opened.—October 25, the formal opening exercises of the new laboratories of the Ontario Board of Health were conducted by the Duke of Devonshire. The laboratories are about 8 miles from Toronto, and are the gifts to the University of Toronto of Col. Albert Goodes-bane, and represent an expenditure of \$75,000. The director is Major J. G. Fitzgerald. They are named the Connaught Laboratories, after the former Governor-General of Canada, and are the only serum laboratories in Canada. Besides preparing tetanus serum for overseas, the laboratories also prepare, both for war and local purposes, meningitis and pneumonia serum, diphtheria antitoxin, typhoid vaccine and the Pasteur treatment.

Personal.—The Canadian Associated Press reports that Gen. Guy Carleton Jones, C. M. G., Ottawa, Ont., is returning to Canada to resume his duties as Director-General, Army Medical Services, which have lately been discharged by Gen. John Taylor Fotheringham, C. M. G.—Dr. Wilmer Denny, who was graduated from the Western University, London, Ont., a few months ago, has been commissioned medical officer in the Royal Navy.—Lieut. W. S. Smith, R. A. M. C., Kingston, Ont., who has served in France and Saloniki, was home for a short time with rheumatism, but has joined the C. A. M. C., and has returned to England.—Major Henry E. Paul, Fort William, Ont., is in command of the Canadian hospital at Etchinghill, England. On the staff are Capt. Henry K. Bates, Toronto; George O. Scott, Ottawa; Allan M. Yates, London, Ont.; John G. Gunn, Ailsa Craig, Ont.; William T. Lockhart, Carnduff, Sask.; Burpee F. Steeves, Claresholm, Alta.; A. B. Jackson, Simcoe, Ont., and Lieut. A. V. Greaves, Toronto.

Dr. Simon Flexner in Toronto.—October 25, Dr. Simon Flexner of the Rockefeller Institute, New York, addressed a large audience of medical men and students in Convocation Hall, University of Toronto. The subject was "Certain War Activities of the Institute." Dr. Alexis Carrel, New York, had been in France since the beginning of the war, and one of the first of the war activities was to deal with the alarming and frequent occurrence of gaseous gangrenes, and even yet no adequate preventive measures had been evolved. From the time of the discovery of the micro-organism responsible for the disease until 1914, only 200 cases had come to light. It became common in France in a very short time, induced largely by the richly fertilized soil. The bacilli clung even to sterilized uniforms. He told of the opening of a small hospital for experimental purposes, and of the use of chlorin and boric acid to eliminate the bacilli from the system. Finally, an antitoxin was compounded which, it was hoped, would dominate the gaseous gangrene curse. He also spoke of the tetanus antitoxin, and looked for much preventive and curative benefit therefrom. Pictures were shown of the experimental hospital.

GENERAL

Southern Physicians to Meet.—The Southern Medical Association will hold its annual meeting in Memphis, Tenn., November 12-15, under the presidency of Dr. Duncan Eve, Sr., Nashville.

Railway Surgeons to Meet.—The New York and New England Association of Railway Surgeons will hold its twenty-seventh annual session at the Hotel McAlpin, New York, November 8, under the presidency of Dr. Halbert G. Stetson, Greenfield, Mass.

The Waring Case.—Honse Bill No. 6343 has been brought before Congress by Mr. Montague, and authorizes the President to nominate, and with the advice and consent of the Senate, to appoint John B. Waring, late a captain in the Medical Corps on the retired list, increasing the list by one, for this purpose.

New Electrotherapeutic Officers.—The American Association of Electrotherapeutics and Radiology, formerly the American Electrotherapeutic Association, at its annual meeting elected the following officers: president, Dr. Frank B. Granger, Boston; secretary-registrar, Dr. Byron S. Price, New York, and treasurer, Dr. Emil Heuel, New York.

Foundation of Urology.—Under an agreement between the executors of the estate of the late James Buchanan Brady and his heirs, most of the estate, estimated at \$3,000,000, is now

available for the New York Hospital, and makes possible the establishment of the James Buchanan Brady Foundation of Urology, which is in accordance with the testator's plans. Dr. Oswald S. Lowsley, who was named by Mr. Brady as director, has the plans of the foundation in charge.

New Officers for Public Health Association.—At the forty-fifth annual meeting of the American Public Health Association, held in Washington, D. C., October 17-20, under the presidency of Dr. William A. Evans, Chicago, the following officers were elected: president, Dr. C. O. Hastings, Toronto, Ont.; vice presidents, Drs. George M. Kober, Washington, D. C.; Emanuel S. Iglesias, Vera Cruz, Mexico, and Guilford H. Sumner, Des Moines, Iowa; secretary, A. W. Hedrich, Boston, and treasurer, Lee K. Frankel, New York. The association adopted the resolution favoring the bestowal of the Nobel Prize on Major-Gen. William C. Gorgas, Surgeon-General, U. S. Army, for placing yellow fever in the list of preventable diseases.

Georgia Board Investigates Charges.—The Georgia Board of Medical Examiners recently heard charges preferred against Dr. J. A. McLeay, Atlanta, to the effect that, under the charter of the Southern College of Medicine and Surgery of Atlanta, which was closed in 1914, he had been illegally issuing medical diplomas for a stipulated sum. The matter was referred to the solicitor general of the superior court for action. The board also heard charges of using forged licenses against Drs. C. J. Malloy, Helena; S. B. Ellis, Whitesburg; F. C. Bentley, Crandall, and W. R. Rothrock, Athens. There is no record of licenses having been issued to these physicians. The board directed the secretary to assist the county solicitors in prosecuting these men on charges of illegally practicing medicine.

Foreign Patents to Be Open to American Manufacturers.—Since the outbreak of the war there has been a shortage of certain synthetic drugs, especially salvarsan and neosalvarsan. As the patents for many of these drugs were owned by German firms, American manufacturers, of course, could not make them. When the United States severed its relations with Germany, it was realized that some provision should be made to supply articles controlled by enemy-owned patents. As early as June, Congress was considering "the trading with the enemy act," then known as "The Adamson Bill," the purpose of which was to confer authority on the President to license American firms to use German patents. In the latter part of September, the "trading with the enemy act" finally became a law.

During this period, Dr. Marston T. Bogert, chairman of the Committee on Chemistry of the National Research Council, was being aided by a special committee on synthetics composed of Julius Stieglitz, chairman, president of the American Chemical Society; Roger Adams of the University of Illinois, M. Gomberg of the University of Michigan and W. A. Puckner, secretary of the Council on Pharmacy and Chemistry. (Shortage of Synthetic Drugs, *THE JOURNAL*, Aug. 4, 1917, p. 400.) This committee gathered information as to drugs which were difficult to obtain, and considered recommendations which might be made for the enforcement of the law. On October 30, the Federal Trade Commission held a conference in Washington regarding the granting of licenses of enemy patents, at which the material of this and other committees was placed at the disposal of the Trade Commission. According to reports at hand, the discussion covered questions of manufacture, of control of the product, distribution and price.

The regulations issued by the commission based on the law safeguard the interests of patent owners, who, after the war, are to receive some remuneration for the use of their inventions, and provides that licenses will be issued only where the public welfare demands it—that is, to supply a demand not now being met. In this connection it is well to point out that the number of drugs of which there is a serious shortage is not great. Even in Great Britain—which has a law similar to the trading with the enemy act—relatively few German patents have been turned over to English licensees.

FOREIGN

Argentine Medical Bibliography.—Under the auspices of the *Revista Medica del Rosario*, the classified medical bibliography for Argentina during the year 1916 has been published in a 120-page pamphlet. The compilation was done by Dr. M. A. Blanco.

Serum and Vaccine Institute at Naples.—Prof. I. Bandi has been placed in charge of the newly opened institution at Naples for production of therapeutic serums and vaccines and

as a center for research in hygiene and biology, with special regard to colonial conditions.

The Argentine Medical Association.—A recent three-day meeting at Buenos Aires of this association was devoted to brain tumors. The differential diagnosis was presented by Drs. Castex, Alurralde, Borda, Chiappori and Houssay, the operative treatment by Segura, Palma and Finochietto, while D. J. Cranwell spoke on echinococcus disease of the brain.

Deaths in the Profession Abroad.—E. Delens, *agrégé* professor of ophthalmology at the University of Paris until retirement, aged 78.—A. J. F. Dastre, chief of the laboratory for animal physiology at the University of Paris, killed in an automobile accident. From recent casualty lists, British: Surg. A. E. Panter, Capt. W. R. Aspinall (Australian), Lieut. J. F. Elliott, Asst. Surg. A. R. Underwood, Lieut. R. F. Hiley, Capt. F. Hardie, Capt. R. L. Henderson (Australian). Italian: Lieut. G. Maccia; Capt. E. Boeri, Lieut. G. Polcher, Lieut. S. Redaelli, Capt. G. Castornio, Capt. C. T. Aurelio, Lieut. B. Gallotti.

Medical Supplies in India.—Madras is the center for government medical supplies in India. Since the outbreak of the war, the manufacture and preparation of drugs has been centered in that city. Until 1912, Calcutta had been the manufacturing place, but it has been converted into a distributing center, as has been the case also with Rangoon. At Bombay certain stores have been specializing in the manufacture of surgical instruments. It is expected by the director of stores in Madras to make disinfectants, especially those of the phenol group, emetin, and starch from rice. Castor oil is manufactured and the possibilities of making glycerin are being investigated. It is proposed also, according to *Commerce Reports*, to increase the production of field dressings, bandages, etc. Quinin is now manufactured at Nilgiris and the Indian government medical service at Simla has completed inquiries regarding the increased cultivation of cinchona in Bombay, Madras, Burma and other provinces.

Shortage of Physicians in Great Britain.—Comment in the *British Medical Journal* (Sept. 29, 1917, p. 428), shows that for the next few years the annual output of physicians from the British medical schools will fall below the normal annual decrease in times of peace. The shortage of physicians will be even more marked hereafter owing to the pressing demands of the army service and the casualties resulting in that service. The normal annual decrease in the number of physicians is placed at 900. Figures collected recently show that only 900 men each year are due to qualify in 1917 and 1918. The shortage will be still more serious in 1919, 1920 and 1921 when, respectively, only 519, 800 and 700 physicians are due to qualify. It is said that the supply of physicians for the need of the civil population has already been reduced to the minimum consistent with safety. All the new additions to the ranks of the medical profession are to be at once requisitioned for army medical service so that there will be no reserves to make up the annual depletion from deaths and retirement from practice. The outlook both for civil and army medical services in Britain, therefore, is quite unsatisfactory. Even the demobilizing of medical students now in the ranks so they can return to the medical schools and complete their training, a measure now being planned, will fall considerably short of meeting the requirement.

PARIS LETTER

PARIS, Sept. 13, 1917.

The War

AUTOCHTHONOUS MALARIA

Drs. Victor Raymond and Grysez have communicated to the Réunion médico-chirurgicale de la III-e Armée their observations of four patients who entered the hospital presenting the following symptoms: fever of short duration, the temperature falling to normal subsequently, with febrile paroxysms recurring from day to day, without definite periodicity, and of several hours' duration. In the interval there was a slight degree of anemia without any gastro-intestinal disturbance, no pain in the tibias, but always a very marked hypertrophy of the spleen. The symptoms would at first lead one to think of malaria, but none of the four patients seen had ever been outside of France, nor did they ever have any intermittent fever; they came from nonmalarial districts, two from Paris, one from the department of Basses-Pyrénées and one from the department of the Marne. In three of these cases the blood was examined at the beginning of the febrile attack. In all three a hematozoon was found. This parasite was that of benign tertian fever, *Plasmodium vivax*: gre-

gariniform, with rosettes having sixteen nuclei, oval gametes, Schüffner's grains; no crescents. The affection is benign, and the febrile paroxysm may be suppressed by means of quinin, given by mouth, in doses of from 1.5 to 2 gm. for three successive days. Inquiry established the fact that the disease originated in one corps which had been stationed for many weeks in an inundated district abounding in mosquitoes. The members of this corps had all been stung many times by these insects. The examination of a certain number of mosquitoes gathered from that region showed that 7 per cent. were *Anopheles*. The corps in which these cases occurred had been preceded in that section by a native regiment, and some weeks previously it had received an increment of some size consisting of repatriates from Saloniki, many of whom presented relapses of malaria. It is a question, therefore, whether this is not to be regarded as a small focus of autochthonous malaria, because the region in which these cases appeared was free from malaria before the war. It is better, perhaps, to assume that the repatriates from Saloniki played the rôle of virus reservoirs or carriers. Dr. Abrami has stated that benign tertian malaria and its parasite, the *Plasmodium vivax*, have occurred frequently at Saloniki this year, and that the small percentage of *Anopheles* explains the small number of cases observed.

NO FURTHER EXEMPTION FOR PHYSICIANS ON THE GROUND OF PHYSICAL UNFITNESS

The undersecretary of state of the Service de Santé militaire has made known, by means of a circular, that there is to be no further exemption of medical men on the basis of physical unfitness. Hereafter, every doctor who is called into service will be utilized as far as his physical unfitness will permit.

PRACTICE OF CIVIL MEDICINE BY THE MOBILIZED PROFESSION

M. Chassaing, having demanded of the ministry of war (1) whether in the zones of the armies the physicians of a unit stationed in a locality unprovided with civil physicians are obliged to give their services to the civil population, or whether they may choose to do so; (2) whether they must visit the civilian sick in localities other than the one in which their cantonment is situated; (3) if they have the right to ask for transportation to patients residing at some distance, and if, in the course of such transport, there occurs an accident, will the case be considered as having occurred in the line of duty; (4) if they have the right to demand or expect an honorarium, received the following reply:

"The regulation relative to placing the army medical man at the disposal of communities unprovided with physicians not mobilized is applicable in the army zones as in the interior. The army physicians so detached ought to be called from the personnel of the region and not from any sanitary formations on duty in that region. However, the surgeons in chief of such sanitary formations may place their personnel at the disposal of civilians who are without medical service in the absence of physicians detached by the directors of this region. Under the circumstances, it is well to understand that service is assured by the medical personnel of the army under the same conditions as by the personnel of the region, that is to say, gratuitously, and if necessary, means of transportation are to be placed at their disposal by the municipal authorities. In the case of accidents occurring in the course of this detail or absence on such service, these medical officers are considered as being in actual service."

CREATION OF A COMMITTEE ON CHEMICAL PRODUCTS

The minister of commerce has appointed a committee to investigate the sale and manufacture of chemical products, coloring agents, pharmaceutical products, photographic materials, perfumes, etc. This committee is charged to determine, centralize, coordinate or control the needs of the state and of the public; to provide means to meet, in the best manner possible, the needs of the nation; to secure rational utilization of the resources of the country; to satisfy the demands of home as well as of foreign trade; the sale and transport and manufacture, the importation, the exportation and the composition of stock. So far as concerns the industries utilizing reserve materials, particularly for national defense, the committee has fixed and proposed to the proper ministry: the monthly allotment of materials placed at the disposition of private industries; the prices of materials and products given up by the state, and the prices and the conditions of sale and consumption of products manufactured by the private industries from materials and products given up by the state.

WINE RATION OF THE SOLDIERS

The minister of food control (ravitaillement), in accord with the ministry of war, has decided to increase the soldiers' daily wine ration to 0.75 liter. This had previously been fixed at 0.5 liter. The measure becomes effective, Jan. 1, 1918.

A Home for American Students in Paris

The municipal council of Paris has offered to the universities of the United States ground on which to construct a home for American students. This territory is about 1,000 meters square, and is situated on the Champ-de-Mars. Building operations will be begun shortly, thanks to the efforts of Mr. James Hyde, originator of the idea of this foundation; to Prof. Barrett Wendel, president, and to Mr. Bliss, secretary of the committee resident in New York, which will raise the necessary funds by subscription. The committee has already received a number of gifts. Ere long, the American students who, year after year, come to France in rather large numbers, will have in Paris a large establishment, appointed in the most modern style, where they will be entirely at home.

Death of Dr. Jouty

Dr. A. Jouty, otolaryngologist of the municipal hospital of Oran, died at Lyons from fulminant septicemia, the result of an accidental infection. He has been in continuous service since the beginning of the war, first at Oran, then at Bel-Abbès, and finally at Lyons, where he had charge of a special service.

LONDON LETTER

LONDON, Oct. 8, 1917.

The War

THE AIR RAIDS

During the harvest moon, London has endured an unprecedented succession of air raids—six in eight days. They commenced soon after sunset and lasted from one to three hours. The enormous development of the defenses enabled a heavy barrage fire, appalling to witness, to be maintained almost continuously for as long as an hour when necessary. The roar of the guns was so continuous as to suggest the working of some gigantic machinery. Thanks to the effectiveness of the barrage, only one or two of the raiders, whose number on each occasion is estimated at about twenty machines, got through. The casualties were therefore few. Ample provision had been made to deal with them by organizing ambulance parties in every district of the metropolis. The danger to those in the open air was really greater from our own shrapnel, which in some districts dropped like rain. But on receiving the warning of the approach of the raiders, the public quickly took cover in the basements of houses, or in buildings that offered special protection. The underground tube stations were ideal places of refuge and were crowded, principally by foreigners. The mental effect produced on the majority of the English people was very different from that calculated on by the Hun, with his usual ignorance of the psychology of other races. Of terror or panic there was very little, and this was almost confined to women anxious about their children. The predominant feeling was intense anger that German cities were not subjected to the same experience. Indeed, this feeling has at last forced the government to announce that German cities will be raided. Unlike our barbarous foes, we shall as far as possible spare women and children by attacking munition works and other military objectives.

AN AMERICAN HOSPITAL OPENED IN LONDON

Dr. Page, United States Ambassador, has opened St. Catherine's Lodge, Regents Park, as a hospital for American and British officers. The house with grounds of about 4 acres has been equipped for forty patients by Mr. and Mrs. William Salomon of New York, owners of the lease, who will maintain it for the duration of the war. It is controlled by the London chapter of the American Red Cross, and is the first American Red Cross Hospital established in Europe. It is fitted to accommodate orthopedic patients. Two of the American orthopedic surgeons who came to this country under the command of Major Goldthwait of Boston, and are attached to the Sheperd's Bush Military Orthopaedic Hospital, Capt. E. Kidner of Detroit and Capt. de Forrest Willard of Philadelphia, have been chosen as the nucleus of the medical unit under the supervision of Col. Sir Robert Jones. The nursing staff will be American. For work other than orthopedic, some of the most eminent London physicians and sur-

geons have offered their services. Dr. Page said he had to acknowledge the great generosity of the donors. It was gratifying to find the work of the American Red Cross well started in London. The hospital differed from others in that it would give orthopedic treatment to officers. He was told that 70 per cent. of cases yielded to the treatment which had been developed under the leadership of Sir Robert Jones.

AUSTRALIAN PHYSICIANS DECIDE FOR CONSCRIPTION

The members of the British Medical Association in Australia have replied to the question whether they desire conscription of the medical profession in Australia for service at home and abroad. Out of a total of 1,361 votes, 1,011 were given in favor of conscription—a majority of practically 75 per cent. The voluntary system has achieved great results, but they are not now adequate to the requirements of the army. Under it nearly 1,000 physicians out of a total well under 3,000 relinquished their practices and proceeded overseas with the expeditionary force. In addition, 400 undertook military service in the commonwealth. Of those that went to the front, the number who have given their lives amounts to fifty, a proportion greater than that of the combatant troops.

The Health of Schoolchildren

Sir George Newman, chief medical officer of the board of education, has published his annual report for 1916. He states that the fact must be faced that in 1916, as in former years, the records show a large amount of ill health and physical and mental defect. A year ago a moderate computation yielded not less than a million children of school age as being so defective or diseased as to be unable to derive reasonable benefit from education. What is needed is an effective unification of all the powers having for their purpose the healthy upbringing of youth. In addition, it is essential that the local education authorities should have continually before them a clear view of the steps necessary to secure the full value of the school medical service to every child of school age in their area. He considers that the irreducible minimum that will yield the results the nation requires is as follows: 1. Every child shall periodically come under direct medical and dental supervision, and if found defective shall be "followed up." 2. Every child found malnourished shall, somehow or other, be nourished; and every child found verminous shall, somehow or other, be cleansed. 3. For every sick, diseased or defective child skilled medical treatment shall be available, either by the local education authority or otherwise. 4. Every child shall be educated in a well ventilated schoolroom or classroom, or in some form of open-air schoolroom or classroom. 5. Every child shall have daily organized physical exercise of appropriate character. 6. No child of school age shall be employed for profit except under approved conditions. 7. The school environment and the means of education shall be such as can in no case exert unfavorable or injurious influence on the health, growth and development of the child. Dealing with the care and training of children under the school age, that is, under 5, the report states that their physical and mental well-being is not adequately provided for. The view is expressed that eventually it may be thought desirable that they should be educated on the lines suggested by the Consultative Committees for Nursery Schools.

The importance of dental disease is becoming more evident to the educational and military authorities concerned. So widespread is oral sepsis, and ill health directly due to the bad condition of the teeth, that great national efforts must be made to deal with the problem. The school is the place, and childhood is the time to intervene. A chapter is devoted to the benefits that are derived from an open-air life. It is estimated that there are not fewer than 600,000 children for whom the best possible treatment is an open-air school, and the need for the extension by authorities of their present facilities for open-air education is stated to be urgent.

The teaching of mothercraft is also dealt with. It is laid down that if the schoolgirls of this generation are to become wise mothers of the next, they must be taught the elements of mothercraft. The teaching of mothercraft may be divided into three periods: (1) instruction to the older girls at the elementary schools; (2) instruction to girls from 14 to 18 years old, and (3) instruction to married women. Where introduced, the teaching of mothercraft is declared to be satisfactory and practical; but the schools in which it is in operation are far too few; and apart from isolated lessons given during training in housewifery, etc., local education authorities have done almost nothing to encourage the general introduction of this teaching throughout all schools in their areas.

In regard to physical education, Sir George Newman remarks that there is an increasing recognition of its value. The problem before the board of education has heretofore been relatively narrow, namely, to lay the foundations of a system of physical training throughout public elementary schools and encourage its development in secondary and continuation schools. Now their field of action is likely to be enlarged. The work hitherto accomplished must be strengthened and established, and if, as is hoped, all children remain at school till at least 14, the teaching of physical exercises in the public elementary school can be expanded and more satisfactorily carried out than when any children leave at the age of 12 or 13.

The control of juvenile employment is considered in all its aspects. Through the history of child labor, the dominant evil is not accidents, or poisoning, or deformities, or specific disease, but the stress and fatigue of the immature body due to long and unsuitable hours of occupation. The only remedies are that (a) no child under 14 shall be exempted from education, half-time, or whole-time, for purposes of employment for profit; (b) no child attending school shall be employed out of school hours except at prescribed hours and for prescribed periods, and (c) the employment of all young persons from 14 to 18 should come under the medical supervision and control.

Marriages

LIEUT. CHARLES HYATTE CHERRY, M. R. C., U. S. Army, Fort Riley, Kan., formerly of Chisholm, Minn., to Miss Rebecca O. Jacobs of Topeka, Kan., recently.

LIEUT. WILLIAM LYTLE ROSS, JR., M. R. C., U. S. Army, Garden City, Long Island, N. Y., to Miss Ethel Jeanette Nixon of New York City, October 6.

LIEUT. JOHN ANDREWS ROGERS, M. R. C., U. S. Army, Nashua, N. H., to Miss Edith Pearl Batchelder of Framingham, Mass., September 8.

PAUL EMERSON GILMOR, M.D., a medical missionary in the Egyptian Sudan, to Miss Esther Margaret McCracken of Pittsburgh, September 5.

LIEUT. EDWARD FOULKE CORSON, M. R. C., U. S. Army, to Miss Esther Bisler, both of Philadelphia, in Chicago, October 15.

LIEUT. DANA BYRON DISHMAKER, M. R. C., U. S. Army, to Miss Olga Bertha Haney, both of Kewaunee, Wis., October 20.

LIEUT. FAY J. ERNEST, M. R. C., U. S. Army, Topeka, Kan., to Miss Edith Knox of Topeka, in Kansas City, July 23.

FREDERICK YATES, M.D., Washington, D. C., to Mrs. Mary Estelle Archer of Chevy Chase, Md., September 20.

WILLIAM ARMITAGE MONCRIEFF, M.D., to Miss Beryl Stuart Smith, both of New Bedford, Mass., September 29.

ASST. SURG. MATTHEW F. CZUBAK, U. S. Navy, to Miss Rhoda Evans Gilles of Philadelphia, August 30.

JOSEPH RAOUL LAROCHELLE, M.D., to Miss Jeannette R. Roussin, both of Biddeford, Me., October 8.

JOHN A. RAGONE, M.D., Buffalo, N. Y., to Miss Margherita Agnes Tirendelli of Cincinnati, October 3.

SUSAN ANDERSON, M.D., Fraser, Colo., to Mr. George Schaus, at Prescott, Iowa, October 10.

AMOS JOHN WINKEL, M.D., to Miss Helen Leigh Hunt, both of Hamburg, N. Y., October 13.

DAVID THOMAS HEYSER, M.D., Emad, La., to Miss Ola Manning of Kinder, La., October 3.

PHILIP B. NEWCOMB, M.D., Bangor, Me., to Miss Dorothy Williford in New York, October 1.

THOMAS H. GILLAND, M.D., Greencastle, Pa., to Miss Daisy B. Daley of Baltimore, October 17.

GEORGE MILBRY GOULD, M.D., to Miss Laura Stedman, both of Atlantic City, N. J., October 3.

HERMAN LUCAS EARL, M.D., Jewell, Ga., to Miss Ella Berry of Sparta, Ga., October 9.

CLARK JAY STEVENS, M.D., Rockville, Ind., to Miss Roxie Parker, at Chicago, October 17.

RUSSELL J. MURDOCH, M.D., to Miss Ruth M. Palmer, both of Blair, Neb., October 3.

GEORGE ALFRED FELCH, M.D., to Miss Janey E. Little, both of Boston, October 4.

Deaths

Richard Halsted Ward, M.D., Troy, N. Y.; College of Physicians and Surgeons in the City of New York, 1862; aged 80; a Fellow of the American Medical Association and American Academy of Medicine; a member of the Royal and Belgian microscopical societies; acting assistant surgeon in the Army during the Civil War; instructor in botany in 1867, and lecturer and professor in histology and microscopy in the Rensselaer Polytechnic Institute, Troy, from 1869 to 1872; governor and first vice president and chairman of the medical board of the Marshall Infirmary and Sanitarium since 1868; notable as a research worker in economic botany and microscopy and as an expert in microscopy; an honorary member of many foreign societies; died at his home, October 29.

LeGrand Atwood, M.D., Ferguson, Mo.; Washington University, St. Louis, 1849; aged 85; a member of the Missouri State Medical Association, and a life member of the St. Louis Medical Society, and president in 1885; surgeon in the Confederate Service during the Civil War; superintendent of the St. Louis Insane Hospital from 1886 to 1891, and of State Hospital for the Insane, No. 1, Fulton, in 1891 and 1892; lecturer on therapeutics and toxicology in St. Louis Medical College, and lecturer on nervous diseases in the Marion-Sims Hospital College, St. Louis; died at his home, August 2.

Robert Watts, M.D., New York; College of Physicians and Surgeons of the City of New York, 1861; aged 80; a member of the Medical Society of the State of New York; surgeon of the One Hundred and Thirty-Third New York Volunteer Infantry during the Civil War; consulting gynecologist to the Roosevelt Hospital, and consulting physician to the City and St. Mary's Children's hospitals; died at his home, October 15.

Charles Forbes, M.D., Rochester, N. Y.; College of Physicians and Surgeons in the City of New York, 1871; aged 73; for many years an instructor in natural science; a research worker especially in photography and electricity; inventor of the individual communion cup, in 1894; and more recently, of a gauze bandage, drain, and sponge roller; died in the Rochester General Hospital, October 2.

J. Homer Darling, M.D., Thompsonville, Conn.; Castledon, Vt., Medical College, 1859; aged 79; assistant surgeon of the Fifty-First Massachusetts Volunteer Infantry; and Acting Assistant Surgeon, U. S. Navy, during the Civil War; once president and for several terms a member of the local school board; died at his home, October 18.

Stephen Cassin Spalding, M.D., Shenandoah, Pa.; University of Maryland, Baltimore, 1870; aged 73; formerly a member of the Medical Society of the State of Pennsylvania; a director of the Citizens' Building and Loan Association and Shenandoah Mutual Fire Insurance Company; died at his home, October 11.

John Frank Simison, M.D., Romney, Ind.; Rush Medical College, 1881; aged 58; township trustee in 1885 and 1887, and a member of the legislature in 1907 and 1909; for many years a trustee of DePauw University; died in St. Elizabeth Hospital, Lafayette, October 15, a week after an operation for appendicitis.

Herbert M. Burritt, M.D., Hilton, N. Y.; University of Buffalo, N. Y., 1901; aged 44; formerly a member of the Medical Society of the State of New York; at one time health officer of Hilton; died in the Park Avenue Hospital, Rochester, N. Y., October 11, from pneumonia complicated by diabetes.

William R. Scott, M.D., Portland, Ore.; Jefferson Medical College, 1906; aged 38; formerly a member of the Oregon State Medical Association; was found dead at his Helix ranch, October 12, from the effects of a gunshot wound of the head, believed to have been accidentally self-inflicted.

Chauncey W. Chidester, M.D., Newark Valley, N. Y.; College of Physicians and Surgeons, Chicago, 1886; aged 70; formerly a member of the Medical Society of the State of New York; for many years coroner of Tioga County; died at his home, August 16, from arteriosclerosis.

James R. Edwards, Denton, Texas (license, Texas, years of practice, act of 1907); aged 77; a practitioner for fifty-six years; formerly a member of the State Medical Association of Texas; at one time health officer of Denton County; died at his home, October 12.

Floyd S. Farnsworth, M.D., Plattsburg, N. Y., Hahnemann Medical College, Philadelphia, 1885; aged 59; a member of

the Medical Society of the State of New York; died at the home of his niece in Troy, N. Y., October 12, from cerebral hemorrhage.

Amos Avery Rittenour, M.D., Denver; George Washington University, Washington, D. C., 1900; aged 42; formerly a member of the Medical Society of Virginia, and a resident of Berkeley; died in the Sarah Leigh Hospital, Norfolk, Va., October 10.

Harvey W. Scales, M.D., Yorktown, Iowa; Medical College of Ohio, Cincinnati, 1879; aged 62; formerly a Fellow of the American Medical Association; a member of the Iowa State Medical Society; was found dead in his room, October 13.

James Daniel Hewett, M.D., New York City; New York University, New York City, 1868; aged 84; assistant surgeon of the Sixty-Sixth New York Volunteer Infantry, and later major; died at his home, October 13.

Daniel W. Owens, M.D., Mosheim, Tenn.; University of Tennessee, Nashville, 1890; aged 57; formerly a member of the Tennessee State Medical Association; died at his home, July 25, from Pott's disease.

Thomas Evans Elliston, M.D., Nashville, Tenn.; Vanderbilt University, Nashville, 1880; for six years a member of the Davidson County Court; died at his home, October 17, from cerebral hemorrhage.

William Ross, M.D., New York City; New York University, New York, 1894; aged 54; formerly a member of the staff of the New York and Bellevue hospitals; died at his home, October 18.

John Myrick Crocker, M.D., Cambridge, Mass.; Harvard Medical School, 1866; aged 72; a Fellow of the American Medical Association; died at his home, October 6, from heart disease.

Henry Julius Cohen, M.D., Brooklyn, N. Y.; Cornell University, 1909; aged 29; died in the Methodist Episcopal Hospital, Brooklyn, October 18, after an operation for appendicitis.

Edwin Gillard, M.D., Sandusky, Ohio; Homeopathic Hospital College, Cleveland, 1872; aged 72; once professor of gynecology in his alma mater; died at his home, October 14.

Robert Burnsides Ferree, M.D., Pittsburgh, University of Pittsburgh, 1887; aged 54; a member of the Medical Society of the State of Pennsylvania; died at his home, October 15.

Samuel Ensign, M.D., Arborville, Neb., Geneva, N. Y., Medical College; aged 98; for many years a pharmacist; died at his home, August 19, from cerebral hemorrhage.

John F. Spencer, M.D., Moore's Hill, Ind.; Eclectic Medical Institute, Cincinnati, 1869; aged 75; a veteran of the Civil War; died at his home, October 1, from heart disease.

Berzelius D. W. Thompson, M.D., Sardinia, Ohio; Cincinnati College of Medicine and Surgery, 1886; aged 79; died at his home, July 23, from carcinoma of the liver.

John B. Marchard, M.D., Monticello, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1882; aged 75; died at his home, September 4, from diabetes.

J. A. Bickett, Maryville, Mo.; a practitioner since 1866; aged 79; a veteran of the Civil War; died in a hospital at Leavenworth, Kan., September 21.

Theresa G. Breene Baum, M.D., Oil City, Pa.; University of Pittsburgh, 1910; aged 38; died at her home, August 5, after an illness of two years.

William Patrick Honan, M.D., Chicago; Bennett Medical College, Chicago, 1914; aged 30; died at his home, October 25, from heart disease.

Frederick Briggs Quackenbush, M.D., Philadelphia; Hahnemann Medical College, Philadelphia, 1901; aged 50; died at his home, October 6.

Leander James Crooker, M.D., Augusta, Me.; Dartmouth Medical School, Hanover, N. H., 1871; aged 80; died at his home, October 10.

William F. Clayton, M.D., Overlea, Md.; College of Physicians and Surgeons, Baltimore, 1906; aged 35; died at his home, October 12.

Jerome P. Marvin, M.D., Harrison, Ohio; Eclectic Medical Institute, Cincinnati, 1866; aged 71; died at his home, October 12.

David M. Ray, M.D., Bernie, Mo.; University of Tennessee, Nashville, 1878; aged 71; died at his home, about September 29.

Wade Minor Logan, M.D., Cincinnati; Miami Medical College, Cincinnati, 1869; aged 69; died at his home, October 11.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

SECRECY IN PATENT MEDICINES

One Concern Proves That the "Open Formula" Does Not Spell Ruin

THE JOURNAL has long insisted that one of the greatest evils connected with the "patent medicine" business is the element of secrecy. Practically every "patent medicine" manufacturer leads the public to believe, either by direct statements or by implication, that his preparations possess some marvelous and esoteric powers—due either to a peculiar combination of well-known drugs or to the presence of some mysterious drug about which the rest of the world is ignorant—not to be found in official products or in unofficial products made by competitors. Such claims, of course, are the sheerest humbug. There is not a "patent medicine" on the market today whose place could not better be taken by some official drug or combination of drugs. So long, however, as "patent medicine" manufacturers sell names instead of drugs it is possible for them to "get away with" claims that would be laughed to scorn if the element of mystery were eliminated.

It is for this reason that the nostrum makers declare that to give to the public the names and amounts of the therapeutically active drugs in their products would spell financial ruin. In many cases it doubtless would, but not for the reason assigned by those making the claim. It would destroy business in those cases in which even the nontechnically trained layman would recognize the absurdity of claims made for simple mixtures of well-known drugs.

One of the spokesmen for the "patent medicine" interests has said:

"... it is practically impossible to prove that the therapeutic claims made for a preparation whose composition is not known are 'false and fraudulent.'"

This same spokesman declared that should "patent medicine" manufacturers be forced to make their formulas public "they will be supplying evidence which may result in their own undoing."

When the public prescribes for itself it has the right to know what it is prescribing. If it cannot be given this obvious prerogative without destroying an industry, then that industry should be destroyed. The facts are, of course, that no "home remedy" having any legitimate place in commerce would be destroyed by such a course, although it would, doubtless, do much to wipe out of existence the fakes, frauds and humbugs with which the public is at present afflicted.

These facts are suggested by a letter recently received from the manager of a "patent medicine" concern. This letter so completely refutes many of the misstatements made by the exploiters of fraudulent nostrums that we print it in full. It is worth reading:

"To the Editor:—Let me introduce myself, first of all, as the Treasurer and General Manager of the J. C. Ayer Company, of Lowell, Mass. I come asking the privilege of placing before your readers the marked changes that have taken place during the past few years in the methods of conducting the business of this company in every state of the Union.

"Some twenty years ago I was first placed in charge of said business, although I had known of it ever since my earliest recollection. Even at this beginning I had been a physician for twenty-five years and so became at once keenly aware of the fact that certain changes could be made to the benefit of the public, and then, of course, to the benefit of the company.

"While a number of changes were made at once, it was only about ten years ago that the first radical change took place, namely, when we published our full and complete formulas on all the printed matter, cartons, bottles and boxes of medicine, said change having been continued to this very day. It is interesting to know that the Canadian government ruled that because of said publication of formulas we were entirely exempt from its Patent Medicine Act.

"Another change, equally important at least, was made about that same time, when we placed on the market all our medicines entirely

free from alcohol. This change was made because we believed, with all our might, that alcohol is a poison too powerful and too dangerous to be used as a medicine unless under the direction of a physician. Right here let me add that there is nothing secret about this; we percolate according to standard methods, recover the alcohol by distillation, and lastly add the glycerine.

"Then came the hard problem of advertising, with its constant tendency to exaggerate and thereby to mislead. A weak advertisement always reads to me like bibble-babble, while an extra strong one too often shows that the writer has been carried to dizzy and dangerous heights! So it was decided, about three years ago, to discontinue all newspaper advertising, leaving only the *Almanac* through which to make announcements to the public.

"Probably it is asking altogether too much of the busy editor to read some of the more recent editions of said *Almanac*, but it is certainly true that in writing them it has ever been my earnest effort to write in a more and more conservative way, with the thought that I, as a physician, was especially bound to use my knowledge in every possible way to advance the interests of the public health. I have also endeavored to completely eliminate everything that would have a tendency to make the well man think he was sick or the sick man think he was sicker; at the same time giving a good amount of practical every-day hygiene. One result is that our 1918 *Almanac* is quite a different affair from those of my earlier efforts.

"But there were other changes needed. So about two years ago we omitted all kinds of literature accompanying our medicines; no pamphlets, no leaflets, no circulars, practically no printing whatever except the formula and dose on bottle, box and carton.

"Such changes naturally bring up the question of the effect on the pocketbook. I can only speak for this company, and say that we are still pursuing these same methods with increased vigor and find them more and more satisfactory. Indeed, we have never once had the slightest idea of turning back to the tallow-candle age! Some people seem to forget the brilliant period in which we are living, with its remarkable common school system, good literature, cheap postage, extensive trolleys, telephones, and so on, whereby even the most remote districts in the country are brought in closest contact with the very center of our largest cities. The old-time mystery is fast disappearing as the new-time education penetrates the darkness.

CHARLES H. STOWELL, M.D., Lowell, Mass."

Dr. Stowell was graduated by the University of Michigan Medical School in 1872. In printing his letter THE JOURNAL is not to be understood as endorsing the preparations of the J. C. Ayer Company, but it does endorse the business principles shown by the company. The formulas for some of the Ayer preparations are needlessly complex and of the shotgun-mixture type; however, not more so than some of the preparations in the Pharmacopeia and National Formulary. If ever mixtures of the shotgun type are excusable, it may be when such are used as home remedies that are taken without a real diagnosis—a rifle is of little use against an obscure mark!

The important points brought out by this letter, however, are that "patent medicines" without alcohol or other habit-forming drugs can be advertised with comparative conservatism and the public given detailed information regarding their composition and the company marketing them still flourish.

Correspondence

PROPOSED INVESTIGATION OF TRAINING AND OPENINGS FOR CRIPPLED SOLDIERS

To the Editor:—I have noted with interest several articles in recent issues of THE JOURNAL dealing with the general subject of occupations and training for the physically handicapped. It occurs to me that you may desire to be of some assistance to the Bureau of Vocational Guidance in a proposed survey of this field.

In cooperation with several organizations of national importance, we are considering an investigation of training and possible industrial openings for crippled soldiers and others who are physically handicapped. Our work would probably culminate in a publication dealing with the methods of reeducation used both in the United States and abroad, an account of the general occupations open to each class of the handicapped, and an intensive study of actual opportunities in some one section of the country, probably New England and some of the neighboring states. Funds will probably be available for investigation and publication.

Can you inform us of any other investigations of like character now going on, or can you give us the names and

addresses of individuals or associations who would be likely to cooperate with us, or furnish us valuable information?

Any suggestion that you care to make regarding such an investigation, as to either method or scope, will be gladly received.

Please be assured that we will be very grateful for any assistance you may be able to render.

ROY W. KELLY.

Director, Bureau of Vocational Guidance, Harvard University, Cambridge, Mass.

STANDING OF ENGLISH MEDICAL WOMEN IN WAR WORK

To the Editor:—I am enclosing a copy of a letter received from Flora Miller, director in charge, Military Hospital, Endell Street, London, in reply to a request for exact information regarding the standing of the English medical women in the war work. As it is the first definite news that we have been able to obtain on this subject, we think it would be of interest to the public, and so ask you to reproduce it in THE JOURNAL.

LOUISE B. DEAL, M.D., San Francisco.

Secretary, Organization of Women Physicians for Federal Recognition.

In reply to your letter to Dr. Garrett Anderson, I have pleasure in giving you the following facts about the employment of women doctors by the War Office.

The medical staff of this hospital is appointed by the War Office, and has entire charge and control of the hospital. The staff is graded and paid according to rank, namely, as Major, Captain or Lieutenant. None of us are commissioned, as a commission cannot be held by women under the present Army act of Great Britain, and as women cannot be attested or sworn in under that act.

We are given the position of officers with the pay and allowances of R. A. M. C. officers. In other military hospitals many women are employed. Some of these are graded and paid according to rank as we are here. Others are engaged as civilian practitioners at a flat rate of 24 shillings [\$5.76] a day without uniform or other allowances. It should be noted that there are men doctors in military hospitals engaged on these terms also. Men so engaged are ineligible for general military service, and the War Office has a habit of regarding women as also ineligible for general service.

Our staff here has certain privileges. It is permanent and cannot be moved about by the War Office, and each member except Dr. Garrett Anderson and myself has an opportunity of terminating her appointment every six months.

WHAT FACILITIES DO HOSPITALS AFFORD FOR THE RECEPTION OF SPECIAL INTERNS?

To the Editor:—A committee representing all the associations of otolaryngologists on this continent has been at work for some years, in the endeavor to standardize the training of those who desire to enter on this specialty.

In contradistinction to the ophthalmologists, the committee is not proposing an examination for license by a federal board, but favors the obtaining of a special degree, D.Sc. (Otolaryngology), from the postgraduate departments of leading universities, on examination, after the completion of a definite course of training: (1) as an intern of a standard hospital in medicine, or surgery, or both, or a term of years in practice; (2) as intern in the otolaryngologic department of a standard hospital, for eighteen months, and (3) the attendance on a short course in such subjects as special anatomy, embryology and histology, physiology, pathology and bacteriology, neurology and physics in the postgraduate department of the university conferring the degree.

In order to be in a position to lay the scheme before the postgraduate boards of study of the universities, for their consideration, the committee must be informed what facilities are afforded by the hospitals of the continent, for the reception of special interns:

1. The total number of beds in each hospital.
2. The number of these set apart for otolaryngologic patients.
3. Whether these are under a departmental head.
4. Whether there is an intern set apart for this department.
5. The regulations regarding the intern service: Is there: (a) a rotation service; (b) a lengthy period confined to

one department, or (c) a graduated term of service—juniors and seniors, etc.?

It hardly needs to be pointed out that should such a scheme as outlined above be brought into operation and be supported by the leading special and general hospitals, such hospitals would be insured a constant succession of satisfactory material, out of which to man the department of otolaryngology with responsible and earnest interns.

The first condition laid down above would make it reasonably certain that the interns in question would be possessed of a sound basic training, and with these, entrance on the special training of otolaryngology would be in no sense an experiment, but a deliberate investment of time, determined on after mature thought.

Moreover, when a rotation system of internship is in operation, the scheme outlined above would not interfere. The rotating intern would still take on the otolaryngologic service for six weeks or two months, acting in the capacity of junior on the service, and receiving much help from the chief intern.

Information as to the number of hospitals which have a regular department of otolaryngology is difficult to obtain. Any general hospital of 250 beds should have at least fifteen beds set apart for such patients, and these would occupy the full time of a houseman, provided he worked also in the outpatient service.

Any information which your readers can supply will greatly assist and will be appreciated.

On behalf of the committee,

D. J. GIBB WISHART, Toronto, Chairman.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

THE PARESIS OF GUY DE MAUPASSANT

To the Editor:—I desire to know from a neurologic point how De Maupassant is classed. It occurs to me that by reason of the trend in his writings he must have been a sensualist, if not a sexualist, as much that he writes deals with this phase of human frailty. The fact that he died insane leads me to think that he was suffering from some type of sexual perversion. I shall be greatly obliged if you will direct me to the proper source for this information, if such is extant and available.

E. B. HARDIN, M.D., Florence, Ala.

ANSWER.—Guy de Maupassant (1850-1893), the master of the short story, was of Norman extraction, and grew up around Rouen. In his youth he became a clerk in the Ministry of the Marine at Paris, in which he was but an indifferent employee, spending his time on the river as a *canotier*, or in learning the art of novel-writing with Gustave Flaubert. The latter, as Maupassant has testified, taught him to cultivate the faculty of vision as a means of attaining impeccable accuracy of statement, and conciseness of style, so that any object, from a pile of dirt to a human being, might be visualized in a few words. On the development of this faculty, his success as a writer of tales and travel sketches was based. He became the O. Henry of Paris, with the difference that the sexual side of life was glaringly emphasized in Maupassant's stories, a circumstance that added not a little to the success of his books. In personality, he was really a faun with sensual features and Crô-Magnon jaw, the sort of man who would brazenly take leave of companions in the street or on the river in order to visit a bagnio or a waterside brothel. He delighted in obscene effrontery, particularly in shocking high officials or functionaries of the government in the street or a railway station, by vociferating foul-mouthed expressions in a loud and offensive manner. He had a neurotic heredity, and during the last four years of his life developed all the symptoms of a general paralysis, the result of sexual dissipation, the abuse of drugs, and probable syphilitic infection. He attempted suicide in 1892, and died under painful circumstances, July 6, 1893.

Much has been written about the neurotic heredity and insanity of Maupassant, in particular, the Toulouse dissertation of Z. Lacassagne (La folie de Maupassant, Toulouse,

1907, No. 717); G. Vorberg's brochure, "Guy de Maupassant's Krankheit" (Wiesbaden, 1908); the study of L. Lagriffe (*Ann. méd.-psychol.*, 1908, Series 9, 8, 203, 353; 1909, 9, 5, 177), and the article by A. Lacassagne in *Archives d'anthropologie criminelle*, 1910, 25, 104. The best paper is that of Maurice Pillet (Le mal de Maupassant) in *Aesculape* (1913, 3, 138, 167, 180, 217), which is profusely illustrated and has specimens of Maupassant's handwriting in his parietic period. The breakdown of his mind was attended by migraine, melancholia, obsessions, perversions, hallucinations and violent outbreaks of erratic, ill tempered behavior. The sexual eccentricities of his life, anterior to his final breakdown, have been denominated as "perverse," but need not be detailed here. The life history of Maupassant is, in fact, a sad commentary on the theme:

The nobleness of man
May be by man effaced; man can control
To pain, to death, the bent of his own days.

In other words, a man with such remarkable mental traits was not entirely the puppet of a neurotic heredity, although undoubtedly the creature of his environment, to some extent. The sexual brutalities in his writings are in no way different from those perpetrated by Catulle Mendes, Octave Mirbeau, and the shoal of recent Parisian novelists who exploited sexualism in their fictions in order to sell them; nor were they different in tendency and intention from the recent American exploiters of "sex stuff" in our 15 cent magazines. The clean-cut Latin pessimism in Maupassant's observations and aphorisms on life and nature show that he saw clearly what he was doing with his own life. At a time when France has utterly cast aside the decadence and degeneracy of *fin de siècle* Paris to rise once more "a queen of men with helmeted hair," we must not judge of the French nation by its decadent novelists, who have abounded in all countries of late years. Such novels are written and published in France for outlanders, and are seldom read by respectable French people. Our own humbug contributions to sex fiction are printed in magazines that are professedly for the "family circle." France has a right to be judged by her greatest names, by men like Molière, Pascal, Turgot, Colbert, Condorcet, Desault, Larrey, Bichat, Laënnec, Pinel, Louis Blanc, Claude Bernard and Pasteur, men whose lives were as sane and wholesome and clean as those of any other nation. That France has regained her soul, has found herself spiritually, is one of the outstanding facts of recent history; and even if all the men, women and children in France had been destroyed in the present war, the debt that humanity owes to her as the great promoter of liberal sentiment in Europe would still be recognized with gratitude. Most Americans today, in fact, respond to the sentiment of one of our recent poets:

You have become a forge of snow white fire,
A crucible of molten steel, O France
Your sons are stars who cluster to a dawn
And fade in light for you, O glorious France!
They pass through meteor changes with a song
Which to all islands and all continents
Says life is neither comfort, wealth nor fame.
Nor quiet hearthstones, friendship, wife nor child,
Nor love, nor youth's delight, nor manhood's power,
Nor many days spent in a chosen work,
Nor honored merit, nor the patterned theme
Of daily labor, nor the crowns and wreaths
Of seventy years. . . .
As Joan of Arc amid the apple trees
With sacred joy first heard the voices, then
Obeying plunged at Orleans in a field
Of spears, and lived her dream and died in fire,
Thou, France, hast heard the voices and hast lived
The dream and known the meaning of the dream,
And read its riddle: How the soul of man
May to one greatest purpose make itself
A lens of clearness, how it loves the cup
Of deepest truth, and how its bitterest gall
Turns sweet to soul's surrender.

TEST FOR LEAD IN URINE

To the Editor:—Will you kindly publish, in *Queries and Minor Notes*, a simple, reliable test for the detection of lead in urine?

E. W. APPLEBE, M.D., New York.

ANSWER.—John W. Holland (Medical Chemistry and Toxicology, Edition 4, Philadelphia, W. B. Saunders Company, 1915, p. 330) suggests that a quart of urine acidified with acetic acid be evaporated to dryness and fused in a crucible with a little pure niter until it becomes white. When the crucible is cool, dilute hydrochloric acid is added *hot* to

extract the residue after ignition. The extract is then filtered, and the filtrate is treated with ammonia to alkaline reaction, to precipitate the phosphates and iron. Ammonium sulphid is added at the same time to throw down the lead and iron as sulphids. This deposit is washed three times by decantation with hot water; then water acidified with hydrochloric acid is added, and the whole allowed to stand until the next day. It is then filtered through a small filter, and the residue washed. A little pure nitric acid is then added, drop by drop, to dissolve the lead sulphid left on the filter and carry it through as nitrate. This filtrate is collected in a watch-glass, evaporated to dryness, and the final test is made by adding a drop of water and a crystal of potassium iodid. A yellow precipitate denotes lead.

More accurate and elaborate quantitative methods consist of electrolyzing a prepared lead solution or comparing it colorimetrically. Such methods have appeared in the literature during the past few years.

TARTAR EMETIC

To the Editor:—In an early number of THE JOURNAL for this year there was an abstract concerning the use of tartar emetic in the treatment of estivo-autumnal malaria. I would appreciate information concerning the use of this drug—dosage, method of administration, and length of interval between doses.

— — —, Captain, M. R. C., U. S. Army,
Provisional Base Hospital, Fort Oglethorpe, Ga.

ANSWER.—In a case of apyrexial malaria showing numerous crescents in the blood, Rogers (*British Medical Journal*, Jan. 6, 1917) gave intravenously 4 cg. of tartar emetic on the fourth day, 8 cg. on the fifth and eighth days, respectively, and 12 cg. on the eleventh day. He believes that quinin should be given to check the malaria, and that tartar emetic should be given subsequently by the intravenous method to destroy the persisting organism. In a case of tertian malaria yielding to quinin, with later appearance of crescents, he gave an intravenous injection of 8 cg. of tartar emetic on the second and ninth days, with ultimate disappearance of the crescents. The tartar emetic is used in a 2 per cent. solution.

The following is a list of references on the subject.

- Low, G. C., and Newham, H. B.: Intravenous Injection of Antimony in Malaria, *Brit. Med. Jour.*, 1917, 1, 295; abstr., THE JOURNAL, April 7, 1917, p. 1067.
Rogers, L.: Disappearance of Malignant Tertian Crescents from the Blood Following Intravenous Injections of Tartar Emetic, *Brit. Med. Jour.*, 1917, 1, 6; abstr., THE JOURNAL, Feb. 10, 1917, p. 490.
Castellani, A.: Tartar Emetic in Certain Diseases of Protozoal Origin Alone and in Combination, *Brit. Med. Jour.*, 1916, 2, 552; abstr., THE JOURNAL, Nov. 25, 1916, p. 1631.
Rogers, L.: Experience in Tartar Emetic Treatment of Kala Azar, Including Its Use in Young Children, *Indian Med. Gaz.*, 1917, 52, 265; abstr., THE JOURNAL, Oct. 20, 1917.

MERCURY AND INUNCTION

To the Editor:—1. May I inquire if there are any rapidly disappearing or more soluble preparations of mercury than our regular unguentum hydrargyri that may be used for inunction?

2. Is there such a product on the market as Hagun Cream Hydrargyrum Saponis made by Walter Sach of New York City, and distributed by Sach and Wolf. If there is such a product, is it good?

3. Is there any method of giving mercury by inunction except with a glove-covered hand? Are there any machines which are practical?

W. A. WILSON, M.D., Kansas City, Mo.

ANSWER.—1. The recent investigation by Wile (THE JOURNAL, April 7, 1917, p. 1024) suggests that the use of calomel deserves further study, but it indicates that metallic mercury in the form of mercurial ointment is the most efficient means of administering mercury by inunction.

2. We are not familiar with the proprietary preparation named, or the firm which exploits it. Mixtures of mercury and soap have been used, but are believed not to have any advantage over the official mercurial ointment.

3. The manual method is still almost exclusively the method of making mercury rubbings. In addition, some dermatologists have the patients use mercury rubbings on the body and wear the same undershirt for six or eight weeks. This becomes saturated with the mercury and aids in continuing the absorption. It is the opinion of others that mercury is absorbed by the skin, but that most of the absorption takes place through the inhalation of mercury vaporized from the body. Electric appliances are also available which produce massage through an oscillation movement of hard rubber applicators.

Medical Education and State Boards of
Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 13-14. Sec., Dr. T. J. Stout, Brinkley.
ARKANSAS: Eclectic: Little Rock, Nov. 13. Sec., Dr. C. E. Laws, 803½ Garrison Ave., Fort Smith.
CONNECTICUT: New Haven, Nov. 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.
CONNECTICUT: Homeopathic: New Haven, Nov. 13. Sec., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.
CONNECTICUT: Eclectic: New Haven, Nov. 13. Pres., Dr. J. W. Fyfe, Saugatuck.
DELAWARE: Wilmington, Dec. 11-13. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.
FLORIDA: Jacksonville, Dec. 4-5. Sec., Dr. W. M. Rowlett, Citizens Bank Bldg., Tampa.
KENTUCKY: Louisville, Dec. 4-6. Sec., Dr. A. S. McCormack, Bowling Green.
MAINE: Portland, Nov. 13-14. Sec., Dr. Frank W. Scarle, 776 Congress St., Portland.
MARYLAND: Baltimore, Dec. 11. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.
MASSACHUSETTS: Boston, Nov. 13. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.
MISSOURI: St. Louis, Dec. 17-19. Sec., Dr. George H. Jones, 206 Washington St., Jefferson City.
NEBRASKA: Lincoln, Nov. 14. Sec., Dr. J. J. Hompes, 612 Security Mutual Life Bldg., Lincoln.
NEVADA: Carson City, Nov. 5. Sec., Dr. S. L. Lee, Carson City.
NEW HAMPSHIRE: Concord, Dec. 10-12. Sec., Dr. W. S. Crosby, Beacon Bldg., Manchester.
OHIO: Columbus, Dec. 4-6. Sec. Pro-tem., Dr. Herbert M. Platter, 185 E. State St., Columbus.
SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.
TEXAS: Dallas, Nov. 20-22. Sec., Dr. M. F. Bettencourt, Mart.
VIRGINIA: Richmond, Dec. 11-14. Sec., Dr. J. W. Preston, McBain Bldg., Roanoke.
WEST VIRGINIA: Clarksburg, Nov. 21-23. Chairman, Dr. S. L. Jepson, Capitol Bldg., Charleston.

District of Columbia July Examination

Dr. Edgar P. Copeland, secretary of the Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, July 10-12, 1917. The examination covered 17 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 7 candidates examined, 5 passed and 2 failed. Four candidates were licensed through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|--|------------------------------|------------|------------------|
| George Washington University | (1917) 84.2; 86.1; 86.2. | | |
| Georgetown University |(1917) | | 91.1 |
| Bowdoin Medical School |(1915) | | 80.1 |
| FAILED | | | |
| Minneapolis College of Physicians and Surgeons |(1909) | | 73.8 |
| Meharry Medical College |(1912) 71; (1915) | | 66.3 |
| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
| Baltimore Medical College |(1908) | | Maryland |
| University of Pennsylvania |(1894) | | Delaware |
| Lincoln Memorial University |(1912) | | Tennessee |
| University of Texas |(1909) | | Texas |

Indiana July Examination

Dr. W. T. Gott, secretary of the Indiana State Board of Medical Registration and Examination, reports the written examinations held at Indianapolis, July 11-13 and August 21-23, 1917. The examination covered 16 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 38 candidates examined, 36, including 1 osteopath, passed and 2 failed. Thirty candidates were licensed through reciprocity. One candidate, a graduate of the University of Louisville in 1916, who obtained a grade of 91.4 per cent., was licensed, Sept. 14, 1917. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|--|------------|------------|
| American Medical Missionary College |(1902) | | 81.6 |
| Chicago College of Medicine and Surgery | (1917) 89.9, 90.6, 93. | | |
| Indiana University | (1917) 81.9, 84.6, 85.9, 86, 86.3, 87.2, 87.7, 87.8, 88.3, 88.4, 88.7, 89, 89.2, 89.9, 90, 90, 90.3, 90.3, 90.5, 91, 91.2, 91.6, 91.7, 93.2, 94.4. | | |
| University of Louisville | (1917) 86.2, 88.3, 90.2. | | |
| Johns Hopkins University |(1917) | | 89.4, 90.4 |
| University of Pennsylvania |(1916) | | 92.7 |

| FAILED | | | |
|---|------------------------------|------------|------------------|
| Louisville National Medical College |(1909) | | 73.1 |
| Meharry Medical College |(1916) | | 74.3 |
| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
| Howard University |(1915) | | Dist. Colum. |
| Bennett Medical College |(1912) | | Illinois |
| Chicago College of Med. and Surg. | (1913) (1914) (1915,2) | | Illinois |
| College of Physicians and Surgeons, Chicago |(1906) | | Wisconsin |
| ..... | .....(1912) | | Illinois |
| Rush Medical College |(1905) (1914) | | Illinois |
| Kansas Medical College |(1894) | | Kansas |
| Hospital College of Medicine |(1897) | | Kentucky |
| Baltimore University |(1891) | | Michigan |
| ..... | .....(1902) | | Virginia |
| Johns Hopkins University |(1908) | | New York |
| Southern Homeopathic Medical College |(1897) | | Virginia |
| University of Michigan Medical School |(1903) | | Illinois |
| St. Louis University |(1913) | | Illinois |
| ..... | .....(1914) (1915) | | Missouri |
| Washington University |(1910) | | Illinois |
| University of Buffalo |(1913) | | New York |
| Ohio Medical University |(1905) | | Ohio |
| Western Reserve University |(1916) | | Ohio |
| Jefferson Medical College of Philadelphia |(1915) | | Penna. |
| Medico-Chirurgical College of Philadelphia |(1912) | | Penna. |
| Meharry Medical College |(1911) | | Tennessee |
| University College of Medicine |(1901) | | Virginia |
| National University, Athens |(1897) (1913) | | Illinois |

Iowa Reciprocity Report

Dr. Guilford H. Sumner, secretary of the Iowa State Board of Medical Examiners, reports that fourteen candidates were licensed through reciprocity at the meeting held Oct. 2, 1917. The following colleges were represented:

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|---|------------------------------|------------|------------------|
| Chicago College of Medicine and Surgery |(1908) | | Illinois |
| Loyola University |(1916) | | Illinois |
| Northwestern University |(1908) | | Illinois |
| Rush Medical College |(1904) (1914) | | Illinois |
| Tufts College Medical School |(1915) | | Nebraska |
| Detroit College of Medicine |(1904) | | Wisconsin |
| University of Michigan Medical School |(1907) | | Michigan |
| Barnes Medical College |(1902) | | Missouri |
| St. Louis University |(1916) | | Missouri |
| John A. Creighton Medical College |(1913,2) (1916) | | Nebraska |
| Milwaukee Medical College |(1912) | | Wisconsin |

New Mexico July Examination

Dr. R. K. McClanahan, secretary of the New Mexico Board of Health and Medical Examiners, reports that 21 candidates were licensed on the presentation of satisfactory credentials at the examination held at Santa Fe, July 9, 1917. The following colleges were represented:

| College | PASSED | Year Grad. | Total No. Licensed |
|--|---------------------------|------------|--------------------|
| University of Arkansas |(1913) | | 1 |
| University of Colorado |(1917) | | 1 |
| George Washington University |(1905) | | 1 |
| Georgia College of Eclectic Medicine and Surgery |(1898) | | 1 |
| Northwestern University |(1911) | | 1 |
| College of Physicians and Surgeons, Chicago |(1903) | | 1 |
| Kentucky School of Medicine |(1908) | | 1 |
| University of Louisville |(1893) (1913) | | 2 |
| Tulane University of Louisiana |(1912) | | 1 |
| College of Physicians and Surgeons, Baltimore |(1884) | | 1 |
| Hahnemann Medical College of Philadelphia |(1912) | | 1 |
| University of Pennsylvania |(1894) | | 1 |
| Woman's Medical College of Pennsylvania |(1908) | | 1 |
| Sewanee Medical College |(1904) | | 1 |
| University of Tennessee |(1891) (1905) (1916) | | 3 |
| University of Virginia |(1899) (1905) (1910) | | 3 |

Arizona July Examination

Dr. John Wix Thomas, secretary of the Board of Medical Examiners of the State of Arizona, reports the written examination held at Phoenix, July 2-3, 1917. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 14 candidates examined, 12 passed, and 2, including 1 osteopath, failed. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|--|--------------------------|------------|-----------|
| College of Physicians and Surgeons, Los Angeles |(1917) | | 86.1 |
| University of South Carolina |(1896) | | 83.3 |
| Northwestern University |(1905) | | 75.1 |
| Rush Medical College |(1913) | | 83 |
| University of Louisville |(1892) | | 76.6 |
| Medical School of Maine |(1901) | | 75.8 |
| Boston University |(1906) | | 86.9 |
| St. Louis University |(1903) | | 79.8 |
| New York Homeo. Med. College and Flower Hospital | (1915) | | 82.7 |
| Jefferson Medical College |(1893) 75.7; (1911) | | 79.3 |
| University of Texas |(1917) | | 76.2 |

| FAILED | | | |
|-------------------------------------|-------------|--|------|
| University Medical College of K. C. |(1907) | | 68.1 |

Book Notices

L'APPAREILLAGE DANS LES FRACTURES DE GUERRE. Par Paul Alquier et J. Tanton, Médecin Principal, Professeur agrégé du Val-de-Grâce. Paper. Price, 7 francs 50 centimes. Pp. 250, with 182 illustrations. Paris: Masson et Cie, 1917.

In this work the authors "have in view exclusively the immobilization of compound fractures produced by war projectiles." The theme is that the existence of the wound of the soft parts makes the problem complex because the apparatus applied should leave the wound uncovered in order to permit examination and dressing. The rule of practice laid down is that "with the exception of some cases of bullet wounds with punctiform cutaneous orifices in which operative abstention is permissible, because an aseptic progress of these cases is the rule, all cases of war projectile fractures at the present time ought to be the object of a complete methodical and thorough surgical intervention at the earliest possible moment. Such an intervention is prophylactic, the aim being to transform an infected wound into an aseptic wound."

Following this is a brief discussion of the proper method of opening up the fractured area and of the disposition of the fragments: As a rule, if the patient is seen early, that is, within ten or twelve hours, the fragments should not be removed; but if seen late, that is, in from three to five days, and infection is already present and the members are swollen and discharging pus, then all of the fragments should be carefully removed at the operation, but always subperiosteally. The point made by the authors is that if the fragments are all removed early, the osteogenic layer of the periosteum goes with the fragments, and union almost always fails; but if removed later, even after infection has taken place, the periosteum has become thickened so that it separates from the fragments easily and retains its osteogenic layer, and osteogenesis is not interfered with.

After this brief introduction, the authors plunge into the real subject-matter, which is the proper reduction and immobilization of compound fractures by suitable appliances. In this field the authors find full scope for their great ingenuity and patience, and many of the results accomplished in what appeared to be almost hopeless cases of extensive comminuted compound fractures show that their labor has been abundantly rewarded. Examples of almost every type of fracture of the class under discussion are shown, together with appliances devised to accomplish the purposes indicated. The work again emphasizes the fact that success in the treatment of fractures comes only as a result of constant painstaking care and attention to details, and that it will not do to tie up a fracture in some fixed form of dressing and let it alone, trusting to luck that it will come out all right, as is so frequently done.

Those who are called on to treat fractures will find in this work a rich mine of ideas as to the proper method of applying fixation dressings in this very trying class of cases, namely, compound comminuted fractures of the extremities.

A MANUAL OF ANATOMY. By Henry Erdmann Radasch, M.Sc., M.D., Assistant Professor of Histology and Embryology in Jefferson Medical College. Cloth. Price, \$3.50 net. Pp. 489, with 329 illustrations. Philadelphia: W. B. Saunders Company, 1917.

This was written for the purpose of filling the need for an anatomy of moderate size for the use of medical students and nurses. One result of the attempt has been so to condense the material that the various anatomic units composing each of the great systems of the body appear to be treated as related structures rather than as independent units whose relation to each other and to the body as a whole is merely incidental—an impression which is apt to be given by the voluminous discussions of the larger textbooks on anatomy. This feature is especially noticeable and helpful in the sections dealing with the anatomy and the histology of the nerve system, in which the gross anatomy and the microscopic anatomy are continued uninterruptedly from one segment to another; in addition, the various pathways are given separate and rather full consideration, so that impulses may be traced, in a connected manner, from origin to termination. The medical

student or practitioner who is interested in applied anatomy may notice the absence of special chapters on surgical and surface anatomy. Although this deficiency is largely compensated for by the clarity and arrangement of the text and the many well chosen illustrations, it still constitutes a definite defect as viewed from the standpoint of the clinician. While this book is a model of clear, concise statement, replete with necessary details but still compact and easy to read, its value to the medical man would be greatly enhanced by the addition of a chapter summarizing the gross anatomic relations of importance to the diagnostician and the operating surgeon.

DIAGNOSTIC SYMPTOMS IN NERVOUS DISEASES. By Edward Livingston Hunt, M.D., Assistant Professor of Clinical Neurology, College of Physicians and Surgeons, Medical Department of Columbia University, New York City. Second Edition. Cloth. Price, \$2 net. Pp. 292, with 64 illustrations. Philadelphia: W. B. Saunders Company, 1917.

This book covers the salient points and leading diagnostic symptoms of the principal nervous diseases, and makes it unnecessary for the student or physician who wishes to review his knowledge of the subject to undertake, on his own account, the usual laborious search through the larger treatises. The practical and systematic way in which the various chapters have been divided into definite clinical groups has been well worked out. Following these classifications, brief and instructive explanatory discussions of the different diagnostic signs are presented. The number of illustrations is relatively small, but those that do appear have been carefully selected with a view of conveying to the reader a clear conception of important but often obscure signs. The practitioner who has a general knowledge of the fundamental principles that underlie neurologic subjects will find the classifications and explanations presented an excellent guide in eliciting and interpreting practically all the important signs and symptoms.

DYKE'S AUTOMOBILE AND GASOLINE ENGINE ENCYCLOPEDIA, TREATING ON THE CONSTRUCTION, OPERATION AND REPAIRING OF AUTOMOBILES AND GASOLINE ENGINES. By A. L. Dyke, E.E. Sixth Edition. Cloth. Price, \$3. Pp. 896, with 3,392 illustrations. St. Louis: A. L. Dyke, 1917.

This is one of those practical books that give practical advice and make practical suggestions on a very practical subject to the great majority of physicians of today—to those who use automobiles. It is, in a way, an encyclopedia on automobiles and automobile parts, and on the inner combustion engine. A complete index makes ready reference to any subject concerning the automobile, whether propelled by gasoline, vapor, steam or electricity. Detailed information on the Ford and the Packard car is given at the end of the book, in the form of addenda. In the body of the book, however, the special features of different cars are discussed.

Medicolegal

Physician Rendering Services to Minor at Father's Request

(Potter vs. Thomas (N. Y.), 164 N. Y. Supp. 923)

The Supreme Court of New York, Appellate Term, First Department, reverses a judgment for \$600 that the plaintiff recovered for professional services rendered to the defendant, termed an infant, who was 16 years old and attending a boarding school in Connecticut. The court says that the defendant was seriously injured in an automobile accident, and some one telephoned to her father in New York to bring a surgeon from there. The father, who lived in the plaintiff's house, requested the plaintiff to accompany him. Subsequently the plaintiff made other trips to the school, to treat the girl for her injuries, and on some of these visits he was accompanied by her father, who on these occasions paid the fares. At no time was there any conversation between the plaintiff and the defendant in relation to the plaintiff's employment, or on the subject of payment for his services. The services so rendered were concededly necessities, and the reasonableness of the charge was admitted. The defen-

dant's father was her guardian at the time the services were rendered, but subsequently his letters were revoked, and an uncle of the defendant was appointed in his stead. The plaintiff testified that by reason of his close association with him he knew that the father was impecunious, knew the infant had an estate, and had expected to be paid out of her estate. The father refused to pay the bill, and the plaintiff presented it to the new guardian, who disclaimed liability. Thereupon this action was brought against the infant.

If an infant is so situated as to render it unnecessary for him to pledge his personal credit to obtain necessities, his contract will not bind him. Here the guardian was entrusted with the management of an estate ample to pay for the plaintiff's services. It was his duty to provide his ward with necessary medical attention, to the extent that the property under his control and properly applicable thereto would permit. Under stress of such an emergency as was here present, an encroachment on the principal of the infant's estate was permissible. In order, however, to fasten liability on the defendant personally, the plaintiff was required to establish affirmatively that the person charged with the duty of maintaining and protecting the infant, at the time the services were rendered, was either unwilling or unable to discharge his obligation. The proofs in this case failed to satisfy this requirement, and the most favorable view that might be taken of the testimony was that it indicated that the plaintiff at all times looked to the infant's estate for payment. It was clear that no credit was extended to the infant herself.

The express request for the plaintiff's services was made by the father and guardian. While it was his general duty as a father to care for his minor child, the court thinks his right in the circumstances to charge, as guardian, the defendant's estate for the payment of the plaintiff's services could not be questioned, had he seen fit to adopt that course. But he could bind himself only as an individual, whether acting as father or guardian, and that he did this was, the court thinks, plainly the legal effect of his employment of the plaintiff.

A guardian is a trustee, and it is possible that the plaintiff may be able to procure the payment that in all decency he is entitled to receive from some one, by invoking equitable principles that have been applied in cases involving the administration of trust estates. In any event, a judgment at law against the defendant in these circumstances cannot be allowed to stand.

Neither Railway Company nor Conductor Liable for Services of Physician

(Cannon et al. vs. Minneapolis & St. L. Ry. Co. et al. (Minn.), 162 N. W. R. 355)

The Supreme Court of Minnesota, in affirming a judgment in favor of the defendants, says that the plaintiffs sued for professional services and hospital care rendered to one Curran on the alleged request of the defendants. The trial court found that the services and care were not rendered on the request, either express or implied, of the defendants; and the supreme court, having examined the evidence, discovers no basis therein for the claim that the lower court should have, or could have, found otherwise than was done. The foreman and crew of laborers of another railway company, in leaving their work to go home, came to a crossing whereon a freight train of the defendant railway company was standing. The defendant Forgy was the conductor in charge of the train. The foreman and laborers mentioned, one of whom was Curran, tired of waiting, climbed over, or passed through, the train about the same time it started to move. On looking back, the foreman saw Curran come out from the train, bleeding from an ugly scalp wound, and immediately went to see how badly he was hurt. Forgy also came up to him for the same purpose. The foreman noticed that Curran was dazed from the injury. Both he and Forgy undoubtedly realized that the man needed medical attention, and Forgy asked the foreman if he would get a doctor for him. He answered that he would, and started off with Curran. The injured man was taken to the foreman's home. Then he directed his children to take him to a drug

store, and call one of the plaintiffs. This was done. The record failed to show that the plaintiffs knew at whose direction the call came, or that they made any inquiry as to the defendants' connection with the injury, or had any knowledge of any desire on the part of the defendants that Curran should receive care or treatment. Curran was an able-bodied laborer, and the one who furnished him with needed medical attention would presumably look to him alone for pay. There was no intimation that either of the defendants was in any way to blame for his injury, or that the plaintiffs so thought when the treatment and care were rendered; hence no obligation rested on them to reimburse the plaintiffs. Curran was neither a passenger nor an employee of the defendant railway company, and Forgy was not authorized to employ a physician to treat his injuries under the rule of the company offered in evidence by the plaintiffs. To charge the defendants, it was necessary to show either that they were under some obligation to furnish Curran with medical attention, or that the plaintiffs rendered the same in reliance on a request [promise?] of the defendants to become responsible therefor. The evidence suggested nothing in that direction. What Forgy did was no more than a personal kindness to Curran.

Limited Waiver as to Physical Examination

(Oklahoma Ry. Co. vs. Thomas (Okla.), 164 Pac. R. 120)

The Supreme Court of Oklahoma holds that where the plaintiff in an action for damages for personal injuries exhibits a portion of his body to the jury and physicians called by him to testify as to the nature and extent of his injuries, and he offers to submit to an examination by any physician or board of physicians named by the court other than those in the employ of the defendant, who are shown to have been employed by the defendant and who are to receive \$25 per day for testifying in the case, it is not error for the court to refuse to require the plaintiff to submit to an examination by the physicians employed by the defendant. The court says it has been held that the courts of Oklahoma, in the absence of a constitutional or statutory provision authorizing them to do so, have no authority in an action for damages to order a plaintiff to submit in advance of or during the trial of a case to a physical examination by a physician to be appointed by the court. On the first trial of this case, plaintiff Thomas waived his exemption on condition that the examination should be made by a board of three physicians to be selected by the court, and the defendant, in order to obtain the privilege of such an examination and the testimony of the physicians making it, agreed to these conditions. Had the plaintiff not made this agreement, an examination could not have been had nor testimony based thereon procured by the defendant in the absence of a waiver of his exemption by the plaintiff. Did the fact that a new trial was granted relieve the parties from the agreement entered into, and authorize the court to compel the plaintiff to submit to an examination? The court thinks not, in the absence of additional waiver on the part of the plaintiff. While calling other physicians, the plaintiff exposed his person to the jury only in connection with the testimony of one of the physicians who had been named by the court to make the examination agreed to as above, and without objection permitted another of said named physicians to examine his body and testify in connection with such examination. Not having permitted any physician other than the one appointed by the court to make an examination in the presence of the jury and testify with reference thereto, the plaintiff could not be said to have waived his exemption further than he had done on the former trial; and having permitted the defendant, without objection, to call another member of the board, he submitted to all of the conditions on which the exemption was originally waived. For another reason there was no error in the ruling of the court refusing to require the plaintiff to submit to an examination by physicians in the employment of the defendant. If it be said that the calling of the physician mentioned was a waiver by the plaintiff of his exemption, independent of the agreement entered into at the first trial, the court was authorized to impose such reasonable restrictions as it might deem best on the right of the defendant to such an examination.

Society Proceedings

COMING MEETINGS

Amer. Public Health Association, Washington, D. C., Dec. 4-7.
Kentucky State Medical Association, Louisville, Nov. 6-9.
Southern Medical Association, Memphis, November 12-15.

INDIANA STATE MEDICAL ASSOCIATION

Annual Meeting, held at Evansville, Sept. 26-28, 1917

(Concluded from page 1469)

Tests Used to Detect Malingering

DR. GEORGE F. KEIPER, Lafayette: The recent draft for soldiers for the National Army has revealed the necessity of reviewing the tests used to detect malingering. Ninety per cent. of the men have been honest, and responded promptly and truthfully to the tests. The tests fall under two heads—objective, what the examiner hears and sees; and subjective, what the examinee hears and sees. Recruits must have $\frac{20}{40}$ vision of one eye and $\frac{20}{100}$ of the other, provided no organic disease exists, and their hearing must be $\frac{10}{20}$ of normal. The Duane test, the Snellen test, the Graefe-Baudry, the Todd and many others are used for simulated blindness, while for hearing, the Weber-Kerrison test, and Bárány noise apparatus are among those used. With these, malingering may be detected in a great majority of cases. Some may baffle the surgeon for a time, but if persisted in they will ultimately come to light.

DISCUSSION

DR. E. M. SHANKLIN, Hammond: My work along this line has been in connection with the various industries of our region, in which I have to deal with many foreigners. We have always had to contend with some members of the legal fraternity, and since the inauguration of the industrial board, the "ambulance chasers" have taken to instructing their clients how to evade the examinations. However, we are usually able by some of these tests to find the malingerer.

Prostatic Hypertrophy

DRS. W. N. WISHARD and H. G. HAMER, Indianapolis: This may involve the entire organ, or the increase in size may be confined to one lateral lobe or to the median portion. Of greater importance than the size is the change it works on the outlet of the bladder. The symptoms of prostatic hypertrophy are those mainly due to mechanical obstruction, but are augmented by infection producing pain and frequency of urination. The severity of the symptoms ordinarily bears a direct relation to the character and degree of obstruction, although this does not necessarily indicate the size of the growth, as the growth may be a small, pedunculated middle lobe acting as a ball valve obstruction and producing complete retention; and if the element of infection is added, the symptoms of pain and desire to urinate will become extreme; whereas a symmetrical growth may reach an enormous size without producing more than a slight increase in the frequency of urination. The suprapubic operation has given good results, in that bladder function is restored and there is less danger to other structures as well as less interference with the function of other organs. It has fewer complications and is more certain of cure.

DR. CHARLES M. MIX, Muncie: There seems to be a lack of interest among the general practitioners in surgery of the prostate, due not so much to lack of knowledge as to the result of unhappy experiences. The general practitioner is in an expectant attitude. Surgery must demonstrate the value of the more recent methods of surgical interference. The best answer is a number of old men in a community who have been relieved and will recommend the operation to other sufferers.

DISCUSSION

DR. W. N. WISHARD, Indianapolis: I am not by any means convinced that surgery of the eye, surgery of the nose and throat, and surgery of the ear is altogether legitimate surgery

for the general practitioner. Neither am I convinced that surgery of the prostate is best done by the general surgeon, for the reason that there is a very considerable detailed technic involved in the diagnosis, proper treatment, and in the operation itself, which necessarily is a special department of work. We have today some highly competent general surgeons who have become very good prostatic surgeons. A man must be a skilled cystoscopist before he undertakes to do work on the prostate, and it is important that one should carefully understand, follow and cover as completely as may be other questions of pathology that are involved in the sometimes prolonged preliminary treatment.

DR. LOUIS FRANK, Louisville, Ky.: The most important elements in the success of prostatic surgery are careful preparation of the patient, wise selection of the anesthetic, and the control of hemorrhage at the time of operation. With care in these directions, the mortality may be very low; without it the mortality will be out of all proportion to what it should be.

Abdominal Wounds in War

DR. J. RILUS EASTMAN, Indianapolis: The present war has witnessed important developments in the treatment of abdominal gunshot wounds. In previous wars it was held that gunshot injuries of the abdomen should be treated conservatively, as distinguished from the teaching of prompt operation in civil practice. The old plan of "rest and opium" still has some advocates, but the weight of opinion is in favor of applying in military practice the civil method of immediate operation (within twelve hours) in all penetrating wounds of the abdomen, especially when conditions include a skilled operator, trained assistants, a sufficient armamentarium, and last but not least, an aseptic environment. It is likely that the best explanation of the improved statistics of operation in this war is to be sought in the favorable conditions of the trench, the battle lines being in the main more stable than in former wars and allowing of better preparation for operating near the front. A smooth, undeformed bullet, as a rule, makes a small, easily sutured opening in a hollow viscus, unless the shot is tangential to the intestine. However, such a bullet usually produces an irregular laceration of a parenchymatous organ, the aperture of entrance being smaller and more clear cut than the aperture of exit. Irregularly deformed bullets naturally produce larger and more ragged wounds than do smooth ones. For example, the fragmented nickel or steel mantle partially split off and projecting from the lead center bullet may do frightful damage. Large grenade fragments do not, as a rule, penetrate deeply, but often cause extensive crushing and laceration of the abdominal wall. Small grenade fragments often do very little injury on the surface, but the wound is deceptive, the intra-abdominal injury being more serious. Shrapnel balls often remain impacted in the abdominal coverings, but do comparatively little damage. They rarely completely traverse the abdomen. Before operation is undertaken, simple nonpenetrating injury of the abdominal wall must be considered intelligently; also the question of whether conservative treatment, considering the patient's general state and surroundings, would not be better. Operation is not undertaken unless conditions are favorable for good operating. The general treatment of patients not to be operated on consists in rest in the recumbent position with shoulders raised and knees flexed, thus relaxing the abdominal muscles and giving comfort to the patient. An attempt to move the patient should be avoided, nor should he be permitted to move himself. If moved before operation, the Fowler position should be maintained during transport.

DISCUSSION

DR. MURRAY N. HADLEY, Indianapolis: What Dr. Eastman said regarding puncture wounds of the abdomen may be applied in civil practice. The first symptom he mentions, that is, the evidence of the presumptive peripheral wound, is all that is required in civil practice for an exploration. However, the points he brought out in regard to kidney and liver dullness and tenderness are all things which should be used by the civil surgeon to determine whether or not he should

open the abdomen. It is not always easy to determine just what has happened even when the abdomen is opened.

DR. W. D. GATCH, Indianapolis: During a street-car strike in Indianapolis a few years ago we had at the City Hospital twelve cases of gunshot wounds in the abdomen within a month, in which I operated under the most ideal circumstances and within half an hour. The total mortality in a small series of my cases is 40 per cent., and I believe the civil mortality ranges about 50 per cent. What Dr. Eastman said of wounds of the bladder was confirmed in these cases. In two cases the bullet had gone right through the kidney and down into the thigh. Both patients recovered.

COLORADO STATE MEDICAL SOCIETY

*Forty-Seventh Annual Meeting, held at Colorado Springs,
Sept. 25-27, 1917*

(Concluded from page 1468)

Cesarean Section in Toxemia of Pregnancy

DR. L. H. MCKINNIE, Colorado Springs: I have had twelve cesarean sections for the toxemia of pregnancy without a death. I have been favored in the handling of these cases in that I have seen the patients early, and they came from the hands of good obstetricians whose previous treatment and examinations could be depended on. These women have all had one or more convulsions. I have operated on two women who had had no convulsions before operation. One woman had a small pelvis, and it was expected that there would be more or less difficulty with the delivery. Twenty-four hours preceding the operation, the albumin in the urine had increased rather rapidly, and about ten hours before the operation, casts were found in the urine. The patient complained of slight nausea, and the blood pressure rapidly increased from 130 to 190. Taking into consideration the fact that we expected a very difficult and slow labor, and the patient's rapid increase of toxemia, we decided to do an abdominal cesarean section. This was done without difficulty under nitrous oxid-oxygen anesthesia. About three hours following the delivery she had one slight convulsion. Following this she had an uninterrupted recovery, the blood pressure rapidly decreasing and the albumin and casts clearing up in about seven days. The other case was somewhat similar in history, but had shown for some little time a suspicion of oncoming toxemia. I have delivered thirteen babies, with three deaths, twins of six months, and the one child of eight months.

DISCUSSION

DR. M. J. KEENEY, Pueblo: A young primipara, who has a well developed toxemia of pregnancy which does not improve under a short course of treatment, should be delivered by cesarean section. A study of the blood pressure of these women is very important in deciding on operative intervention.

DR. CHARLES A. FERRIS, Denver: Cesarean section, at the present stage of its development, is liable to abuse. An abdominal surgeon can open the abdomen of a woman and take out the baby at term with a good deal of ease, although he may not know anything about the obstetric indications for the operation. That is one large avenue of abuse of the cesarean operation, and is liable to bring the practitioner into disrepute. However, cesarean section is a well established therapeutic measure in properly selected cases.

DR. H. G. WETHERILL, Denver: I believe Dr. McKinnie succeeded in his series of cases because he gave these patients nitrous oxid gas. The great majority of the profession is unanimous in agreeing that chloroform should not be given to an eclamptic woman under any circumstances. Ether is certainly not the anesthetic of choice. The reaction on the kidneys and lungs, although slight, constitutes a definite danger, and ether should be avoided if possible. Nitrous oxid gas is the anesthetic of choice in operations on eclamptics.

DR. W. F. MATSON, Denver: I have been in the habit of waiting for a second convulsion before resorting to cesarean

section; but we are guided by the ease by which delivery might be brought about through the natural channel. A primipara, with a long rigid cervix, who has not had labor pains, should always have a cesarean section. On the other hand, a woman with an easily dilatable cervix, with a left occipito-anterior vertex presentation should be delivered through the natural channel.

DR. O. M. SHIVERS, Colorado Springs: I am afraid that if we get too radical along the line of operating on eclamptic patients, general practitioners will be doing cesarean sections for other conditions that should be dealt with by less radical measures.

Acute Perforation of Abdominal Viscera

DR. CHAUNCEY E. TENNANT, Denver: Surgeons have recently shown that in cases of abdominal injuries occurring at the battle front, the mortality of the patients not operated on is nearly three times as great as of those operated on. When these patients are operated on within the first eight hours after perforation, the larger percentage recover. It is imperative to make an early diagnosis, even at the expense of an exploratory operation.

Roentgen Diagnosis of Lesions of the Esophagus

DR. J. A. MATLACK, Longmont: In partial or complete obstruction of the esophagus, the roentgen method of examination is usually satisfactory and conclusive. In the hands of a trained operator the technic is simple, and the procedure is not uncomfortable to the patient. In all cases, final interpretation of the roentgen findings must be made only after careful consideration of all available clinical data.

A Few Difficulties in the Administration of Ether

DR. D. E. HOAG, Pueblo: One of the best plans to secure complete muscular relaxation is to administer some preliminary narcotic, and to induce anesthesia slowly and evenly. In a large percentage of surgical cases there is a tendency to spasmodic closure of the air-way, and this is best counteracted by keeping the lower jaw pressed forward. Overriding teeth will sometimes prevent the lower jaw from coming forward. Pulling the chin away from the sternum or completely extending the head over the operating table is often of use in obstructed breathing. An artificial air-way is of great help. There are certain postures, namely, the prone and semiprone, in which the trunk weight may tell directly on chest expansion. If breathing becomes much embarrassed or ceases, the patient should at once be placed in the dorsal position, and the ordinary means adopted for restoring breathing. Lip friction, sponging the pharynx and tongue traction are all of help, and in desperate cases artificial respiration or laryngotomy must be resorted to.

Causes of Iritis and Allied Inflammations

DR. EDWARD JACKSON, Denver: Rheumatic iritis used to be ranked as next to syphilitic in frequency. In nearly forty years of practice, I have seen only one case of iritis arising during an attack of acute articular rheumatism. Focal infection has taken the place of chronic rheumatism in the list of causes. The particular organisms present in iritis are usually staphylococci and streptococci. The experimental work done by Rosenow and confirmed by Brown, Irons and Nadler seems to show that certain strains of streptococci are especially likely to cause iritis. Tuberculosis is the cause of many cases of uveal inflammation that were formerly not recognized as being due to it. Of my twenty-five cases, four were clearly tuberculous. Gonococcus infection has long been recognized as a cause of iritis, but its relative importance has been greatly underestimated. In my series there was but one case due to this cause. Gastro-intestinal auto-intoxication has of late years been recognized as an important cause of iritis, and treatment based on this view has been markedly successful, so that we might claim the diagnosis established by the therapeutic test. Of my twenty-five cases, five were put down as due to this form of poisoning.

The curative treatment of iritis is chiefly extra-ocular. The cause of the iritis should be ascertained and removed, or its deleterious influence removed so far as possible.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

October, XIV, No. 4

- 1 *Hunger in Infant. R. Taylor, Rochester, Minn.—p. 233.
- 2 *Hunger and Appetite Secretion of Gastric Juice in Infant's Stomachs. R. Taylor, Rochester, Minn.—p. 258.
- 3 *Studies in Nephritis of Children. L. W. Hill, Boston.—p. 267.
- 4 *Prophylactic Use of Pertussis Vaccine Controlled by Complement Fixation Test. E. J. Huenekens, Minneapolis.—p. 283.
- 5 Paroxysmal Tachycardia in Childhood. N. W. Brown, Baltimore.—p. 287.
- 6 Case of Pneumonia of Unusually Short Duration. H. B. Conrad, Baltimore.—p. 296.
- 7 Case of Pernicious Anemia in Boy of Eight Years. J. L. Morse and S. B. Wohlbach, Boston.—p. 301.

1. **Hunger in Infant.**—The material investigated by Taylor included five premature infants weighing from 1,200 to 2,500 gm., forty full term new-borns under 3 weeks of age, and eleven older babies, five between 1 and 2 months, two between 3 and 4 months, three between 4 and 6 months, and one boy of 2 years with a surgically induced gastric fistula made necessary by the effects of corrosive in the esophagus. The gastric movements of some of the infants were recorded only once; on others as many as twenty observations were made. The results of this work fully confirm Carlson and Ginsburg's report that the stomach of the new-born infant exhibits greater hunger contraction than does that of the adult. In normally developing breast fed babes, hunger is not ordinarily an immediate cause of crying. The average time required for the development of hunger in healthy infants gaining in weight and receiving a known sufficient amount of food is, in prematures, under one month, one hour and forty minutes, with a maximum of two hours and twenty minutes and a minimum of forty minutes; in full term infants under 2 weeks, two hours and fifty minutes, with a maximum of four hours and a minimum of two hours; in infants from 2 weeks to 4 months, three hours and forty minutes, with a maximum of four hours and thirty-five minutes and a minimum of three hours and twelve minutes. Hunger contractions occur in these infants long before the stomach has emptied. Consequently their presence is not in itself an indication that the stomach is ready for food.

2. **Hunger Secretion of Gastric Juice in Infants' Stomachs.**—In this study Taylor shows that there is no appetite or psychic secretion of gastric juice in the young infant. This disproves the present view, which, he says, is based on insufficient experimental evidence. The empty stomach of the hungry babe secretes a gastric juice which often is as acid as that found in the adult's stomach. The more profuse this secretion, the higher is its acidity. It contains pepsin. This secretion is not neutralized in the stomach, but flows out into the small intestine. Regurgitation through the infant's pylorus does not occur. Taylor suggests that therapeutic starvation in acute alimentary disorders and in summer diarrheas may owe its success in part to the heightened tonus of the alimentary tract, and in part to the pouring out of highly acid detoxicating and disinfecting gastric juice into the small intestine.

3. **Nephritis in Children.**—Four methods of testing kidney function in children are discussed by Hill: the added salt and urea test, the phenolsulphonephthalein test, the two-hour renal test, and the determination of the concentration of urea nitrogen in the blood. Of these tests the added salt and urea test is of little practical value in children. The determination of the blood urea is probably of slightly more value. The most valuable of the four tests discussed are the phenolsulphonephthalein test and the two-hour renal test, because they are simple to carry out, and because they give reliable and important information concerning the functional power of the kidney. These two tests supplement each other, and more valuable information can be obtained by using them together than by using either one singly. In general, repeated low functional tests at intervals of a few months mean a poor

prognosis. High phenolsulphonephthalein excretion alone does not help one way or the other. High phenolsulphonephthalein excretion, normal blood urea, and a normal response to the two-hour test warrant a conclusion that the process is a mild one, that the kidneys are only slightly damaged, and that there is a good chance for ultimate recovery.

4. **Pertussis Vaccine Controlled by Complement Fixation Test.**—Huenekens' observations in seventeen cases would theoretically justify the prophylactic vaccination against pertussis. In none of the cases treated with small doses could any antibodies be demonstrated. Whereas, large doses, such as recommended by the New York City Health Department, showed antibodies in 44 per cent. of the cases. The freshly prepared vaccines were, apparently, more effective than the stock vaccines, as 60 per cent. of the patients treated gave positive fixation reaction. From this, it may be concluded that it is possible to immunize children against pertussis if sufficiently large doses of freshly prepared vaccine be used.

Archives of Pediatrics, New York

September, XXXIV, No. 9

- 8 *Appendicitis in Infants. I. A. Abt, Chicago.—p. 641.
- 9 Effect of Chilling on Experimental Pyelonephritis in Rabbit. H. F. Helmholtz and B. Rappaport, Chicago.—p. 658.
- 10 *Unresolved Pneumonias: What Becomes of Them? J. H. Hess, Chicago.—p. 686.
- 11 Classification of Finkelstein. J. R. Gerstley, Chicago.—p. 691.
- 12 Empyema; Simple, Interrupted and Continuous Aspiration. H. M. Richter, Chicago.—p. 696.
- 13 *Prophylactic Vaccination Against Chickenpox. M. Michael, Chicago.—p. 702.
- 14 *Five Per Cent. Oatmeal Gruel in Infant Feeding. A. Levinson, Chicago.—p. 707.

8. **Appendicitis in Infants.**—Abt has collected from the literature of appendicitis eighty cases of the disease in infants under 2 years of age. Among the cases occurring among children under 3 months, are two possible instances of prenatal appendicitis. The first was a doubtful case in a new-born baby with an eventration and a hernia into the umbilical cord. The appendix of this patient was removed. The second occurred in a baby poisoned by the ingestion of mercuric chlorid and died forty hours after birth. The necropsy showed that the appendix was congested, twisted and bound to the cecum by numerous adhesions. Eighteen additional cases occurred in infants under 3 months. There were six cases in children from 3 to 6 months of age. Eleven cases occurred in children from 6 to 12 months, and forty cases occurred in children from 1 to 2 years. Manifest chill, which is rare in childhood, is infrequently noticed in the first stage of the disease. Temperature is unreliable. It may be very high, or in some instances it may be subnormal. Pulse usually corresponds to the temperature. When extensive peritonitis occurs, the pulse is rapid, weak and irregular. In adults, as in children, an abatement of severe symptoms sometimes occurs after the perforation of the appendix.

Constipation is the rule and occurs among the more severe types. Diarrhea occurs in the milder types, though both conditions may be present, one alternating with the other. When general peritonitis occurs, and paralytic ileus results, symptoms of bowel obstruction naturally follow. Traumatism or diseases of the alimentary tract occasionally seem to play a part in the production of appendicitis. Infection may take place through the lymphatics, or possibly, in some cases, it may be a direct extension from the cecum. In addition, appendicitis may occur after erysipelas, scarlet fever, pulmonary and pleural infections, tonsillitis and other diseases. Foreign bodies, such as worms in the appendix, may bear a direct causal relation. The blood examination in almost every case shows a polymorphonuclear leukocytosis. When general peritonitis occurs, or where the general defenses of the body are reduced and exhausted by severe sepsis, the leukocyte count may be low.

The diagnosis in young infants is difficult, and the mortality is high. Furthermore, the precise condition is frequently confused with intussusception, intestinal obstruction, diffuse pneumococcal peritonitis, pleurisy, pneumonia, gastro-enteritis, typhoid (rarely), ileopsoas abscess or coxalgia. Tenderness at McBurney's point, if it can be elicited, is of diagnostic

importance, but, the appendix in children frequently lies deep, so that tenderness may be greater on the left than on the right side, or it may be deflected upward. Rectal examination is of great importance in such cases. When there is palpable resistance on the right side, in the presence of other symptoms, the diagnosis of appendicitis should be suspected.

10. Unresolved Pneumonias.—Hess emphasizes the fact that tuberculosis is frequently a complicating, if not primary factor in many of the fatal cases and unquestionably frequently a factor in delayed resolution in recovered cases. Empyema especially of the intralobular type must be excluded in all cases. Empyema and tuberculosis are the two complications to be most carefully watched for and treated, the former surgically, the latter symptomatically. The rare etiologic factors, such as syphilis, foreign body, metastatic and primary new growths, while uncommon, must not be overlooked. The diagnosis of nontuberculous interstitial pneumonia should always be made with great caution and after exclusion of all other conditions causing similar physical findings.

13. Prophylactic Vaccination against Chickenpox.—Thirty-two children in an institution were exposed to chickenpox and were given prophylactic vaccinations. Seven developed the disease, six between thirteen and sixteen days after vaccination. In the other instance the date was not known. Eight developed lesions at the site of vaccination between the tenth and fourteenth day, four of these developed chickenpox. Of the four, who had vaccinal lesions and who developed the disease, three had mild attacks and one a severe attack; of three who did not have vaccinal lesions two had severe and one a moderately severe attack. The ages of all who developed vaccinal lesions were between 2 and 5 years. This is true also of those who had chickenpox, except one girl of 7. It is evident that chickenpox is inoculable, as is shown by the development of lesions at the site of vaccination in eight of the thirty-two children vaccinated. This inoculation seems to take place more readily in young children, for the positive results were invariable in children under 5 years of age.

14. Oatmeal Gruel in Infant Feeding.—Levinson urges the use of oatmeal gruel as an important addition to infant food. The 5 per cent. solution is the most efficacious. It can be prepared very simply by washing grits in cold water and boiling for thirty minutes and then straining. Gruel can be given at any age with beneficial results. Its taking increases the appetite of the child, makes the stool homogeneous, and often relieves constipation. The gruel has high iron content. The caloric value of 1,000 gm. is 54 large calories.

Boston Medical and Surgical Journal

October, 11, CLXXVII, No. 15

- 15 Neurologic Indications for and against Operation in Traumatic Injuries Affecting Central Nervous System. J. J. Thomas, Boston.—p. 503.
- 16 *Indications for Operation on Traumatic Head Cases. E. H. Nichols, Boston.—p. 508.
- 17 *Temperature as Valuable Guide to Diagnosis, Prognosis and Surgical Treatment in Craniocerebral Traumatism. J. W. Courtney, Boston.—p. 511.
- 18 *Indications for Laminectomy in Fracture of Spine, with Cord Symptoms. J. B. Hartwell, Boston.—p. 513.
- 19 *Fractures of Base of Skull at Massachusetts General Hospital. W. J. Mixter, Boston.—p. 518.
- 20 *Report of Cases of Fracture of Skull and Spine, from Fourth Surgical Service, Boston City Hospital. F. J. Cotton and W. F. Cotting, Boston.—p. 519.
- 21 Cholecyst-Duodenal Fistula. E. D. Gardner, New Bedford.—p. 523.

16. Operation in Traumatic Head Cases.—Nichols summarizes his paper as follows: Uncomplicated edema of the brain almost never requires operation. Slight laceration of the brain with persisting edema sometimes requires operation to prevent cerebral degeneration. Subtemporal method is the best operation. Slight extracerebral hemorrhage seldom requires operation; occasionally demands operation to avoid cyst formation; the operation of choice is always skin bone flap. Extensive extracerebral hemorrhage, from rupture of the middle meningeal artery, with or without focal symptoms, always should be operated on, and always by skin bone flap method. Basilar hemorrhage seldom can be cured by operation. When operation is performed it should be in selected cases, for relief of pressure, and usually by skin bone flap

method. Intracerebral hemorrhage cannot be cured by operation, although pressure may be relieved. Fracture of the skull by itself, is of little importance except when compounded, when it may produce meningitis unless made aseptic. All depressed fractures involving the entire thickness of the skull should be elevated.

17. Temperature as Guide in Craniocerebral Traumatism.—Personal experience leads Courtney to declare dogmatically that of all the diagnostic and prognostic manifestations of intracranial traumatism, the temperature throughout stands supreme in the scale of importance. In intracranial hemorrhage unless the bleeding is very extensive and complicated by coexisting alcoholic intoxication, the temperature soon regains the normal and is seldom elevated more than a single degree throughout the entire course of the case, provided no extensive degree of contusion and no degree whatsoever of laceration be present. In uncomplicated contusion the range of the temperature is equally distinctive. In the generality of cases it rises quickly from the subnormal point caused by shock and may go as high as 102. Almost from the beginning its recessions are striking, a morning fall and an evening rise. In favorable cases the evening range gradually narrows to the normal point, the morning recession to a point but slightly subnormal. Toward the end, in unfavorable cases, temperature and pulse rise together and may reach a very high point.

In brain laceration the initial fall of temperature from shock is of extremely brief duration. The almost immediate trend of the temperature is steadily upward, and in severe cases it may rise to 104 or 105 in a few hours. An early and persistently high temperature after craniocerebral traumatism invariably denotes brain laceration. The occurrence of chills during the course of a case of head injury is not an indication of pus formation. The development of an arachnoid process is marked by a sudden jump in the temperature accompanied by such signs of cortical irritation as delirium, somnolence or great motor restlessness. In cerebral abscess the temperature is normal during a sinister period of quiescence which follows the antecedent activity of the process, and subnormal after an abscess has attained sufficient proportions to cause local manifestations of its presence.

18. Laminectomy in Fracture of Spine with Cord Symptoms.—The indications and contraindications for laminectomy in Hartwell's opinion are as follows: Laminectomy is absolutely contraindicated in all cases of fracture of the cervical segment of the spine in which there is a paralysis of the intercostal and abdominal muscles, and is contraindicated in all fractures of the spine, wherever located, with cord symptoms of immediate onset, however slight, if other severe injuries are demonstrable, or if the patient presents or has presented the signs of surgical shock. Laminectomy is contraindicated in cases of fracture of the spine with synchronous cord injury, in which the signs point to a complete crush of the cord, until at least four days have passed—the minimum time in which spontaneous improvement can be expected to manifest itself.—and if no spontaneous improvement is shown that operation offers no real hope.

Laminectomy is justifiable in cases of fracture of the spine, accompanied by cord symptoms which do not point to a complete cord destruction, if the patient comes under observation within six hours, and if, during the period of observation, the cord symptoms are progressive. In such cases laminectomy with incision into the cord substance for drainage should be practiced at once. Laminectomy is urgently and immediately demanded in those cases of spinal fracture in which cord symptoms are of slow onset and progressive, and in those cases originally free from cord symptoms, in which medullary signs make a sudden appearance. Laminectomy is indicated in those fractures of the lumbar spine in which the cord symptoms indicate injury to the cauda equina, and in these cases an attempt to suture the crushed trunks should be made. Laminectomy is indicated in those cases of old fractures of the spine in which cord symptoms were originally absent or slight and of short duration, but in which the symptoms of pressure on the cord develop late.

19. **Fractures of Base of Skull.**—Mixer's statistics show that among 209 cases of fractures of the base of the skull treated expectantly there was a mortality of 58.3 per cent., whereas among ninety-two cases treated by operation the mortality was 43.4 per cent. Mixer says that decompression in the proper cases of fracture of the base of the skull markedly lowers the mortality. Localizing signs are of value but are certainly no more important than the evidences of increased intracranial pressure. Operation should be performed as early as possible, as late operations are much less effective. As a rule, the decision for or against operation can be made at once, but in a certain number of doubtful cases it is necessary to wait from six to twenty-four hours in order to observe the increase or decrease in symptoms. If the decision is made to postpone operation or not to operate at all, the patient is sent to the ward and the pulse, temperature and blood pressure watched and the condition of the eye grounds noted at intervals. Epsom salt, by the mouth or stomach tube, and an enema are usually given within a few hours. The general pressure symptoms and the general condition of the patient are of fully as great importance as an indication for operation as any localizing signs.

20. **Fracture of Skull and Spine.**—Of twenty-one cases of proved skull fracture, only seven were operated on by Cotton and Cotting; of these there were no deaths following operation save by way of sepsis—late; while of those not operated on there was one death in a hopelessly smashed case and only one death from alcohol combined with trauma in which operation after three to four days would perhaps have been better. It has been Cotton's rule not to do radical operations early, just to clean up compound damage and to await results. If one operates early there is a large percentage of deaths, occurring with curious accuracy ten or twelve hours after operation, from a combination of shock, uncontrollable leakage of blood and of cerebrospinal fluid. Certain cases like one of subdural hemorrhage cited, growing steadily worse from hemorrhage, must be operated on and take their chance. In the main, however, if one can wait, and one mostly can wait safely from forty-eight to seventy-two hours, then the bleeding has ceased, the shock is over, and one can operate or not, mostly not, without much risk and for definite reasons. Depressed fragments, signs of cortical pressure, persistent slowness in clearing of the mental state, with or without signs of actual pressure, are the indications and the only indications. In the early stages, particularly in base fractures, intracranial pressure is not the sole trouble; when they die it is apt to be from an operation which renews bleeding as it removes pressure, a bleeding from sinuses or little basal veins that one cannot control, which with the added trauma is enough to turn the scale.

California State Journal of Medicine, San Francisco

October, XV, No. 10

- 22 Recruiting Observations. J. Jacobs and W. D. Horner, San Francisco.—p. 391.
- 23 Urologic Diagnosis in General Practice. F. Hinman, San Francisco.—p. 392.
- 24 Treatment of Eclamptogenic Toxemia of Pregnancy; Report of Cases. E. N. Ewer, Oakland.—p. 401.
- 25 Radium; Its Local Application as Therapeutic Agent; Report of Cases. R. Duncan, Los Angeles.—p. 406.
- 26 Malaria Problem in Rice Fields. S. B. Freeborn, San Francisco.—p. 412.
- 27 Common Errors in Diagnosis of Syphilis of Skin and Mucous Membranes. G. D. Culver, San Francisco.—p. 414.
- 28 Late Correction of Malunited Fractures of Extremities. P. S. Campiche, San Francisco.—p. 420.

Iowa State Medical Society Journal, Des Moines

October, VII, No. 10

- 29 Retrospect and Prospect. Oration in Medicine. M. E. Witte, Clarinda.—p. 365.
- 30 Pleurisy—Symptomatology. J. W. Osborn, Des Moines.—p. 370.
- 31 Pleurisy—Etiology and Pathology. G. McConnell, Waterloo.—p. 372.
- 32 Pleurisy—Diagnosis and Prognosis. W. J. Findley, Sac City.—p. 374.
- 33 Pleurisy—Nonsurgical Treatment. R. L. Parker, Des Moines.—p. 378.
- 34 Surgical Treatment of Empyema. L. W. Littig, Davenport.—p. 379.
- 35 Unusual Opportunities for Surgical Work and Original Investigation. W. E. LaForce, Ottumwa.—p. 384.

Journal of Cutaneous Diseases, Chicago

August, XXXV, No. 6

- 36 *Clinico-Pathologic Study of Unusual Cutaneous Neoplasm Combining Nevus Syringadenomatosus Papilliferus and Granuloma. J. H. Stokes, Rochester, Minn.—p. 411.
- 37 *Gel Test. A. Strickler, Philadelphia.—p. 426.
- 38 Perlèche: Review of Literature. J. E. Lane, New Haven, Conn.—p. 433.
- 39 Sporotrichosis. Clinical and Histopathologic Report of First Case to be Published in New England. J. H. Blaisdell, Boston.—p. 452.
- 40 Skin Diseases of Porto Rico. W. W. King, Washington.—p. 459.
- 41 *Cutaneous Metastases in Hodgkin's Disease. H. E. Alderson, San Francisco.—p. 481.
- 42 *Herpes Zoster Focal Infection. E. S. Lain, Oklahoma City.—p. 486.
- 43 Dermatitis Factitia and Neurotic Gangrene. C. A. Simpson, Washington.—p. 493.
- 44 Lupus Erythematosus and Its Management. F. Wise, New York.—p. 500.
- 45 Erythrodermie Congenitale Ichthyosiforme; Report of Cases and Review of Literature. G. M. MacKee and I. Rosen, New York.—p. 511.

36. **Syringadenoma.**—The case presented by Stokes offers the extremely rare combination of a nevus of the sudoriparous glands with a highly vascular granuloma containing large numbers of lymphocytes, plasma and mast cells in a fibroblastic stroma, suggesting in many ways a granuloma pyogenicum or a vegetating dermatitis. All stages in the histogenesis of such a nevus, according to the conception of origin in epithelial rests and inclusions (Cohnheim), seemed to be represented in the material from this case.

37. **"Gel" Test.**—Eighty-seven Gel tests were made by Strickler and in all, control Wassermanns were also made. In doing the Wassermann, three antigens were employed: cholesterinized beef heart, acetone insoluble lipoids of Noguchi, and alcoholic extract of syphilitic liver. The complement unit was a fixed one, the amboceptor titrated before each test and two units employed; 2.5 per cent. suspension of sheep cells was used. In doing the Gel test, all the serums were subjected to the ammonium sulphate test, while about forty serums were subjected to the acetic acid thorium sulphate test. In this series of eighty-seven serums, fifty-nine patients gave a history of syphilis or had syphilitic lesions; practically all were under treatment. All these serums gave positive Wassermann reactions, while only forty-seven gave positive Gel tests. The serum of twenty-eight individuals suffering with various skin affections and several with no lesions whatever were tested. All gave negative Wassermann tests, sixteen gave negative and twelve serums gave positive Gel tests. Therefore it is Strickler's belief that the Wassermann reaction is the best test for syphilis.

41. **Cutaneous Metastases in Hodgkin's Disease.**—Alderson's patient had Hodgkin's disease involving the cervical, axillary and mediastinal glands, as demonstrated clinically and histopathologically. He developed on both legs hard, immovable, painless, noninflammatory tumors which softened and broke down, leaving ulcers clinically indistinguishable from syphilitic gummas. In spite of numerous negative Wassermanns, including several following two provocative injections of salvarsan, mercury and potassium iodid were administered. The salvarsan-mercury-iodid treatment caused only temporary improvement. Roentgen therapy (Coolidge tube) applied to the lesions, rapidly caused complete filling in of the ulcers. Sections of tissue taken from the edge of one of the ulcers before treatment showed the condition to be metastatic Hodgkin's disease of the subcutaneous tissue and skin.

42. **Herpes Zoster Focal Infection.**—Finding a constant association of zoster with alveolar and tonsillar disease processes, leads Lain to believe that true herpes zoster has its origin in a focal infection.

Journal of Nervous and Mental Disease, Lancaster, Pa.

September, XLVI, No. 3

- 46 *Symptomatology of Certain Infectious Processes Involving Ciliary Ganglion or Its Connections. L. Archambault, Albany, N. Y.—p. 161.
- 47 Cerebrospinal Fluid Tests, Especially Gold Reactions in Psychiatric Diagnosis. L. G. Lowrey, Boston.—p. 186.

46. **Symptomatology of Infectious Processes of Ciliary Ganglion.**—In all the cases included in Archambault's paper, the symptoms had an acute onset and followed either evidence of general infection or toxemia or else actual infectious processes about the orbits and nasal fossae. The symptoms were strictly local and repeated neurologic examinations failed to disclose any sign of involvement of the cerebrospinal axis. In Archambault's opinion there can hardly be any doubt therefore that the symptoms observed were dependent on pathologic changes within the orbit. This does not mean that infiltration at the sphenoidal fissure and optic foramen cannot materially interfere with the vascular and subarachnoid exchanges at the base of the brain and thus determine secondarily more or less functional disturbance referable more particularly to the interpeduncular space and acoustico-cerebellar recess. The nature of the infection in these various cases is difficult to establish even tentatively. In all of them, with one exception, the Wassermann reaction was negative which naturally did not exclude syphilis, and in some of the cases, active antisyphilitic medication was followed by prompt and marked improvement. Even this, however, is not positive proof that the nature of the lesion was syphilitic. In some of the cases specific medication yielded absolutely no results and the condition either remained stationary or cleared up apparently under other forms of treatment. Several of the cases occurred either at the beginning or toward the end of an epidemic of poliomyelitis and some of these patients actually lived in districts from which cases of poliomyelitis were known to have been reported. It occurred to Archambault that these ocular syndromes might possibly represent another clinical modality of poliomyelitis. In most of the cases, the occupation or avocation of the patient was such as to throw undue and persistent strain on the accommodative apparatus.

Archambault concludes that while foci of disease involving the brain stem and more particularly the region of the sylvian aqueduct and corpora quadrigemina undoubtedly do produce, usually along with other symptoms, the accommodation convergence paralysis syndrome, there seems to be little ground for the assumption that this syndrome, occurring as an isolated and purely transitory clinical manifestation, is due to an elective central localization. The fact that this syndrome develops after a number of infectious and toxic states known to give rise essentially to lesions in the peripheral nerves, and that it likewise follows local infectious processes about the orbit and nasal fossa, appears to Archambault to justify the belief that it is dependent on degenerative changes involving either the ciliary ganglia or their immediate connections.

Maine Medical Association Journal, Portland

October, VIII, No. 3

- 48 Best Method of Securing Pathologic Specimens for Laboratory Examinations. F. N. Whittier, Brunswick.—p. 69.

Medical Record, New York

October 13, XCII, No. 15

- 49 Osmosis, an Immunizing Factor in Tuberculosis. P. S. Bailey, Fort Bayard, N. M.—p. 618.
50 Management of Decubitus, System in Use at Kings County Hospital. W. Browning, Brooklyn.—p. 622.
51 Recent Advance in Treatment of Kidney Disease. J. R. Williams, Rochester.—p. 624.
52 Electricity Then and Now. W. Travell, New York.—p. 627.
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54 Etiology of General Paralysis. B. Lemchen, Dunning, Ill.—p. 632.
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Michigan State Medical Society Journal, Grand Rapids

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59 Pyelitis in Children. H. W. Long, Escanaba.—p. 438.
60 Vesicle Calculus. A. K. Bennett, Marquette.—p. 440.
61 Treatment of Fractures and Results Obtained as Observed in Military Hospitals of Austria. G. J. Korby, Ishpeming.—p. 443.

New Jersey Medical Society Journal, Orange

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- 62 Indigestion and Other Protective Symptoms. D. E. Drake, Newfoundland.—p. 379.
63 Increased Eye Tension and Blood Pressure; Report of Twenty Cases. H. Vaughan, Morristown.—p. 386.
64 Education in Development of Physician. G. K. Dickinson, Jersey City.—p. 389.
65 Plea for Greater Exactness in Diagnosis and Treatment of Tuberculosis. R. C. Newton, Montclair.—p. 391.

New York Medical Journal

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- 66 Psychologic and Therapeutic Value of Studying Mental Content During and Following Epileptic Attacks. L. P. Clark, New York.—p. 677.
67 Onions in Tuberculosis. W. Lintz, New York.—p. 683.
68 Health Insurance. W. P. Cunningham, New York.—p. 683.
69 Id. A. Schachner, Louisville, Ky.—p. 686.
70 War Depletion of American Medical Profession. A. L. Benedict, Buffalo.—p. 690.
71 Differential Diagnosis in Cases of Suspected Pulmonary Tuberculosis. A. Minnig, Denver.—p. 692.
72 Portable Operating Table Attachment. T. C. Stellwagen, Jr., Philadelphia.—p. 694.
73 Simple Painless Technic for Salvarsan Intravenous Administration. C. C. Miller, Chicago.—p. 696.
74 Circumcision of Prepuce in Lieu of Circumcision. F. K. MacMurrugh, Jersey City, N. J.—p. 698.

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- 75 Medical Profession and War. S. C. Baldwin, Salt Lake City.—p. 291.
76 Principles Underlying Successful Treatment of Achylia Gastrica and Chronic Connective Tissues Lientery. N. W. Jones, Portland, Ore.—p. 295.
77 Physiology of Gallbladder Under Normal and Morbid Conditions. C. S. Leede, Seattle.—p. 298.
78 Report of One Hundred and Five Consecutive Gallbladder Operations. Primary Cholecystectomy vs. Cholecystostomy. A. A. Matthews, Spokane.—p. 302.
79 Autoserum Treatment of Chorea (Goodman); Report of Cases. E. M. Tarr, Boston.—p. 308.
80 Four Point Survey for Localization of Foreign Bodies Without Use of Roentgenograms. E. O. Houda, Tacoma.—p. 311.

Ohio State Medical Journal, Columbus

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- 81 Sarcoma of Stomach. F. Warner, Columbus.—p. 647.
82 Some Bacteriologic Findings in Conjunctivitis. R. B. Metz, Cleveland.—p. 649.
83 Points in Treatment of Syphilitic Brain Conditions. G. H. Williams, Columbus.—p. 651.
84 Tumors of Urethra and Vesical Sphincter. J. F. Elder, Youngstown.—p. 653.
85 Veratrum Viride and Pilocarpin Hydrochlorate. H. F. Biggar, Cleveland.—p. 655.
86 Inflammation of Eyes of New-Born; Observations of Operation of Present Law. J. E. Bauman, Columbus.—p. 656.

Oklahoma State Medical Association Journal, Muskogee

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- 87 Syphilis of Nervous System. D. W. Griffin, Norman.—p. 383.
88 Hereditary Syphilis. W. L. Kendall, Enid.—p. 387.
89 Ocular Manifestations of Syphilis. J. H. Barnes, Enid.—p. 388.
90 Early Treatment of Syphilis; Its Prevention and Cure. R. T. Edwards, Oklahoma City.—p. 392.
91 Treatment of Latent Syphilis. P. P. Nesbitt, Muskogee.—p. 397.
92 Application of Clinical Laboratory to Diagnosis and Treatment of Syphilis. O. J. Walker, Oklahoma City.—p. 400.

Philippine Journal of Science, Manila

March, XII, Sec. B, No. 2

- 93 *Experimental Cholera Carriers and Immunity. O. Schöbl and C. S. Panganiban, Manila.—p. 43.
94 Anatomicopathologic Lesions in One Thousand Filipino Children Under Five Years of Age. M. P. Mendoza-Guazon, Manila.—p. 51.
95 *Bacteriologic Investigation of Feces and Bile of Cholera Cases and Cholera Carriers. B. C. Crowell and J. A. Johnston, Manila.—p. 85.

93. **Cholera Carriers and Immunity.**—Schöbl and Panganiban found specific immune bodies in the blood serum of experimental cholera carriers (guinea-pigs and rabbits). Specific immune bodies were found to be absent in the normal bile of a highly immunized rabbit. In confirmation of Virole's findings specific antibodies were found to be present in the gallbladder contents of infected rabbits. The percentage of

takes in guinea-pigs that received preventive inoculation or vaccine treatment was as high as in untreated carriers. Preventive vaccination and vaccine therapy effected no apparent shortening of the duration of cholera carriers in guinea-pigs.

95. **Feces and Bile of Cholera Cases and Carriers.**—The intestinal contents and the bile of 269 cases of cholera and cholera carriers were examined by Crowell and Johnston. In 212 cases of cholera the vibrio was found in the bile in 65.2 per cent. and only in the bile in 5.7 per cent. In thirty-two cholera carriers detected after death, the cholera vibrio was found in the bile in 75 per cent. and only in the bile in 43.7 per cent. In cholera carriers the vibrio was present in the bile in 10 per cent. more cases than in cholera cases and only in the bile in 38 per cent. more than in cholera cases. From this the importance of routine examination of both bile and feces becomes apparent. Five patients that were known to have been carriers before death were examined after death, and only in the one with the shortest period between detection and death (thirty-seven days) was the vibrio found. In that case the vibrio was isolated from the bile only. Thirty strains of nonagglutinable vibrios, isolated from the feces and bile of cholera cases, cholera contacts, and others, have been studied. When first isolated, these were not agglutinated by high titer cholera immune serum. By growth in bile eight of these strains acquired the agglutinability. Five of these eight strains retained this property, and the other three lost it after cultivation for a period of two months. In six cases that were clinically and anatomically cholera, the cholera vibrio was not isolated from either the feces or the bile. Such cases occur in a large series of cholera cases.

Southwestern Medicine, El Paso, Texas

September, I, No. 9

- 96 Traumatic Hernia. J. E. Bacon, Miami, Ariz.—p. 9.
- 97 Successful Use of Autogenous Vaccines in Mixed Infection in Tuberculosis. W. R. Smith, El Paso.—p. 13.
- 98 Carcinoma of Male Breast; Report of Case. C. S. Vivian, Humboldt, Ariz.—p. 17.
- 99 Smallpox. I. J. Bush, El Paso.—p. 21.
- 100 Medicosurgical and Legal Aspect of Few Injury Cases, as Seen through Eyes of Corporation Physician. W. A. Holt, Globe, Ariz.—p. 26.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

October, XXV, No. 10

- 101 Autointoxication. C. W. Tedrowe, Elk City.—p. 247.
- 102 Tubal Pregnancy; Report of Case. F. M. Sanger, Oklahoma City.—p. 251.
- 103 Double Undescended Testicles; Report of Case. F. M. Sanger, Oklahoma City.—p. 253.

Surgery, Gynecology and Obstetrics, Chicago

October, XXV, No. 4

- 104 *Report of Eight Cases of Syphilis of Stomach. W. A. Downes, New York.—p. 361.
- 105 Complete Bony Ankylosis of Jaw; Report of Three Cases Cured by Operation. W. P. Carr, Washington, D. C.—p. 367.
- 106 *Recurrence of Gallstones. J. B. Deaver, Philadelphia.—p. 371.
- 107 America's Place in Surgery of World. T. S. Cullen, Baltimore.—p. 376.
- 108 *Substitution of Anal for Vesical Sphincter in Certain Cases of Inoperable Vesicovaginal Fistulae. R. Peterson, Ann Arbor, Mich.—p. 391.
- 109 Subtotal Thyroidectomy. W. Bartlett, St. Louis.—p. 402.
- 110 Study of Modern Operations in Hypospadias from Anatomic and Functional Standpoint. J. E. Thompson, Galveston, Texas.—p. 411.
- 111 Conservative Foot Surgery; Report of Case. J. P. Lord, Omaha.—p. 422.
- 112 Caisson Bronchoscopy in Lung Abscess Due to Foreign Body. C. Jackson, Philadelphia.—p. 424.
- 113 Cystic Hygromas and Other Tumors Occurring in Infancy; Report of Cases. R. Winslow, Baltimore.—p. 428.
- 114 Ligation or Excision of Pelvic Veins in Treatment of Puerperal Pyemia. C. J. Miller, New Orleans.—p. 431.
- 115 Treatment of Puerperal Pyemia. B. C. Hirst, Philadelphia.—p. 452.
- 116 Nonoperative Treatment of Gunshot Fractures of Femur. J. R. Eastman, Indianapolis, and R. B. Bettman, Chicago.—p. 456.
- 117 Observations in Military Surgery. W. A. Clark, Chicago.—p. 463.

104. Abstracted in THE JOURNAL, Jan. 27, 1917, p. 308.

106. Abstracted in THE JOURNAL, June 20, 1917, p. 222.

108. Abstracted in THE JOURNAL, Jan. 20, 1917, p. 221.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

September 29, II, No. 2961

- 1 *Etiology and Treatment of War Neuroses. A. F. Hurst.—p. 409.
- 2 *Investigation of Trench Nephritis by Means of Phenolsulphonephthalein. A. G. Auld.—p. 414.
- 3 *Occurrence of Spirochetes in Urine. J. L. Stoddard.—p. 416.
- 4 *Spirochetes Occurring in Urine of Cases of Pyrexia of Unknown Origin. S. W. Patterson.—p. 418.
- 5 Acute Syphilitic Meningitis. S. A. K. Wilson and A. C. E. Gray.—p. 419.
- 6 Eusol Treatment of Wounds Infected with Bacillus Pyocyaneus. P. Turner and G. Richardson.—p. 421.
- 7 Ionic Medication: Method of Administration. L. Kesteven.—p. 423.
- 8 Case of Acholuric Jaundice Treated by Splenectomy. R. Hill.—p. 424.

1. **Treatment of War Neuroses.**—Hurst discusses: 1. Exhaustion resulting in neurasthenia and soldier's heart. 2. Emotions resulting in stupor and amnesia, psychasthenia, hysteria, hypersuprarenalism and hyperthyroidism, and exaggerated defensive reflexes: (a) stupor and amnesia; (b) psychasthenia; (c) hysterical symptoms; (d) hypersuprarenalism and hyperthyroidism; (e) exaggerated defensive reflexes. 3. Shell shock: 1. Pure concussion: (a) cerebral concussion; (b) spinal concussion. 2. Hysterical symptoms grafted on to organic basis of cerebral or spinal concussion.

2. **Phenolsulphonephthalein Test in Trench Nephritis.**—The cases studied by Auld were young soldiers discharged from the hospitals abroad after the acute symptoms had subsided. As a matter of fact, the test is useless in acute cases. The complete results are based on forty-two selected cases. The routine consisted in making the test soon after the patient's admission, and repeating it at intervals of about three weeks. Concomitantly the blood pressure was recorded. The cases in the second month of the disease showed phenolsulphonephthalein elimination varying from 15 to 50 per cent., or over in one hour. If, within three months from the onset of the disease, the phenolsulphonephthalein excretion rises to 40 per cent., or over in one hour, recovery will be good, even should albuminuria continue for another two months or possibly longer. For part of this time casts may also be present. If, at the end of the third month, the phenolsulphonephthalein excretion be under 30 per cent. in one hour, notwithstanding a slight degree of albuminuria, or with intermitting albuminuria, recovery will be protracted, and in some of the cases unsatisfactory. If, at the end of four months the phenolsulphonephthalein excretion reaches 40 per cent., or over, ultimate recovery is the rule, even should the albuminuria last for several months longer. If the excretion remains persistently low (15 to 30 per cent.) up to the fourth or fifth month, the prognosis is unfavorable without reference to the presence or degree of albuminuria. Several such patients reporting themselves after eight to nine months still presented a low index of elimination and slight albuminuria. As to the final issue, it is difficult to say, but the fact that they all had either normal blood pressures, or slightly over, seems to presage in some of these a favorable result.

3. **Spirochetes in Urine.**—A series of 100 men without history or symptoms of relapsing fever showed intra-urethral spirochetes in 33 per cent. of the cases. If spirochetes of the refringens type are included, the incidence rises to 44 per cent. The spirochetes occurred in about 1 in 2¼ men sick of miscellaneous medical and surgical conditions, and in 1 in 5 of healthy men. Stoddard believes that the variety of organisms makes it improbable that the mere finding of spirochetes in the urine can have any diagnostic value in relation to the relapsing fevers until definite morphologic or other differences are established between the various normal and pathogenic varieties.

4. **Spirochetes in Urine of Cases of Pyrexia.**—Patterson states that spirochetes may occur in: 1. A disease with acute onset with chills and vomiting, pain in the abdomen, usually more marked in the right upper quadrant, with continued fever for several days, often with enlargement of the spleen

and herpes of the lips. The pulse rate is not increased, and is usually slowed to 50 or 60 beats a minute in convalescence. There is a leukocytosis of 12,000 to 25,000 with relative increase in the large mononuclears. The cases, if an attempt is made at diagnosis, come to the base as "appendicitis," or "N. Y. D. abdominal"—the initials "N. Y. D." standing for "not yet diagnosed." In these patients Patterson finds spirochetes almost constantly in the urine. 2. The relapsing type of P. U. O. (trench fever) with the characteristic periodic rises of temperature, myalgic and periosteal pains, and leukocytosis with or without enlargement of the spleen, in which an improving technic has enabled Patterson more and more frequently to find a spirochete in the urine during and immediately after the exacerbations of temperature.

Journal of Laryngology, Rhinology and Otology, London

September, XXXII, No. 9

- 9 An Air Raid Case. M. Yearsley.—p. 273.
- 10 Cases of Facial Deformity Treated in Department of Plastic Surgery at Cambridge Hospital, Aldershot. H. D. Gillies.—p. 274.
- 11 Ozena Among Various Races of Earth. J. N. Roy.—p. 283.

Lancet, London

September 22, II, No. 4908

- 12 *Wound Treatment by Introduction of Living Cultures of Spore-Bearing Anaerobe of Proteolytic Group. R. Donaldson and J. L. Joyce.—p. 445.
- 13 *Liquid Tight Closure in Treatment of Wounds. W. H. Taylor and N. B. Taylor.—p. 452.
- 14 *Operation for Radical Cure of Inguinal Hernia. R. V. Slattery.—p. 455.
- 15 Blood Pressure and Surface Temperature in One Hundred and Ten Cases of Shell Shock. E. M. N. Green.—p. 456.
- 16 Fractured Base of Skull: Subsequent History of Case and Its Termination Twenty-Four Years After Accident. J. B. Christopherson.—p. 458.
- 17 Unusual Renal Calculi with Severe Hemorrhage as Only Important Symptom. J. D. Malcolm.—p. 459.
- 18 Awkward Prescriptions. A. W. Bromley.—p. 472.
- 19 Biologic Aspects of Warfare. H. Campbell.—p. 469. To be concluded.

September 29, No. 4909

- 20 Malaria. C. Christy.—p. 485.
- 21 *Treatment of Subtertian Cerebral Malaria with Quinin and Galyl. A. W. Falconer and A. G. Anderson.—p. 486.
- 22 Surgery Next Door to Front. T. B. Layton.—p. 488.
- 23 *Germicidal Power of Flavine. R. T. Hewlett.—p. 493.
- 24 Open Flap Method of Treating Perforating Brain Wounds. J. G. Hunt.—p. 494.
- 25 Mediastinitis as Cause of Heart Failure. H. L. Whale.—p. 495.
- 26 Biologic Aspects of Warfare. H. Campbell.—p. 505.

12. Wound Treatment by Living Cultures of Spore-Bearing Anaerobes.—The key to the situation according to Donaldson and Joyce depends on two observations: one clinical, the other bacteriologic. The former consists in the fact that cases which smell (and the odor is one of the most characteristic features of these cases) do well, while those which do not make no headway. The bacteriologic observation consists in the discovery that a certain bacillus is apparently constant in the wounds which emit the odor, while it is absent or cannot be recovered from those which do not smell. This bacillus is a spore-bearing anaerobe of a saprophytic nature and belongs to the proteolytic group of organisms; the group which includes *B. tetani* and *B. edematis-maligni*. Unlike the latter, it appears to be nonpathogenic to the animals experimented on, and, what is of more importance, appears to be nonpathogenic for man when introduced into wounds. Further, it does not appear to set free any toxins injurious to the patient in the course of its action on the dead tissues. For convenience sake, the authors call it the "reading" bacillus. It acts, apparently, in virtue of its proteolytic powers only on devitalized tissue, and possibly on toxalbumins, and appears to possess no power of attacking healthy structures. Special stress is laid on the necessity of recognizing the fact that one of the chief factors which keep a wound septic is the presence of devitalized tissue in that wound. This acts as a base from which pathogenic organisms attack the body.

The surgical or excision treatment of wounds apparently recognizes this, but only aims at removing macroscopically devitalized tissues, and in doing so inflicts a fresh trauma liable to reinfection. For this Donaldson and Joyce propose

to substitute the "reading" bacillus in a living form. The organism is probably present in the larger number of infected wounds, but requires more or less anaerobic conditions before it can come into play. These are provided by the pack method of treatment, but the authors are inclined to think that salt is not a necessary adjuvant and plays a very small rôle, if any. This seems indicated by the fact that an inert substance like sphagnum moss for packing gives equally good results. It is essential, however, that the wound be laid wide open in the first instance, exposing every pocket and sinus, so that the packing may completely fill the wound.

13. Liquid Tight Closure in Wound Treatment.—For the purpose of bringing fresh solution in contact with as large an extent of the wound cavity as possible, the authors created an ebb and flow in the wound by repeatedly filling it under pressure and allowing the fluid to escape. A catheter was inserted having a hole about its middle discharging in the center of the wound and its lower end tied off. The escape of fluid was obstructed by plugging the wound openings with gauze. Irrigation was regulated by a clip on the tube connecting the catheter with a reservoir. Distention of the wound occurred during the flow, followed by leakage and collapse of its walls when the flow was stopped, thus furthering the mixing of fluids in the wound much as the interchange of gases is promoted in the lungs by the act of breathing. In a sense the wound was made to breathe. This tidal movement in the wound is important. It is essentially a cleansing action. In wounds whose ramifications are many and tortuous this plan is particularly efficacious and has given excellent results. Closely associated with this washing of the wound is its ventilation. Exposing a deep wound to the air is of little avail unless air containing fluids are made to penetrate its depths. This is precisely what tidal flushing does. The technic of the procedure is described in detail.

14. Radical Cure of Inguinal Hernia.—In Slattery's opinion the importance of repairing the defect in the fascia transversalis in an operation for the radical cure of an oblique inguinal hernia has never been fully appreciated. Any operation which leaves a large or unsupported defect in the fascia transversalis or interferes with the support which the internal oblique muscle normally affords in the inguinal region must fail. Slattery frees the fascia transversalis thoroughly from the retroperitoneal fatty tissue both upward under the conjoined tendon and downward to expose the deep aspect of Poupart's ligament. The fleshy arch of the internal oblique muscle is retracted and forceps applied to the glistening fascia on the deep aspect of the conjoined tendon so as to draw it into the wound. This fascia brings with it the lower aponeurotic portion of the transversalis muscle. Mattress sutures (three or four generally suffice) are used to approximate this fused fascia and aponeurosis to the deep aspect of Poupart's ligament. It is important that the remains of the fascia transversalis still adherent to Poupart's ligament and the cord should not intervene between the structures opposed.

21. Subtertian Cerebral Malaria Treated with Quinin and Galyl.—In six cases cited by Falconer and Anderson galyl was used in association with large doses of quinin. That galyl alone can cause the disappearance of the ring forms of parasite from the peripheral blood stream is shown by two cases cited. The first six cases reported were all seriously ill with definite subtertian cerebral malaria. All the patients recovered, with the exception of one patient who died of a complicating croupous pneumonia. All had received quinin, several of them large doses by the mouth, intramuscularly, and intravenously, without clinical improvement. In all of them, with the exception of the fatal case, the clinical improvement after the administration of galyl was striking and immediate. In none of the cases did the injection produce any unpleasant results, although several of the patients appeared almost moribund before the injection. In one case in which it was considered inadvisable to give quinin, galyl alone caused the disappearance of the parasite from the peripheral blood and produced a striking improvement in the condition of the patient. In another case the patient took quinin in any form with great difficulty, and although she had taken a con-

siderable amount of quinin by the mouth and intramuscularly, ring forms of the subtertian parasite were constantly present in the blood. After the first half dose of galyl there was a notable clinical improvement, but the parasite could still be demonstrated in the blood. After the second dose the parasites at once disappeared from the blood. The disease ran a protracted course, and she developed a periostitis of the left humerus, but in spite of repeated examinations parasites were not again demonstrated in the blood during the rest of her stay in the hospital. The authors conclude that while the results of the combined galyl and quinin treatment have been encouraging enough to justify a further trial, the addition of galyl in no way diminishes the necessity for quinin. In cases in which on account of idiosyncrasy, quinin is impossible a valuable substitute may be found in galyl.

23. Germicidal Power of Flavine.—From Hewlett's experiments the germicidal value of flavine comes out very much lower than that stated by Browning and his co-workers. The result with pus is particularly poor and many disinfectants equal or surpass flavine and have the advantage of a much more rapid action.

Archives des Maladies de l'Appareil Digestif, etc., Paris

June, IX, No. 9, pp. 229-296

- 27 *Albert Mathieu. Editorial.—p. 229.
- 28 *Congenital Megacolon and Megarectum. L. Bard.—p. 233.
- 29 *Exploratory Laparotomy with Advanced Cancer of the Stomach. Le Noir and Gardin.—p. 248.
- 30 *Fermented Whey in Treatment of Certain Forms of Dyspepsia. G. Moruzzi.—p. 254.
- 31 *Stool Signs of Insufficiency of the Stomach. R. Goiffon.—p. 262.
- 32 Jejunal Ulcer after Gastro-Enterostomy. Urrutia.—p. 272.
- 33 Pathologic Reactions of the Colon—Colonic Crises—and Pancreas Organotherapy. E. Savini.—p. 276.

27. Mathieu and the Archives.—The sudden death of Albert Mathieu is not to interfere with the publication of this monthly he founded nine years ago for records of research on diseases of the digestive apparatus and of nutrition. It is to be carried on by his former assistants, J. C. Roux, the internist, and P. Daval, the surgeon. It was one of Mathieu's principles to insist on the close and continuous collaboration between the internist and the surgeon in this line of work. The numerous cases of severe and rebellious enteritis in soldiers in his service during the war threw more light on gastro-intestinal pathology, and he had just finished the revision of the third edition of his textbook with this title when death surprised him.

28. Idiopathic Dilatation of the Rectum.—Congenital dilatation of the bladder, colon, and rectum has been a special field of Bard's research. He here describes cases of megarectum in which there was abnormal frequency of bowel movements. In one case, in a man of 48, previously published, the rectum filled the entire small pelvis, extending up to the diaphragm. Except for a tendency to constipation, there had been no trouble from this megarectum which was a necropsy surprise, the nature of the tumor not being suspected. In a recent case the diagnosis was made in the clinic. The man of 45 had had for years six or seven daily soft stools. When he had to defecate twice in the night, he called it an attack of diarrhea, but no medication modified it and there were no symptoms outside of the abnormally frequent soft stools. The rectum was much dilated but not so much as in the first case in which constipation dominated the clinical picture. In two other cases of megarectum with the diarrheic tendency there was also megacolon, so that diarrhea with megacolon should not be ascribed to colitis until megarectum has been excluded. In fact, the diarrhea from the megarectum may mask the constipation from the megacolon. This may lead to serious mistakes in diagnosis, as in still another case he describes in which various tedious courses of treatment had been futilely applied by different specialists to cure the assumed chronic colitis. This patient was a man of 60, member of a foreign embassy, not at all neuropathic and in good general condition but annoyed at having four or five passages of the bowels during the night, with two during the day. Roentgenoscopy showed the rectum abnormally dilated and long and the colon also. In these cases of megarectum, medication to cure the diarrhea had no

effect as it did not remove the cause, but great benefit followed lavage of the rectum, rinsing it clean and thus putting an end to the incomplete spontaneous evacuation which was the cause of the frequent defecation. With megabladder, in the same way, there is only fragmented evacuation at a time, and hence the pollakiuria with megabladder is exactly analogous to the pollakicoprois with megarectum.

29. Exploratory Laparotomy with Advanced Cancer of the Stomach.—Lenoir and Gardin report a case of advanced gastric cancer in which an exploratory laparotomy improved conditions materially. The patient was a woman of 54 who had had for six years symptoms suggesting hyperchlorhydria. Then during the following year, the vomiting and hematemesis became more frequent with other symptoms suggesting malignant disease, including atrocious pains and loss of weight. At an exploratory laparotomy the neoplasm was found too extensive for removal and the abdomen was closed, but prompt and material improvement followed. The pains in the stomach region disappeared for weeks at a time and the appetite returned, the patient gaining nearly 30 pounds. Secretory conditions improved to a remarkable extent, and the general benefit was so great that the diagnosis of cancer was doubted for six months, but then the symptoms returned. The woman lived eleven months after the operation. More than this could not have been anticipated from a more radical operation. Mathieu reported a similar case in 1895; he attributed the benefit to the effect of the operation on the mind. The pains abolished by an exploratory laparotomy, he thinks, must have been of central origin. A number of similar cases are cited, with from two to eighteen months' survival. The effect of the exploratory laparotomy is probably analogous to the influence of a laparotomy on tuberculous peritonitis.

30. Unfermentable Diet.—Moruzzi's publication on the advantages of peptonized and fermented whey in treatment of dyspepsia with acid or alkaline fermentations, in adults, was summarized in these columns, July 7, 1917, p. 75.

31. The Stools with Gastric Insufficiency.—Goiffon reviews in detail the coprologic signs revealing defective functioning on the part of the stomach. He thinks this is more common than generally believed, and that it may be responsible for both gastric and intestinal troubles. When the stools look brown or black on the surface and a brighter color inside, this, he says, indicates rapid oxidation of the bile pigments, and testifies to intense albuminoid putrefaction. The stools with gastric insufficiency are also liable to contain bunches or filaments of connective tissue and small scraps of potato, and the microscope shows muscle fibers. Treatment is with hydrochloric acid, and it has to be given in doses of from 1.5 to 3 gm. a day. Mathieu used to prescribe it: 20 gm. hydrochloric acid in 180 gm. distilled water. From one to three teaspoonfuls is added to a glass of sweetened water into which the white of an egg has been stirred. This glassful is to be sipped during the meal. The hydrochloric acid even in this amount does not replace the missing gastric juices, but it is enough to start the normal play of the reflexes, so that the motor functioning is restored to normal.

Bulletin de l'Académie de Médecine, Paris

September 4, LXXVIII, No. 34, pp. 163-194

- 34 Discussion on the Declining Birth Rate. Pinard and others.—p. 165. Continuation.
- 35 *Repression of Criminal Abortions. Berthélemy.—p. 190.
- 36 *Sodium Arseniate in Treatment of Soft Chancre and Chancroid. Goubeau.—p. 192.

September 11, No. 35, pp. 195-225

- 37 *Shield Worn to Protect Chest and Abdomen. E. Delorme.—p. 206.
- 38 *The Declining Birth Rate. E. Maurel.—p. 213.
- 39 The Role of the Flying Surgical Hospital. Doisy and Marcille.—p. 219.

35. Criminal Abortions.—This article is by a professor in the university law department. He discusses the legal measures that should be adopted to arrest the increasing number of criminal abortions, arguing that criminal abortion should be classed with espionage, counterfeiting money, anarchy, etc., as the crime against society is more important than the indi-

vidual character of the crime, and the informer should be guaranteed an absolute pardon. "Is the defense of the race," he asks, "of lesser importance than the defense of the money supply?" The birth-control propaganda should be suppressed, as the arguments in favor of birth control apply also to voluntary abortion. Criminal abortion cases should not be given a jury trial, as the jurymen do not realize the social danger of the crime, and they yield to intimidation by the abortionists, usually powerful and always with a protecting backing. Another point which he emphasizes is that a physician cited in a suit for criminal abortion should be relieved of the ban of professional secrecy, so that his testimony can be used against the abortionists "toward whom there can be no professional obligation." The action of the police should be reenforced by granting to medical syndicates, to the services pecuniarily interested, and to associations for increasing the population and to morality propaganda associations, the right to bring suit. Isolated, none of these measures is very effectual, but all together, with penalizing the convicted abortionists, would certainly reduce the number of such cases. The fear of punishment has always been one of the determining causes of virtue. In conclusion, Berthélemy stated that he had submitted this article to various medical and legal authorities, including the Assistance Publique and the Society of Legal Medicine, and obtained their endorsement.

36. Sodium Arsenate in Treatment of Soft Chancres.—Goubeau states that he and three other army physicians for a year and a half have been applying in treatment of soft chancre and chancereous bubo, sodium arsenate in a 2 per cent. alcohol (95 per cent.) suspension. They paint the soft chancre with this daily, and if there is a complicating bubo they inject into it 1 or 2 c.c. of a 1 per cent. aqueous solution of the sodium arsenate, repeating on alternate days. Thanks to this method, the average course of treatment was shortened to nineteen days in 149 cases of chancre without bubo, the cure being complete in from four to ten days in the early cases. The most instructive case was that of a negro from Africa who had had vast soft chancres for over six months, rebellious to arsenobenzol and mercury. Five applications of the sodium arsenate suspension transformed the angry lesions and repair proceeded rapidly with a complete cure in a month.

37. Shield for Chest and Abdomen.—Delorme pleads that as the steel helmet has proved so useful in protecting against and attenuating skull wounds, a similar steel guard should be worn to protect the chest and abdomen. He exhibited a model breast plate for the purpose, and urged the adoption of something of the kind. His model is made in two overlapping parts.

38. The Declining Birth Rate.—Maurel suggests among other measures to arrest the decline of the birth rate, that pensions should be paid to families in proportion for each child until it becomes self-supporting, and that the parents in their old age should be given a pension proportionate to the number of children they have raised.

Lyon Médical

September, CXXVI, No. 9, pp. 397-444

40 *Acute Typhoid Meningitis. S. Bonnamour and A. Macrygenis.—p. 397.

41 Camphorated Alcohol in Treatment of Extensive Industrial Wounds; Three Cases. Briau.—p. 404.

42 *Mammitis in Soldiers with Malaria. C. Garin and Coullard-Descos.—p. 410.

40. Typhoid Meningitis.—The young woman had a typical typhoid fever except for intense headache, and typhoid bacilli were found in the lumbar puncture fluid. Bonnamour remarks that he knows of only seventeen authentic cases of purulent typhoid meningitis with bacilli in the spinal fluid, and one with paratyphoid bacilli.

42. Mammitis in Soldiers with Malaria.—Garin found mammitis in five of 800 soldiers under treatment for malaria, and five other cases have recently been reported by others. The mammitis caused no trouble for several months but as suppuration developed there was considerable pain. In two of the men the other mamma suppurated a month or two

after the first. In one case there was secretion of actual colostrum during the course of the suppurating mammitis.

Correspondenz-Blatt für Schweizer Aerzte, Basel

September 8, XLVII, No. 36, pp. 1153-1184

43 *Anatomic Research on the Prevalence of Tuberculosis. A. Reinhart.—p. 1153.

44 *Treatment of Flatfoot. H. v. Salis.—p. 1162.

45 Fungus as Substitute for Cotton to Plug Culture Tubes. B. Galli-Valerio.—p. 1168.

46 Incandescent Electric Light for Improved Superheated Air Apparatus. Debrunner.—p. 1168.

43. Prevalence of Tuberculous Lesions in Cadavers.—Reinhart writes from Berne where for eighteen months he made a special study of all the cadavers (460) at the Pathological Institute, seeking for evidences of tuberculosis. No traces of tuberculosis were found in the 28 newborn infant cadavers, but 29.16 per cent. of 72 children under 16 had manifest tuberculosis, in a progressive stage in all, although only 16.8 per cent. had died from tuberculosis. He cites statistics from other large cities showing from 10 to 42 per cent. with tuberculosis in the child cadavers, the numbers reported on varying from 88 to 848. Reinhart's material confirms the increasing prevalence as the children grow older, only 7.14 per cent. showing tuberculosis under one year. In the adult cadavers, tuberculosis lesions were found in 96.38 per cent. of the total 360. Only in thirteen cadavers was the search negative, and of these, nine were under 30. Other statistics show a range from Beitzke's 51.4 per cent. (Berlin), to Naegeli's 98 per cent. (Zurich). The tuberculosis mortality was highest between 30 and 40, rapidly declining after this age. In 63.9 per cent. of the adult cadavers the tuberculous lesions were in a clinically healed stage, the proportion of these cases increasing with each decade. He does not include small induration of the apex among the positive findings, but he was impressed with the frequent coincidence of these indurations with calcified foci in the bronchial glands on that side. This coincidence was marked in 122 of 230 cadavers. This percentage of 63.9 healed cases is the largest yet published, he thinks. The difference between town and country dwellers was slight, 93.9 per cent. of the 140 town people and 98.1 per cent. of the 211 country dwellers. The tuberculous mortality rate was slightly higher for the latter, 27.37, in comparison to 22.15 per cent., but the proportion of active progressive cases was only 7.5 per cent., in the country people to 14.9 per cent. in the towns. The data presented confirm the wide prevalence of tuberculosis, and that in most people it heals. The data show further that it is doubtful, to say the least, whether tuberculous infection occurs generally before the twentieth year.

44. Flatfoot.—Salis refers to what he calls *Spreizfuss*, a form in which the normal arch of the metatarsal bones sags, the curve being downward instead of upward. Insoles do not help this straddling of the bones, but great relief is obtained by a tight cuff worn over the front part of the foot back of the root of the toes. This cuff laces on top of the foot and laces further at the side at the broad end. By this means the arch of the metatarsal bones is forced up into place and held there, maintaining it in a dorsal convex instead of a plantar convex position. Before applying this corset-stuff cuff, he softens the skin of the foot, getting rid of callouses, and corrects the straddle foot with a plaster dressing. During this time the foot cannot be used much. In the milder cases this treatment corrects the trouble completely in a few months; in others the cuff has to be worn permanently. It slips easily on and off.

Annali d'Igiene, Rome

August, XXVII, No. 8, pp. 477-548

47 *The Reform in the Army Ration. F. Rho.—p. 477.

48 *The Army Ration in Italy. S. Baglioni.—p. 487.

49 *The Navy Ration. C. M. Belli.—p. 503.

50 The Morphology of the Hemorrhagic Jaundice Spirochete. D. C. Bianchi.—p. 510.

47. The Army Ration in Italy.—Rho says that when the war started every effort was made to give the soldiers the best food possible, and the ration was based on the Voit-Rubner

estimate of the calory needs. But time soon showed that what may be proper for a people of heavy caters did not suit at all the Italian soldiers, coming from rural homes where meat is not on the every-day menu. Pessimistic sociologists have said that the Italian populace is inadequately nourished from a lack of nitrogenous substances in their diet, and they have cited this as an argument to demonstrate and explain the alleged inferiority of the Latin race. But Rho declares that southern Italy has furnished emigrant labor to the world that can stand comparison with any for the ability to stand fatigue, although bread, vegetables and cereals is the principal diet. Carbohydrates form the main articles of diet in rural populations nearly everywhere from the oatmeal of the Scotch to the potatoes of the Irish and the rice of Asia. Folena's experiments on himself (1912) showed that he could maintain his nitrogen balance with a nitrogen minimum of 28.9 gm. He asserts that it is possible to keep at the normal physical and mental level with a protein intake of only 0.6 gm. daily per kg. of body weight. Rho cites further Chittenden, Hindhede and others and the unfavorable experiences with the excessive meat ration given the Italian soldiers, all tending to show the necessity for reform in the soldiers' ration. A commission of military or militarized hygienists and physiologists was appointed to study the subject. Their report was accepted and acted on, with the saving of 30,000 head of cattle each month as only 60,000 had to be slaughtered instead of the 90,000 called for by the previous ration. The number of calories provided in the new ration does not surpass 3,000—except in winter and for the troops in the mountains—but even this is more than Chittenden regarded as necessary. All the reports from the army and navy are favorable for the new ration during the six months it has been in operation.

48. The Soldiers' Ration in the Italian Army.—Lieut.-Col. Baglioni comments on the great difference between conditions in this war and in previous wars when men lived in open camps. There is no longer the necessity for long marches and physical encounters and effort. The men crouch in shelters and get comparatively little exercise, while their nerves are being constantly on the strain. The ration possibly called for in other wars is not needed in this, and does actual harm. Another difference between this and previous wars is that the food cannot always be served directly when cooked, but has to be carried long distances to the men in the shelters. The food undergoes various changes during this transportation, in addition to its getting cold, so that it loses in palatability. Among the first steps taken to improve on the former ration was the training of large numbers of men to serve as cooks for the special conditions of the present warfare. The meat ration was reduced from 375 to 250 gm. with optional fish or canned meat two days in the week, and 100 gm. cheese instead of meat on Fridays, with a corresponding increase in rice or pastes (macaroni, etc.). Provision was also made for cabbage and other vegetables, and 40 gm. of cheese every day. The ration includes also 15 gm. of lard or oil on the three beef days and 20 gm. on the four days of vegetables. Another form of condiment, he says, which is almost indispensable for Italians is the tomato, and provision is made for 15 gm. daily of the fresh or canned tomatoes, or the extract representing 30 per cent. of the dry residue. Variety is also ensured by 10 gm. of onions, garlic, etc.; pepper and spices, 0.5 gm.; salt 20 gm., and on the days when one meal consists of pastes, 10 gm. of grated cheese are allowed for it. For cooking soups and pottage, portable cookers have been found extremely convenient for the men on the firing line (*casse di cottura*), and they are being used more and more extensively in the civilian population. But they cannot be used for preparation of the concentrated tomato extract, boiling the onions, etc. On this account the military authorities and certain firms put up in cans a mixture of meat, vegetables and tomato juice. The inside of the can is varnished to protect the food against corrosion of the metal. The mixture of fats and proteins in the can is varied by different makers and at different times to avoid monotony. The ration of this is 25 gm. which gives a relish to the macaroni or rice served with it. By the change in the ration

thus provided, beef cattle and grain are saved in large proportions while the cheese, tomatoes, potatoes, etc., are domestic products. Camp jaundice rapidly subsided on addition of vegetables to the diet of the men in the advanced posts, as also certain forms of scurvy and nephritis. In conclusion eight pages of tables are given showing the comparative food values. The expense of the total ration, including meat, bread, potatoes, vegetables, cheese, sugar and coffee, averages about 80 cents less per week than the old ration; it averages 2,794 calories to the former 3,013. It is expressly stated throughout the article that this ration applies only to the territorial troops, that is, those not at the front firing line.

49. The Navy Ration.—Belli gives the details for the navy, saying that the calories total 3,036. This includes 170 calories from the wine provided the men. Rho has proposed to credit the men not taking wine with the money it would cost, but the proposal met with administrative objections. The details of the navy ration are left in large measure to the discretion of the commanders of the vessels to permit variety.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 9, XXXVIII, No. 72, pp. 977-991

51 *War Injuries of the Eyes. T. di Giuseppe.—p. 977.

51. War Injuries of the Eyes.—Di Giuseppe refers to the fact that wounds of the head are exceptionally numerous in this war, and the eyes are proportionately often injured. In the fighting among the mountains, the scraps of stone broken off and propelled by the explosions increase the danger for the eyes. Another danger to which the soldiers' eyes are exposed is from the trachoma and other eye affections of the men taken prisoners, and from such infections in the trenches just vacated by the enemy. The toxic gases which induce much lacrimation are far less dangerous for the eyes than the usual asphyxiating gases. The latter when they act on the eye long enough deprive the cornea of sensibility and it looks dull but otherwise seems normal for a time. If the injury is severe, small foci of necrosis then develop and, with atrocious pain in the brow, back of the neck and the temples, the eye slowly dies, the eyeball becoming completely atrophied. In his experience, 16 per cent. of the war injuries of the eyes were from machine guns or shrapnel, 50 per cent. from flying scraps of stone, 5 per cent. from trachoma, and 25 per cent. from asphyxiating gases.

Pediatria, Naples

September, XXV, No. 9, pp. 513-576

52 *The Sugar Content of the Blood at Birth. S. Cannata.—p. 513.

53 *Transient Paralysis of the Arm, with Pain, in Young Children. V. Conterno.—p. 517.

54 *The Value of Bacteriolytic Antibodies in the Cure of Typhoid. A. Zironi.—p. 527.

55 Vaccine Therapy in Acute Infectious Disturbances in Infants and Young Children. P. Ceppellini.—p. 533. To be continued.

52. The Sugar Content of the Blood at Birth.—Cannata determined the sugar content of the blood in fourteen newly born infants and in eight from 2 to 5 days old. The method applied was the Lewis-Benedict-Bass technic. The findings ranged from 0.074 per cent. in the first group to a maximum of 0.92 per cent. in the others, fasting, and a maximum of 0.114 two hours after feeding.

53. Transient Painful Paralysis of the Arm in Young Children.—Conterno comments on the neglect by the text books of this common trouble in young children. In Broca's compilation of 208 cases, half were one to 3 years old and the others up to 5 years, but girls were affected twice as often as boys. The usual cause is that the child stumbles as it is walking with an older person holding its hand, and the arm is jerked as the adult seeks to keep it from falling. The symptoms are those of a subluxation of the head of the radius, and all trouble vanishes with reduction of the luxation, as a rule. In a few cases, however, merely distracting the child's attention answered the purpose. The child was held close in its mother's arms, the sound arm held against her so that the child was unable to use it while the paralyzed arm was left free, near a tempting toy. The mother and

physician pay no attention to the child, and it soon reaches out its one available hand to seize the toy, and the paralysis is conquered. When this fails, he proceeds to reduction of the subluxation. The trouble is a painful but benign traumatic injury of the head of the radius or memory of such.

54. Bactericidal Properties of Typhoid Serum.—Zironi tabulates the findings in about twenty-five cases to demonstrate that the serum in typhoid and paratyphoid has marked bactericidal power for bacilli of both the typhoid and the two paratyphoid groups. This power is marked in vitro in a 1:10 dilution, but is still evident even at 1:50, even when the serum is obtained while the bacilli are still circulating in the blood. He theorizes to explain this paradox, suggesting that bacilli in artificial cultures are frailer than those in the body.

Rivista di Clinica Pediatrica, Florence

September, XV, No. 9, pp. 449-504

56 *The Avoidable Infant Mortality in Italy. G. B. Allaria.—p. 449.

57 *The Urine Reaction in Infants. M. Flamini.—p. 462.

58 *School Anemia. C. Bracci.—p. 469.

56. Avoidable Infant Mortality.—Allaria commences this study of the sanitary prophylaxis for early childhood with a description of Mercuriale's "De Morbis puerorum." It was published at the most brilliant period of the Renaissance, the days of da Vinci and Michelangelo, but the writer had to devote the preliminary chapter to an excuse and justification for his temerity in suggesting that children should be given medical attention and care as well as adults. As late as 1905, G. Mya published a scathing arraignment of society for its disregard of the high infant death rate in Italy. Allaria gives statistics in regard to the infant birth and death rates in various European countries, and proposes various measures for infant welfare work.

57. The Reaction of Infants' Urine.—Flamini tabulates the metabolic findings in fifteen breast fed and fifteen bottle fed infants, with the urine reaction and the aspect of the stools. Also of a number of the bottle fed being given calcium lactate. In the bottle fed infants and in the breast fed with bowel trouble, the urine was always strongly acid; the acid phosphates content was always large. In the healthy breast fed the acidity of the urine ranged from 0.1 to 0.6, but in the artificially fed the range was from 1.25 to 4 in the healthy, with two exceptions in which it was 0.6. In some of the bottle fed with bowel trouble it reached 4.5 and 5.8. The phosphate content was much higher in the bottle fed. The bottle fed given calcium lactate showed marked reduction of the acidity afterward, the acidity dropping from 2 to 1.3; from 3.5 to 0.9, or from 4 to 1.4. The infants took without disturbance up to 0.5 gm. of the calcium lactate at each feeding, and Flamini thinks that it might be useful to give calcium lactate as a routine measure to bottle fed babies to enable them to tolerate and utilize better the artificial food.

58. School Anemia.—Bracci calls this "scholastic anergy," as anemia is not constant and is usually secondary to the changes induced in the metabolism by the lack of energy. The chief change in the blood is the reduction of the amounts of the two basophile substances of the red corpuscles. The whole trouble is probably some upset in the balance of the glands with an internal secretion. Iron does not act as well as usual in anemia. Arsenic gives better results in these cases, and phosphorus is also useful, and their combination.

Prensa Medica Argentina, Buenos Aires

August 30, IV, No. 9, pp. 105-116

59 Angioma with Cavities in the Tendon of the External Oblique Muscle. R. A. Marotta and A. F. Landivar.—p. 107.

60 *Normal Beef Serum in Treatment of Human Anthrax. III, J. Penna, J. B. Cuenca and R. Kraus.—p. 108. Continuation.

61 Error from Derived Electric Currents in Experimental Research on Frogs with Curare. J. Guglielmetti.—p. 110.

60. Normal Beef Serum in Treatment of Anthrax.—In this instalment of their third communication on this subject, Kraus and Penna give illustrated descriptions of five typical cases from their later series. The first instalment was summarized in these columns recently, page 1388. There was also editorial comment, page 1350.

Semana Medica, Buenos Aires

July 19, XXIV, No. 29, pp. 57-84

62 *Surgical Treatment of Ankylosis. E. M. Olivieri.—p. 57.

63 *Nationalization of the Asistencia Publica. L. J. Facio.—p. 68.

64 *Minor Technical Points in Laboratory Differential Diagnosis. M. Beatti.—p. 69.

65 Oysters. P. Brocca.—p. 72.

62. Operative Treatment of Ankylosis.—In this part of Olivieri's study of this subject, he reviews the history, and describes four cases in which he restored the functional use of the elbow by resection. He warns that we must not hesitate to resect widely in these cases, from 5 to 8 cm. of bone as may be needed, especially in the tuberculous cases. Vallas has shown that a kind of new joint may form after simple resection. He had occasion to compare the block of bone cut out at the resection with the necropsy findings in the elbow several years later. The epicondyle and epitrochlea had grown again, and the muscles had regenerated with their points of attachment while the articulating ends of the bones had become covered with a compact tissue resembling cartilage; the capsule had reformed completely, and the synovialis was represented by a series of serous cavities which probably in time would have fused into a single cavity. The resulting nearthrosis was an excellent example of what can be accomplished in the elbow by resection alone. But good results are obtained more promptly and more constantly by opening up the joint, resecting conservatively, and interposing a pad of tissue. This, he declares, is the greatest progress realized to date in the treatment of ankylosis.

63. The Nationalization of the Asistencia Publica.—In Paris and Buenos Aires the entire system of hospitals, asylums, municipal lodging houses and other agencies for caring for the sick poor and helpless are under one management, called the Public Assistance. It has been found to work so well, by preventing duplication of effort and gaining the advantages of organization, that E. R. Coni, the leading hygienist of Argentina recently proposed a plan to unify in the same way the public hospitals and asylums throughout the whole country on the same single management system. Facio here endorses the project most enthusiastically, and enumerates a number of additional advantages beyond those to which Coni called attention. The plan is to have the national public health system quite distinct, as at present. This department is for prophylaxis of sickness; the Asistencia Publica is for care of the sick. With a nationalized Asistencia Publica it will be possible to have accessible hospitals and asylums available for each region. One point on which Coni insisted especially was that the national leper asylum should not be placed on a comparatively inaccessible island, as at present planned. If the separation from home has to be absolute, families will not disclose the presence of leprosy. It is much better to induce them to disclose it early by having the leprosarium within a reachable distance and visiting permitted under restrictions.

Siglo Medico, Madrid

August 18, LXIV, No. 3323, pp. 605-624

66 *Roentgenography with Kidney Stones. A. P. Martin.—p. 606.

67 Treatment of Lichen Planus. E. de Oyarzabal.—p. 609.

68 Simple Melancholia. A. S. Herrero.—p. 610.

August 25, No. 3324, pp. 625-644

69 Visit to the Crocker Cancer Institute at New York. C. Fernandez-Arroyo.—p. 626.

70 Depilation. B. N. Canovas.—p. 628.

71 *Still Unsolved Problems in Regard to Leprosy. R. Kraus.—p. 631. Commenced in No. 3323, p. 612.

72 Present Status of Our Knowledge of Puerperal Infections. D. S. Recasens.—p. 640. Commenced in No. 3323, p. 618.

66. Kidney Calculi and Radiography.—Martin reports a few cases to show the danger of relying too implicitly on the roentgen findings when they fail to disclose anything suggesting calculi although the clinical picture indicates something of the kind. Imperfections in the photographic plate may simulate calculi, or gravel may clump and simulate a solid stone. In one such case the pyelotomy revealed only one minute grain which he extracted. The fifth day after the operation a large number of other grains were voided in the urine. The pyelotomy had thus been entirely superfluous as

the "sand" would have been washed out in time, while the fact that the other grains were not found at the pyelotomy shows the inadequacy of opening the pelvis alone for exploring the kidney. Roentgenography showed 4 grains still left in the kidney, and three were still there when examined several months later. Martin then had the young man drink copiously of diuretic beverages and exercise vigorously, jumping, walking on his hands and other gymnastic exercises. This dislodged the minute stones and one by one they were expelled, clearing the urinary apparatus of all suspicious appearances. In a third case, pain and hematuria returned after removal of a calculus by nephrotomy, and a second operation was done. The nerve was then released from cicatricial adhesions and also the kidney. Two hardened glands were found close to the renal pelvis, explaining the roentgen shadows at this point. This second operation put an end to all disturbances.

71. Leprosy.—Kraus thinks that there probably is more than one germ responsible for leprosy, as for dysentery. The findings with experimental research have been conflicting, he says. In fact, none of the cultures isolated to date can be regarded as the true culture of leprosy. To date also no specific allergic reactions have been conclusively demonstrated in leprosy. It is possible, however, that the tuberculin tests or something of the kind in the incipient stages might prove positive, and etiologic vaccination give successful results. He adds that Stefanski's discovery of lepra in rats may have something to do with its transmission. Fernandez' research in Argentina has demonstrated the existence of lepra in rats. Kraus cites the experiences in Norway in regard to isolation of the leper in his own house, avoiding all contact with the healthy, as having given the most satisfactory results. The reduction in the number of cases has been so marked that this example can be followed with confidence in other countries. In South America, on the other hand, leprosy has spread widely in recent years as there has been no systematic prophylaxis against it. He urges concerted national and international action in prophylaxis of leprosy, especially in South America.

Acta Scholae Medicinalis Univ. Imp. in Kioto

September 10, II, No. 1, pp. 1-113. German Edition

73 *Primary Diseases of Lymphatic Apparatus. H. Nakamura.—p. 1.

74 *Action on Vessels of the Elements of the Blood. (Die Kohlen-säure ist der dissimilatorische Regulator für die Zirkulation der tätigen Organe.) N. Yamamoto.—p. 57.

75 *Lesions of the Tibial Tubercle in Adolescents. (Zur Osgood-Schlatterschen Krankheit.) K. Kawamura.—p. 99.

73. Primary Disease of the Lymphatic Apparatus.—Nakamura refers particularly to lymphosarcoma. He comments on the diversity of names that have been applied to Hodgkin's disease, listing nearly half a page of them. He also lists eight pages of bibliography on the subject, and reports in detail six cases from the surgical service at Kioto. He also tabulates the blood findings at different periods in four cases of lymphatic leukemia or pseudoleukemia, and suggests a classification for the primary affections of the lymphatic apparatus which will do away with much confusion, discarding completely the term lymphosarcoma. We then would have three groups: 1, the cases with hyperplasia of the lymphocyte cells. (This group includes lymphatic leukemia and pseudoleukemia); 2, those with hyperplasia of the reticulo-endothelium cells (including Hodgkin's disease, tuberculosis and syphilis), and 3, true tumors. In conclusion he reports a case which seemed to be a transitional form between groups 1 and 2. A colored plate shows the blood findings typical of each group. The discovery of a short, antiformin-fast, thick bacillus in the tumors, lymph glands and spleen in three of four cases of lymphatic leukemia and pseudoleukemia convinced him that these diseases are of infectious nature, not malignant tumors. The coordinated hyperplasia of lymphoid tissues in different organs stamps leukemia as a systemic affection. The leukemic blood changes are the result of the action of some noxious substance circulating in the blood. This starts pathologic proliferation of lymphocytes in lymph glands and spleen. The lymphocytes pile up in the lymph glands and spleen, and stretch them to actual

tumors. This is pseudoleukemia, myeloma and Mikulicz' disease. Later, the walls of the vessels, especially the veins, become affected and the lymphocytes get swept out into the blood stream. This is lymphatic leukemia and chloroma.

74. Action of Elements of the Blood on the Vessels.—Yamamoto reviews the history of research in this line, and describes much personal work, especially on the rabbit ear. He charts the findings in regard to the vessel-constricting action of the different constituents of the blood, the serum and extracts of blood corpuscles, and discusses the mechanism of the vasodilating influence he found with them. The carbon dioxid in the blood in tests with serum or with extract of blood corpuscles exerted a very intensive vasodilating action. Oxygen and nitrogen did not display any appreciable action on the vessels. Yamamoto concludes from the findings related in detail that carbon dioxid plays an important part as a dissimilation regulator of the circulation in functioning organs. This assumption throws light on the benefit from carbonated baths in cases of disturbance in the circulation with high blood pressure. The carbon dioxid is probably absorbed by the skin, and exerts its influence on the vessels in and close to the skin, dilating them and thus relieving the heart. The waste gaseous product of metabolism in an actively functioning organ, namely, the carbon dioxid, by its irritation of the vasodilators ensures an extra supply of blood at once to the organ.

75. Lesions of the Tibial Tubercle in Adolescents.—Kawamura's profusely illustrated article analyzes nine cases of Osgood-Schlatter's disease. The patients were all between 12 and 17, and all but one were boys. In four cases the left leg alone was involved, and in five, both legs. The region of the anterior superior epiphysis of the tibia is peculiarly vulnerable during this stage of rapid growth, and any direct or indirect trauma, a single fall or repeated mild injuries, is liable to lead to fracture of the epiphyseal beak of the tibia or tearing loose of the cartilage. The injury may not cast a shadow on roentgenoscopy, and conservative treatment usually ensures a complete cure. If not, and the disturbances persist, excision may be required. This put an end to all the trouble in the first case reported, the lad of 17 being dismissed in twelve days entirely cured.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

August 11, II, No. 6, pp. 441-532

76 *Unrestricted Practice of Medicine. G. van Rijnberk.—p. 443.

77 The Psychanalysis Method. J. H. van der Hoop.—p. 458.

78 Physiologic Titration of Digitalis Preparations on Warmblooded Animal (Cat). G. den Besten and C. de L. van Wijngaarden.—p. 479.

79 *Hemorrhagic Meningitis from Infection with Anthrax Bacillus. R. de J. de Jong.—p. 484.

76. Unrestricted Practice of Medicine.—Van Rijnberk relates that an appeal signed by five dozen persons "who know enough to write their names" was presented to the government asking removal of restrictions to the practice of medicine. The government has appointed two committees to study the subject, one comprising ten of the leading physicians of the country, and the other, some lawyers and the men who have long been protesting against the "physicians' monopoly." The official directions given this second committee are "to investigate what legal restrictions to the practice of medicine should be enforced if the license to practice is not to depend on the possession of a certificate showing the successful passing of the state examination." The directions for the medical committee are "To investigate the expediency (*doeltreffendheid*) of the methods of treatment practiced by the nonlegally qualified practitioners of medicine and the results attained by them." Van Rijnberk comments that the task of the first named committee is to prove that in order to cure disease it is not necessary to know what disease is, nor be able to recognize it, nor know its cause, its course or its outcome, nor what can be done for it; in short, that in order to practice the art of healing, ignorance is trumps. The task given the other committee is ambiguously worded as the term "nonlegally qualified practitioners of medicine" might mean physicians legally qualified in other countries but not having conformed to the requirements of the Nether-

lands laws. The term "practitioners of medicine" (*beoefenaren der geneeskunst*) should not be applied to the quacks who are responsible for the agitation. The medical committee has an interesting field for research before it, he continues. This committee includes a physiologist, a pharmacologist, four neurologists, one internist, one ophthalmologist and an obstetrician, but there is no venereologist and no ear man, although these are the chosen fields of the quacks. He comments on the vast field for their research, remarking in conclusion that the physicians of the Netherlands anticipate their report with much interest and concern.

79. Anthrax Bacillus Meningitis.—At the necropsy of the young soldier who had succumbed to fulminating hemorrhagic meningitis, the anthrax bacillus was found in the meninges and spinal fluid and in internal organs. He had helped to slaughter a cow with anthrax not long before. The intense cyanosis, early unconsciousness and speedy death were special features of the case. The first symptoms, pain in right arm and shoulder were noticed ten days after the slaughtering of the cow, and a pustule on the arm and the meningeal symptoms developed the fourteenth, with death the fifteenth day.

Hospitalstidende, Copenhagen

August 15, LX, No. 33, pp. 789-812

80 *Appendicitis and Oxyuriasis. S. Matthiasson.—p. 789.

80. Helminths and Appendicitis.—Matthiasson states that he found a living oxyuris in the appendix in three adult women. In each case the appendicitis had been mild and restricted to the interior of the appendix, and all had complained of boring pains in the right iliac fossa for several weeks or months after the first acute attack. The long persistence of these pains, with the comparatively slight pathologic changes in the appendix, impressed him as possibly to be ascribed to the helminths. He cites certain authorities to show that helminths are capable of serving as a possible factor in the development of appendicitis. This might explain the occurrence of appendicitis in several members of one family. In looking over the literature he has been astonished to see that surgeons pay so little heed to the oxyuris as a factor in recurrence of appendicitis. He urges collection of statistics in regard to the prevalence of the oxyuris in cases of appendicitis, and especially in recurrences, and whether expulsion of the helminths aids in warding off recurrence, adding that possibly the oxyuris seeks refuge in the appendix during treatment for worms and thus escapes the action of the drug. He has found naphthalin more effectual than san-tonin in expelling the oxyuris.

Hygiea, Stockholm

August 16, LXXIX, No. 15, pp. 737-800

81 *Cholesterol in Pleural Effusion. P. Arnell.—p. 737.

82 *Esophageal Diverticulum plus Dilatation. J. Leffler.—p. 748.

81. Cholesterol in Pleural Effusion.—Arnell found cholesterol crystals numerous in the effusion in the right pleura in a man of 25 with minor signs of pulmonary tuberculosis. The pleurisy had a chronic tendency but, notwithstanding the persistence and recurrence of the effusion through six years, the general health kept good and the cholesterol crystals did not seem to cause much subjective symptoms. The crystals glistened in the effusion, as there was up to 0.41 per cent. cholesterol. The albumin content reached 5.23 per cent. The fluid was sterile. The effusion had developed first after a spontaneous pneumothorax and the effusion had evidently been encapsulated by the pleura.

82. Esophageal Diverticulum.—In the case described by Leffler, a woman of 34 had extreme idiopathic dilatation of the esophagus and at the same time a pulsion diverticulum on a level with the junction of the second rib with the sternum. Recurring bronchitis with lassitude suggested pulmonary tuberculosis, and the esophageal anomalies were a casual discovery on roentgenoscopy, as the symptoms from the stenosis had improved so much during the years that they had been disregarded. The large diverticulum had given percussion findings simulating those of a tuberculous cavity, but there was no reaction to tuberculin.

Norsk Magazin for Lægevidenskaben, Christiania

September, LXXVIII, No. 9, pp. 1017-1128 and Supplement

83 *Surgical Treatment of Wandering Kidney. C. Johannessen.—p. 1017.

84 *Nodular Arteritis. (Periarteritis nodosa.) F. Harbitz.—p. 1051.

85 *Management of Post-Partum Hemorrhage. (Om ledelse av efterbyrdstiden.) K. Brandt.—p. 1079.

86 *The Physiology of Endogenous Uric Acid. H. F. Høst. Supplement.

83. Wandering Kidney.—Johannessen discusses the various drawbacks of the different technics in vogue for operative correction of wandering kidney. He regards Rovsing's latest method as superior to all others. Rovsing has reported 85 per cent. cured and 9.3 per cent. improved in 107 cases without complications and a corresponding 50 and 25 per cent. in 64 cases with complications. Johannessen applied his technic in 11 cases, all in women, and all involving the right kidney. In 5 the kidney had become displaced after a childbirth. Of the 7 uncomplicated cases, 6 were cured and the seventh materially improved. Of the 4 with gastropexia or other complications, all were improved and 2 quite cured. His experience confirmed Rovsing's statements as to the influence of wandering kidney on menstruation. He has repeatedly found that a bandage to support the wandering kidney put an end to dysmenorrhea. Kümmel has reported a case in which, to relieve the pains, both ovaries and finally the uterus were removed, but the pains persisted until the sagging kidney was restored to place. It is important to give some drug to maintain peristalsis after the operation, as otherwise symptoms suggesting ileus may develop. The kidney should always be examined for calculi, cysts and a neoplasm before fastening it in place, and the ureter tested.

84. Periarteritis Nodosa.—Harbitz reports the full details with necropsy of a typical case of this affection, saying that he knows to date of only thirty-five cases on record. The intima and media of the medium and smaller arteries were affected with a chronic proliferation of connective tissue and hyalin, associated with regions of acute involvement of the adventitia. In one of the illustrations the finer arteries on the heart look as if strung with beads. The findings in his case suggest polyarteritis as a more correct designation than periarteritis. The onset is generally acute, in the midst of health in the prime of life, although cases have been known in children and the elderly. It begins with fever, not high but irregular, and pains in the muscles and legs, sometimes in the joints. Then there is fleeting edema at various points, especially in the face. The diagnosis wavers between polyneuritis, polymyositis and trichinosis. His patient was a man of 22 and polyneuritis was the clinical diagnosis. Lassitude and weakness became extreme, the pulse small, irregular and fast at times, modified more than corresponded to the fever. The pains increased and symptoms developed on the part of the kidneys, intestinal tract and heart, and death occurred within the usual period of from two to four weeks. This is the nerve or muscle type of nodular arteritis. In the intestinal type, vomiting, diarrhea and collapse phenomena dominate the clinical picture, suggesting peritonitis. The necropsy findings showing the changes and obstruction in the arteries, and the resulting softening and necrosis readily explain the clinical picture. In some cases the main disturbances are in the kidneys from the start, entailing early fatal uremia. The brain and respiratory apparatus have been mostly spared in the cases to date. The nodular arteries may be restricted to a single organ and the nodules may retrogress; Harbitz has seen findings in cadavers and in animals which prove this. He has found gray nodules along the arteries in the spleen in elderly cadavers, which probably were relics of nodose arteritis. An infectious origin seems certain, but no positive bacteriologic findings have been reported yet, and nothing suggesting syphilis.

85. Postpartum Hemorrhages.—Brandt is convinced that when bleeding keeps up after expulsion of the placenta, this is caused by retention of scraps of adherent membranes or clots; these cannot be expelled by Credé's expression method. This is useful to separate the placenta and aid in its expulsion, but it only maltreats the uterus unnecessarily when it is a question of removing scraps or clots. He removes them

by introducing his hand into the uterus. This was done in 3.6 per cent. of a recent series of 1,700 maternity cases, and none of the women died although 34.4 per cent. were febrile cases. The hemorrhage was always arrested before it became serious. Bimanual compression is a valuable means to arrest the hemorrhage with atony of the uterus after delivery. Compression is applied from without with one hand curving over the uterus while the other hand, in a pointed fist shape, the thumb extended straight on its axis, and the fingers clenched to point the fist the whole length of the thumb—this hand is worked into the vagina and pushed against the middle of the uterus, forward of the cervix. The uterus is thus pushed in against the hand outside until the walls are squeezed together, the axis of the uterus bent at a right angle or more. This pressure can be kept up for fifteen or thirty minutes uninterruptedly. This technic is taught in his service. But as he is convinced that the hemorrhage is always due to retention of clots or scraps of placenta or membranes, the uterus is cleared out first, and this invariably stopped the hemorrhage so that he never had occasion to apply this bimanual compression in the 1,700 cases. Another point on which he insists is that the urine must be drawn to empty the bladder at once after delivery. To ensure against infection he has the bladder rinsed out with a 1:500 silver nitrate solution immediately after the catheterization. In all his experience he has never encountered but two or three cases in which no cause could be found to explain the postpartum hemorrhage except atony of the uterus. In such a case he advises the bimanual compression and a subcutaneous injection of ergot. The effect is felt in about eight minutes. No time is lost and there can be no further bleeding with the walls squeezed together, while the ergot keeps the uterus walls contracted after the bimanual compression is stopped. Clots and adherent scraps of membrane cannot be evacuated with sponges or cotton held with forceps, and rubber gloves cannot be used in removing adherent scraps of membranes.

86. The Endogenous Uric Acid.—Høst's monograph of 132 pages is accompanied by eight pages of bibliographic references with full titles. His research was done on two healthy persons and fifteen convalescents, all free from any trace of uric acid arthritis. The metabolic findings are tabulated over long periods. They show that the endogenous uric acid content of the blood and urine is liable to wide variations from day to day in some, while others produce and eliminate a fairly constant individual amount.

Ugeskrift for Læger, Copenhagen

August 9, LXXIX, No. 32, pp. 1329-1370

87 *Thymus Dwarf Growth. K. H. Krabbe.—p. 1329.

88 *Suffocation in Pneumonia from Falling Back of the Root of the Tongue. C. Jørgensen.—p. 1337.

August 16, No. 33, pp. 1371-1396

89 *Occult Blood in the Stools with Pulmonary Tuberculosis. K. W. Lange.—p. 1371.

90 *Crutches. H. Abrahamsen.—p. 1379.

87. Thymus Dwarf Growth.—Krabbe remarks that with the development of endocrinology, the study of dwarf growth has become more than a mere scientific curiosity. Symptoms of rachitis and stunting of the growth have followed removal of the thymus in animals, and in a case of pronounced dwarf growth, which he describes in detail, a similar combination suggests that the thymus was responsible for the dwarfism. The patient is a young woman of a healthy family. She weighs 28.4 kg. but is only 111.25 cm. tall, that is, weighing 62 pounds for a height of about 44 inches. She presents an almost normal appearance otherwise except for the scanty growth of hair and the elderly aspect of the face. There are no signs or symptoms suggesting disturbance in the functioning of the thyroid or parathyroids, pituitary, suprarenals, ovaries or pancreas. The dwarf growth in this case seemed to be the result of premature growing together at the epiphyseal line. The legs curve as a relic of rachitis, and he suggests that possibly there may be forms of rachitis for which thymus insufficiency is responsible. This has already been suggested for the combination of rachitis, dwarf growth and idiocy, but in this case the patient is intelligent.

88. Suffocation in Pneumonia from Falling Back of the Root of the Tongue.—In the case described by Jørgensen the young man was doing well in mild pneumonia, the pulse and temperature good, when suddenly he was found suffocating. No edema, paralysis or tumor could be discovered. The symptoms suggested those observed under general anesthesia when the root of the tongue relaxes under the anesthetic, and treatment applied on this diagnosis proved promptly successful. At first the lower jaw was kept pulled forward but later, turning the man on his right side, with the head bent over, seemed to correct the tendency for the tongue to slip back. It is possible that this cause for suffocation may be more common than surmised. In this case the nervous system may have been affected by the pneumonia toxins; we know that the knee-jerk is often abolished during pneumonia. The patient's habit of sleeping with his mouth open may also have favored the trouble, and there is a further possible factor in the drug, optochin, which had been given. In any event, the case warns that with suffocation under any circumstances, the possibility of the dropping back of the root of the tongue, as with general anesthesia, must not be overlooked. In this case the suffocation came on again and again as soon as the exhausted man dropped to sleep, and the Heiberg-Esmarch method of drawing forward the mandible had to be kept up regularly or the suffocation soon came on again, until he was turned to lie on his side with the head bent over.

89. Occult Blood in the Stools with Pulmonary Tuberculosis.

—Lange examined the stools for occult blood on four occasions, with one day intervals, in 37 cases of pulmonary tuberculosis in the first stage; in 25 in the second stage, and 64 in the third stage—only one in the first group showing any signs of tuberculosis of the bowel, three in the second group, and ten in the third. He also applied the same tests to 34 with bowel tuberculosis as evidenced by clinical or postmortem findings. The findings were positive in all but 3 in this group, and in these the necropsy failed to confirm the tuberculous nature of the bowel trouble. Among the practical results of this study of 163 cases is the warning that tuberculous ulcerations in the intestines may long exist without giving rise to bleeding. Also that tuberculous intestinal lesions are more common with pulmonary tuberculosis—even in the total absence of all signs of the bowel involvement—than would be supposed from the clinical symptoms. The occult blood findings were negative in all the 37 in the first stage, after the effect of blood-containing food had worn off; in the 25 in the second stage, the findings were positive in three. In the 64 in the third stage, four of the ten showing signs of intestinal tuberculosis gave a positive benzidin reaction. Of the eleven giving a positive reaction, four also showed signs of intestinal tuberculosis.

90. Crutches.—Abrahamsen says that the most striking sight at the arrival of a shipload of disabled soldiers is the large proportion of those using crutches. The men cling to the crutches as their only friend, and let the wounded leg hang passively, not seeking to utilize it but allowing it to fall a prey to ankylosis and atrophy and disturbances of various kinds. Every day that the crutches are used makes restoration of function harder. He gives a few examples of contracture, etc., which he thinks might easily have been avoided if it had not been for the crutches. The muscles become degenerated early and the man is left a cripple for life. Crutch paralysis from the pressure of the crutch is another avoidable evil. It is not common, but he has had one case, which, however, had a favorable outcome in time. Out of 350 men at the Hald hospital, arriving on crutches, he compelled 100 to discard them at once. Only two or three in this group really had needed them, but all had been given the crutches as they first left the bed. He denounces this practice unreservedly, saying that with operations, bandages and a cane, the men can be brought to their feet, and they thus utilize all the walking powers left them. In the nearly four years since he has been assistant in Slomann's orthopedic service, he has never seen crutches supplied even one patient, and he declares they are seldom needed in the military hospitals.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 19

CHICAGO, ILLINOIS

NOVEMBER 10, 1917

THE DIET OF PRISONERS OF WAR IN GERMANY

ALONZO ENGLEBERT TAYLOR, M.D.
PHILADELPHIA

American soldiers are in France, others are going, and many more will have to go, unless some unforeseen turn in military, industrial, economic or political affairs brings the war to an early conclusion. Barring extreme crop failure, starvation will not intervene in Germany; of revolution in war-time no one has any hope who knows the German mind from first hand observation. Since we have soldiers on the western front, American boys will inevitably be taken prisoners and interned in prison camps. For us the facts of the management of the German prison-of-war camps will, therefore, hold a personal and urgent meaning. We have, indeed, over one hundred Americans interned in Germany, being fed by our Red Cross. There has been much written of the prison-of-war camps in Germany. Much has been distorted and exaggerated; much has also been concealed. In the broad sense, one fundamental fact holds for the prison of war as well as for the prison of peace; prison life depends more on the character of the management than on prison laws. Nobility of management will make prison life good in a state with the worst of laws relating to the penal institutions; brutality will make a hell of prison life under the best of laws. Of this we have illustrations in this country; a prison hell and a prison haven may exist within the same city. But, the prisoner-of-war problem is something more than this. The prisoner of war is not confined for reason of personal penalization, nor is he the object of reformation. The prisoner of war is a military fact; he represents a reduction in the military forces of his country. He is an industrial fact, since he is potentially and actually a laborer in the service of the enemy. He is a political fact, and can be evaluated in terms of diplomatic units. He is lastly, and unfortunately, a weapon of offense in the hands of his captives, since he may be made the object of reprisal for the attainment of military aims. The subsistence of the prisoner of war is a part of his situation, and has relations to each of the rôles that his capture imposes on him.

In a historical review of the provisioning of the prisoner of war in Germany, three periods must be defined: the period of unorganization, the period of organization and the period of stringency. Throughout, one must bear in mind the five accepted principles of management of prisoners of war in Germany:

(a) The possession of prisoners by Germany in greater numbers than those of her subjects in the

hands of her enemies gave her a situation of vantage.

(b) The fact of a food blockade relieved her of legal responsibility for the subsistence of the prisoners of war.

(c) The fact that, through the blockade, Germany could not secure manufactured commodities from the neutral world gave her extraordinary rights over the labor of the prisoners of war.

(d) The rules of discipline and control applying to her soldiers under her military law applied to prisoners of war under military rule.

(e) Distinctions between prisoners of war of different nationalities were not recognized; "the Allies who fight together must as prisoners of war sleep together, eat together and work together."

The period of unorganization lasted until the close of the autumn campaign of 1914. On the west front, management of prison-of-war camps was regarded by the Germans as well organized in 1915. On the east front, however, the organization broke down under the weight of the huge number of Slavs captured in the late summer of 1915. According to the Germans, the organization was everywhere maintained during the year of 1916. During the present summer the number of prisoners taken by the Germans has been so low that the problem of caring for them cannot have been onerous.

The Germans were taken by surprise at the number of prisoners taken during the fall of 1914. As one officer remarked to the writer, with what he doubtless regarded as fine sarcasm, they were "surprised that the Allies had so many troops to surrender and that they surrendered so readily." Confident that the Imperial Army would march directly to Paris, no particular provision for the care of prisoners of war was contained in the campaign plans of the General Staff. For each new batch of prisoners, it was almost literally true that they had no beds on which to sleep, no roofs over their heads, and no food to eat. Usually this state of unorganization lasted only a few days; but sometimes the quarters, living accommodations and food were almost intolerable for several months. Some prisoners have stated to the writer that they regarded the neglect at that time as purely unintentional due to unorganization; others have the conviction, born of experiences that to them permit of but one interpretation, that malice more than unorganization contributed to the wretchedness of their situation. The writer regrets to feel compelled, from personal observations, to conclude that in some camps and under some commandants, malice was a factor in the regimen. When one considers the number of camps (150 parent camps and thousands of working camps) it is obvious that the chances of getting a brute for a commandant or overseer were not few. In theory, the prisoner of

war was supposed to receive the ration of the army of his country, and this was, with his pay, charged against his country, to be paid at the close of the war.

The writer had no personal experience with the prison-of-war camps in Germany prior to March, 1916. All statements of conditions prior to that date rests on the experiences and records of the American Embassy in Berlin, on official German publications, and on statements of German officials to the writer. The stringency in foodstuffs became acute after the arrival of the writer in Berlin; and the conditions of subsistence may be assumed to be about the same now as during the summer and autumn of 1916.

The story of later conditions is of more importance to us than a recital of earlier conditions, since we are most interested in what our fellow men may be expected to encounter and endure in the event of being captured on the western front. The fact that Germany has taken no official notice of the declaration of war by the United States, and has herself made no declaration of war against us, will not prevent the captured soldier from "getting his" if he should fall into the hands of a rancorous Prussian sergeant. The Prussian sergeant is a creature *sui generis*. Since the Franco-Prussian War, German newspapers have regularly contained accounts of the brutalities of the sergeants to the one-year recruits drilling under them. The one-year recruit was the man of university education. The drill sergeant sprang from the masses. During the single year of military service of the educated German, the uneducated sergeant had the only opportunity of his life to inflict personal indignities on the man of social station above him. German military regulations contained specific provisions designed to control the profanity and indecency of language employed by the sergeant against the recruits. German officers have stated to the writer that the strict military rules applying to the newly captured prisoners were not infrequently violated by the sergeant, in the same spirit in which he used to abuse recruits under his control. Good commandants often had difficulty in controlling the sergeants who were their subordinates; the combination of a harsh commandant and a malicious sergeant spelled suffering for the unfortunate man entrusted to their military care.

The subsistence of the prisoners of war during the first half of the first year was provided on the contract system. When one or five or ten thousand men were taken prisoners, they were sent back of the lines. Later they were sent inward, in accordance with a system of distribution that no German official was ever able, or willing, to make clear to one of us. The heads of the army corps had certain rights; the generals of the battling divisions to whom the captive had fallen had certain prerogatives; the needs of the particular sections of the fatherland for labor were taken into consideration, and the capacities of certain cities or sections to care for large bodies of prisoners were factors of moment. But when all was said and done, some of the prison-of-war camps seemed, like Topsy, to have "just grown up." Certainly, some of the camps were established in places that the present commandants cannot imagine would ever have been regarded as proper locations for a camp. When after a battle, the hundreds or thousands of prisoners arrived at the denominated place, possibly after only a few hours' notice by telegraph to the local authorities, it was up to the local authorities to provide shelter, beds and subsistence. The contract system was the most easy

and feasible system, at first sight. Caterers took over the entire feeding of prisoners, at prices ranging from 15 to 16 cents per day. There were at first no regulations of diet officially promulgated; the commandants were supposed to see to it that a proper diet was provided. It was during these first months that the greatest complaints over subsistence arose. It was frankly admitted to the writer by German authorities that in many instances the caterers violated grossly the trust imposed in them by the government, made easy by the lack of inspection service. Indeed, in published protocols of later meetings of the war subsistence bureau, dissatisfaction of the authorities and scientists with the subsistence furnished by the caterers was freely expressed. But, openly, the Germans usually denied that more than nominal abuses existed; and when driven to the wall, would fall back on the "you're another" by describing the British as inventors of concentration camps during the Boer War. The caterers not only confessedly neglected the needs of the prisoners of war, but in some instances they also defrauded the government. The penalty, therefore, sometimes exacted, was to compel the contractor to continue his contract after the period had expired, until restitution was done. As prices were continually rising, to compel a caterer to continue at the old price meant loss to him and profit to the government. In many instances this was done until, in the judgment of the authorities, the improper profits had been leached away. But the prisoner of war had no restitution. The writer has no personal information of the diet of the prisoners of war in Germany during the first year of the war. The records of the American Embassy in Berlin contained no investigations by trained observers. The German government did not maintain a competent department of inspections, and confessedly did not know for many camps exactly what was going on. But from statements made to the writer by men whose judgments, as revealed to the writer in camps with which the writer was acquainted, were fair and just, the food of the prisoner of war during the first year of the war was often badly prepared, entirely disregarded the tastes of the men, and was sometimes deficient in amount.

The first governmental regimen was issued in the spring of 1915, and was, in a certain sense, recognized by the Germans as an admission that the local camp authorities and the caterers had been more or less derelict. The first ration provided that the prisoners of war must receive daily 85 gm. (3 ounces) of protein, 40 gm. ($1\frac{4}{10}$ ounces) of fat, and 475 gm. (17 ounces) of carbohydrate, with a total value of 2,700 calories. From the standpoint of quantities, this was an entirely adequate diet for sedentary men. When the prisoners worked, they received 10 per cent. more food. The cost was limited to 16 cents, thus compelling the materials to be chosen from among the few foodstuffs that would furnish the denominated units within the set price. Early in the summer of 1915, the housing and subsistence in the prison-of-war camps were organized, and on the customary basis of German minuteness. Under the commandant of the camp operated a committee composed of subsistence officer, surgeon and paymaster. The service of the surgeon was limited to an inspection of the raw materials and stores, and to a daily report on the taste of the mid-day soup. The subsistence officer had the running of the store rooms and kitchens. The paymaster made arrangements for purchase, though this was often purely mechanical, as

the central war department made the chief purchases for the prison-of-war camps. The minister of war appointed a diet expert to exercise supervision over the ration. This was fixed each month for all of the camps, leeway being supposedly allowed to enable the subsistence committees in different camps to take advantage of local markets. If the camp commandant was an efficient man, this arrangement resulted in variety in the diet. (The writer once saw 3 tons of asparagus being cooked for prisoners-of-war.) More often the opportunity was neglected. In June, 1915, a course of instruction for subsistence officers was held in Berlin, under the direct authority of the minister of war. The course was attended by about one hundred officers detailed from the several camps; for a week they attended lectures and demonstrations on the physiology of the diet, the preparation of food and the technic of mass rationing. Germany had possessed considerable experience in civic kitchens; and on this experience the feeding of the prisoner of war was largely founded.

As the expert of the Prison Nutrition Office there was selected, not one of Germany's many recognized workers in nutrition, as might have been expected, since the number of prisoners of war was large and the verdict of history on the care of these men a matter of much importance to Germany. Instead, they selected a man whose experience in matters of nutrition had been largely confined to animal husbandry. The writer learned in his first interview with Professor Backhaus that he was not conversant with the literature of human physiology. He was well versed in animal nutrition from the older standpoint of energy equivalents. He was not acquainted with modern investigations on growth or with the current viewpoint of metabolism. He was practically unacquainted with the considerable work that had been done on adaptation of the diet, and was devoid of any conception of the psychology of rationing. He attempted to ration prisoners of war exactly as one would feed live stock. The knowledge of the nutrition of the human body includes that of the animal body, but it also includes something more; and this something more the director of subsistence of prison-of-war camps did not possess. In rationing human beings, one must not violate the laws derived from the studies of nutrition of animals; but merely to apply the feeding rules of the stock farm is not sufficient in the feeding of men.

In the published report of addresses delivered at the meeting of subsistence officers of the camps, frequent references were made to abuses by caterers. Camp authorities were also urged to permit the prisoners of war to prepare food in accordance with their own tastes as much as possible, a recommendation rarely followed; had it been adopted, much of the dissatisfaction of the prisoners with their rations would have been avoided.

From June, 1915, on, the head office issued over the signature of Professor Backhaus a menu for each month, defining in grams to the decimal place the amounts of each foodstuff that were to be served each day. Certain leeway for adaptation and substitution was permitted, but these had to show on the camp diet sheets that were sent to the central office for record and approval. One by one the contracts with caterers expired or were discontinued, and the camp authorities took over the management of subsistence.

The writer reached Germany in March, 1916, and departed in October. During this period, Germany

passed from closeness to stringency in food supplies, and the writer was thus in a position to study the changes in the ration of the prisoners of war that accompanied this transition. While the student of the subject is able to predict an oncoming stringency of food supplies at a considerable distance of time, it is usually not possible to convince those in public authority that such a stringency is imminent, and this was the case in Germany. In March, 1916, the students of the subject realized that a critical situation was impending; but the authorities in charge of food control could see nothing of this until the crisis developed in the markets in May. This was reflected in the prison-of-war menu for June, which displayed a reduction of 40 per cent. from that of the month before.

Even the Germans make mistakes, and even the Germans admit they make mistakes. A famous pope has been credited with the remark that he cared not who conducted the arguments so long as he framed the definitions; and the Germans are willing to make such mistakes as are provided in their philosophy. In the Hegelian system, provision is made for logical and illogical mistakes. The German finds great relief in the reflection that his mistakes were logical. The attitude of the world toward this frame of mind is quite that of the family toward the surgeon who regarded the operation as a technical success though the patient died. One of the most striking differences between Englishmen and Germans lies in this: Englishmen blunder into mistakes, Germans reason themselves into mistakes.

The two mistakes that were responsible for most of the difficulties in the prison-of-war diet were disregard of the psychology of the diet and the selection of potato instead of bread as the keystone of the ration. The last mistake the German authorities made against their own people, and it has been the cause of great misery to them. The crop of 1915 was short on grain, long on potatoes. Two hundred gm. ($7\frac{1}{10}$ ounces) of flour per diem was set as the cereal ration of the German people. The rest went to stock feed. Had the ration been set at 300 gm. ($10\frac{7}{10}$ ounces) per day, where it could have been set, this could have been maintained, as was repeatedly demonstrated by German scientists, involving only the withdrawal of so much grain from stock feed. In June, 1915, the bread ration of the prisoner of war was set at 300 gm. per day. The flour ration issued to the kitchens to be used in the preparation of the food and in the baking of extra bread and cakes was limited to 500 gm. (18 ounces) per week. This amounted to a total flour and cereal ration of about 270 gm. ($9\frac{1}{2}$ ounces) per day. There was a stated rice ration of 200 gm. ($7\frac{1}{10}$ ounces) per week, but this was largely on paper, as rice soon became scarce.

As against this was the normal British consumption of 310 gm. (11 ounces), the French and Russian of 400 gm. ($14\frac{2}{10}$ ounces) per day. Entirely apart from the kind and quality of the bread, the prisoners naturally felt the amount to be entirely insufficient. The digestive tract becomes accustomed to a certain bulk of the staple foods. When other articles in the diet do not suit, the few staples become the mainstay. Many of the dishes of German cooking, the French and British could not eat. When, therefore, the bread was low in amount, the deprivation was doubly felt. The same fact held for the entire German people. It did little good to substitute potato, since this disarranged the entire bulk habits of the digestive tract.

As a final misfortune, the supply of potatoes gave out early in the spring of 1916, and the prisoners and population together had to go on short rations of potato as well as of bread. In the early months, bread was on sale in the canteens; later this was interdicted.

The bread of the prison camps was the center of storms that concerned more than quantity, involving also kind and quality. Of the kind of bread served, the amount was later more than enough for Frenchmen, Belgians and British. The bread was a coarse mixture of rye (70 per cent.) and wheat (30 per cent.), dark in color, sour in taste and inclined to be soggy and gummy inside. The American bread faddists who are seeking for ever and ever more laxative breads ought to import, after the war, some of the bread makers of the German prison camps; they certainly have perfected the making of bread that would leave an indigestible residue. The bread was sour in reaction, as in the sour fermentation method of central and eastern Europe. This bread was not necessarily indigestible to much greater extent than our graham bread; indeed, the acid fermentation probably had some action on the starch and cellulose. But it was revolting in appearance and in taste. It is a matter of taste. The German prisoners of war in England used to complain of the constant use of white bread; as late as August, 1916, the writer saw in the prison camps in England pieces of sour black German bread sent over from Germany to the men as delicacies, in response to their appeals for a little of the home bread. The smell of the bread is like the smell of the sod, ineffable. The Russians made no complaint against the bread except that the ration was low. And, when an irate Tommy would take a piece of bread and throw it as far as he could, a Russian would eagerly pick it up and eat it. The British boys did not believe the bread had to be made that way; they believe that the Germans were "rubbing it into them," trying to make the German bread as a penal procedure. When in the fall of 1915 potato was added to the bread, matters only became worse. When the writer visited the camps in the spring of 1916, the bread contained as much as 30 per cent. of potato. In some of the camps, relatively good bread was baked; in many of the camps nothing approaching good bread could be produced. In Parchim, where the commandant was ceaselessly busy doing his best to improve conditions for the men in his camp, the making of bread had been evolved to such an art that the 30 per cent. of potato was entirely concealed, and the bread tasted like a common whole-grain bread of coarse texture. In the final analysis, it was a matter of endeavor; where conscientious effort was expended on the problem, results were secured; where the complaints against the bread were lightly disregarded, conditions remained bad. At the best it was a low grade bread, difficult of digestion.

In June, 1915, a limitation of supplies applicable to all camps was issued by the Department of War. Each prisoner of war was to receive not in excess of 300 gm. (11 ounces) of bread, from 200 to 500 gm. (7 to 17 ounces) of fresh vegetables and 1,000 gm. (36 ounces) of potatoes on the average daily; and weekly 200 gm. ($7\frac{1}{10}$ ounces) of sugar, 500 gm. (18 ounces) of flour, 100 gm. ($3\frac{1}{2}$ ounces) of fat (usually soya oil that lasted until late in the fall of 1915) 200 gm. ($7\frac{1}{10}$ ounces) of field beans, 300 gm. ($10\frac{7}{10}$ ounces) soya beans, 200 gm. ($7\frac{1}{10}$ ounces) of rice, 440 gm. (15 ounces) of fresh meat, 100 gm. ($3\frac{1}{2}$

ounces) of sausage made of blood and internal organs, 150 gm. (5 ounces) of dried sea fish and 200 gm. ($7\frac{1}{10}$ ounces) of herring. No butter was provided, and margarin was soon dropped. Since it was the rule to serve the special articles of diet at noon in the form of a thick soup, this left little else than bread and coffee or tea for breakfast and supper. Without butter or conserves, this made a poor and unsatisfying breakfast and supper. ("A breakfast consisting of thin coffee without milk or sugar is really not a meal at all, especially if bread is lacking"—a quotation from an official discussion of the prison-camp fare.) The suppers did often contain potato salad or boiled potatoes with herring or sausage, at the beginning; later the suppers approached more and more the compositions of the breakfast. During the past winter the writer has seen prison bills of fare in this country that were almost identical with the German menu; dry bread with coffee or tea for breakfast and supper, soup for dinner six days in the week. The quality of the foodstuffs was, in the experience of the writer, usually not worse than poor. Naturally the grades were not of the best, but decomposed foodstuffs were not often encountered. The coffee was very poor; at first it was one third coffee; two thirds substitutes; later it was all substitute. The cocoa was a powder of husks that cost 5 cents per pound; milk was rarely seen. The sugar carried the tax, as it was expected that the cost of the ration would be repaid at the end of the war. The fresh fish, usually served once a week, was almost always excellent, and this was the dish most looked forward to by the prisoners. The paucity of fat was one of the most grave defects of the diet. Foods low in fats never seem properly cooked. They digest rapidly, and thus hunger appears too soon after a meal, and the sense of having been well fed is destroyed.

The amount of foodstuffs in the diet of the camps was maintained at the set level until June, 1916. In April of that year the ration was normal, containing: protein, 89 gm. ($3\frac{1}{2}$ ounces); fat, 30 gm. ($1\frac{1}{10}$ ounces), and carbohydrate, 510 gm. (18 ounces), with a total of 2,740 calories for a nonworking ration. In June the ration for nonworking prisoners fell suddenly to 1,720 calories: protein, 57 gm. (2 ounces); fat, 21 gm. ($\frac{3}{4}$ ounce), and carbohydrate, 310 gm. (11 ounces). This was evidently the result of the mandate of the food controller, von Batocki, who has just been relegated to private life by the new chancellor. The writer has not seen the diet sheets for all of the months since June, 1916; but from those that he has seen, the intake has never since that time risen from 2,000 calories; and the best available information runs to the effect that the ration since our entrance into the war has not exceeded that amount. This quantity of food was, of course, too low to maintain nutrition. It meant loss of weight, subnutrition, lowering of resistance to infections and other diseases—in short, starvation for some of the men. Many men, on a diet of 1,800 calories, will waste greatly and reach a low level in weight at which they can live on the low intake. The defenders of Ladysmith went for three months on 1,500 calories per day. But the intake of the prison-of-war camps in Germany since June, 1916, must have meant subnutrition for all of the nonworking men who had no other food supply, and death directly and indirectly to some.

It was the German principle of ration of war prisoners, as officially stated to the writer, that Germany under food blockade would give to the nonworking

prisoners that amount of food only that was available for the poorest nonworking citizens of the empire. This was also practically the Russian rule; the German and Austrian prisoners were given the ration available for the poorest refugees who had no employment. Any other rule would have implied that the Germans were to keep alive the prisoner of war at the expense of German citizens. It is the conviction of the writer that in the large industrial cities of Germany last summer many individuals did not receive more food than was provided in the prisoner-of-war ration, or any better ration.

The equipment of the camp kitchens consisted usually of a number of large soup kettles, a small stove for roasting, and a hot water boiler. The thick soup was usually served to the men directly, standing in line with bowls in their hands. They usually returned to their barracks to eat the meal, but were permitted to do so in the open. In some camps the soup was served to each barracks in large buckets. There were dining tables in few camps; the men had usually to sit on beds or boxes, or stand while eating. The men were not permitted to have knives or forks, spoons alone being permitted, since it was feared that weapons for escape or attack could be fashioned from knives and forks.

With the lack of knife and fork appeared another characteristic of the noon-day meal that was bitterly resented. The meat allowance was very low, for the past year only a third of a pound per week. But this had to be cooked in the soup, and was lost in the mass. Men thus fed acquire a positive homesickness for the sight, taste and touch of meat; they long for the act of mastication of meat. The animals were usually killed in the camps. Everything was used as food but the horns, hair, hide, hoofs and contents of the alimentary tract. The internal organs were worked up with blood into a blood sausage, whose appearance was confessedly revolting. Beef, pork and mutton were all served, according to circumstances. The bones were crushed, the mass heated, and the fat collected by centrifugation. Frozen rabbits from Austria were served as late as the fall of 1915.

All this did not involve the prisoners of the United Kingdom at all, those of France to no marked extent; but it did concern the Russians and the Serbs, who received no foodstuffs from the outside world. As early as the fall and winter of 1914-1915 the British received practically all their foodstuffs from home, and the French to an extent of over one half of their needs. During the six months the writer was in personal contact with the situation in Germany, the Tommies subsisted almost entirely on the supplies sent from home. The international agreements dealing with war provide that prisoners of war may receive packages of tokens, delicacies, clothes, etc., from home. This comfort package, called by the Germans the "love parcel," was expanded by the British into a full ration package. When fresh fish was served or potatoes boiled in their skins, the Tommies would take their share. Otherwise, one or two things would happen. In good camps, the food allotted to the Tommies would be delivered to their barracks by their messengers, and then turned over to the Russians. In bad camps, this was not permitted, and the food was not prepared for the British. The French and Belgians took more or less of the food according to their taste, to fill out the inequalities and insufficiencies of their food parcels. Some of the German dishes were not so revolting to the Belgians,

and as a rule they were more adaptable in the direction of German cooking.

In June, 1916, the question of placing a check on the food parcels was brought up by the minister of war. The camp authorities were flooded with letters of protest from Germans, protesting that Germany permitted the prisoner of war to receive from the outside world food in variety, kind and quantity in excess of that available to the poor Germans under blockade. A movement was inaugurated to compel the government to act in the direction of repression. It was supported by the military parties, opposed by the chancellor and the Foreign Office. At that time the Germans were much concerned over the treatment of German prisoners of war in Russia, and supplies of food were being sent to them in Russia under the auspices of the American Y. M. C. A., whose leading representative in prison-of-war service, A. C. Harte, had accomplished an enormous task of alleviation in Russia and Germany. The fear that any repression of the food parcels to Germany would lead to similar repression on food parcels into Russia undoubtedly tended to deter harsh action on the part of the German military authorities. But probably the most deterring factor in the final decision to impose no conditions on the shipment of food parcels into Germany was the vigorous opposition of Ambassador Gerard. The position of the American Ambassador on all matters involving the rights of the prisoners of war committed to his charge was unequivocal and admitted of no compromise. Supported by Bethman-Hollweg and von Jagow, the demands of Gerard for uninterrupted continuance of food parcels of unlimited contents into Germany was finally agreed to by military authorities. This raised a storm of protest, because the Germans felt that these prisoners should be made to feel the pinch of the blockade. And, of course, through the sentries the Germans knew exactly what foodstuffs were being received by the British prisoners. In particular, the possession of butter by the British prisoners seems always to arouse the Germans' wrath, since butter was the article most scarce and most keenly missed. Ambassador Gerard obtained one further concession, in practice if not in principle. In Ruhleben were a considerable number of civilian Englishmen who had no connections in England engaged in sending food parcels. When the low ration of June, 1916, was first introduced, these men were strictly "up against it." Gerard secured permission for food to be shipped in for them in bulk, not as individual parcels, but as lot shipments of foodstuffs to the American Ambassador, to be distributed to the needy men.

Up to the fall of 1916, the food parcels to Tommies were sent out from the mother country in an unorganized way, by families, associations, clubs, churches and societies. In the autumn of that year, the victualization of these men was organized in London and centralized in one committee. A ration was selected that would conserve well, pass censorship easily, stand transportation, keep well in the camp, and wear with the tastes of the men. The supplies included soap and tobacco, two scarce articles in Germany. Bread was baked in Berne, and supplied by a committee of women organized under Lady Grant-Duff, wife of the then minister to Switzerland, and supplied to every Tommy in Germany. So far as the writer could learn from the prisoners themselves, these food parcels were never appropriated by the Germans. Delivery was often

delayed, especially in working-camps. The packages had to pass the censor, outgoing as well as incoming, and this often consumed time. The necessity of censorship can be understood from the statement that on a number of occasions a suit of clothes was removed from a hollowed-out loaf of bread. The writer has recently learned from a nurse who has only lately talked with the Tommies exchanged to Switzerland that the delivery of food parcels continues without loss or difficulties. The shipment of these food supplies packed as individual parcels imposed a serious burden on the German transportation system. Sometimes 50,000 packages a month would be delivered to a camp, and a great many express trains were kept in operation by the parcel shipments to the camps. This led to difficulties between the transportation authorities and the censor's office, since the shipments could have been greatly expedited if the rules of censorship had been less strict. All in all, the food parcels were as much a source of discomfiture to the Germans as they were of sustinment to the Tommies.

The food parcels were also the occasion of internal difficulties in the camps. In order to use their supplies, it was necessary for the prisoners to have facilities for cooking. Coffee and tea required hot water, and many of the tinned foods were meant to be warmed up. In good camps, the men were given free facilities to so serve themselves. They could purchase coal, and they were allowed stoves so long as they were careful to guard against fires. In the bad camps, these privileges were refused, and the most petty obstacles put in the way of the use of these food supplies. In the good camps, men were allowed to share their food with other prisoners. In some of the bad camps, the giving of food to prisoners of another nationality was prohibited. In one of the camps, when on the occasion of an inspection by a member of the American Embassy staff, call was made for complaints, a little Irishman stepped out of line and in a shrill voice demanded; "I want to know why in hill I can't give me extry grub to the sick Frinchmen?" It was in such ways that the camp of good management was distinguished from the camp of bad management. When the men of the American Embassy spoke of a good or a bad camp, they referred not to the material equipment, but to the point of view of the commandant. When the Tommies emptied the tins of food they threw the empty cans into a heap. The Russians, like the bears back of the hotels in Yellowstone Park, would hunt over the cans and lick them clean. In one camp this was forbidden! The tin in the cans became a matter of valuable recovery of the metal to the Germans, so that foods in tin may not now be shipped to prisoners in Germany, being forbidden by explicit regulation.

The writer is advised that the shipments of food to the French prisoners in Germany has lately fallen off, an expression of food stringency in France. This is a matter of very great importance and urgency, since with the extreme prevalence of tuberculosis among the French prisoners, a lowering in the intake of food would have a terrible result. This matter of virtualization of the French prisoners is now in the hands of the American Red Cross.

All the camps originally contained canteens, where foodstuffs, tobacco and articles of personal need could be purchased. But since June, 1916, no foods are on sale in the camp canteens. Beer and wine were on sale in most of the canteens. The amounts that could

be purchased were very limited; a pint of beer or a half pint of wine two or three times weekly, under strict control. The men prized this privilege very highly, not being teetotalers and not disposed to argue as to the effect of such libation on the statistical expectation of life. The camp authorities were a unit in commending the system. No such system obtained in England, despite the petitions of the prisoners and the favor of the majority of the commandants. Assured that sentiments of prohibition were not at the bottom of the refusal, the writer was forced to regard this as a petty form of reprisal, the only sign of this iniquity he was able to find in any of the British camps. The faults in the British camps, where such existed, were due to lack of organization. The faults in the German camps, where such existed, were usually those of persecution, usually petty, sometimes grave and brutal to a serious degree.

The diets in the working camps were usually much more satisfactory than in the parent camps. Employers knew that if the men were well fed they did better work, though in some instances coming under the observation of the writer, employers tried to secure through terrorism by sentries work that was not warranted by the diet. Naturally, a brutal employer, when in possession of prisoners as laborers, has opportunities in the direction of brutality and coercion not possible in times of peace. And, of course, Germany contains such employers just as other nationalities have them. The control of this abuse by employers lay in official inspection; but the inspection system of the working prison camps was both inefficient and inadequate. The writer observed a number of instances of abuse in the direction of underfeeding in working camps, and the matter was all the less excusable as the men were working largely on rations from home. Generosity in the matter of diet could hardly be expected when the standards of work by which the men were judged were such that in one instance the official time-card of a group of men engaged in cultivation of virgin moorland credited the men with work equaling the value for the day $2\frac{1}{2}$ cents. Ten cents per day was a common rate of payment. The men billeted on farms fared the best. Here the lack of long standing racial hatred between German and English came to the good of the Tommy. After being billeted on a farm for a few months, the Tommies and the families of the peasants apparently forgot that their countries were at war, so far as their personal relations were concerned. The Tommies developed a sort of pigeon German and lived in amity with their employers. Very often the prisoners would share with the simple peasants their delicacies from England in exchange for the eggs and butter that the food controller was vainly trying to extract from the country districts for the benefit of the industrial cities. The French and Belgian prisoners did not fare so well. The French never dropped the hauteur and distance of an ancient racial antipathy. The Belgian never lost the immediate sense of resentment at the sufferings of his innocent people. The Russians had few difficulties, because the peasants were accustomed to Russian agricultural labor in prewar days. Work is the salvation of the prisoner of war. If all the prisoners could be employed in agricultural labor, that would be the best solution of the prison-camp problem.

The second mistake of the German management, as was stated earlier, lay in disregard of the psychology of the diet. In the first promulgation on the treatment

of the prisoners of war, issued by the War Department, Sept. 11, 1914, the camp authorities were warned not to disregard the differences in habit and customs that existed between the prisoners of different nationalities, and to pay particular attention to the diet of prisoners. This, however, was not done. Why not? The most common answer given by the camp commandants ran to the effect that they did not have adequate and competent personnel, as the military arm seized all. There was, of course, truth in this extenuation, certainly for the first year. But later the causes of the disregard of the psychology of the diet were of a different nature. One was the feeling of bitterness that developed as the war was not brought to a successful conclusion. "They are allies, they fight together; therefore, they live together, sleep together, eat together; no discrimination; the same for everybody." Such in effect was the answer that the writer has heard time and time again. This was the spirit that promoted the commandants in Wittenberg and Gardelegen to disregard the advice of their surgeons, on the first appearance of typhus, that the Russians must be separated from the British, Belgians and French, with the result that epidemics got under way that should have been checked at the outset. This was the spirit that in many cases prompted the refusal to allow the different nationalities to be barracked separately, desirable on account of the different habits of the Russians and British—for example, in the matter of open windows in the sleeping quarters, highly prized by the British, feared as dangerous by the Russians. This was the spirit that ordered the cooks to cook all the food up in one way, the easiest way, perchance: "Let them be allies in the eating of German prison-camp fare." In such an arrangement the one to come out ahead was the Russian. The problem of feeding a Russian peasant is a problem in solid geometry; his sole concern is that of the third dimension. The writer has heard the most unbelievable stories of the capacity of the Russian alimentary tract, such as the eating at one sitting of 50 quarts of purée of peas by seven prisoners. At home the Russians lived largely on bread and vegetable soup, with little meat or dairy products. In the camps with a low bread ration, low in quantity but to them satisfactory in kind, the Russian was entirely satisfied with camp soup if the amount was sufficient. The poor Belgian was against the diet on constitutional grounds; after what he had been through in his native land, any dish that the German concocted could be nothing else than bad. The average Tommy had the point of view in diet that a luncheon from the joint in Simpson's, a piece of rare meat, a bit of boiled cabbage and a potato, each unseasoned, represented the heaven of gastronomics. The Frenchman was accustomed to the highly concocted and deftly seasoned sautés and made-up dishes that the simplest French woman can do so well, and for the rest was dependent for half his intake on white bread. The line of least resistance was to have separated the nationalities as much as possible, have them install their own cooks, and turned over to them the raw materials, as far as possible, and allowed them to prepare the foods as they desired. This was the system arrived at in the prison-of-war camps in Great Britain as the simplest solution of the problem. This the German caterers refused to do in the first months, because of the reduction of profit to themselves. This the camp commandants, for the most part, refused to

do later on, because they would concede no distinctions to the different nationalities.

Later, two more or less valid reasons did develop. One was the size of the camps. With the huge camps running up to forty or fifty thousand, the Russians always greatly predominating, it was less feasible to segregate the barracks or the kitchens. The second related to the utilization of food. The camp authorities were afraid that if the men were given raw materials they would cook what they liked and discard the other articles. For example, when potatoes, field turnips and dried sea fish were issued for one meal, the British would soak out the fish and broil it, boil the potatoes, and throw the turnips away. Therefore, to secure complete utilization, the Germans cooked the three into a thick soup, and the ingredients had all to be eaten or let lie. Cooking up all the materials compelled the consumption of the poorer foods, and reduced the cost of maintenance. And as the supplies became more and more coarse, approximating fodder, the more necessary it seemed to cook them altogether. When an Englishman protested that he could not eat such a mess, the German pointed to the Russian contentedly consuming a double portion, and gave a shrug of the shoulder as much as to say, "If it is good enough for your ally in the contest for higher civilization, it is good enough for you." The more the Tommy fought the diet the more determined the German was to make him eat it, go without, or provide his own food. The Tommy finally settled the row by supplying his own food. The Frenchman, less obstreperous and more dignified, took the food when it displeased him least and pieced out with a half supply from home. The more the western Allies shipped in, the more there was for the Russian. When the Russian peasant has not enough to eat, he stands for all the world like a big hungry-eyed docile calf, locked out of the maternal stall; there is no resentment, only appeal.

The psychology of a diet is made up largely of externalities that, on paper and in fact, are much less important than protein, fat, carbohydrates, vitamins, salt and roughage. But as a matter of experience, taste, palatability and the normal appearance and consistency of the foods are of great importance. The Germans had had long experience with civic kitchens, and citations enough can be made from German writings warning against the effects of monotonous soup rations that lack all individuality as dishes. These externalities of diet are important to the normal individual. They are still more important to the abnormal individual, as may be seen in the daily experience in the sickroom. Now the truth is, the prisoner of war does not long remain normal. The crisis of battle, the terror of capture, the transition of circumstances of living, the depression of patriotism, the gloating of the captor, the abnegation of defeat, the homesickness that becomes a positive nostalgia, the insomnia—these all combine to produce reactions in the nervous system that easily lead to perversions in the physiologic functions. When finally is added to this a diet that does not please and idleness, mental and physical, the average prisoner of war, no matter in what land, lives on the verge of the abnormal. Under these circumstances, the externalities of the diet assume and finally possess an increased importance. The constant row about the preparation of the food kept many of the camps in perpetual uproar. Fault there was on the part of the prisoners of war, in that they sometimes made absurd and exaggerated complaints. But the primary

and responsible fault lay with the camp authorities, in failing to recognize how serious would be the results of a constant forcing of an unsatisfactory diet. In particular the constant eating of thick soups gets on the nerves. They looked like swill, they left nothing to mastication, and with this manner of cooking the best tastes of the ingredients were not developed; indeed, the particular tastes of the ingredients were lost. German experts in dietetics knew all this, of course. In one of the official publications dealing with the diet of the German camps, attention was drawn to the fact that constant use of soups as the chief dish caused illness in some individuals. And when they began civic feeding on a large scale last summer, loud and numerous were the warnings to the authorities not to repeat the very faults that had been committed in the prison camp. But the German experts in human nutrition had nothing or little to do with the prison-of-war fare. That was being done on the basis of the model stock farm: the men were dieted precisely like domesticated animals. At the time of highest prices of food in the summer of 1916, Professor Backhaus stated to the writer, "I can feed men brilliantly on 12 cents per day." The cost of our army ration is 42 cents. Even the Russians finally turned against the soup diet.

Wise commandants took a different position, and allowed freedom in the preparation of food. The writer has visited camps where the different nationalities were cooking their food in their own way, with satisfaction and without friction, also without losses to the commissary. It was for the most part merely a matter of consideration versus ruthlessness. We have the same things in some of our institutions. With abundant public funds, good foods are purchased; when prepared, the final product is a swill. With the average camp commandant the cause lay in the constitutional disinclination of the German to permit any individual liberty. The prisoner of war could not be allowed self-management; the authorities must do all the management. Now and then a commandant would see deeply enough to disregard this shell of sophistry, with immediate results for himself and his camp. With the right kind of camp commandants, the subsistence would have been better if Germany had not been short of food; with the wrong kind of commandants, conditions would not have been improved if foodstuffs had been abundant. If Americans are taken prisoners and sent to Parchim, Saltau, Friedrichsfelde or Wahn, they will wonder on what the printed stories of the harsh treatment of prisoners of war are based. But if they are taken to Lemberg, Minden, Langensalza or Schneidemühl, they will find it out for themselves in an unfortunately short time, unless these camps have suffered change of commandants. The German system of military control is bad, in that it tends to harshness in discipline, long notorious in the case of their own troops. When this military system was applied to prisoners of war, it became much worse in the hands of a camp commandant who was bitter because he had been compelled to give up his business to become a reserve officer in charge of a prison camp, or who, retired, felt that the battle of Verdun would have been won if he had been there at the head of a division instead of at the head of a camp of prisoners.

Officers have an entirely different system of rationing. The imprisoned officers run a mess, precisely as in their own armies in active service. The cost is charged, directly or indirectly, against them or their

country. The officers of the allied countries were, for the most part, comfortably housed in Germany and were free to run their own mess until foodstuffs became scarce. They were often subjected to reprisals, usually petty but sometimes grave, and these reprisals were occasionally directed against the mess. After foodstuffs became scarce in the spring of 1916 and the rationing system was introduced for the empire, the imprisoned officers were not allowed to purchase food in excess of the amounts allotted to Germans. They imported freely foodstuffs of all kinds, and really fared fairly well. The prices charged for domestic foods were often excessive, and petty restrictions were sometimes placed on the amounts of fuel that could be purchased. The natural tendency in Germany was to treat officers well, an expression of the feeling of caste in a military country where the officer occupies a position of social distinction. But the effort failed for reasons of psychology; the Germans fail in the handling of prisoners of war just as they fail in the administration of colonial affairs. Instead of drawing out the qualities of men, German officials attempt to impress their stamp on them.

In accompanying tables are presented the two weekly diet sheets, which will serve to illustrate the subsistence in the German prison-of-war camps. The first is typical of the period prior to stringency in foodstuffs; the second serves as a contrast, and illustrates the present state of affairs.

TABLE 1.—WEEKLY DIET SHEET TYPICAL OF PERIOD PRIOR TO STRINGENCY IN FOODSTUFFS*

| | Gm. | Ounces. | | Gm. | Ounces. |
|----------------------|-------|---------|---------------------|-----|---------|
| Bread | 2,100 | 75 | Sugar | 200 | 7.1 |
| Flour | 270 | 9.6 | Legumes | 150 | 5.3 |
| Meat | 300 | 10.7 | Fat | 70 | 2.5 |
| Fish | 300 | 10.7 | Maise grease | 180 | 6.4 |
| Herring | 150 | 5.3 | Pearl barley | 100 | 3.5 |
| Potatoes | 9,000 | 321 | Dried fruit | 50 | 1.8 |
| Vegetables | 1,800 | 65 | Marmalade | 100 | 3.5 |
| Skim milk | 400 | 14 | Tea | 16 | 0.5 |
| Sausage | 200 | 7 | Spices, herbs | 30 | 11.1 |
| Cheese | 100 | 3.5 | Cocoa | 40 | 1.4 |
| Nutrient yeast | 40 | 1.4 | | | |

*Per diem: protein, 89 gm.; fat, 30 gm.; carbohydrate, 510 gm.; calories, 2,740.

TABLE 2.—WEEKLY DIET SHEET TYPICAL OF PERIOD OF STRINGENCY IN FOODSTUFFS*

| | Gm. | Ounces. | | Gm. | Ounces. |
|----------------------|-------|---------|------------------------|-----|---------|
| Bread | 2,100 | 75 | Fat | 65 | 2.3 |
| Flour | 50 | 1.7 | Maise grease | 100 | 3.5 |
| Meat | 200 | 7 | Pearl barley | 60 | 2.1 |
| Sausage | 200 | 7 | Fruit | 300 | 10.7 |
| Fish | 325 | 11 | Marmalade | 100 | 3.5 |
| Potatoes | 3,500 | 125 | Tea | 4 | 0.15 |
| Vegetables | 1,650 | 59 | Coffee | 6 | 0.21 |
| Skim milk | 500 | 17 | Chicory | 15 | 0.5 |
| Cheese | 100 | 3.5 | Cocoa | 40 | 1.5 |
| Nutrient yeast | 20 | 0.7 | Spices and herbs | 20 | 0.7 |
| Sugar | 130 | 4.8 | Mustard | 50 | 1.7 |
| Legumes | 150 | 5.3 | | | |

*Per diem: protein, 57 gm.; fat, 21 gm.; carbohydrate, 310 gm.; calories, 1,720.

It is apparent from these figures that our government must undertake and organize the feeding of Americans who may be taken prisoners of war and confined in Germany. This has, indeed, been already undertaken. Food parcels can be sent in via Berne or Copenhagen, and the system of receipts affords a guaranty that the parcels are received by the prisoners. If food conditions in Germany become stringent, the military authorities may decide to rob the prisoners, reversing their previous decision, just as they reversed themselves in the U-boat campaign. Should the prisoners be robbed of their food parcels, the Allies could have recourse to nothing except reprisals on German prisoners of war—which Heaven forbid, since the western Allies could never, in theory or practice, follow the Germans in reprisals.

PROPHYLACTIC THERAPY FOR RICKETS
IN A NEGRO COMMUNITY*

ALFRED F. HESS, M.D.
AND
LESTER J. UNGER, M.D.
NEW YORK

For many years cod liver oil has been regarded as the sovereign remedy for rickets. Its claim to therapeutic virtue rests not only on many years of clinical experience but also on metabolism tests showing its

TABLE 1.—COMPARATIVE INCIDENCE OF RICKETS AMONG
INFANTS RECEIVING AND NOT RECEIVING THE
PROPHYLACTIC THERAPY

| | Dura- tion of Therapy, Mo. | Number of Infants | Infants Not De- veloping Rickets | Infants Devel- oping Rickets | Per- centage Non- rachitic |
|---|-------------------------------------|-------------------------|---|---------------------------------------|-------------------------------------|
| Oil given (average total 54 ounces)..... | 6 | 32 | 30 | 2 | 93 |
| Oil given (average total 23 ounces)..... | 6 | 5 | 4 | 1 | 80 |
| Oil given (average total 21 ounces)..... | 4 | 12 | 7 | 5 | 58 |
| Oil not given..... | .. | 16 | 1 | 15 | 6 |

beneficial effect on the retention of calcium. It may be properly regarded as one of the well established therapeutic agents and one which should be widely utilized. It seemed, therefore, worth while to investigate whether its usefulness could not be extended to the prophylactic treatment of rickets.

No doubt cod liver oil has frequently been employed in individual instances in this way. As far as we know, however, no extensive test, embodying a considerable number of cases and continuous and careful observations, has been carried out. This is the task to which we set ourselves.

For various reasons we decided to carry on the investigation among a negro community, and for this purpose selected a district known as the Columbus Hill district. Our main reason was the fact, agreed to by all, that of all races the negro is most subject to rickets. This tendency is so marked that it may be safely stated that over 90 per cent. of the colored babies have rickets, and that even a majority of those that are breast fed show some signs of this disorder. It is evident that where rickets is so prevalent, an excellent opportunity is afforded for judging of therapeutic results.

Another factor which prompted us to select this district was that a survey of the section had recently been made by the Henry Street Settlement and National League for the Study of the Urban Conditions of the Negro, whom we wish to thank for their cooperation in this work. Thus the economic and living conditions, as well as the morbidity and mortality, had been given particular attention. The economic status of these people, as of all the negro population in the larger cities, may be summed up as very bad. The people pay high rents, earn low wages, and unfortunately have had but meager educational opportunities.

The mortality of the negro in New York City, according to the federal census of 1910, was 25.9 as against 15.3 for the white population. In the state and

in a group of selected cities, the ratio was about the same. The mortality among the negro infants in the city was 202 in 1915, and 194 in 1916 for each thousand born, as compared with 96 and 94 among the white population in the same years. The Columbus Hill district, which has a population of about 9,000, bears the unenviable distinction of having the highest mortality of any neighborhood in the city, being New York's "black spot." In 1915 its infant mortality rate was 314 per thousand. Among these deaths respiratory diseases, such as pulmonary tuberculosis, pneumonia, and whooping cough, play a large rôle. This tendency has been noted by the city investigators as well as by the federal census bureau. In view of the fact that rickets is a predisposing cause of these respiratory diseases, it would seem particularly beneficial if this disease could be combated, for the purpose not only of improving the nutritional condition of the infants, but, at the same time, of reducing the infant mortality.

It was determined to give cod liver oil to about fifty babies between the ages of 4 months and a year, and to select, wherever possible, infants of families in which other children had had rickets. Before the oil was given, a careful physical examination of the baby was made, and a history of the case taken, involving the diet of the baby and of the mother, the economic condition of the family, the length of time they had lived in the North, and many other data which might be of interest in this survey. As the result of this investigation, we shall in the near future publish a study of the diet of the negro under urban conditions in the North, and attempt to associate it with the marked development of rickets among the children. We were fortunate in having the services of a nurse who had worked in this district for many years, and who was able to facilitate our access to the homes of these people. At the outset before the oil therapy was instituted, a physical examination was made and repeated at the end of two months, four months and six months, when the test was completed. Visits were

TABLE 2.—RELATIONSHIP OF BREAST AND ARTIFICIAL
FEEDING TO THE PROPHYLACTIC THERAPY

| | Dura- tion of Therapy, Mo. | Breast Feeding | | Artificial Feeding | |
|---|-------------------------------------|---|---------------------------------------|---|---------------------------------------|
| | | Infants Not De- veloping Rickets | Infants Devel- oping Rickets | Infants Not De- veloping Rickets | Infants Devel- oping Rickets |
| Oil given (average total 54 ounces)..... | 6 | 22 | 1 | 8 | 1 |
| Oil given (average total 23 ounces)..... | 6 | 3 | 1 | 1 | 0 |
| Oil given (average total 21 ounces)..... | 4 | 4 | 4 | 3 | 1 |
| Oil not given..... | .. | 1 | 12 | 0 | 3 |

frequently made by the visiting nurse and by one of us in order to follow the health of the infants and to assure ourselves that the oil was being taken. As was to be expected, there was a considerable number of mothers who, for one reason or another, were unable to cooperate in the work. These were either dropped absolutely from the list or were viewed as control cases. It so came about that although we began with eighty infants, this number was gradually depleted so that at the end of the period we had only forty-nine cases on which to base our conclusions. There were, on the other hand, compensating advantages. As the negro, in the choice of his home, is limited to certain definite localities, our follow-up work was not ham-

* From the Bureau of Laboratories, New York City Department of Health.
* Read before the Section on Preventive Medicine and Public Health at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

pered by the great difficulties which usually beset those who attempt to keep track of people in this great city for a period extending over six months.

Our results are summarized in the accompanying six tables. It is seen that we were able to prevent the development of rickets in more than four fifths of the infants who received the oil for six months, and in more than one half of those who were given it for four months (Table 1). This result must be considered satisfactory when we note that, of the sixteen infants who did not receive oil, fifteen showed signs of rickets, though all of them lived under the same

It seems unnecessary to go into detail regarding the data appended in these tables. Table 3 shows the results when a large amount of cod liver oil, an average total of 54 ounces, was given for a period lasting six months. Table 4 presents the benefits derived from smaller amounts of oil, an average total of 23 ounces, given for the same length of time. In Table 5 may be seen the effect of administering smaller amounts for a period of only four months, and finally a summary of the clinical course of the control cases among those receiving no oil is given in Table 6. We shall leave a consideration of the details to those who

TABLE 3.—SUMMARY OF CLINICAL EXAMINATIONS AND AMOUNTS OF OIL THERAPY
(LARGE AMOUNTS FOR SIX MONTHS)

| Case No. | Age in Dec. Mos. | Craniotables | | | | Rosary | | | | Epiphyseal Enlargement | | | | Ounces of Cod Liver Oil Taken During | | | | Course of Rickets | Nursed |
|----------|------------------|---------------------|------|------|------|---------------------|------|------|------|------------------------|------|------|------|--------------------------------------|---------------|--------------|-----------|-------------------|--------|
| | | Date of Examination | | | | Date of Examination | | | | Date of Examination | | | | Date of Examination | | | | | |
| | | Dec. | Feb. | Apr. | June | Dec. | Feb. | Apr. | June | Dec. | Feb. | Apr. | June | Dec. and Jan. | Feb. and Mar. | Apr. and May | Total Oz. | | |
| 8 | 10½ | + | + | 0 | 0 | ++ | ++ | ++ | ++ | ++ | ++ | ++ | + | 24 | 20 | 8 | 52 | Improved | Yes |
| 9 | 4 | ++ | 0 | 0 | 0 | ++ | + | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 24 | 32 | 72 | Improved | Yes |
| 10 | 11½ | 0 | 0 | 0 | 0 | ++++ | ++ | ++ | + | ++ | ++++ | +++ | + | 36 | 16 | 16 | 68 | Improved | Yes |
| 19 | 3½ | ++ | + | 0 | 0 | + | 0 | 0 | 0 | + | 0 | 0 | 0 | 20 | 12 | 16 | 48 | Improved | Yes |
| 20 | 12 | 0 | 0 | 0 | 0 | +++ | + | 0 | 0 | ++ | + | 0 | 0 | 16 | 16 | 8 | 40 | Improved | Yes |
| 21 | 9 | 0 | 0 | 0 | 0 | ++ | ++ | + | + | ++ | + | + | + | 20 | 8 | 16 | 44 | Improved | Yes |
| 22 | 9 | 0 | 0 | 0 | 0 | ++ | ++ | + | 0 | + | 0 | 0 | 0 | 24 | 8 | 16 | 48 | Improved | Yes |
| 23 | 3½ | +++ | +++ | +++ | 0 | ++ | ++ | +++ | ++ | 0 | 0 | ++ | + | 12 | 8 | 16 | 36 | Progressed | No |
| 25 | 6½ | +++ | + | 0 | 0 | ++ | ++ | + | + | ++ | + | + | + | 16 | 16 | 16 | 48 | Improved | No |
| 26 | 6 | ++ | 0 | 0 | 0 | ++ | + | 0 | 0 | + | + | + | + | 20 | 8 | 16 | 44 | Improved | No |
| 28 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 12 | 16 | 36 | Unchanged | Yes |
| 35 | 9½ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 24 | 24 | 60 | Unchanged | Yes |
| 38 | 9½ | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | + | 0 | 0 | 0 | 24 | 20 | 8 | 52 | Improved | Yes |
| 41 | 5½ | + | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 8 | 12 | 32 | Improved | Yes |
| 42 | 6 | ++ | 0 | 0 | 0 | ++ | + | 0 | 0 | + | 0 | 0 | 0 | 24 | 24 | 16 | 64 | Improved | Yes |
| 44 | 7½ | + | 0 | 0 | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 8 | 24 | 48 | Improved | No |
| 47 | 13 | 0 | 0 | 0 | 0 | ++ | ++ | 0 | 0 | ++ | ++ | ++ | + | 24 | 32 | 24 | 80 | Improved | Yes |
| 48 | 9 | + | 0 | 0 | 0 | +++ | ++ | ++ | 0 | ++ | + | + | + | 20 | 12 | 12 | 44 | Improved | No |
| 50 | 5¼ | 0 | 0 | 0 | 0 | ++ | + | + | 0 | + | 0 | 0 | 0 | 24 | 24 | 24 | 72 | Improved | Yes |
| 53 | 17½ | 0 | 0 | 0 | 0 | +++ | +++ | ++ | + | +++ | +++ | ++ | + | 24 | 24 | 24 | 72 | Improved | No |
| 54 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 24 | 24 | 72 | Unchanged | No |
| 55 | 6¾ | 0 | 0 | 0 | 0 | ++ | ++ | ++ | ++ | 0 | 0 | 0 | 0 | 14 | 14 | 15 | 43 | Unchanged | No |
| 57 | 7¾ | + | 0 | 0 | 0 | +++ | + | 0 | 0 | ++ | 0 | 0 | 0 | 20 | 24 | 8 | 52 | Improved | No |
| 59 | 5 | 0 | 0 | — | 0 | 0 | 0 | — | 0 | 0 | 0 | — | 0 | 16 | 16 | 8 | 40 | Unchanged | Yes |
| 60 | 5½ | ++ | 0 | 0 | 0 | +++ | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 16 | 12 | 36 | Improved | Yes |
| 62 | 4½ | + | 0 | 0 | 0 | + | + | + | + | 0 | 0 | + | + | 20 | 16 | 8 | 44 | Progressed | Yes |
| 65 | 6¾ | 0 | 0 | 0 | 0 | + | + | + | + | + | 0 | 0 | 0 | 20 | 24 | 12 | 56 | Improved | Yes |
| 69 | 8½ | 0 | 0 | 0 | 0 | +++ | + | 0 | 0 | ++ | + | 0 | 0 | 12 | 16 | 12 | 40 | Improved | Yes |
| 71 | 2¼ | + | + | + | 0 | + | + | + | 0 | + | + | + | 0 | 8 | 8 | 24 | 40 | Improved | Yes |
| 72 | 10 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 8 | 16 | 36 | Improved | Yes |
| 73 | 6½ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 40 | 32 | 24 | 96 | Unchanged | Yes |
| 77 | 2½ | 0 | + | 0 | 0 | + | ++ | + | 0 | 0 | + | + | 0 | 20 | 24 | 16 | 60 | Improved | Yes |

TABLE 4.—SUMMARY OF CLINICAL EXAMINATIONS AND AMOUNT OF OIL THERAPY
(SMALL AMOUNTS FOR SIX MONTHS)

| Case No. | Age in Dec. Mos. | Craniotables | | | | Rosary | | | | Epiphyseal Enlargement | | | | Ounces of Cod Liver Oil Taken During | | | | Course of Rickets | Nursed |
|----------|------------------|---------------------|------|------|------|---------------------|------|------|------|------------------------|------|------|------|--------------------------------------|---------------|--------------|-----------|-------------------|--------|
| | | Date of Examination | | | | Date of Examination | | | | Date of Examination | | | | | | | | | |
| | | Dec. | Feb. | Apr. | June | Dec. | Feb. | Apr. | June | Dec. | Feb. | Apr. | June | Dec. and Jan. | Feb. and Mar. | Apr. and May | Total Oz. | | |
| 2 | 9 | 0 | 0 | 0 | 0 | + | + | + | + | + | + | + | 0 | 12 | 4 | 4 | 20 | Improved | Yes |
| 3 | 9 | 0 | 0 | 0 | 0 | + | + | 0 | 0 | + | + | 0 | 0 | 12 | 4 | 4 | 20 | Improved | Yes |
| 49 | 5¾ | + | 0 | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 | 4 | 8 | 8 | 20 | Improved | Yes |
| 61 | 8 | 0 | 0 | 0 | 0 | ++ | ++ | + | 0 | 0 | 0 | 0 | 0 | 12 | 12 | 4 | 28 | Improved | No |
| 70 | 6¼ | 0 | 0 | 0 | 0 | 0 | + | ++ | + | 0 | 0 | + | 0 | 12 | 8 | 8 | 28 | Progressed | Yes |

conditions and many in the very same families. No other treatment was given, nor was a change of diet or mode of life attempted which could account for the difference in the results between the two groups of cases. Table 2 shows that the cod liver oil proved to be a more potent factor than breast feeding in warding off rickets, and that almost all the colored babies developed rickets even though they were nursed. It is naturally impossible to set fixed boundaries and classifications for different degrees of a disease. In our clinical examinations we were guided mainly by craniotables, beading of the ribs, and the enlargement of the epiphyses, and classified these signs as of four grades of intensity, which are designated in the tables by plus signs.

care to study the data of the individual cases. The conclusion, however, seems evident that the negro infants who received cod liver oil for six months regularly ("large amounts" indicate regularity of therapy rather than any increased dosage) are protected from rickets, whereas those who were given no protective therapy were almost certain to develop the disease.

It is difficult to state either the minimum length of time that the oil must be given to accomplish prophylaxis or the minimum dosage necessary. A review of the results as portrayed in the tables, however, shows that a four months' course of treatment, averaging a total of from 16 to 20 ounces of oil, is insufficient to afford protection (Table 5). Among twelve infants

of this group, five were found to show progressive rickets. It would seem that six months should be considered the minimum duration of treatment. It is likewise true that no hard and fast rule can be laid down as to dosage. Our plan was to give infants under 6 months one-half teaspoonful of oil three times a day and older infants twice this amount. It was found that almost all babies can take cod liver oil, although it may disagree temporarily and may have to be discontinued for short intervals when there is digestive disturbance. Infants of from 2 to 3 months tolerate the oil in half-teaspoonful doses, and younger ones may be given still smaller amounts. This study was not carried out during the summer months, so that it does not provide a criterion of the practicability of oil

opment—that specialized clinics should be established to meet the particular needs of a given neighborhood. In Italy quinin is dispensed in clinics formed for those suffering from malaria. Along similar lines have been the creation of tuberculosis and cardiac clinics.

As a result of our experience, we would recommend that dispensaries of this kind be provided in large cities in the negro and the Italian districts, for rickets is almost as prevalent among the Italians as among the colored people. Such dispensaries do not have to be created at large expense. They can be instituted in connection with existing milk or baby welfare stations, where provision can be made for dispensing cod liver oil. The details of this plan cannot well be discussed, as they will no doubt differ according to special condi-

TABLE 5.—SUMMARY OF CLINICAL EXAMINATIONS AND AMOUNT OF OIL THERAPY
(SMALL AMOUNTS FOR FOUR MONTHS)

| Case No. | Age in Dec. Mos. | Craniotables | | | | Rosary | | | | Epiphyseal Enlargement | | | | Ounces of Cod Liver Oil Taken During | | | | Course of Rickets | Nursed |
|----------|------------------|---------------------|------|------|------|---------------------|------|------|------|------------------------|------|------|------|--------------------------------------|---------------|--------------|-----------|-------------------|--------|
| | | Date of Examination | | | | Date of Examination | | | | Date of Examination | | | | | | | | | |
| | | Dec. | Feb. | Apr. | June | Dec. | Feb. | Apr. | June | Dec. | Feb. | Apr. | June | Dec. and Jan. | Feb. and Mar. | Apr. and May | Total Oz. | | |
| 15 | 8¼ | + | 0 | 0 | 0 | +++ | ++++ | ++ | ++ | ++ | ++ | + | + | 8 | 16 | 0 | 24 | Improved | Yes |
| 27 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | + | 0 | 0 | 12 | 12 | 0 | 24 | Improved | No |
| 36 | 2¾ | 0 | 0 | — | 0 | 0 | ++ | — | + | 0 | + | — | 0 | 12 | 8 | 0 | 20 | Progressed | Yes |
| 40 | 3 | 0 | 0 | 0 | 0 | ++ | + | 0 | 0 | 0 | 0 | + | + | 8 | 16 | 0 | 24 | Progressed | Yes |
| 58 | 7 | ++ | 0 | 0 | 0 | ++ | ++ | + | 0 | 0 | + | 0 | 0 | 12 | 16 | 0 | 28 | Improved | No |
| 63 | 2½ | 0 | 0 | 0 | 0 | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 8 | 16 | 0 | 24 | Improved | Yes |
| 64 | 6¼ | + | 0 | 0 | 0 | ++ | + | ++ | ++ | ++ | + | + | + | 12 | 8 | 0 | 20 | Improved | Yes |
| 68 | 2¾ | + | + | 0 | 0 | + | + | ++ | ++ | + | + | + | 0 | 4 | 8 | 0 | 12 | Progressed | Yes |
| 74 | 2¾ | 0 | 0 | — | 0 | 0 | + | — | + | 0 | 0 | — | 0 | 8 | 16 | 0 | 24 | Progressed | Yes |
| 75 | 17 | 0 | 0 | 0 | 0 | ++++ | + | + | + | ++ | ++ | ++ | + | 16 | 8 | 0 | 24 | Improved | No |
| 17 | 4 | + | 0 | 0 | 0 | +++ | +++ | +++ | +++ | ++ | ++ | ++ | + | 8 | 8 | 0 | 16 | Progressed | No |
| 34 | 4½ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 12 | 0 | 16 | Unchanged | Yes |

TABLE 6.—SUMMARY OF CLINICAL EXAMINATIONS WHEN NO OIL WAS GIVEN
(SIX MONTH PERIOD OF OBSERVATION)

| Case No. | Age in Dec. Mos. | Craniotables | | | | Rosary | | | | Epiphyseal Enlargement | | | | Course of Rickets | Nursed | Remarks |
|----------|------------------|---------------------|------|------|------|---------------------|------|------|------|------------------------|------|------|------|-------------------|--------|-----------------|
| | | Date of Examination | | | | Date of Examination | | | | Date of Examination | | | | | | |
| | | Dec. | Feb. | Apr. | June | Dec. | Feb. | Apr. | June | Dec. | Feb. | Apr. | June | | | |
| 1 | 8½ | 0 | — | — | 0 | ++ | — | — | ++ | + | — | — | + | Unchanged | Yes | Gave 12 oz. oil |
| 7 | 5½ | + | 0 | 0 | 0 | ++ | ++ | ++ | +++ | + | + | 0 | 0 | Progressed | No | |
| 11 | 4¾ | + | + | — | + | ++ | ++ | — | ++ | + | + | — | ++ | Progressed | Yes | |
| 14 | 15 | 0 | 0 | 0 | 0 | ++ | ++ | ++ | +++ | ++ | ++ | ++ | ++ | Progressed | Yes | Gave 12 oz. oil |
| 16 | 2¼ | 0 | 0 | — | 0 | 0 | 0 | — | + | 0 | 0 | — | 0 | Progressed | Yes | |
| 18 | 6½ | 0 | 0 | — | Died | ++ | +++ | — | Died | 0 | ++ | — | Died | Progressed | No | |
| 24 | 3½ | +++ | +++ | +++ | 0 | ++ | ++ | +++ | +++ | + | + | ++ | ++ | Progressed | No | Gave 12 oz. oil |
| 31 | 3¼ | 0 | 0 | * | + | ++ | ++ | * | +++ | 0 | 0 | * | 0 | Progressed | Yes | |
| 37 | 5¼ | 0 | 0 | — | — | 0 | + | — | — | 0 | 0 | — | — | Progressed | Yes | |
| 39 | 7¼ | 0 | 0 | 0 | 0 | ++ | ++ | ++ | +++ | + | + | + | + | Progressed | Yes | |
| 43 | 2 | 0 | +++ | — | — | + | ++ | — | — | 0 | 0 | + | — | Progressed | Yes | |
| 51 | 2 | ++ | ++++ | — | ++++ | + | + | — | ++ | 0 | 0 | — | ++ | Progressed | Yes | |
| 52 | 3 | 0 | 0 | — | 0 | ++ | ++ | — | +++ | 0 | 0 | — | 0 | Progressed | Yes | |
| 56 | 2½ | + | ++ | — | +++ | ++ | +++ | — | +++ | 0 | + | — | + | Progressed | Yes | |
| 67 | 3¼ | + | ++ | — | + | ++ | ++ | — | +++ | ++ | ++ | — | +++ | Progressed | Yes | |
| 80 | 2½ | 0 | 0 | — | 0 | ++ | ++ | — | ++ | 0 | 0 | — | ++ | Progressed | Yes | |

* Pneumonia.

therapy in the warm weather. As the result of personal experience gathered at other times, we believe that with slight modification it can be pursued throughout the year. In summer, moreover, rickets seems to pass through a quiescent period; therefore treatment is not so necessary as in the colder season. After a few months we arranged that instead of having the oil delivered to them, the mothers should call for it at the neighborhood settlement house, for which purpose an office hour was appointed for each morning and one evening a week. The report of this work gradually spread throughout the district, and the ordinary symptoms of rickets became the common knowledge of the mothers, who often brought their babies to the consultation with the request that cod liver oil be administered. In this way a rickets clinic was soon evolved. This would seem to be a logical devel-

opment. Whether it is necessary to use Norwegian oil is very doubtful; it is probable that a less expensive cod liver oil will produce equally good results. In order to combat the high infant morbidity and mortality among the negroes of the Columbus Hill district, Commissioner Emerson of the Department of Health will establish a rickets clinic this fall in connection with its baby welfare station, and will dispense cod liver oil at cost.

16 West Eighty-Sixth Street.

ABSTRACT OF DISCUSSION

DR. HAVEN EMERSON, New York: We have been fortunate in New York in having the direct benefit of the whole series of Dr. Hess' rather striking experiments, not only the laboratory experiments with the experimental animals, but the

observations in the institutions which he has under his control; and now these field experiments, in the very areas in which we have been attempting to make an impression on a racial problem of rickets. I will leave it to Dr. Sobel to tell you what has been done in meeting the problem among the colored children; but I think it is well for us to consider this report of Dr. Hess as a very important addition to our knowledge of so-called racial susceptibilities to disease.

We have been always told that the Italians and the colored people were racially susceptible to rickets. On a closer analysis it may easily prove to be that what we have put down as a racial susceptibility is merely a result of economic habit—their habits changing radically when they move from their normal habitat in the West Indies to an abnormal housing and economic condition in this city. The colored people buy the most expensive cuts of meat. They are apt to get meat that many of us would hesitate to buy for our own tables because of the high cost of it. Their racial habits of buying and preparing food may easily be the reason of this so-called racial idiosyncrasy to rickets.

Dr. Hess has suggested, and brought it already to the attention of the department of health, that we should dispense cod liver oil from the baby health stations. I think those of you who are responsible for public health administration realize how many are the requests for using the health department organization to promote or exploit some special substance. It would be just as logical to dispense sugar of milk or limewater at cost, or some of the proprietary foods which are found valuable in difficult feeding cases. The department of health has had to refuse to do that; but it is possible to see that a pure cod liver oil is furnished at the local drug stores.

Dr. Hess did not tell you one of the interesting results of his study and teaching. The mothers are now coming to his clinic saying: "I want to have cod liver oil for my baby." He asks them, "Why do you want it?" "They have little swellings around the end of the long bones; they have got little lumps on their wrists." The mothers are beginning to realize what is happening to the babies. He has carried on a campaign of education which is going to redound to the benefit of all the colored babies and diminish the death and sick rate of these children in a variety of ways.

DR. J. SOBEL, New York: No one is more interested in the infant mortality problem, probably, than I am; and any contribution along those lines, of course, is entirely welcome. We have a very definite infant mortality problem in New York City as far as the colored people are concerned. When I tell you that in 1915 the infant mortality rate per thousand births among colored children was 202 as against 96.1 for whites, and that in 1916 it was 193.3 against 91.2 for whites, in other words, that the infant mortality among the colored was 110 per cent. more than among the whites, you will understand readily that we have a definite problem to cope with. In the section that Dr. Hess is working in, the Columbus Hill district, or the San Juan district, as it has been termed because of the "peaceful" character of the population, the infant mortality is 314; and that naturally led to a great many observations, not only on the part of the department, but along Dr. Hess' lines. Rickets, of course, is a contributing factor toward infant mortality and predisposes the child to diseases of the respiratory tract, and to gastrointestinal diseases, to say nothing of the occasional cerebral involvements; and if we can control rickets, we will diminish infant mortality along those particular lines. This is only a small proportion of the mortality, however, since I learned this afternoon that the infant mortality rate among the colored for congenital diseases was 71 as against 41 for the entire city.

As I look at the table of Dr. Hess I may be wrong, but I find in that table one of the most potent arguments for the increased feeding of babies with milk, rather than with cod liver oil. We find here that the mothers and, coincidentally, the babies get a large protein intake, that is, a large meat intake and a large egg intake, a comparatively good vitaminic intake in the form of fruits and vegetables, a fairly large carbohydrate intake, but a very low fat intake. The milk

and the cocoa are practically the smallest intake of the people; and that shows us what we found out years ago, that one of the main causes of rickets is the deficiency in fat. We know that rickets is more common among children who take patent baby foods with a large carbohydrate content. If cod liver oil is a prophylactic agent against rickets, it probably works not specifically, but rather through its fat content; and if I can give the colored people an extra bottle of milk a day, I think that I would do a great deal better than by giving them cod liver oil; and, what is more, I know they will buy the milk in preference to the cod liver oil; in fact we have already had a great deal of difficulty in having these people purchase cod liver oil. I don't mean to say that they will not take it if we give it to them for nothing; but, as far as purchasing cod liver oil is concerned, it is a different proposition. As I see it, while, as a supplemental treatment, or a supplemental prophylactic agent, we might dispense or should dispense cod liver oil, still I think we would obtain better results if we educated the colored people to increase the purchase of milk.

DR. A. F. HESS, New York: It is well known that milk will not prevent rickets. Children who get plenty of milk get rickets. Breast fed children get rickets; among the colored it is not at all unusual to see very marked rickets among the breast fed; so that the milk is not a protection. Just what is the specific nature of the cod liver oil, I do not know. Olive oil will not take its place. It requires some animal oil, probably from some glandular organ.

In this table milk was taken forty-seven times and cocoa thirty-eight; the latter was made almost entirely with milk. We must also remember that the yolk of the egg has a very high fat content. In order to simplify matters I have omitted the milk taken with tea and coffee. I have abbreviated the study very greatly, but have calculated all according to calories and find that they take an adequate number of calories of protein, carbohydrate and fat.

CARBON MONOXID POISONING

WILLIAM D. McNALLY, A.B.

Chemist, Cook County Coroner's Laboratory
CHICAGO

The deaths from carbon monoxid poisoning in large cities now exceed those from any other poison. In Cook County our records show a steady increase in death by such asphyxiation. The total number of gas cases for 1916, 501, constitutes nearly 8 per cent. of the entire number of coroner's cases, taking fourth place in the numerical order of different forms of death for the year. The increase is to be attributed, not to carelessness or ignorance, but rather to the widespread knowledge of the ease with which carbon monoxid produces death, the more marked increase coming under the class of suicides, as shown in the accompanying tables.

Carbon monoxid occurs most commonly as a product of combustion in ordinary stoves, salamanders, furnaces, blast furnaces¹ and gas engines;² in fumes from explosions, and in "after damp" of explosions

1. Willcox: Asphyxiation from Blast Furnace Gas, Technical Paper 106, Dept. of the Interior, Bureau of Mines, Washington, D. C., 1916.

2. Hood and Kudlich: Bulletin 74, Department of the Interior, Bureau of Mines, Washington, D. C., 1915. Analysis of exhaust gases shows them to be a mixture of carbon monoxid, carbon dioxid, oxygen, nitrogen, hydrogen, water vapor and a small but negligible quantity of gasoline vapors. The amount of carbon monoxid varies with the size of the engine cylinder, good carburation and poor carburation; the maximum amount of carbon monoxid was 13.5 per cent. in tests made with gasoline mine locomotives. The exhaust from automobiles contains varying proportions of carbon monoxid, from 1.16 to 6.62 per cent., and has been the cause of the death of a number of people. The blood from several necropsies was submitted to me for examination. I found the hemoglobin to be 36 per cent. saturated in one case, and 40, 58 and 64 per cent. saturated in three other specimens. Cases of poisoning from carbon monoxid have been reported in France in ambulances warmed from the exhaust gases of the engine.

of methane and coal dust in mines; in mine fires, in the smoke of burning buildings, and in illuminating gas. In electric furnaces having limestone linings, the carbon dioxid is reduced to carbon monoxid by the heated electrode.³ Tobacco smoke contains about 80 c.c. of carbon monoxid to each gram of tobacco burned.⁴ Using an intermittent aspirator to imitate the smoking of tobacco, I found that the carbon monoxid of the inhaled smoke from cigarets was from 0.014 per

deep sleep, or by a person with a defective sense of smell. It has been suggested that ethylene (C_2H_4), which is very poisonous to plants, might be the real cause of the gas asphyxiation.⁵

The proportion of carbon monoxid differs greatly in domestic and industrial gases, varying between 4 and 30 per cent., in coal gas 4 to 10 per cent., and 30 per cent. in water gas, and 20 and 30 per cent. in producer gas. Almost all illuminating gas contains a large proportion of water gas, so that when this gas is discharged into an inhabited space it becomes exceedingly dangerous. An atmosphere containing 0.2 per cent. is capable of destroying life.⁶

It is commonly believed that during the winter months the percentage of carbon monoxid increases, and that this is the chief reason for more deaths from gas poisoning. The percentage of carbon monoxid does not, however, increase during the winter. Table 1 gives the percentage of carbon monoxid and the number of deaths from gas asphyxiation for each month for the years from 1912 to 1916 inclusive. The more extended use of gas in the homes during the dark and cold months of the winter and the closed doors and windows, preventing proper ventilation if there are

TABLE 1.—ASPHYXIATIONS, 1912-1916

| | Carbon Monoxid | Water Heaters | Accidental | Undetermined* | Suicides | Homicides | Totals |
|------------|----------------|---------------|------------|---------------|----------|-----------|--------|
| 1912 | | | | | | | |
| Jan. | 29.48 | 1 | 14 | 8 | 13 | 0 | 36 |
| Feb. | 28.65 | 0 | 13 | 3 | 12 | 1 | 29 |
| March..... | 29.18 | 0 | 8 | 5 | 17 | 2 | 32 |
| April..... | 29.50 | 1 | 14 | 1 | 18 | 0 | 34 |
| May..... | 29.29 | 2 | 7 | 10 | 20 | 0 | 39 |
| June..... | 29.29 | 0 | 7 | 6 | 11 | 2 | 26 |
| July..... | 28.73 | 1 | 5 | 5 | 17 | 3 | 31 |
| Aug. | 28.97 | 0 | 6 | 2 | 8 | 1 | 17 |
| Sept. | 28.80 | 0 | 2 | 3 | 15 | 0 | 20 |
| Oct. | 29.26 | 0 | 12 | 9 | 8 | 0 | 29 |
| Nov. | 29.54 | 0 | 14 | 4 | 9 | 0 | 27 |
| Dec. | 29.20 | 0 | 22 | 5 | 20 | 1 | 48 |
| 1913 | | | | | | | |
| Jan. | 29.26 | 0 | 9 | 3 | 13 | 0 | 25 |
| Feb. | 29.30 | 0 | 14 | 4 | 9 | 0 | 27 |
| March..... | 29.57 | 0 | 20 | 9 | 7 | 0 | 36 |
| April..... | 29.33 | 0 | 6 | 3 | 20 | 1 | 30 |
| May..... | 29.77 | 0 | 12 | 7 | 17 | 0 | 36 |
| June..... | 30.01 | 0 | 17 | 5 | 11 | 1 | 34 |
| July..... | 30.76 | 0 | 5 | 1 | 17 | 0 | 23 |
| Aug. | 29.79 | 0 | 7 | 3 | 10 | 0 | 20 |
| Sept. | 29.88 | 1 | 16 | 4 | 15 | 0 | 36 |
| Oct. | 30.09 | 0 | 9 | 8 | 17 | 0 | 34 |
| Nov. | 29.97 | 0 | 11 | 12 | 7 | 0 | 30 |
| Dec. | 29.94 | 0 | 8 | 9 | 9 | 0 | 26 |
| 1914 | | | | | | | |
| Jan. | 28.6 | 0 | 10 | 2 | 24 | 0 | 36 |
| Feb. | 28.6 | 1 | 8 | 6 | 18 | 0 | 33 |
| March..... | 24.5 | 1 | 13 | 8 | 15 | 0 | 37 |
| April..... | 27.5 | 0 | 9 | 8 | 11 | 2 | 30 |
| May..... | ..... | 0 | 10 | 12 | 19 | 0 | 41 |
| June..... | 22.7 | 0 | 2 | 6 | 11 | 0 | 19 |
| July..... | ..... | 0 | 4 | 1 | 8 | 1 | 14 |
| Aug. | 27.1 | 0 | 7 | 4 | 14 | 0 | 25 |
| Sept. | 26.8 | 1 | 4 | 7 | 28 | 1 | 41 |
| Oct. | 25.5 | 0 | 18 | 11 | 28 | 0 | 57 |
| Nov. | 26.6 | 0 | 10 | 4 | 15 | 1 | 30 |
| Dec. | 26.6 | 0 | 13 | 16 | 15 | 0 | 44 |
| 1915 | | | | | | | |
| Jan. | 30.1 | 1 | 6 | 4 | 20 | 0 | 31 |
| Feb. | 30.1 | 2 | 14 | 12 | 15 | 1 | 44 |
| March..... | 29.8 | 0 | 15 | 5 | 26 | 2 | 48 |
| April..... | 29.2 | 1 | 14 | 6 | 19 | 3 | 43 |
| May..... | 25.2 | 2 | 10 | 7 | 17 | 0 | 36 |
| June..... | 30.5 | 6 | 11 | 7 | 25 | 0 | 49 |
| July..... | 27.8 | 0 | 6 | 3 | 30 | 0 | 39 |
| Aug. | 27.8 | 3 | 2 | 6 | 19 | 2 | 32 |
| Sept. | 25.4 | 1 | 7 | 7 | 17 | 0 | 32 |
| Oct. | 27.8 | 1 | 17 | 11 | 19 | 0 | 48 |
| Nov. | 27.0 | 0 | 13 | 9 | 20 | 1 | 43 |
| Dec. | 24.9 | 0 | 20 | 13 | 13 | 1 | 47 |
| 1916 | | | | | | | |
| Jan. | 23.9 | 1 | 16 | 9 | 23 | 5 | 54 |
| Feb. | 26.4 | 1 | 13 | 7 | 13 | 0 | 34 |
| March..... | 24.1 | 0 | 18 | 7 | 21 | 0 | 46 |
| April..... | 23.9 | 0 | 19 | 8 | 19 | 0 | 36 |
| May..... | 27.2 | 2 | 14 | 8 | 23 | 0 | 47 |
| June..... | 26.2 | 2 | 11 | 2 | 12 | 4 | 31 |
| July..... | 23.0 | 0 | 5 | 12 | 20 | 4 | 41 |
| Aug. | 24.2 | 0 | 5 | 4 | 12 | 0 | 21 |
| Sept. | 22.4 | 0 | 13 | 8 | 26 | 3 | 50 |
| Oct. | 22.6 | 0 | 23 | 9 | 17 | 1 | 50 |
| Nov. | 29.1 | 0 | 7 | 5 | 20 | 0 | 32 |
| Dec. | 31.0 | 0 | 14 | 6 | 13 | 2 | 35 |

* Undoubtedly many of the "undetermined" cases were suicides, the evidence being inadequate to warrant a verdict of suicide.

cent. to 0.26 per cent. of the tobacco and paper consumed; from cigars it was from 0.027 to 0.15 per cent., and from pipe tobacco 0.027 per cent.

The greatest percentage of carbon monoxid asphyxiation is through the medium of illuminating gas, which has the characteristic odor of the hydrocarbons accompanying the carbon monoxid gas. The familiar odor does not prevent many accidental poisonings, as the odor may not be perceived by those in

TABLE 2.—TOTAL GAS ASPHYXIATION CASES FOR THE ELEVEN YEARS FROM 1905 TO 1915, INCLUSIVE *

| Asphyxiation by Gas | Accidental | Undetermined | Industrial† | Water Heaters† | Suicide | Homicide | Totals |
|---------------------|------------|--------------|-------------|----------------|---------|----------|--------|
| 1905 | 59 | 55 | ... | ... | 83 | 7 | 204 |
| 1906 | 87 | 36 | ... | ... | 59 | 5 | 187 |
| 1907 | 76 | 61 | ... | ... | 74 | 1 | 212 |
| 1908 | 85 | 75 | ... | ... | 115 | 3 | 278 |
| 1909 | 102 | 81 | ... | ... | 107 | 12 | 302 |
| 1910 | 127 | 65 | 10 | 4 | 116 | 7 | 329 |
| 1911 | 103 | 66 | 4 | 7 | 115 | 2 | 297 |
| 1912 | 110 | 61 | 11 | 10 | 153 | 9 | 354 |
| 1913 | 148 | 64 | ... | 1 | 163 | 3 | 379 |
| 1914 | 103 | 78 | 3 | 3 | 200 | 5 | 392 |
| 1915 | 126 | 93 | 5 | 17 | 242 | 6 | 489 |
| 1916 | 160 | 92 | 6 | 6 | 219 | 18 | 501 |
| Total | 1,286 | 827 | 39 | 48 | 1,646 | 78 | 3,924 |

* In this table, the cases are counted from December 1 to the following December 1, the fiscal year for the coroner's office.

† The industrial gas cases and those by water heaters were included with the "accidental" and "undetermined" up to the year 1910.

leaky pipes or loose cocks, accounts for the increased number of asphyxiations. All gas stoves, plates and heaters should be connected by metal instead of rubber. This precaution alone would save many lives each year.

Carbon monoxid combines chemically with the hemoglobin of the blood to form a stable compound. According to the research of Nicloux,⁷ one volume of carbon monoxid acts like 220 volumes of oxygen. The corpuscle is not dead. All it needs is oxygen under sufficient tension to displace the carbon monoxid. Hill⁸ and Barcroft⁹ have demonstrated that carbon monoxid combines more readily with unsaturated oxyhemoglobin than with hemoglobin. Hemoglobin will take up more carbon monoxid at a given tension if a little oxygen is present than if oxygen is completely absent. Hufner¹⁰ found that 1 gm. of carbon monoxid hemoglobin contains 1.338 c.c. of carbon monoxid, computed at 0 C. and 760 mm. pressure. The oxygen absorbed from the air is normally

5. Matthews: Physiological Chemistry, 1915, p. 495.

6. Haldane: Jour. Physiol., 1895, 18, 430-462.

7. Nicloux: Presse méd., 1916, 25, 153.

8. Hill: Biochem. Jour., 1914, 7, 471-480.

9. Barcroft: Biochem. Jour., 1914, 7, 481-491.

10. Hufner: Arch. f. Physiol., 1894, p. 130.

3. Moissan: Le four électrique, Paris, 1887, p. 15.

4. Thompson: Lancet, London, 1904, 1, 395. Fleig: Compt. rend Acad. d. sc., 1908, 146, 1776.

taken up by the blood in the form of a loose chemical combination with the red coloring matter (hemoglobin) of the corpuscles, and in this form it is carried to the tissues in which it is used. Oxygen and carbon monoxid combine chemically with hemoglobin in equal molecular proportions, and therefore in equal volumes, the oxygen combination readily liberating its oxygen, while the carbon monoxid is relatively stable.

People nearest to the doors or windows in a room into which illuminating gas is escaping suffer the least, and those nearest the floor the most.

CASE 1.—Dec. 22, 1906, E. F. and a woman went to a rooming house at 4 p. m. At 5 p. m. the landlady noticed the odor of gas coming from the room. As no one responded when she knocked at the door, entrance was gained from the transom. The man was found dead. The woman, still breathing, was removed to a hospital, where she recovered. The woman was on the inside of the bed, near a window. A gas heater was found in the room with two burners still lighted, and three unlighted burners from which gas was escaping.

CASE 2.—Feb. 12, 1915, C. W. and roommate were found in a room unconscious from gas escaping from a defective hose on a gas heater. The roommate, who was nearer to a window, recovered.

CASE 3.—March 16, 1916, F. M. A. died from gas escaping from a defective heater. The roommate on the inside of the bed nearer the window recovered.

Many other cases could be cited from our records, but the foregoing are typical, and the first case illustrates that a person can be asphyxiated in a room where a gas burner or jet is lighted.

LETHAL DOSE

Exposure to a contaminated atmosphere for two or three minutes may cause serious illness. Burrell¹¹ found that exposure for twenty minutes to air containing 0.25 per cent. of carbon monoxid made him sick for eight hours after the exposure. Air containing as little as 0.1 per cent. of carbon monoxid when breathed for several hours produced headache and vomiting with some members of the Bureau of Mines, while others were not affected. An exposure of ten minutes in a cellar has killed a person.¹² Two men in a cooper shop fire in Chicago, June 7, 1917, went into the burning building to recover their tools. In thirty minutes both were found dead. Examination of the blood showed that death was due to carbon monoxid asphyxiation (from smoldering wood).

DURATION

In the majority of cases the victims are found dead or die a short time afterward. Fishbein¹³ reports a patient living five days, Long and Wicki,¹⁴ thirty-six days, Sibelius,¹⁵ three months. I have examined the blood of several patients who lived two days, and one who lived four days after exposure to illuminating gas. Recovery is usually complete within a week, but after-effects may persist for weeks and months. O'Malley¹⁶ reports a case of a woman who, poisoned by illuminating gas, did not regain her mental faculties for three months. He refers also to a case cited by Broudel, namely, that of a physician poisoned by carbon

monoxid, who lost his memory, this amnesia lasting eighteen months, at the end of which time he fully recovered.

There are few references in toxicologic literature to homicidal poisons unaccompanied by simultaneous suicide by illuminating gas, or gases containing carbon monoxid.

CASE 4.—Dec. 14, 1916, Mrs. B. turned on the gas, killing her two children. Her husband had committed suicide the previous day. The woman was found to be insane and was committed to an asylum.

CASE 5.—June 26, 1917, a mother killed her baby with gas, attempting suicide. She was held for murder.

Carbon monoxid poisoning may be of interest in civil cases, for instance, under conditions in which death is a form of chronic poisoning and the results amount to criminal negligence on the part of another.

In another case, the estate of *Catchman Olsen vs. City of Chicago*,¹⁷ the widow was given a verdict of \$3,500, the death of Olsen having been proved to be due to a leaky gas-pipe in one of the repair shops of the city. When an insurance policy is involved it is of the utmost importance to show the presence of carbon monoxid by chemical examination, and to prove whether the case is a murder, a suicide or an accident, as a policy may be void in the case of a suicide. The origin of the poisonous gas may usually be found from the surroundings, as an open gas-jet, or a leak in the feed pipes. A loose-fitting stockcock of many a gas-jet may be opened by careless persons throwing their wraps over a wall gas-bracket or over the gas fixture suspended from the ceiling. Several cases of such carelessness were investigated by the coroner's office during 1916. At inquests it is frequently desirable to distinguish between poisoning by coal gas, illuminating gas, or other source. At the present time there are no good analytic methods by which we can distinguish illuminating-gas poisoning from that due to coal fumes. Wachholz¹⁸ has suggested that the presence of hydrocyanic acid in the blood, and Cruz¹⁹ that the presence of hydrocarbons in the blood gases would identify the source of the carbon monoxid as being illuminating gas. An investigation of the room for the source of the carbon monoxid will give more definite results than a chemical examination of the blood gases.

In one case investigated, a medical student had been overcome by carbon monoxid from a smoking oil-stove on which he was cooking his meals. The room, free from gas fixtures, was covered with soot. In three different instances a closed stovepipe damper caused the coal-gas fumes to enter the room and produce death by carbon monoxid gas.

Two or more persons may be exposed to a contaminated atmosphere; one or more may die, while the others recover.

Three young physicians in Melbourne, after playing tennis, went to bathe in a shower bath, in which the water was heated by a gas burner. Half an hour later a messenger found one dead and two unconscious.²⁰

Jan. 5, 1917, three men were found unconscious in a room. One man died, the other two recovered. A

11. Burrell and Seibert: Miners' Circular 14, Dept. of Interior, Bureau of Mines, Washington, 1914.

12. Coullaud: Ann. d'hyg., 1909, Series 4, 12, 490.

13. Fishbein, Morris: Illuminating-Gas Poisoning, THE JOURNAL A. M. A., March 8, 1913, p. 737.

14. Long and Wicki: Rev. méd. de la Suisse romande, 1902, 22, 172.

15. Sibelius: Ztschr. f. klin. Med., 1903, 49, 111.

16. O'Malley: Am. Jour. Med. Sc., 1913, 145, 865.

17. Olsen vs. City of Chicago, Decision on Review, Vol. 697, Book 2, Case 262, April 30, 1914.

18. Wachholz: Ztschr. f. med. Beamte, 1896, 9, 400.

19. Cruz: Ann. d'hyg., 1898, Series 3, 39, 385.

20. Lancet, London, 1911, p. 1102.

stovepipe had parted from a hard coal burner, allowing the carbon monoxid to escape into the room. The blood of the man who died was 45 per cent. saturated with carbon monoxid.

The time required to completely eliminate carbon monoxid by respirations of pure air has not been determined definitely. It varies greatly with different patients, the carbon monoxid hemoglobin apparently not being in all cases under sufficient tension with oxygen to readily liberate the carbon monoxid. Henderson²¹ states that carbon monoxid is practically eliminated in three or four hours. The experiments of Michel²² tend to show that it does not exceed a few hours; Koch²³ states that he has found it after ten hours; Pouchet²⁴ after sixty hours; Fishbein¹³ after five days; Wachholz²⁵ after seven days. In specimens of blood submitted to me from two cases ending fatally in two days, and one of four days' duration, I was able to detect carbon monoxid hemoglobin. I have had over 100 cases of over four hours' standing, in which I could detect carbon monoxid by definite color tests and the palladious chlorid method. In a large number of my cases of gas poisoning, with clear histories of attempted or consummated suicide by means of illuminating gas, the blood failed to show the presence of carbon monoxid after the respiration of pure air and oxygen for a few hours. Blood from suicides who died within a half hour after being discovered in a gas-filled room contained as high as 13.5 per cent. of carbon monoxid by volume. Blood from other cases in which life was prolonged for a couple of hours contained from traces to 5.5 per cent. carbon monoxid.

The compound of carbon monoxid hemoglobin can be dissociated by hydrogen and carbon dioxid as well as with oxygen. Gaglio²⁶ demonstrated that carbon monoxid inhaled by an animal may be recovered from the expired air with a loss of only 2.8 per cent., due to experimental conditions. The odor of illuminating gas has frequently been noticed in the expired air of patients after being taken to a hospital. Nicloux states that he has found carbon monoxid in normal blood of dogs and in human blood. The amount found in the blood gases of dogs living in Paris varied from 0.08 to 0.18 per cent. Using the method of Fodor, I have failed to find carbon monoxid in the blood of dogs and in normal human blood. Buckmaster and Gardner²⁷ failed to find carbon monoxid in the blood gases of cats.

For the symptoms and pathology of carbon monoxid poisoning the reader is referred to an article by Dr. W. Gilman Thompson,²⁸ and an article by Dr. G. L. Apfelbach.²⁹

TESTS FOR CARBON MONOXID

Carbon monoxid may be detected in the air through the absorbent power of a solution of cuprous chlorid in an excess of hydrochloric acid or an excess of

ammonia.³⁰ With an active solution of cuprous chlorid with large amounts of carbon monoxid, from 20 to 40 per cent., the residual gas after passing through the cuprous chlorid will contain only 0.03 to 0.10 per cent. carbon monoxid.³¹ Birds and mice have been used for the detection of carbon monoxid in the air of mines. With 0.2 per cent. carbon monoxid, a mouse collapsed in fifteen minutes. At the end of an hour it had lost all muscular power. It died in two hours. Canaries are more sensitive to carbon monoxid, 0.2 per cent causing distress in one and a half minutes, and they will fall from the perch in five minutes.³²

Air may be drawn through a bottle containing iron wire gauze moistened with ammoniacal water, then through a Liebig bulb containing 10 c.c. of diluted blood (1:200). The blood may be examined by means of the spectroscope or the tannic acid reaction, Hempel being able to detect 0.06 per cent. carbon monoxid by aspirating large volumes of air through the diluted blood. Paper moistened with a 2:1,000 neutral solution of palladious chlorid, hung in a 10 liter bottle of air, will blacken if the air contains as small an amount as 0.05 part of carbon monoxid in 1,000 parts of air. The paper is also blackened by hydrogen sulphid, ozone and sulphurous acid.

Carbon monoxid hemoglobin imparts to blood a characteristic pink color, even when only a small proportion of the gas is present. Five-tenths c.c. of the unknown sample of blood and a like amount of the normal blood are diluted to 100 c.c. in a cylinder. The normal blood will have a buff yellow tint and the sample, if it contains carbon monoxid, will have a pink color. In testing for carbon monoxid in a contaminated atmosphere, a tube or cylinder containing the diluted normal blood is taken to the place where the air is to be examined. The normal blood is poured out into another tube, so that the air takes the place of the blood. The normal blood is then added to the tube, corked and shaken for about ten minutes. If the air contains carbon monoxid, a distinct pink color of the carbon monoxid hemoglobin will be noticed when the comparison is made with the original buff colored blood.

A large number of tests have been suggested for the detection of carbon monoxid hemoglobin, all of which take a number of hours before a positive result can be reported. If the blood is more than 27 per cent. saturated with carbon monoxid, the spectroscopic examination will readily show the carbon monoxid hemoglobin. If less than 5 per cent. of the coloring matter is saturated, all of the color tests will fail. For the rapid detection and estimation of carbon monoxid in the blood I have found Fodor's method to be the best. In the routine examination of blood for gas poisoning I have found the dilution test, the boiling test, the sodium hydroxid test, the basic lead acetate test, the spectroscopic examination, the palladious chlorid test, the ferrocyanid test, and the tannic acid test the most reliable. If positive results are obtained with the tannic acid, basic lead acetate, and palladious chlorid tests, all other tests can be considered superfluous.

21. Henderson, Yandell: Carbon Monoxid Poisoning, *THE JOURNAL A. M. A.*, Aug. 19, 1916, p. 580.

22. Michel: *Vrtlschr. f. gerichtl. Med.*, 1897, **14**, 36.

23. Koch: *Diss.*, Greifswald, 1892.

24. Pouchet: *Ann. d'hyg.*, 1888, **30**, 361.

25. Wachholz: *Vrtlschr. f. gerichtl. Med.*, **23**, 231.

26. Gaglio: *Arch. f. exper. Path. u. Pharmakol.*, 1887, **22**, 235.

27. Buckmaster and Gardner: *Jour. Physiol.*, 1910, **41**, 60, 246; *Proc. Roy. Soc.*, 1909, **81**, 516.

28. Thompson, W. G.: A Clinical Study of Ninety Cases of Illuminating Gas Poisoning, *Med. Rec.*, New York, 1904, **66**, 41.

29. Apfelbach, G. L., quoted by Kober and Hanson: *Diseases of Occupation and Vocational Hygiene*, 1916.

30. Hempel: *Methods of Gas Analysis*, English translation of third German edition by Dennis, 1910, p. 206.

31. Burrell and Seibert: *Bulletin 42*, Bureau of Mines, Washington, D. C., 1913, p. 48.

32. Burrell: *Technical Paper 11*, Bureau of Mines, Washington, D. C., 1912. Burrell, Seibert and Robertson: *Technical Paper 62*, Bureau of Mines, Washington, D. C., 1914, p. 12.

Spectroscopic Test.—In the examination of carbon monoxid hemoglobin spectroscopically, I use a 1 per cent. solution of the blood in a small cell of 1 cm. inside diameter holding 0.5 c.c., mounted on an ordinary microscopic slide. With a Zeiss microspectroscope, a comparison with normal blood of the same dilution can be made simultaneously. Carbon monoxid hemoglobin shows a characteristic absorption spectrum closely resembling that of oxyhemoglobin, having two absorption bands between the D and E lines. When the blood is more than 27 per cent. saturated by carbon monoxid, the addition of a reducing agent, as Stokes' reagent or a solution of ammonium sulphid, does not convert the spectrum into one of reduced hemoglobin, which is a single band beginning at the D line and occupying a little more than half the space to the E line.³³

Boiling Test.—Blood containing carbon monoxid gives a brick-red coagulum, if boiled. Ordinary blood gives a brownish black precipitate.

The Sodium Hydroxid Test of Hoppe-Seyler.—This is made by mixing blood in a porcelain dish with an equal volume of sodium hydroxid solution (of specific gravity 1.3) when normal blood forms a black, slimy mass, which appears greenish brown in thin layers, while carbon monoxid blood forms a red coagulum.

Tannic Acid Test.—The tannic acid test of Wetzel is one of the easiest and most delicate of the color tests. The blood, diluted one part by volume to four of water, is shaken with an equal volume of a 1 per cent. tannic acid solution (the original method calls for three times the volume of tannic acid solution, but I prefer an equal volume). Normal blood becomes gray in twenty-four hours, in the presence of carbon monoxid, a carmin red. The results are marked and the color distinction easy. The difference persists and becomes more marked with increasing time. The red precipitate holds its color for months. One specimen in my laboratory still retains the carmin color after four years. One per cent. of carbon monoxid (5 per cent. saturated) can be detected in blood with the tannic acid test. In an exhumed body which had been embalmed for thirty days, I was able to demonstrate the presence of carbon monoxid hemoglobin by the tannic acid and palladious chlorid methods.

Basic Lead Acetate Test.—In the basic lead acetate of Rubner, four volumes of basic lead acetate are added to one volume of carbon monoxid blood, and shaken for about one minute. Carbon monoxid gives a fine red color; normal blood gives a brownish color changing to a brownish-gray. The difference increases on standing; the red is still noticeable after many months. Formaldehyd used in embalming fluids interferes with this test, giving a whitish coagulum (Fishbein).

Potassium Ferrocyanid Test.—When 10 c.c. of blood are mixed with 15 c.c. of a 20 per cent. potassium ferrocyanid solution and 2 c.c. of a 30 per cent. acetic acid, a solid coagulum gradually results; if normal, the coagulum is dark brown to black, but when the blood contains carbon monoxid, a bright red will be obtained (Wetzel).

Haldane's³⁴ Quantitative Method.—For the carbon monoxid, this yields satisfactory results with fresh blood; but with dark colored blood from cadavers, the colors are hard to match with a Duboscq colorimeter, the results obtained being far too high compared with the palladious chlorid method.

For the quantitative estimation of carbon monoxid in air and in blood, the method of Nicloux³⁵ or that of Fodor³⁶ is preferred to that of Haldane, especially with blood from cadavers which may not be of a bright cherry red. The method of Nicloux is based on the reaction of the oxidation of carbon monoxid by iodic acid and the determination of the liberated iodine with a standard solution of thiosulphate. In a form of apparatus devised by Seidell,³⁷ the carbon dioxid

liberated may also be determined. The reaction may be expressed by the equation: $I_2O_5 + 5CO = 5CO_2 + I_2$.

The method of Fodor, based on the reduction of palladious chlorid by carbon monoxid, is much better for the examination of carbon monoxid in blood. The reaction is expressed by the equation: $PdCl_2 + CO = Pd + 2HCl + CO_2$. For the examination of the blood, 5 c.c. are diluted with 20 c.c. of water in a large test tube of 80 c.c. capacity; a small piece of sodium hydroxid is then added to aid in the expulsion of carbon monoxid. A tube containing 10 c.c. of palladious chlorid precedes the tube containing the blood to remove the carbon monoxid from the laboratory air. A third U tube following the tube containing the blood contains a solution of lead acetate, and a fourth tube contains dilute sulphuric acid. The chain of tubes is completed by the addition of three U tubes containing a solution of palladious chlorid.³⁸ The test tube containing the blood is heated in a water bath to 90 C., while a gentle current of air, previously drawn through the tube of palladious chlorid, is conducted through the chain of tubes at the rate of 300 c.c. per hour for four hours. If carbon monoxid is present, the palladious chlorid is reduced, and a black precipitate of palladium will be deposited. The reduced palladium is collected on a filter paper, washed with water and dissolved in hot nitrohydrochloric acid. The U tubes after washing with water will have a small amount of palladium adhering to the sides. This can be dissolved in the hot nitrohydrochloric acid and added to that dissolved from the filter paper. The solution is evaporated on the hot water bath, taken up with strong hydrochloric acid three or four times to remove all traces of nitric acid. The residue is dissolved in water and titrated with a solution of potassium iodid containing 1.486 gm. to the liter. The diluted palladium chlorid solution is heated on the water bath before each addition of the potassium iodid solution. A brown precipitate of palladious iodid is filtered off and the operation is repeated until the addition of potassium iodid fails to produce a brown cloudiness. Each cubic centimeter of the potassium iodid solution represents 0.1 c.c. of carbon monoxid. In case the blood contains only a small amount of carbon monoxid, as is demonstrated by the tannic acid and other color tests, 20 c.c. of the blood are used in a small Erlenmeyer flask. When it is desired to report the saturation of the blood after obtaining the percentage of carbon monoxid by volume, one can use the relation $x:20$, since a saturated blood will hold in combination 20 per cent. by volume of carbon monoxid.

38. The commercial salt is dissolved in hydrochloric acid, with the addition of nitric acid, evaporated to dryness on the waterbath, moistened with hydrochloric acid, dried, taken up with a small amount of water and again dried to free it from excess acid. The residue is then made up to volume so that 500 c.c. will contain 1 gm.

Helping the Crippled Soldier to Select an Occupation.—A great aid in helping a soldier to decide about his future is acquaintance with the records of other men with similar physical handicaps who have made good—men who have been trained and who are now holding jobs at attractive wages. In addition, such practical results lend plausibility to the expectations in prospect which are being held out to him. A difficulty, however, is found in the abnormal premium on industrial labor in war time. Even a disabled man may be able to go out and earn seven dollars a day in a munition factory. This constitutes a very potent present counter attraction to representations of moderate but permanent employment after a course of training. If he makes the opportunist choice he will, on the return of employment conditions to normal, be reduced to the status of a casual laborer, perilously near the verge of mendicancy. No pains should be spared to prevent this eventuality. Care should be taken that the representations to the man while encouraging, should in the main be accurate. Workers with the crippled soldiers should not be misled by reports of extraordinary success in isolated cases. The men will, sooner or later, learn the truth, which will tend to discredit the veracity of the vocational officials.—Douglas C. McMurtrie: *The War Cripple*, Columbia War Papers.

33. For a more extended description of the spectroscopic examination and color plates, see Peterson and Haines' text, *Legal Medicine and Toxicology*, 1904, 11, 658.

34. Haldane: *Jour. Physiol.*, 1895, 18, 430, 463; 1896, 20, 521.

35. Nicloux: *Compt. rend. Acad. d. sc.*, 1898, 126, 746.

36. Fodor: *Deutsch. Vrtljschr. f. off. Gesundheitspf.*, 1880, 12, 377.

37. Seidell: *Jour. Indust. and Engin. Chem.*, 1914, 4, 321.

CARCINOMA OF PROSTATE

AN IMPROVED TECHNIC FOR RADICAL EXCISION
WITH PRESERVATION OF URINARY
CONTROL *

HUGH HAMPTON YOUNG, M.D.

BALTIMORE

In 1905, I presented a radical operation¹ for the cure of cancer of the prostate, and showed by an



Fig. 2.—Opening up the space on each side of the central tendon by blunt dissection.

exhaustive study of a large number of clinical cases that the disease was far more common than usually supposed. At that time sixty-eight cases of carcinoma had been encountered in five years, during which time 250 cases of benign hypertrophy were seen, making 21 per cent. of carcinoma. Since then, there have been numerous confirmatory publications. The statistics of Oliver Smith give a proportion of 16 per cent.; of Davis, 20 per cent.; of Kummell, 20 per cent.; Pauchet, 20 per cent., and Mullin, 25 per cent. Wilson and McGrath, studying 469 specimens removed by prostatectomy at the Mayo Clinic, found that 15.5 per cent. were cancerous. These confirmatory statistics show that cancer of the prostate is a very common disease, and that it presents a serious problem to the surgeon, especially as the importance of early diagnosis and radical excision has been conclusively demonstrated.

My reports of cases in which I had carried out my radical operations showed conclusively that radical cures may be obtained; but the fact that all of these

patients suffered with incontinence during the day caused many surgeons to oppose the operation. Thus Judd, in 1913, said that he considered the incontinence an insuperable objection to the operation. During the past three years, I have greatly improved the technic of the operation, so that now it can be carried out without producing incontinence, thus removing the only possible objection to the procedure, which, in my opinion, is indeed a radical curative operation of great value.

The patient is placed in the exaggerated lithotomy position on the Halsted perineal board or some table giving an equally good position (and there are few that do), the penis injected with 5 per cent. argyrol for antiseptic purposes, and a No. 24 sound passed as far as the anterior portion of the prostatic urethra. The perineum is then cleaned up with tincture of iodine, towels are placed, and an inverted V perineal incision made, as in the operation for simple hypertrophy of the prostate, but a little longer on each side, as shown in Figure 1.

After the incision has been carried through the fat and subcutaneous fascia, the space on each side of the central tendon, bounded anteriorly by the transversus perinei muscle, posteriorly by the levator ani, and externally by the ischiopubic ramus, is opened up by blunt dissection, as shown by Figure 2. The bifid tractor is then introduced, and after division of the central tendon (Fig. 3) and the recto-urethralis muscle close to the bulb, the membranous urethra is exposed, incised longitudinally on the sound, and the edges of the mucous membrane picked up with non-

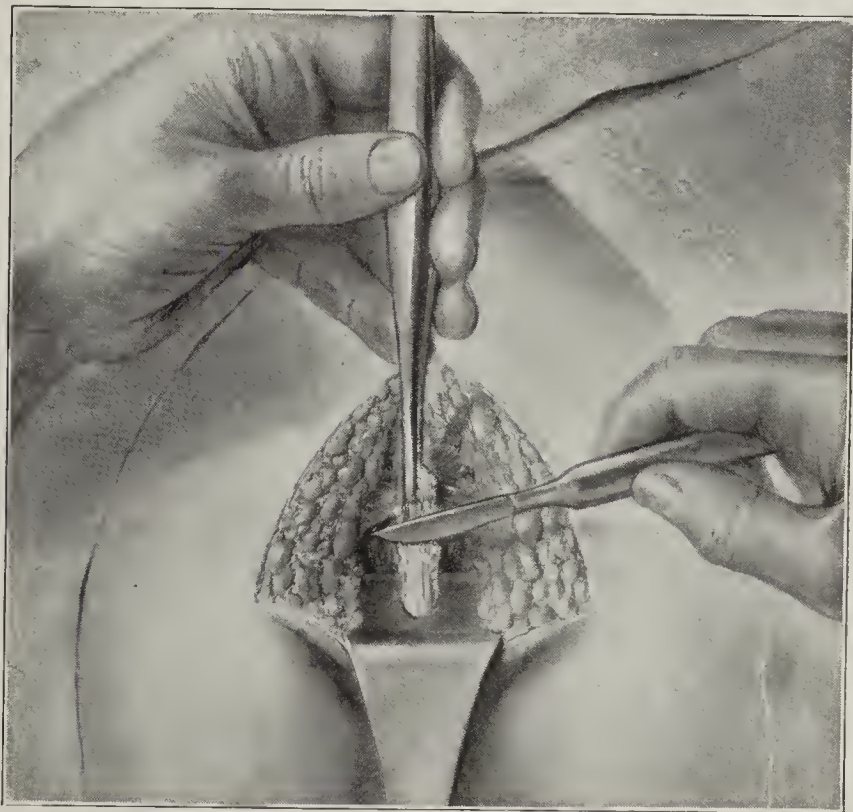


Fig. 3.—Bifid retractor inserted; division of central tendon.

crushing clamps, as shown in Figure 4. The prostatic tractor, Figure 5, is then introduced² and opened out ready to draw the prostate down into the wound. The next procedure is to divide the posterior layer of Denonvillier's fascia at the apex of the prostate on each side, thus exposing the anterior layer of Denonvillier's fascia, which forms the posterior cover-

* From the James Buchanan Brady Urological Institute, the Johns Hopkins Hospital.

* Owing to lack of space this article has been abbreviated in THE JOURNAL by omission of some of the illustrations. The complete article appears in the author's reprints.

1. Described first in the Johns Hopkins Hospital Bulletin, 1905.

2. Many incorrect models, much too rectangular and difficult to introduce, are on the market. The approved models, such as are shown in Figure 20, present a more tapering point, the bend is not so square and they are very easy to introduce, thus doing away with the necessity of the many modifications which have been devised.

ing of the prostate and seminal vesicles, and undoubtedly has much to do with the prevention of car-

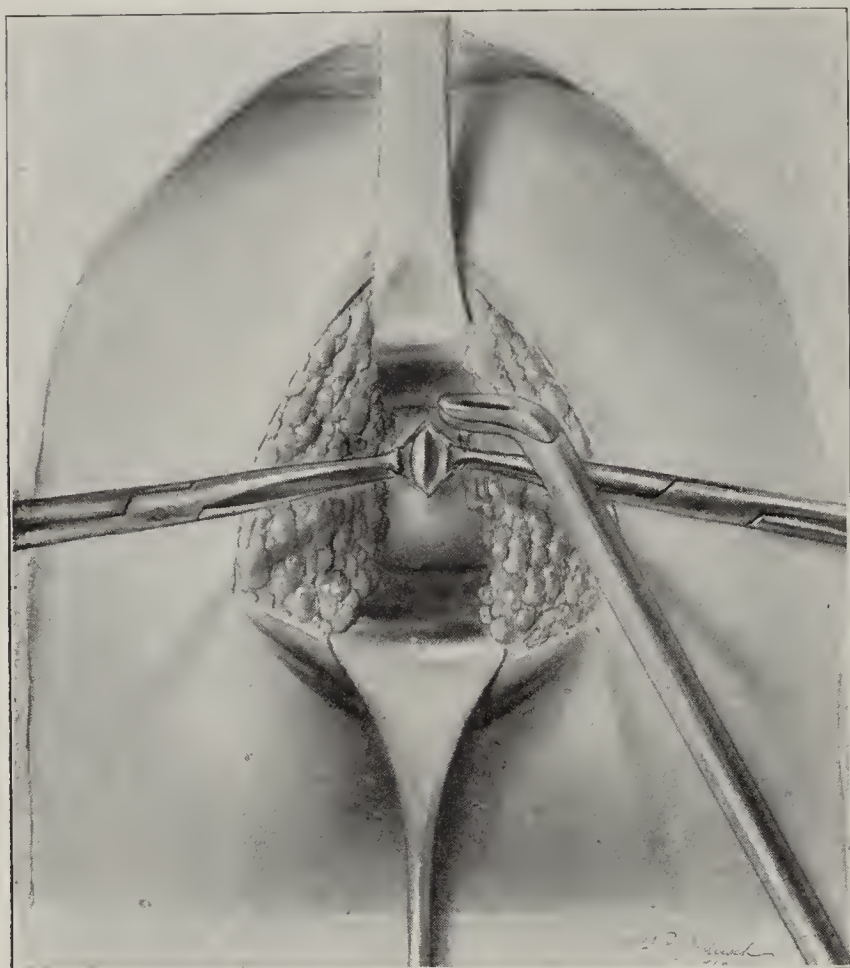


Fig. 4.—Membranous urethra exposed, incised longitudinally on sound, and edges picked up with noncrushing mucosa clamps; prostatic tractor ready for insertion.

cinoma of the prostate and seminal vesicles from traveling backward toward the rectum and adjacent

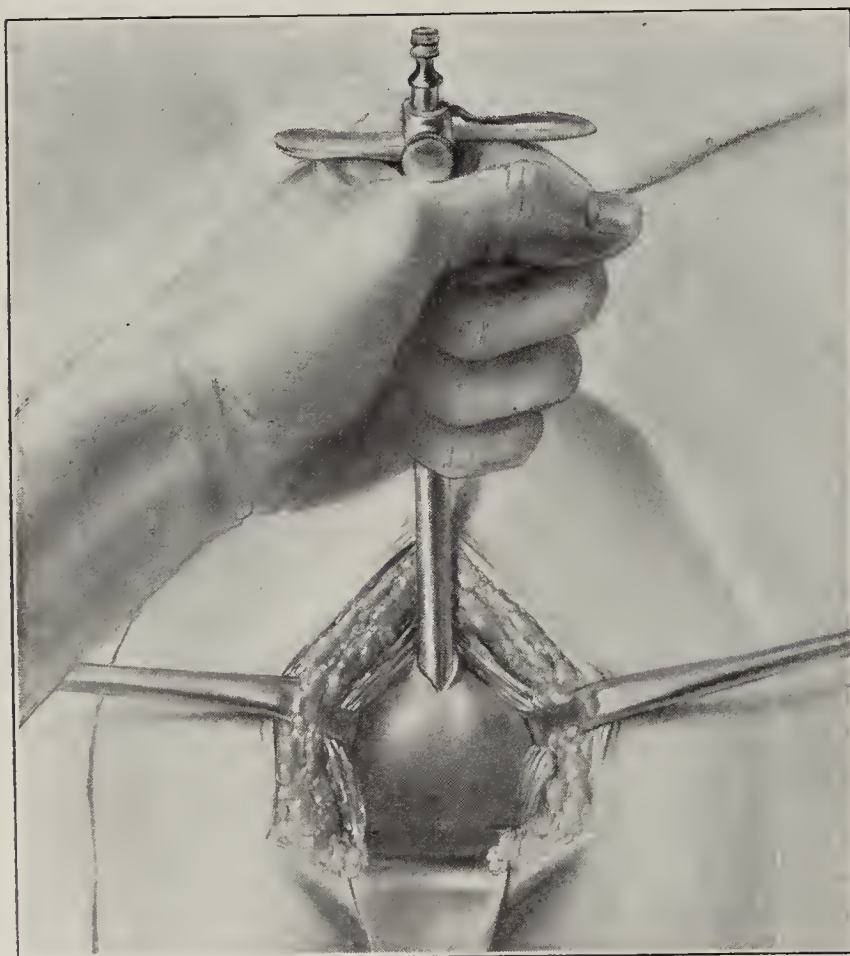


Fig. 5.—Tractor has been inserted and opened; posterior surface of prostate exposed showing anterior layer of fascia of Denonvillier.

structures. Passing upward between these two layers of Denonvillier's fascia, the posterior surface of the prostate and seminal vesicles is freed, after which the

lateral surfaces of the prostate are exposed by blunt dissection, the operator taking care to keep within the anterolateral prostatic fascia, separating it from the prostate. The great plexus of blood vessels, and the important nerves of the perineum lie in front of this fascia so that by stripping it up from the prostate, it is easy to avoid hemorrhage and not only preserve the vascular supply, but also the perineal nerves, including that of the external sphincter. The modification of my operation which I have adopted during the past three years, and which has done away with incontinence, consists in respecting this anterolateral fascia, and passing between it and the lateral and anterior aspect of the prostate, as indicated by the dotted line in Figure 6.

After this fascia has been freed by blunt and sharp dissection on each side, the next step is to divide the membranous urethra just in front of the prostatic tractor, as shown in Figure 7, the operator again being

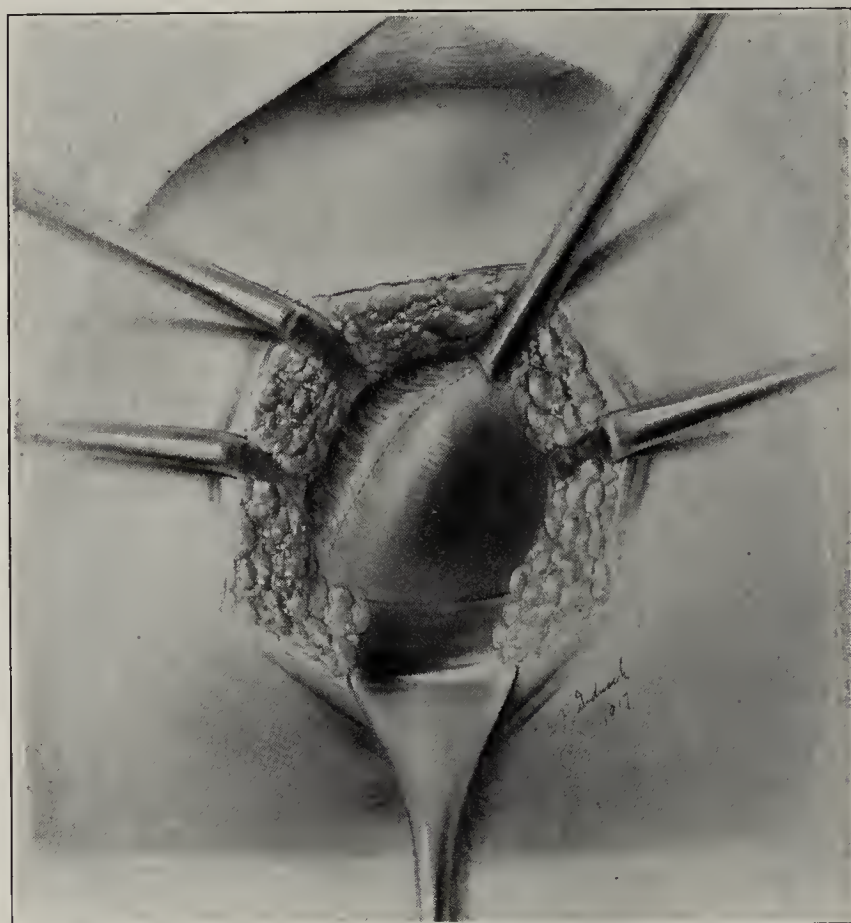


Fig. 6.—Dotted line shows where dissection should proceed in order that the operator keep between the anterolateral fascia and lateral aspect of prostate.

careful to keep beneath the anterolateral prostatic fascia, which is readily stripped up, exposing the anterior surface of the prostate until the prostatovesical juncture is reached, as shown in Figure 8. During this procedure the prostate, freed laterally, posteriorly and anteriorly, is gradually drawn outward, bringing the bladder well down toward the operator, who then plunges a scalpel through the bladder wall close to the upper limit of the prostate and enlarges the opening into the bladder by scissors on each side, thus exposing the interior of the bladder, and particularly the trigon, as shown in Figures 8, 9 and 10. The dotted line here indicates the next step, namely, the curved incision across the trigon, which passes about 1 cm. below the ureteral orifices on each side and includes the mucosa, submucosa and muscle (Fig. 11). The bladder is then pushed upward, as shown in Figure 12, thus exposing the tissues covering the anterior surfaces of the seminal vesicles and vasa

deferentia, which become more and more exposed as the blunt dissection proceeds (Fig. 13). The operator avoids going too close to the seminal vesicles and vasa deferentia, freeing these structures *en masse*, and ligating the fascia containing the blood supply at the upper end of the seminal vesicles on each side, as far distant above the prostate as possible. The vas deferens is then isolated, freed well above the tip of the seminal vesicle, drawn down, clamped and divided. The same procedure is repeated on the other side, thus freeing the carcinomatous mass, which is removed in one piece, composed of the entire prostate with its capsule, and urethra, a small portion of the membranous urethra, a cuff of the bladder, including most of the trigon, both seminal vesicles and 6 or 7 cm. of the vasa deferentia, with intervening and surrounding tissues. The mass removed is shown in Figures

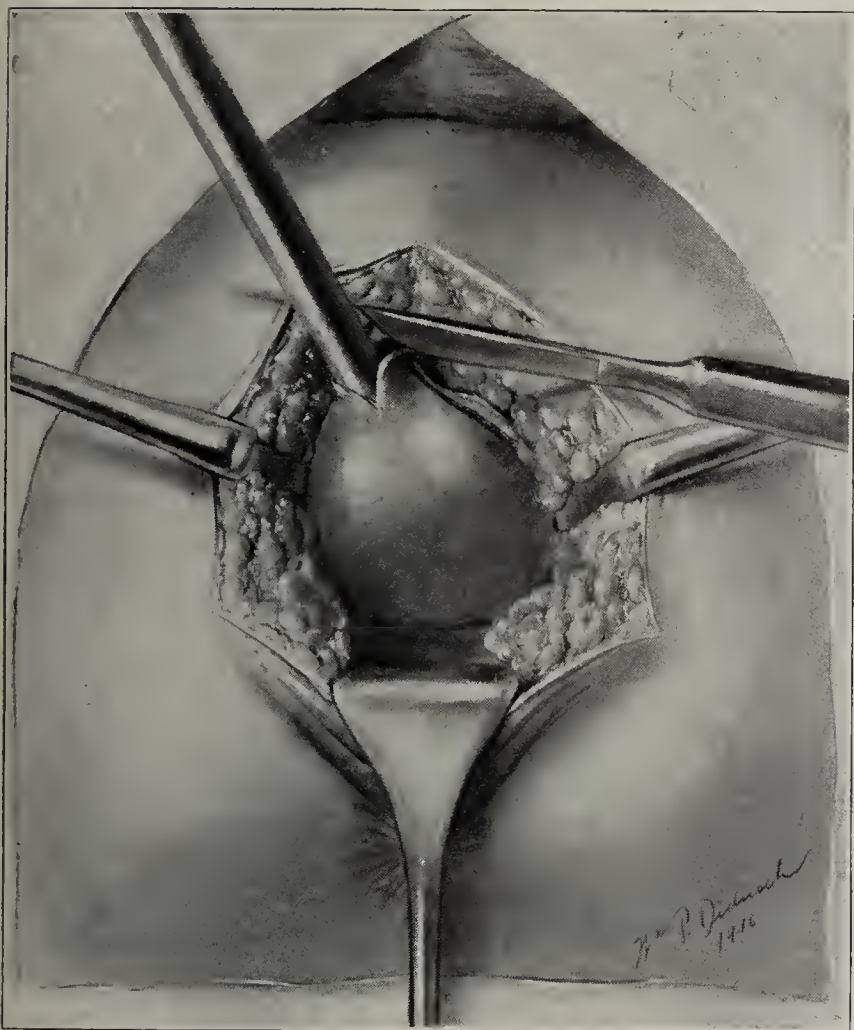


Fig. 7.—Division of membranous urethra.

21, 22 and 23, which are taken from the actual operative specimens.

The problem next confronting the operator is to draw down the bladder and form an anastomosis between it and the stump of the membranous urethra at the triangular ligament. The vesical opening is usually about 3 inches in diameter, and about 3 inches distant from the urethra to which the bladder is to be sutured; but by grasping the anterior wall and drawing it downward, no difficulty is experienced in performing the anastomosis, as shown in Figure 14. The sutures are interrupted and of chromic catgut tied externally and including both mucous membrane and muscle. As a rule, about ten such stitches are required, but no difficulty is experienced in obtaining an excellent anastomosis around the small retained urethral catheter, as shown in Figure 15. There remains then a longitudinal opening in the bladder which is easily closed by continuous chromic catgut suture, as shown in Figures 16 and 17. In perform-

ing the anastomosis, I have recently used my new boomerang needle holder (Fig. 24), and have found

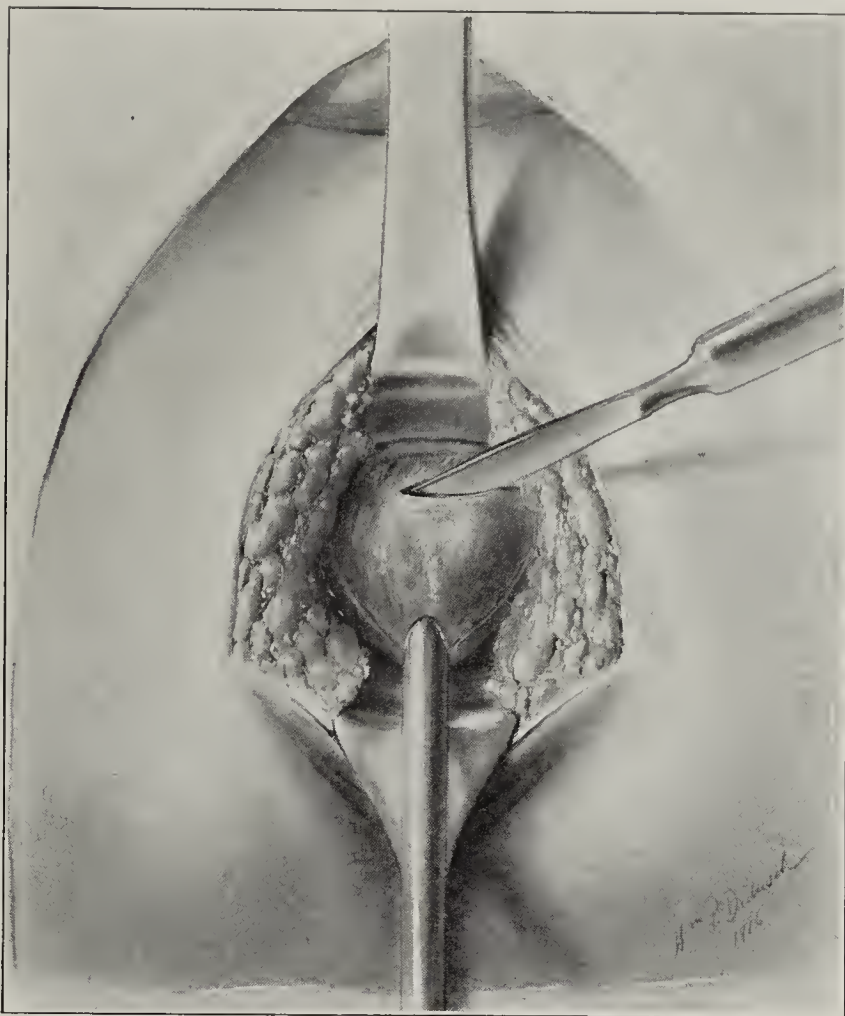


Fig. 8.—Entire prostate turned down and the bladder wall incised transversely just above upper limits of the prostate.

it very efficient, particularly for deep work. The rest of the operation consists in placing a small iodoform gauze drain behind the line of sutures, drawing the levator muscles together with chromic catgut (Fig.

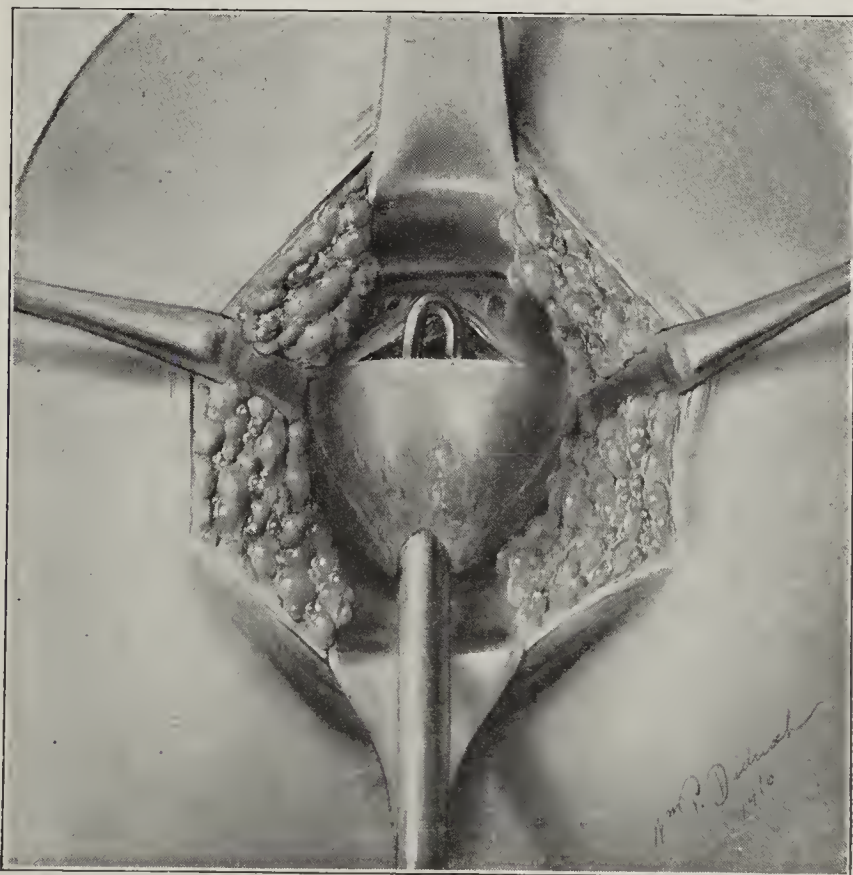


Fig. 9.—Blade of tractor protruding through incision in bladder wall.

18), and closing the skin with a continuous subcuticular chromic catgut suture, as shown in Fig. 19. The catheter is fastened to the glans penis with adhe-

sive plaster and a subcutaneous infusion given at the end of the operation (before if advisable). By preserving the anterolateral prostatic fascia, and thus

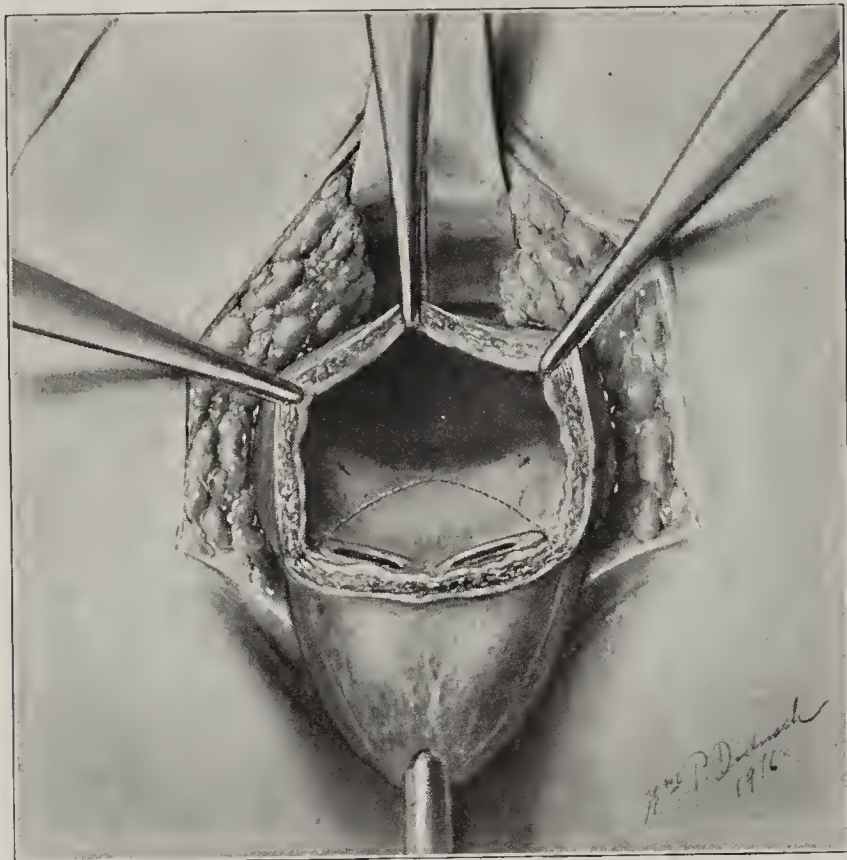


Fig. 10.—Bladder incision enlarged: Dotted line indicates course of completed incision, passing across trigon about 1 cm. in front of ureteral orifices.

avoiding hemorrhage from the plexus of Santorini, and by carefully clamping and ligating bleeding points when the bladder is divided and the seminal vesicles freed from deep adhesions, pronounced hemorrhage is avoided, and the operation is practically free from danger and is not exceedingly difficult.

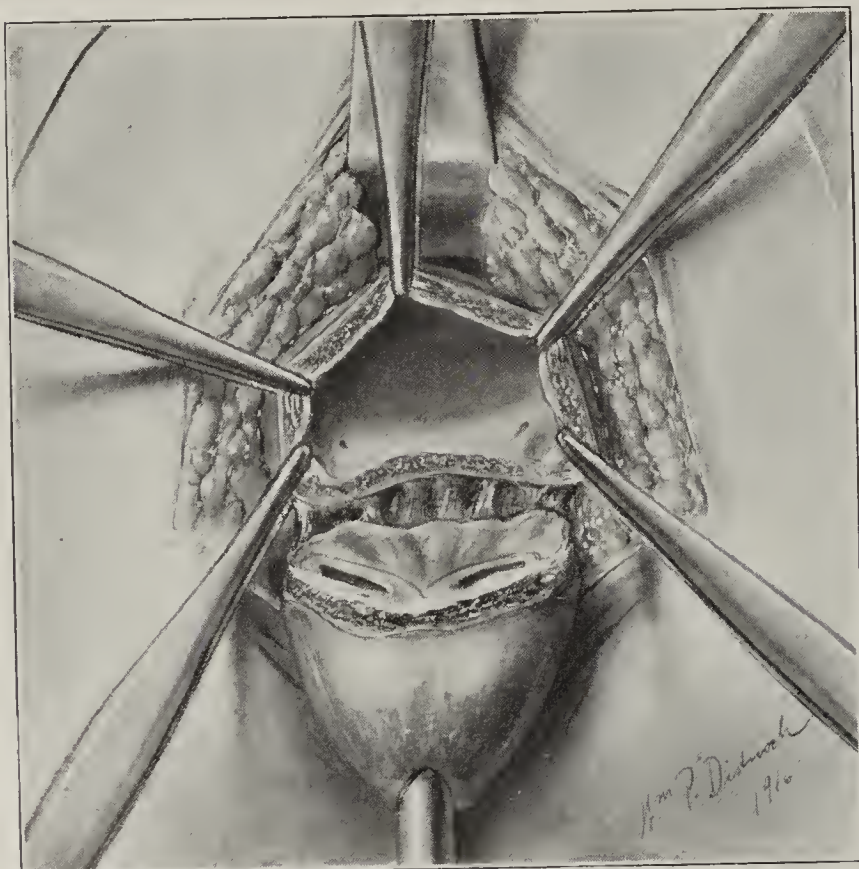


Fig. 11.—Incision in bladder wall completed, the prostate now being attached only by the seminal vesicles and vasa.

AFTER-TREATMENT

The treatment during the convalescence is very similar to that employed after perineal prostatectomy,

namely, water in abundance, subcutaneously if necessary, hexamethylenamin, and daily irrigation of the bladder with small amounts of boric acid solution through the retained urethral catheter, which is allowed to remain in place eight or nine days. The gauze packs are removed in two or three days, and no further packing is introduced. In nearly all cases there is leakage for a week or so, but in almost all cases the wound heals completely within the course of a month, and no cases of permanent urinary fistulas have resulted.

My experience in thirteen cases shows that it is not necessary or even advisable to pass sounds or other urethral instruments, as stricture does not occur at the point of anastomosis, and dilations are therefore unnecessary.

RESULTS

In the first eight cases there was incontinence when the patient was on his feet, and more or less constant dribbling; but when the patient was in a recumbent posture, and particularly when in bed, there was

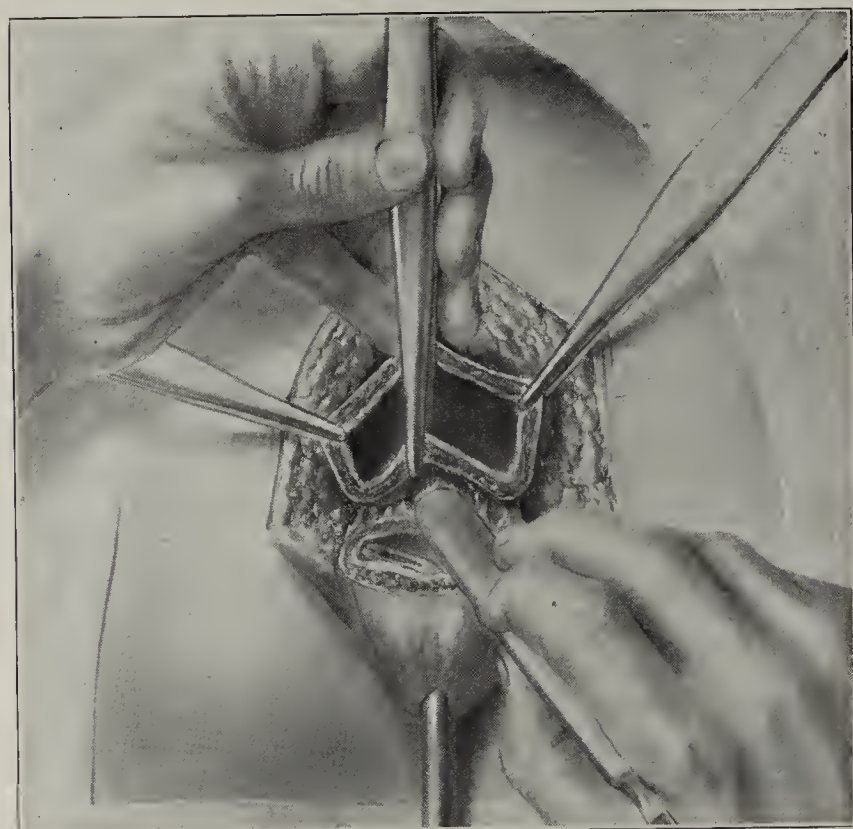


Fig. 12.—Freeing vesicles and vasa surrounding tissues from posterior aspect of bladder wall.

usually no incontinence and the bed was not wet, interval urination of fairly normal character occurring at this time. One patient died of shock immediately after the operation. In the last four cases in which the perfected technic described in the foregoing was carried out, incontinence has not been present, and some of these patients are able to retain urine as long as six or seven hours, they void freely without difficulty, have excellent sphincteric control, and have practically normal urination. One patient, operated on over three years ago, is able to sleep all night undisturbed, and voids large amounts of urine at infrequent intervals and in a normal manner. The other cases are more recent, but give evidence of just as satisfactory results.

Success in obtaining urinary control after this extensive radical procedure is undoubtedly due to the new scheme of carefully preserving the anterolateral prostatic fascia, and thus avoiding injury of the nerve and blood vessels which lie in front of it and which

supply the triangular ligament and external sphincter with vascularity and innervation.

Nevertheless, it is interesting to note that normal micturition can exist even when the entire prostate, with the prostatic urethra, membranous urethra and almost all of the trigon and cuff of the bladder are removed, and the defect restored by plastic anastomosis between the bladder and the stump of the membranous urethra. It is also interesting to note that the external sphincter is able to functionate sufficiently to prevent incontinence, even when the other sphincteric structures of the prostate and bladder have been removed.

At the operation, the lower ends of both ureters were intentionally excised for a short distance in Case 2, the operator thinking that the disease had reached this point. This was a mistake, as it was found afterward that the induration was inflammatory in character. In Case 5 the lower end of the left ureter was involved, and had to be excised. This patient died of shock, and necropsy revealed that,

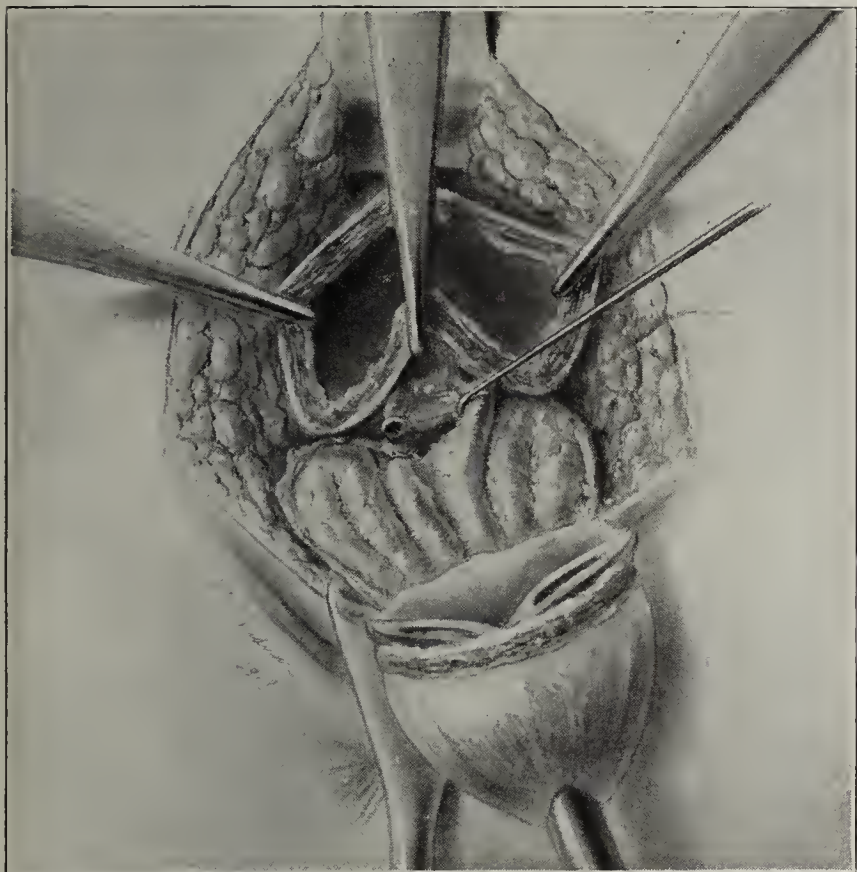


Fig. 13.—Freeing of upper limit of seminal vesicles; vascular adhesions in this region have been clamped and ligated; division of vas.

while the seminal vesicles were free, the disease had traveled into the peritoneal cavity. The cystoscopic evidence of elevation of the whole trigon should evidently militate against the radical operation, as shown by this case. In Case 3, the lower end of the left ureter was unintentionally divided with scissors when the division along the left lateral wall of the bladder was made. Anastomosis was made high up, and no inconvenience resulted. (The patient lived three years). In nine cases, the operation was carried out with apparent success and without shock, but a study of the specimen removed showed carcinoma near the upper limit in two patients (Cases 1 and 3).

In Case 2, the patient died nine months after the operation as a result of traumatism and infection, caused by an attempt to remove a stone adherent to a silk suture. Necropsy revealed a very small area of recurrence, 1 cm. in diameter, back of the bladder. In Case 3, the patient lived over three years in comfort, but necropsy revealed metastases in various

parts of the body, the bladder and urethra, however, being free from recurrence. In Case 1, in which the

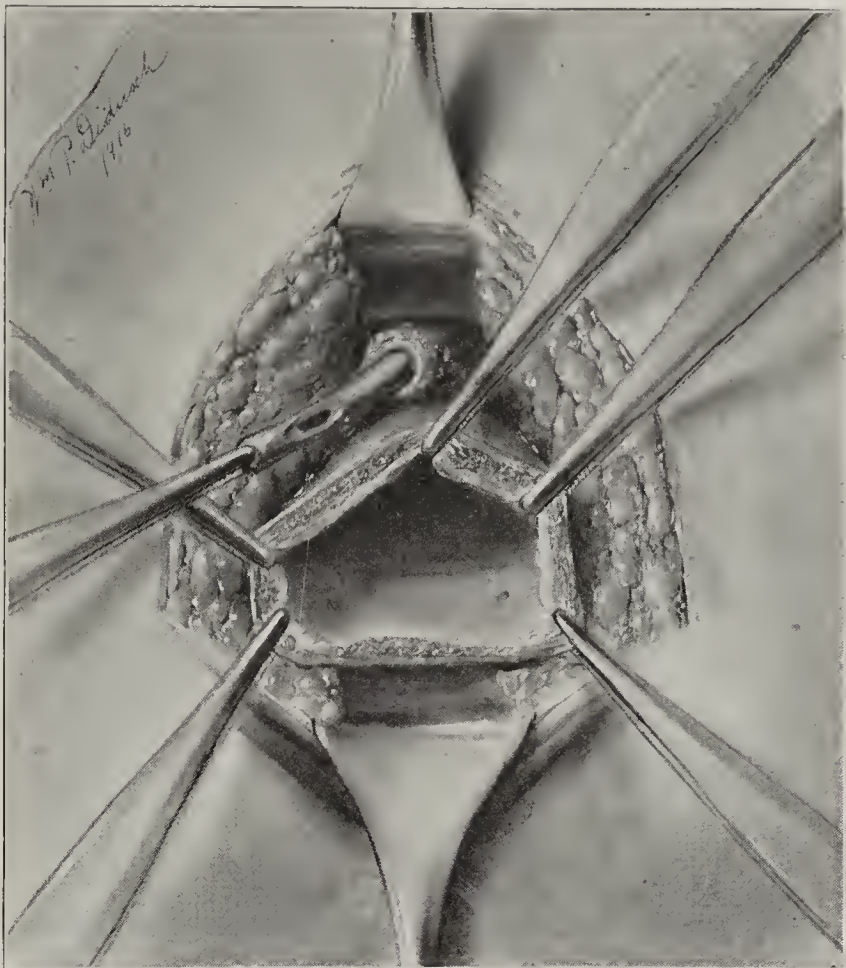


Fig. 14.—Catheter inserted in urethra preparatory to urethrovaginal anastomosis.

patient died six weeks after the operation from ascending renal infection, as a result of the intentional but injudicious division of the two ureters, extremely

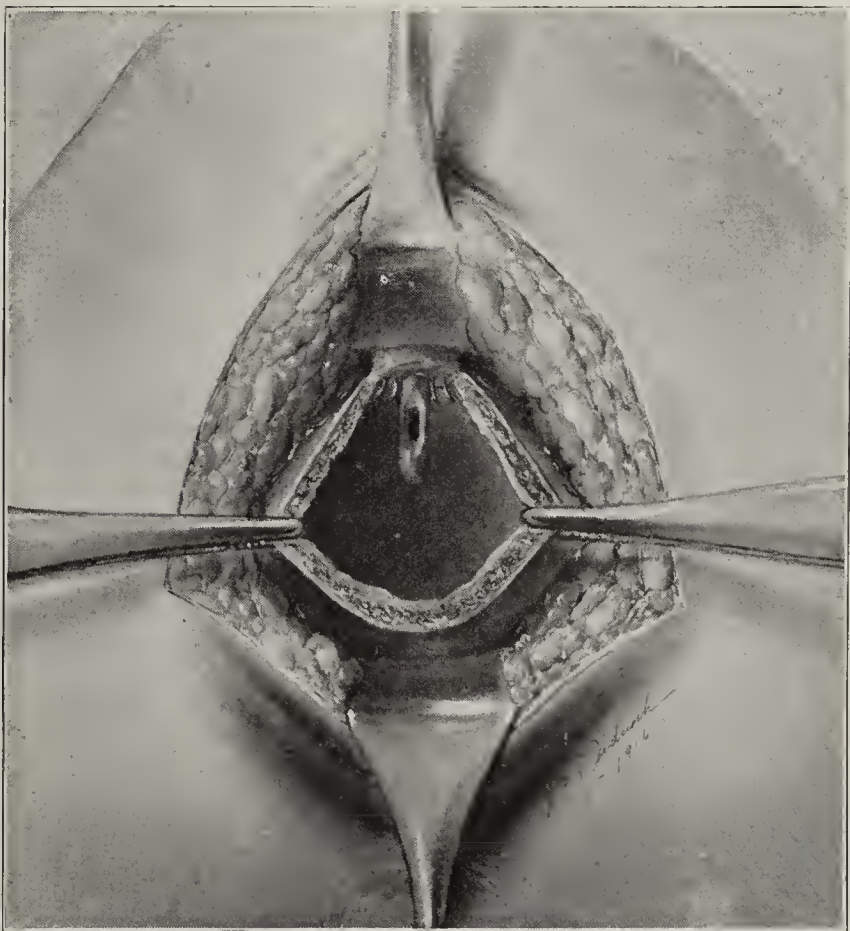


Fig. 15.—Beginning of anastomosis; sutures are of interrupted chromic catgut, tied externally.

careful examination of all the pelvic tissues at necropsy, with numerous sections taken for microscopic study, failed to reveal any evidence of carci-

noma, and it seems probable that the disease had been completely eradicated. Five patients have apparently been cured. One patient died from angina six and a half years after the operation, and necropsy revealed no recurrence of the cancer. Another patient is well five and a half years after the operation. In both of these cases the operative specimens disclosed that the disease had not reached the upper line of excision. Three patients operated on two and a half years ago are alive and apparently well. Two cases in which operation was performed within the past month are so recent that the ultimate result is not known, although the prospects are excellent.

In Case 2, there was incontinence when the patient was on his feet, but when in bed and in a sitting posture there was fair control. In more recent operations control has been much better; in Case 9, there was hardly any incontinence, and in Cases 10, 11 and 12, no incontinence at all occurred; the patients voided naturally with normal force, and only three or four times by day and none at night. In Case 13, the patient is still in the hospital. This improvement in the prevention of urinary incontinence has been accomplished by using great care to elevate the anterior layer of the pelvic fascia, which encloses the lateral and anterior aspects of the prostate, with the nerves and blood vessels of that region. This not only obviates hemorrhage, but preserves the vascular and nervous supply of the triangular ligament and external sphincter, and thus prevents incontinence. It removes the one objection to the operation.

As a result of the experience gained in these thirteen cases, it may be said that the operation should

vesicles are involved, or in cases in which there is an extensive intervesicular mass and indurated lymphatics or glands, or when involvement of the membranous urethra or muscle of the rectum shows that the disease has manifestly progressed too far.

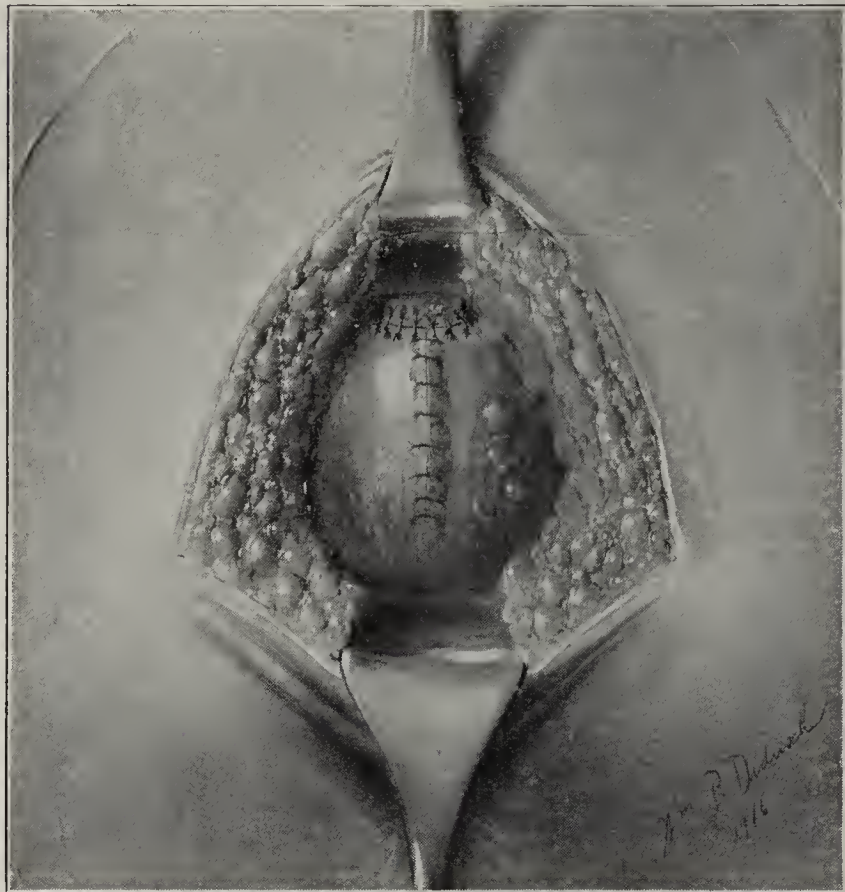


Fig. 17.—The anastomosis completed.

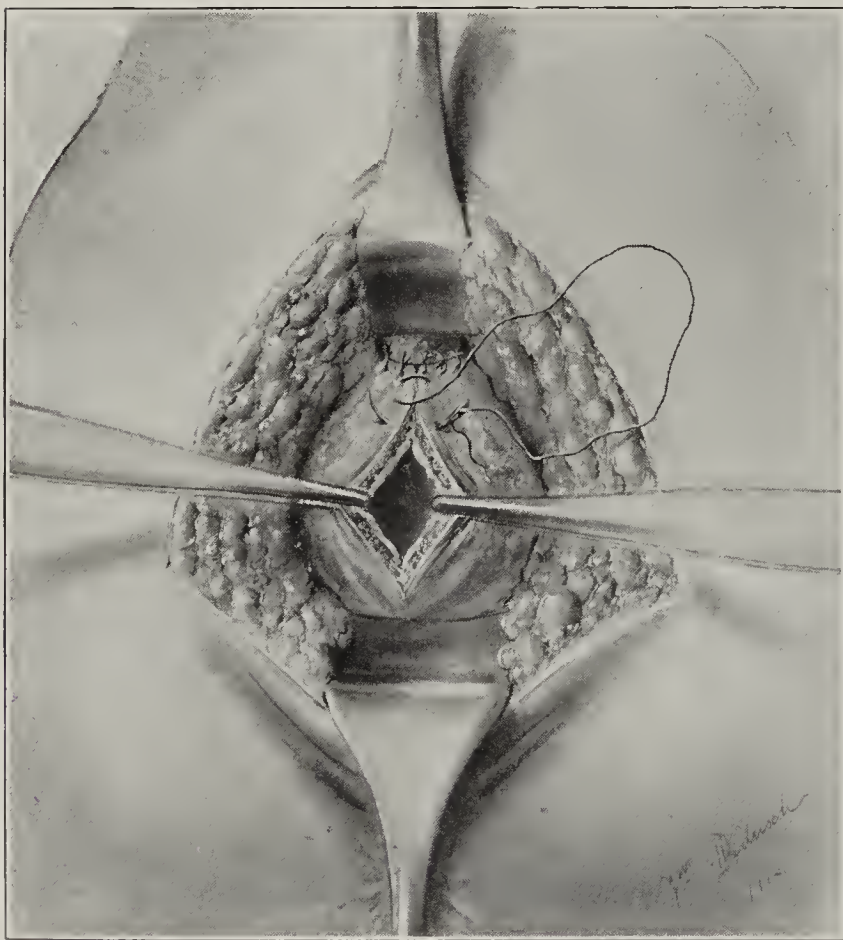


Fig. 16.—Closure of remainder of vesical incision longitudinally, with a continuous suture.

not be attempted when the carcinomatous infiltration extends more than a short distance beneath the trigon (as determined by the cystoscopic examination with the finger in the rectum and the cystoscope in the urethra), or when the upper portions of both seminal

Further, it may be said that the corners of the trigon containing the ureteral papillae should be left intact with sufficient tissue below them to enable proper suturing and to leave their openings free from constriction, 1 cm. above the wound; that the hemorrhage should be carefully checked (by hugging the capsule, injury of the periprostatic plexus being avoided); that silk should never be used to hold the tissues together in making the urethrovesical anastomosis; that when the operation is attempted early it can be performed without much danger or great difficulty, and with excellent chance of cure; that only seven of the ten cases recorded in this paper were suitable for the radical operation, and that in all of these the disease was apparently completely removed. It seems probable that radical cures have been obtained in at least five cases. Only two with definite recurrence have been found.

Radical Cures by Partial Prostatectomies.—In two cases, in which small nodules of cancer were completely removed in the course of perineal prostatectomy for supposed benign hypertrophy, there has been radical cure for eight and fifteen years, and therefore they deserve to be mentioned.

Subtotal Radical Excision of Carcinoma.—This operation is employed with a view to the conservation of the sphincters, and most of the urethra and capsule. The operation has been carried out in six cases. The first case showed a well circumscribed area of carcinoma in the right half of the posterior capsule of the prostate. The lateral lobe lay in front of this and showed an adenomatous hypertrophy, which was also present in the left and median lobes of the prostate. The area was so well circumscribed that I did not perform the typical radical operation, but contented

myself with removal of the right half of the prostate with its capsule, the right lateral wall and floor of the urethra, and the suburethral tissues with ejaculatory ducts and lower portion of the right seminal vesicle and vas deferens, all in one piece. The left lateral and median lobes were then excised as usual, the roof, left lateral wall of the urethra and vesical sphincter being preserved.

The result was splendid. The perineal fistula closed on the ninth day, and the patient was discharged on the fourteenth day. The report by letter five years later said: "entirely well, urination normal."

Four other patients have been operated on by a similar technic, also with excellent results, now four years in one case, and the method can be recommended in cases in which a small nodule of carcinoma well circumscribed and surrounded by healthy tissue is present. Great care must be exercised, however, in choosing cases, and the radical operation is generally the safer to employ.

Typical Conservative (Partial) Prostatectomy.—In seventy-five cases, this operation was done, with no idea of radical cure, but merely to remove the obstruction to urination. In two cases, however, a small nodule of carcinoma was completely excised in the removal of the lateral lobes.

In many cases (65 per cent.) the results in removing obstruction have been just as satisfactory as in benign cases, the patient generally having a good functional result as long as he lives.

Radium.—In the last two years we have used radium very effectively in cases of advanced cancer of the prostate and seminal vesicles, combining it



Fig. 18.—Gauze drainage passing down to site of anastomosis, one suture bringing together fibers of levator ani.

with the use of perineal prostatectomy or the punch operation in case obstruction persisted, with some excellent functional results. Radium unquestionably has marvelous effect in reducing the carcinomatous infiltration of the prostate by the new methods which

I have presented,³ but the cases reported are as yet too recent to permit claims of absolute cures. We have, however, in radium an agent of undoubtedly great potency and value in urology.

CONCLUSIONS

1. Early diagnoses are imperatively needed.
2. The radical operation is a very satisfactory surgical procedure.

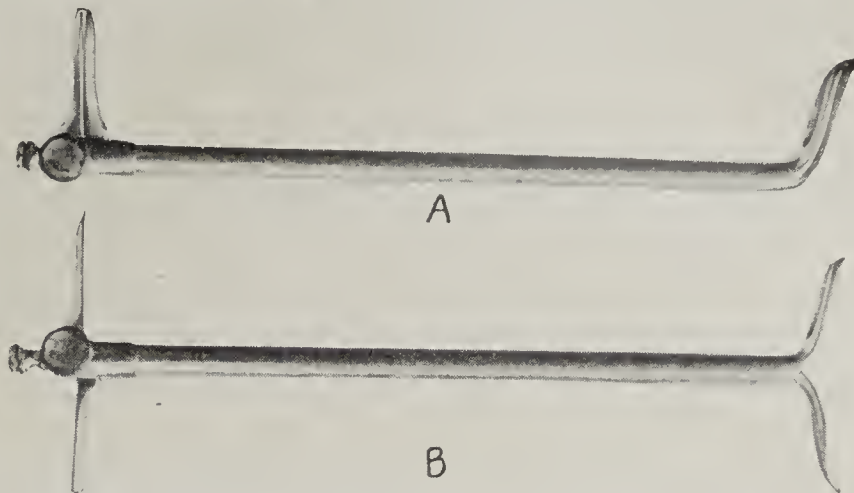


Fig. 20.—A, prostatic tractor closed, before insertion into membranous urethra; B, prostatic tractor opened after entering bladder.



Fig. 24.—Boomerang needleholder.

3. Excellent functional results may be obtained by preserving the anterolateral prostatic fascia and the blood vessels and nerves above it, as shown in my new technic.

4. Radical cures have probably been obtained in over 60 per cent. of the cases, even though some were decidedly unpromising. Marked induration should always be suspected even when occupying only a small area, and early radical cure carried out if the disease proves to be cancer.

3. Young, H. H.: The Use of Radium in Cancer of the Prostate and Bladder, *THE JOURNAL A. M. A.*, April 21, 1917, p. 1174.

Suicides in New York City.—More suicide in New York City since the outbreak of the European War in 1914, illuminating gas the most frequent method, infrequent use of firearms by women committing suicide, a decrease in the use of poison as a means of ending life, these are some of the interesting facts disclosed by a statistical study of suicides in New York City. Perhaps the one fact that stands out most prominently in the accompanying tables is the greater frequency of suicide among men than women; about three times as many men commit suicide as women. Does this indicate a greater feeling of responsibility on the part of men, a greater bravery on the part of women, bravery which enables them to bear the trials and disappointments of life with greater fortitude? Considered in conjunction with the fact that during periods of financial depression suicides are more frequent, indicating that financial reverses are the most common cause of suicide, the conclusion seems justified that the incidence of suicide is greater among males because on men usually falls the worry of financial reverses. The entrance of women into business and the professions, thus bringing them a fuller share of financial responsibility, should, if this be the chief determining factor, increase the female rate, and it will be interesting, as years go by, to note the effect of changing conditions on the incidence of suicide among females.—S. W. Wynne, M.D., *Monthly Bulletin*, New York Department of Health.

THE ETIOLOGY OF PERTHES' DISEASE

PERCY WILLARD ROBERTS, M.D.

Associate Professor of Orthopedic Surgery, Post-Graduate Hospital;
Associate Attending Orthopedist, Mount Sinai Hospital;
Assistant Surgeon, Hospital for Ruptured
and Crippled

NEW YORK

The etiology of osteochondritis of the hip, generally known as Perthes' disease, has been the subject of much speculation ever since the condition was recognized as a clinical entity several years ago. Traumatism, obscure infection and perverted metabolism have each had their advocates. Tuberculosis has been eliminated because the joints recover with good function, and syphilis has been excluded because Wassermann reactions have been negative.

Notwithstanding the results of laboratory tests, I desire to advance the opinion that this affection of the hip, which occurs with considerable frequency in children, is the result of inherited syphilis.

In the course of an extensive study of orthopedic conditions produced by congenital syphilis, involving the treatment of about two hundred cases of various types, several well developed instances of Perthes' disease have come under observation. Two of them presented symptoms of unusual spasm and limitation of motion, one having acute pain on any attempt at passive movement. The symptoms in these two cases cleared up very rapidly under mixed treatment, and the other patients showed improvement in their general condition rather more quickly than would be expected without medication.

While the course of five or six cases under anti-specific treatment proves nothing very definite, there



Fig. 1.—Perthes' disease. In this patient the acute symptoms that had persisted for over two years in spite of immobilization cleared up rapidly under mixed treatment without fixation.

are several arguments to be offered in favor of the syphilitic origin of these lesions. First, the negative Wassermann must be disposed of, and that is not difficult, for it is common experience that subjects with frankly syphilitic bone lesions, when a family history

of syphilis exists and when the pathologic process disappears under mixed treatment, give a negative Wassermann reaction. Several cases of this kind have been observed during my recent studies. Therefore, it



Fig. 2.—Perthes' disease. Acute pain and limited motion had been present for a year and three months, and under mixed treatment the condition disappeared within ten weeks.

may be contended that a negative Wassermann reaction in Perthes' disease does not exclude syphilis. Secondly, the pathologic findings described by Perthes coincide with one of the most common expressions of bone syphilis in children, namely, osteochondritis. Although the joint lesions of congenital syphilis have been much neglected, every author who has written on syphilis of the bones and joints has referred to osteochondritis as it appears in the region of the knees, wrists and ankles. As a matter of fact, many cases of joint enlargement ascribed to rickets are nothing more nor less than syphilitic osteochondritis.

Then again we find in subjects with Perthes' disease dental evidence of inherited syphilis. This does not mean hutchinsonian teeth necessarily, but more frequently the erosions and malformations of the first permanent molars and other units that have been so well described by Cavallaro, or anomalies of spacing of the incisors, to which I recently called attention.¹ These dental signs indicate that spirochetes were undoubtedly present in the body during the period of gestation, and it is a reasonable conclusion that they may have persisted to cause the condition known as Perthes' disease, just as they may persist to cause other forms of bone lesions in children.

Finally, the course of osteochondritis of the hip is similar to that of many other syphilitic joint conditions in that the destructive process is self limited and that there is a tendency to more or less complete restoration of function.

In view of the foregoing facts it would appear that treatment of Perthes' disease on the hypothesis that it is of syphilitic origin is worthy of further investiga-

1. Roberts, P. W.: New York Med. Jour., 11, 1917.

tion, and it is for the purpose of stimulating interest in the subject that this argument is presented. In the writer's experience all syphilitic bone and joint conditions improve more rapidly when the dose of potassium iodid is carried to the point of tolerance than when dependence is placed on a routine dose of moderate size, and it is suggested that this technic be used when medication is adopted.

To illustrate the effect of mixed treatment, the histories of two cases under observation on the service of Dr. H. L. Taylor, at the Hospital for Ruptured and Crippled, are appended with roentgenograms that confirm the diagnosis.

REPORT OF CASES

CASE 1.—The patient, Ida G., aged 8 years, was suffering pain and limped in July, 1914. Night cries were noted at that time. She was treated at two different clinics for tuberculosis of the right hip. The limb was placed in a plaster cast for a year and four months. The plaster cast was then removed for a month. Pain, restlessness at night, restriction of motion and spasm reappeared and another plaster spica was applied at the Hospital for Ruptured and Crippled, Dec. 1, 1915. This treatment was continued until March 21, 1917, when the patient came under my observation. The plaster cast was removed; the hip was found to be stiff and extremely sensitive. The teeth indicated congenital syphilis, and the child was therefore placed on mixed treatment and the spica fixation discontinued. Two weeks later the patient reported for examination. Pain and spasm had disappeared. There was free rotation and considerable flexion without discomfort. From that date there has never been any return of pain. Improvement has continued, and on Oct. 1, 1917, there was flexion of the thigh to 45 degrees inside of a right angle; free rotation; no limp, and the child was extremely active. The roentgen-ray findings were typical of Perthes' disease (Fig. 1).

CASE 2.—The patient, Elsie G., aged 11 years, complained, in February, 1916, of pain in the right leg; the patient limped, and tired easily. She came under observation, May 2, 1917. There was flexion of the thigh to a right angle and full extension, but rotation in extension was limited. Rotation in flexion was blocked and abduction was extremely limited. Pain and spasm occurred on attempt to force motions and there was a marked limp in walking. The teeth indicated congenital syphilis, and the patient was put on mixed treatment without any protection to the hip. A month later there was flexion to 45 degrees inside of a right angle and some rotation with the thigh flexed. There was no pain, and the child was much more active and felt better. July 18, 1917, there was almost normal flexion and free rotation with thigh flexed. There was no pain and no limp. The roentgenograms revealed typical Perthes' disease (Fig. 2).

In Case 2 the symptoms had existed a year and three months and disappeared under suitable medication in ten weeks.

576 Fifth Avenue.

Quadricentennial of Dodoneus.—The *Nederlandsch Tijdschrift voor Geneeskunde* of June 30 was devoted entirely to historical sketches of Rembertus Dodoneus, a great physician and botanist of the sixteenth century. His works include the "Cosmographia," "History of Plants," "Praxis Medica" and the "Cruydt-boeck," in which he contributed much to the materia medica of western and northern Europe which had been neglected by previous writers. He was offered the post of body physician to the king of Spain, as successor to Vesalius, but declined. Later he accepted a similar position with the emperor of Austria until he was called to the chair of clinical medicine at the University of Leyden.

SYSTEMATIZATION OF A SURGICAL SERVICE

EUGENE H. POOL, M.D.

AND

FREDERICK W. BANCROFT, M.D.

Attending Surgeon and Associate Attending Surgeon, respectively,
New York Hospital

NEW YORK

In modern industrial organization, the highest degree of efficiency is attainable only by intense systematization. In hospital management the interde-

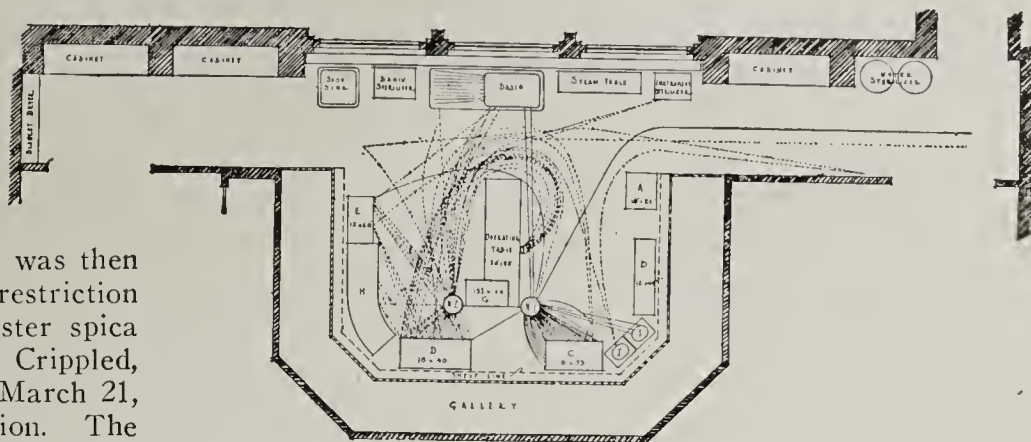


Fig. 1.—Movements of nurses during an operation for appendicitis: N-1, head instrument nurse; N-2, sponge nurse; dotted lines indicate steps taken by nurses during the operation; lines without arrows indicate "round trips," those with arrows indicate "one way trips."

pendence of efficiency and systematization should be recognized. Yet, this conception has been slowly grasped, reluctantly accepted, and compromisingly adopted by the medical profession. Although a mechanical and inelastic system is not suggested for the care of the sick, the advantages of a systematic plan of service, so far as this is consistent with the development and application of medical skill, are striking.

Until a few years ago, hospital services were relatively small, diagnostic methods simple, the staffs

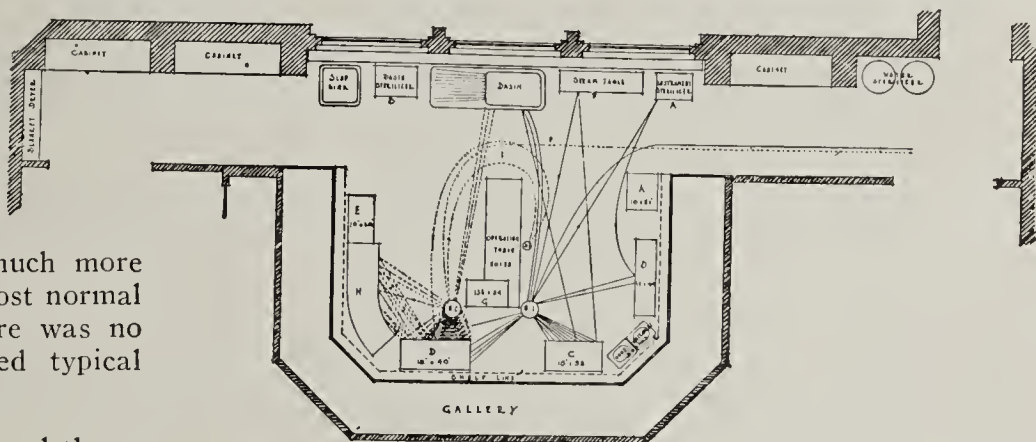


Fig. 2.—Steps taken by nurses during an operation for inguinal hernia. Similar in plan to Figure 1.

small, and the turnover slow. Consequently the details were simple, comparatively few, and readily kept in mind. The treatment of the individual patient was, in general, conscientious and satisfactory.

With the large service of the present day, however, the complicated methods of diagnosis, the large staffs and the rapid turnover, systematization has become essential. By means of it, the time and the energy of the staff are conserved; moreover, other things being equal, thoroughness in the study and treatment of each case is better insured, and oversights and mistakes are less in proportion to the degree of systematization.

The essentials for systematization are supervision by a permanent director and specialization in details by other members of the staff. Our service has been developed with these objects in view.

The surgical department of the New York Hospital consists of two independent divisions. They are similar in organization. We are to consider, however, only the second surgical division.

The staff of the division consists of an attending surgeon, senior associate surgeon, junior associate surgeon and assistant surgeon. Gradation is important in that it eliminates questions of authority and pre-rogative.

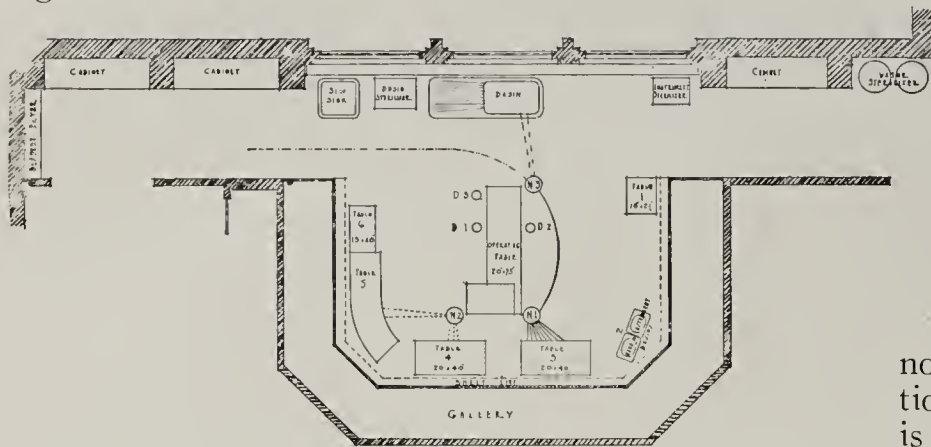


Fig. 3.—Marked reduction in movements and labor of nurses due to the introduction of simplified methods in the operating room. New and larger tables installed. Diagram was made during an operation for appendicitis.

The attending surgeon is in charge and is responsible continuously. The two associates, while equal in rank so far as hospital appointment is concerned, are graded for work on the division. When the attending surgeon is absent, the senior associate takes his place; the junior associate assumes the work of the senior, and the assistant acts as junior associate. Under this plan, the policy of the division is unvarying, because in the absence of the attending surgeon, the routine and regulations are enforced by the associate, who acts in his stead and not independently. A concerted and unchanging policy is thus possible. But such a plan demands the subordination of the individual to the welfare of the service; associates and assistants must serve the hospital as members of a team rather than as individuals.

Inspection rounds, followed by conference with free discussion, are held once a week, and a follow up or end-result system has been established. This routine furnishes the chief with an accurate knowledge of the work of the division, unifies the ideas of the staff, develops a harmonious spirit among them, and checks the immediate and late results.

The weekly inspection rounds are conducted by the attending surgeon, with the staff and student clerks. Practically every case is dressed, the treatment of the wounds is discussed, and permanent records of the condition of each patient and wound are made on the bedside charts. Following the rounds, there is a conference which is attended by the entire staff, including attending surgeons and interns. The conference embraces:

1. A review of the work of the past week, which includes: (a) operative results; (b) diagnostic errors, and (c) late results.

2. Report of standing staff committees (outpatient department, student clerks, follow up system, operating room technic, clinical records, etc.).

3. Reports on special subjects assigned by the chief to a staff member; or a review of the literature bearing on some unusual case on the service.

We will consider these topics in detail.

Operative Results.—Unfavorable results and unfavorable developments are analyzed: (1) deaths; (2) infections, and (3) other postoperative complications, such as hematomas and pneumonias. An effort is made to determine the cause of each unsatisfactory development. As advised by Codman, the poor results are tabulated into:

1. Errors due to lack of technical knowledge or skill (E-s).
2. Errors due to lack of surgical judgment (E-j).
3. Errors due to lack of diagnostic skill (E-d).
4. The patient's enfeebled condition (P-d).
5. The patient's unconquerable disease (P-d).
6. The patient's refusal of treatment (P-r).
7. The calamities of surgery, or those accidents and complications over which we have no control.

Diagnostic Record of the Week.—Errors of diagnosis (E-d) are referred to the operator for explanation, and a general discussion of the case follows. It is believed that such an analysis and discussion leads to greater care in arriving at a correct and exact diagnosis before operation, emphasizes the causes of diagnostic errors, and suggests means for avoiding them.

To obtain an exact diagnostic record, we employ the following method: The anesthetist, before the beginning of each operation, notes the anteoperative diagnosis on the anesthesia chart. The operator is entitled to record his diagnosis up to the time of making his initial incision; after that it cannot be changed. At the end of the operation, a revised diagnosis is recorded.

In cases in which the diagnosis at the close of the operation is still in doubt, as in certain tumors, and in some cases presenting abdominal symptoms in which no lesion has been found, final decision as to the diag-

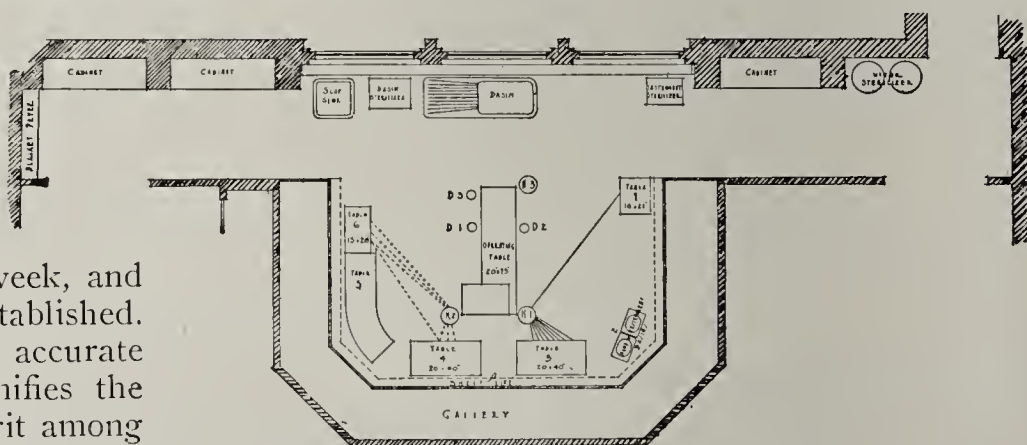


Fig. 4.—Similar in plan to Figure 3. By the elimination of unnecessary steps, the work has been greatly simplified. Diagram was made during an operation for inguinal hernia.

nosis is deferred until it is determined by the pathologist's report or by the course of the case.

*End-Results.*¹—The late results in the cases which have been examined on the previous Sunday morning are analyzed. Those recorded as "fair" and "poor" are discussed, and, if necessary, the original histories of the cases are reviewed. The causes of failures are sought, and measures for avoiding similar failures are considered. The errors or failures are grouped according to the classification described under operative results.

1. The details of our end-result system have been described by Bancroft, F. W.: Bull. Johns Hopkins Hosp., 1916, 27, 201.

A brief comment on the end-result system is appropriate. The conscientious management of a surgical service demands not only a detailed knowledge of the immediate results of operative treatment, but also the ultimate or end-results. The operative policy of a surgical service is directly dependent on the study and analysis of the late results of operations. If it is



Fig. 5.—New supply table with foot pump. Elevation is used when patient is in the Trendelenburg position. Two tables are in use in the operating room, one each for the instrument nurse and the gauze supply nurse.

found that a certain procedure is not giving permanent relief, the members of the staff will be stimulated to devise means that will improve the results. For example: During the two years in which this system has been in use, it has been found that a certain number of patients operated on for chronic appendicitis have not been relieved of their complaint. Certain members of the staff are now making a careful analysis of all cases diagnosed as chronic appendicitis, with the object of determining wherein lies the fault. Such a study can be made effective only by careful analysis of the end-results of a large series of cases in conjunction with the histories, physical examinations, laboratory data, roentgen-ray records, and operative findings.

A follow up system, to be effective, must be so planned that all patients leaving the hospital are followed for at least one year, and selected patients for a longer period.

All patients on leaving the wards are requested to return for observation at the end of three months; if examination at that time indicates that there is no need for earlier observation, they are requested to report again at the end of nine months. We have been able to obtain the late results in approximately 90 per cent. of our cases.

We cannot emphasize too strongly the credit due to Codman of Boston for initiating the follow up system and bringing the profession to an appreciation of its importance; also to Corscaden of the Presbyterian Hospital, New York, for his extremely efficient method of putting the follow up system into effect. We employ his card system with slight modifications.

Attempts have been made to arrange the work in the wards in such a manner that the maximum atten-

tion may be given the patients with the minimum waste of effort. Complete rounds are made daily by one of the staff. Each member of the attending staff has definite days on which he makes morning rounds on all the cases on the division. Patients in the wards are considered as belonging to the division and not to individual members of the staff. In other words, if one of the attending staff refers a case to the service, the patient becomes a ward of the division. Thus, each patient has the advantage of study by the entire staff. No hardship is involved, because no fees are collected for ward patients, except workmen's compensation cases, and the fees for these are collected jointly for the needs of the division.

There is a rule of the division that the operator must examine all patients on the afternoon preceding operation. This, therefore, necessitates the visiting of the hospital every afternoon by one member of the staff.

Three difficulties are often encountered in large surgical services:

1. Delay in ordering and making appropriate laboratory and clinical examinations.
2. Delay in calling the attention of the attending surgeon to very ill patients.
3. Premature dismissal from bed and hospital of patients who have been operated on by the zealous house surgeon who wishes to make room for patients who are to undergo operation.

To overcome these difficulties the following methods have been adopted:

1. An associate has been placed in charge of each ward. It is his duty to visit his ward daily and to see all the patients who are to be operated on, order roentgen-ray and laboratory examinations as indi-

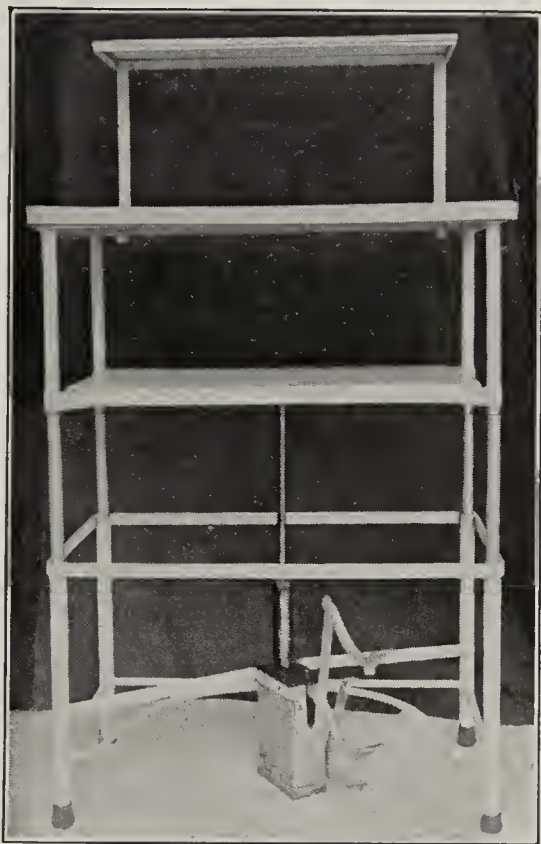


Fig. 6.—Same table as shown in Figure 5, which has been elevated for the Trendelenburg position.

cated, direct and expedite history taking and physical examinations, and note on the chart his diagnosis and suggestions as to treatment. He also supervises the postoperative therapy.

2. A day book is kept on the nurses' desk, with three columns for names: In the first column are noted those patients who have not been operated on;

in the second, patients not doing well or requiring investigation, and in the third column, the names of patients presumably ready for discharge. The attending surgeon can thus learn at a glance the salient facts.

3. Each patient before going home is examined by one of the associates, who writes a discharge note on the chart. This record includes a statement as to the general condition of the patient and the condition of the wound, and a brief summary of the postoperative course. The associate gives the patient a note to the family physician or to the dispensary. In this he describes the operation and convalescence, and suggests treatment. If he considers the patient unable to leave the hospital, he instructs the nurse to keep the patient until further notice. Consequently, it is seldom that patients leave the hospital too soon or in improper condition.

OPERATIVE TECHNIC

An effort has been made to simplify the work in the operating room. The properly trained operating staff should be a well-balanced machine; it is, however, difficult to attain this end. In the average hospital, each member of the attending staff has his individual ideas as to the arrangement of the operating room and of instruments, etc. It often becomes necessary to arrange the room and to plan certain details even of routine operations differently for each man. The lack of uniformity interferes with a fixed policy, leads to confusion, and imposes a greater burden on the helpers. All routine operations should be standardized: the arrangement of the room should be uniform; a given number of instruments should be on the tray, and the same suture materials and instruments should be used. As far as possible, the same incision and procedure should be employed, but unfortunately the vagaries of the human body and the uncertainties of diagnosis require occasional deviations. However, it is possible in most cases to follow a regular system.

The staff, at the conference, decides on the routine types of operation. Let us take inguinal hernia, as an example: The modified Bassini operation with transplantation of the cord has been adopted; all members of the division use this method; all use the same instruments, sutures and needles. If a member of the

staff disapproves the method or of any detail, he must present his criticisms and suggestions at a regular weekly conference.

The chief often assigns the study of a certain type of operation to a member of the staff, who presents his report at a subsequent conference. Discussions at these meetings are often very instructive.

We are making constant efforts to secure simplicity and a safe routine in the operating room. When the effort to systematize this service was begun two years ago, we felt that there was much waste of effort in the operating room work and that certain features of the work were glaringly inefficient. Let us illustrate with one detail: the steps taken by the nurses during an ordinary operation by reason of improper planning and thoughtless arrangement of the necessities for an operation. It was decided to make notes of the steps

taken by all concerned during an operation. To accomplish this, one of us (Bancroft) dictated to a stenographer the movements of the various nurses and physicians during a routine operation performed by the attending surgeon (Pool). Two operations, the repair of an inguinal hernia and an appendectomy for chronic appendicitis, were thus recorded.

We made a ground floor chart of the operating room, drawn to scale with the tables in place for the operations. On this, the movements of each nurse from the beginning to the end of the operations were outlined (Figs. 1 and 2). After analysis of the dictated records and the graphic charts, we found the main faults to be:

1. Lack of system.
2. Too many and too small tables for sterile supplies, extra instruments, etc.

3. Unnecessary energy wasted when the patient is in the Trendelenburg position by nurses stepping down from benches to obtain supplies from tables and stepping up again to reach the operative field or instrument tray.

To correct these faults, we explained to the operating room staff the significance of the charts, and impressed on them the importance of simplifying the work. By interesting the nursing staff, we have been able to cut down the unnecessary steps to an astonishing degree, as is evident by reference to Figures 3 and 4.

Three of the old tables were discarded and two new ones (Figs. 5 and 6) were substituted. These are much



Fig. 7.—Manual signal system for use during operations: 1 *a*, artery clamp; *b*, Allis clamp (intestinal forceps); *c*, Kocher clamp, as artery clamp with wriggling of little finger; 2 *a*, Towel clip; *b*, Kelly clamp; as towel clip plus wriggling of thumb; 3, ligature; 4, sponge pads; 5, *a*, scalpel, with cutting motion; *b*, straight needle, with rotary motion; 6, *a*, thumb forceps; *b*, scissors, opening and closing fingers; 7, tissue forceps, one and two teeth; 8, tissue forceps, many teeth; 9, sharp retractors; 10, palm down: *a*, large right angle retractors, thumb and index finger; *b*, medium right angled retractors; use middle finger instead of index finger; *c*, small right angled retractors, use ring finger instead of index finger; 11, palm up: *a*, large string pad, thumb and index finger; *b*, medium string pad, thumb and middle finger; *c*, small string pad, thumb and ring finger; 12, *a*, McBurney, small; *b*, McBurney, large; use both index and middle fingers; 13, abdominal retractors; 14, *a*, aneurysm, rotary motion; *b*, cautery, squeezing motion; 15, palm down: *a*, large sponge stick, sponging motion; *b*, curved needle, rotary motion; *c*, small sponge stick, as 15 *a*, but with palm up; 16, towel, spreading motion.

larger than the old ones, and are provided with a foot pump so that they can be raised or lowered easily. Raising these tables to the proper level eliminates the necessity for the nurse to move from the bench in order to obtain extra supplies during pelvic operations. The stimulus to improve the technic of the routine operations keeps the staff on the alert and counteracts the monotony of the routine cases.

We have adopted a signal system (Fig. 7) for use during operations. Many others, notably Brewer, have adopted such a procedure more or less extensively, and we refer to it merely as a suggestion to those who have not had the idea called to their attention. The habit of signaling becomes automatic, and the appropriate instrument is quickly obtained. The method seems to add to the smoothness of the operation.

COOPERATION WITH DISPENSARY

An effort has been made to bring the dispensary and the hospital service into close association. The fourth man on the service is chief of the dispensary, and his privileges in the wards are dependent on his management of the dispensary. Each of the other three members of the staff is expected to visit the dispensary on a definite day each week; his visit is scheduled for a certain time, and unusual cases are reserved for his inspection and advice.

About once a fortnight, a member of the dispensary staff gives a clinic. Invitation cards are sent to the physicians of the neighborhood, and unusual cases or new methods of therapy are presented. This stimulates interest and prevents initiative being obliterated by routine.

The history of every case sent from the dispensary to the wards accompanies the patient and is attached to the ward history. On discharge, a note is written by the house surgeon summarizing the operation, pathologic findings and convalescence. The dispensary history is then returned to the outpatient department. In this manner, it is possible for the outpatient surgeon to follow his cases.

Ventilation of Shipholds After Fumigation.—Experiments by the officers of the Public Health Service in the fumigation of ships for the killing of rats suspected of being the source of plague have shown that sulphur dioxide and hydrocyanic acid gas are the best fumigants. The latter is most efficient and desirable because it takes less time, and the ship may be put into service sooner after fumigation. To shorten the time still further and render the ventilation of the ship's compartments more complete, experiments were conducted. Grubbs of the Public Health Service describes in *Public Health Reports*, Oct. 19, 1917, the methods employed. In India, according to Heiser, the gas is aspirated from the vessel through the pipes used to fill the holds with the gas. This method was not employed by Grubbs. Electric fans were placed in the vessels and operated by the electric plant belonging to the vessel. It was found that the time of ventilating the ships could be shortened, but there were objections on account of handling the wires connected with the fans. A gasoline-driven air propeller, designed to propel boats and sleds, was then employed. This was found to deliver about 22,700 cubic feet of air a minute. This fan was used for distributing the gas in the hold and also for ventilation. In its use for the latter purpose, it was attached to the hatch combing and the air introduced into the hold through muslin chutes. It was found that this machine in ten minutes would throw into the bottom of the hold an amount of air equal to the cubic capacity of the ship. This fan has been modified so that it will work horizontally, and is arranged on a frame so that it may be carried by two men. It weighs less than 100 pounds. It has been found expeditious and satisfactory.

SURGICAL TREATMENT OF CHRONIC ENTEROCOLONIC DIARRHEA*

SAMUEL C. GANT, M.D., LL.D.

Professor of Diseases of the Colon, Rectum and Anus, New York Post-Graduate Medical School and Hospital

NEW YORK

Chronic diarrhea can be temporarily relieved by rest, strict diet, antiseptic, astringent and antiperistaltic drugs and irrigation through the anus, but often recurs when the patient returns to business, eats normally and discontinues medication.

Chronic inflammation or ulceration of the intestine, however produced, is often difficult to cure except by surgical intervention. By operation and irrigation, I have permanently cured many diarrhea patients who had been previously treated for months or years by nonsurgical measures.

Up-to-date physicians and surgeons realize that removal or direct treatment of bowel lesions is essential to the successful handling of many types of chronic diarrhea; and I hold that the time has arrived for the profession to give "intestinal stasis" a rest and to devote its attention to the operative treatment of otherwise incurable chronic diarrhea.

The family physician must be taught to differentiate between different types of frequent movements that he may intelligently treat them, or refer the patient to the proper specialist according to their cause; for instance, pyorrhea cases to the dentist; ear, nose and throat infections to the laryngologist; psychic and neurogenic disturbances to the neurologist; ptomain poisoning, gastrogenic or enterogenic dyspepsias to the gastro-enterologist; functional and organic disease to the practitioner or internist, and inflammatory, ulcerative or obstructive lesions of the small intestine, colon or rectum to the coloproctologist.

INFLAMMATORY AND ULCERATIVE ENTEROCOLITIS (DIARRHEA)

Usually diseases causing diarrhea are characterized by inflammatory or obstructive intestinal lesions, formerly discussed under the captions of intestinal catarrh, tuberculosis, syphilis and dysentery; but increased knowledge concerning the etiology of diarrhea makes this classification untenable.

The term "dysentery" is often applied to intestinal ailments characterized by the syndrome of abdominal pain, rectal tenesmus and fluid evacuations containing blood and mucus; but the appellation is confusing, since it has no etiologic significance, and dysenteroid manifestations complicate all ulcerative intestinal affections.

Generally chronic diarrhea is incited by colitis. Would it not be wise to forget so-called "dysenteries" and to classify inflammatory and ulcerative intestinal lesions etiologically, an arrangement that would permit their discussion under the headings of catarrhal, tuberculous, syphilitic, gonorrheal, endamebic, bacillary, balantidic, flagellate, coccidic and helminthic colitis and enterocolitis?

Catarrhal Enterocolitis.—This affection is quite common, and may be associated with constipation or diarrhea, when the mucosa is inflamed, excoriated or ulcerated. Catarrhal colitis can be relieved usually

* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

without surgery when the patient abstains from violent exercise or work, adheres to a suitable diet, and takes medicine to lessen fermentative and putrefactive changes, to destroy intestinal bacteria, to minimize toxins, to allay peristalsis and to heal the bowel. In neglected cases, when the small and the large intestines are involved by numerous ulcers, colonic medicated irrigations and high oil and bismuth injections sometimes effect a cure; but when they fail, the abdomen should be opened and a catheter inserted into the ileum, cecum or appendix, and the bowel flushed daily with physiologic sodium chlorid or medicated solution until the lesions are healed and the diarrhea subsides.

Syphilitic Colitis.—Enteritis and colitis syphilitica are rare, but intestinal syphilis rapidly destroys the mucosa or induces stricture. The process makes the intestine brittle, and in two of my cases the bowel broke in two while being lifted into the wound. Good results are obtained by extirpation of the involved intestine; but when the patient declines radical operation, jejunosigmoidostomy or ileosigmoidostomy or rectostomy is indicated.

Urgent manifestations occasionally make ileostomy or colostomy imperative to prevent death from perforation or obstruction.

Two of my patients in whom an artificial anus was established for syphilitic diarrhea, one seventeen, and the other twenty-five years ago, are earning their living. Salvarsan or antisyphilitic drugs alone are valueless when the intestinal mucosa is extensively ulcerated or the bowel stenosed.

One hesitates about extirpating the rectum, when distorted by a syphilitic stricture and ulceration, since the operation is tedious and more hazardous than proctectomy for cancer, owing to adhesions and brittleness of the intestine.

Gonorrheal Enterocolitis.—I have never known gonococci to attack the small intestine, but I have treated many patients for gonorrheal colitis and proctitis. Usually I have been able to arrest the inflammatory process and control diarrhea, pain and rectal tenesmus by daily colonic irrigation, using a 4 per cent. solution of argyrol or a 2 per cent. solution of ichthyol.

Endamebic Enterocolitis.—Endamebiasis, common to tropical countries and temperate zones, has been encountered frequently in the United States, since we took possession of Porto Rico, and the Hawaiian and the Philippine Islands. The disease is caused by *Endameba histolytica*, an organism difficult to eliminate permanently because it embeds itself in the mucous membrane and submucosa and breaks out and reinfects the bowel following an apparent cure.

Endamebiasis is characterized by chronic diarrhea with mucus, pus and blood in the stools, and loose movements are caused by an inflamed or ulcerated mucosa, endamebic hepatic abscess or intestinal stricture.

The manifestations and degree of diarrhea induced by endamebiasis depend on the segments of bowel involved and the degree of ulceration, for in the beginning, denuded areas are few, small and superficial, but when there is mixed infection, the mucosa of the colon and the rectum is distorted by superficial or undermining ulcers having intercommunicating fistulas.

Abdominal pain, diarrhea, hemorrhage and tenesmus are mitigated by rest, dietary, oil enemas, colonic irri-

gation and antidiarrheal drugs, but aggravated endamebiasis is rarely cured without surgery, though temporary improvement has followed the administration of from 20 to 30 grains of ipecacuanha or $\frac{1}{4}$ grain of emetin administered as required.

The lesions may be confined to the colon and rectum, but in several of my cases the lower ileum was infected and patients complained of terrific colic, abdominal distention, explosive fluid and acrid, foul-smelling stools.

Drainage through the appendix or cecum is not effective when the ileum is involved, and my enterocecostomy, which provides a means of separately or simultaneously irrigating the large and small intestine, meets indications in these cases.

Appendicostomy and cecostomy are a godsend to patients afflicted with endamebic or other types of ulcerative colitis, because they are easy to perform, are not dangerous, and provide a vent for through and through medicated irrigation, which frees the intestine of pathogenic organisms, acrid discharge, toxins and irritating debris, relieves autointoxication, heals ulcers and arrests diarrhea.

Ichthyol, 2 per cent. and hydrogen peroxid, 5 per cent., the irrigants of choice, are superior to quinin.

When the patient is exhausted from starvation, diarrhea and hemorrhage, the colon is irrigated twice, but in less urgent cases daily flushing is sufficient. Recovery is prompt following direct bowel treatments, and usually the patient gains rapidly in weight.

Hepatic abscesses complicating endamebiasis are opened and drained.

Bacillary Enterocolitis.—This affection is common in China, Japan and the tropics, and is more virulent when caused by Shiga's than by Flexner-Harris', Hiss', Park's, Duval's or other dysenteric bacilli.

Bacillary colitis is encountered in France, Germany, Russia, the United States and other cold climates, but usually in epidemic form and most often in unhygienic penitentiaries, insane asylums and barracks.

The infection rapidly destroys the mucous membrane by ulceration or diphtheric sloughs unless arrested by the serum treatment.

Abdominal pain, frequent bloody evacuations and rectal tenesmus disappear in from three to four days in mild, and in from four to six days in aggravated cases following the injection of serum, except when it is not powerful or the patient has an idiosyncrasy against it. Sometimes several weekly injections are required to cure diarrhea.

Since serums are useless in endamebic colitis, this form must be differentiated from the bacillary type.

Serums are not effective in the presence of mixed infection, or when the intestine is distorted with ulcers, fistula or stricture.

I have cured many patients with appendicostomy, cecostomy or my enterocecostomy and frequent colonic flushing, using antiseptic, astringent or healing solutions. In extreme cases characterized by colonic distortion, excision, short-circuiting or establishment of an artificial anus served their purpose.

Since the surgical treatment of balantidic, flagellate and coccidic colitis is similar to that outlined for endamebic chronic diarrhea, they will not receive further consideration.

Helminthic Enterocolitis.—This affection is rare, but frequent evacuations may be caused by irritation from tape worms, strongyloid or lumbricoid worms, flukes,

whipworms, threadworms and hookworms, or obstruction may be induced by a collection of parasites. Usually helminthic colitis is relieved or cured by purgation, vermifuges and high chemical injections, but enterotomy and colotomy have been employed when evacuating worms, and twice I succeeded in eliminating the parasites with their ova by appendicostomy and cecostomy followed by bowel flushing.

Tuberculous Enterocolitis.—The intestinal segments (duodenum, jejunum and upper ileum) coming first in contact with the organisms are seldom involved, while the ileocolic angle is attacked in 85 per cent. of cases.

Tuberculous foci may originate in the mucosa and extend to deeper tunics or begin in the serosa.

There are several varieties, namely, superficial-ulcerative, deep-ulcerative, neoplastic, fibroplastic, glandular and peritoneal, the first three being the most common.

Surgical intervention is indicated in bowel tuberculosis when other measures fail, infection is virulent, hemorrhages frequent, diarrhea is exhausting, the patient's strength is being rapidly depleted, and when there is complicating perforation, peritonitis, stricture, abscess or fistula.

Operative interference is contraindicated when the sufferer is dying from phthisis or tuberculous lesions elsewhere.

When through and through irrigation by way of the appendix or cecum fails to cure ulcerative colitis, it is because irrigations are not copious, not properly medicated or they are always carried out with the patient in the same posture, which prevents the fluid from coming in contact with all sides of the diseased intestine.

Local gas or gas-oxygen is preferred to ether anesthesia, because the latter aggravates pulmonary foci.

Successful operations accomplish removal of the disease, diversion of the fecal current, or provide for through and through colonic irrigation.

Depending on their location, tuberculous foci are extirpated by enterectomy, cecectomy, sigmoidectomy or proctectomy. Short-circuiting is accomplished by entero-anastomosis or unilateral or bilateral exclusion; and through and through bowel flushing is achieved by ileostomy, appendicostomy, cecostomy or my entero-cecostomy.

Resection is the procedure of choice, and tuberculous subjects stand the operation well, except when adhesions are extensive or the bowel is severely traumatized, and the removal of a few inches more of the intestine does not make the undertaking more hazardous.

Occasionally preliminary exclusion, appendicostomy or cecostomy are advisable to prepare the patient properly for radical operation.

I have short-circuited the small or large intestine ten times for tuberculosis, and putting the bowel at rest markedly benefited eight patients.

Usually I perform appendicostomy or cecostomy in connection with exclusion, in order that by through and through flushing I may prevent the backing up of feces and treat lesions directly.

Short-circuiting is not always satisfactory, because it is more often palliative than curative; convalescence is longer than following extirpation; bacilli-laden discharge continues to pass over healthy intestine; the disease sometimes attacks the anastomotic opening,

necessitating a second operation, and no attempt is made to extirpate tuberculous glands.

Appendicostomy, cecostomy or Gant's enterocecostomy is indicated when the patient is being weakened by diarrhea, bacterial or chemical toxemia, hemorrhages, gas accumulation, colic, tenesmus or burning pains incident to acrid discharges, and when enteroclysis by way of the anus fails.

Through and through irrigation palliates or cures superficial and deep ulcerative types, but rarely benefits neoplastic, fibroplastic, glandular and peritoneal enterocolonic tuberculous foci which require extirpation.

OBSTRUCTIVE (MECHANICAL) ENTEROCOLONIC DIARRHEA

This represents a type of diarrhea in which evacuations are made frequent or liquid by lesions that block the bowel. Patients of this class complain of constipation, then obstipation, alternating with loose movements, and finally diarrhea when obstruction is marked.

Obstructive diarrhea is usually mistaken and treated for diarrhea caused by gastrogenic, enterogenic and neurogenic disturbances, because physicians fail to examine properly the abdomen, colon and rectum. It seldom originates in the small intestine, but lesions responsible for it are common to the colon, sigmoid flexure and rectum.

Diarrhea is attributable to valvelike fecal masses that irritate or obstruct the intestine, and to stercoral ulcers that augment peristalsis.

The following lesions may cause loose evacuations or alternating diarrhea and constipation: congenital deformities, extra-intestinal pressure, stricture, tumors, foreign bodies, intestinal calculi, fecal impaction, adhesions, angulation, diverticula, pericolic membrane, sacculations, diseased mesentery, volvulus, kinks, hernia, invagination, procidentia recti, enteroptosis, colonic dilatation, enterospasm, parasites, hypertrophy of O'Beirne's sphincter, the rectal valves, or levator ani and sphincter muscles, coccygeal deviation and anorectal affections.

Obstructive diarrhea has a complex etiology and different operations are required to relieve it, many of which are effective and bring good results.

Congenital anorectal deformities are common, but colonic malformations are rare. In partial congenital colonic obstruction, nonoperative measures work temporarily; but when it is complete or almost complete the deformity must be corrected or excised.

Anorectal occlusion caused by narrowing of the anal canal, a membranous partition or fibrous band, is corrected by a free incision and subsequent rectal divulsion.

When the anus is imperforate, the rectum is dissected free and sutured in the anal region, and complicating fistula is eliminated by closing the opening following repair of the rectum.

Extra-abdominal pressure causing diarrhea is removed by destroying adhesions, anchoring the uterus, excising the prostate or extirpating the tumor compressing the bowel.

Strictures involving the small intestine, colon or sigmoid flexure are excised unless inoperable, when obstruction is relieved by exclusion or colostomy. Rectal stenoses are difficult to remove, and, barring deplorable instances, obstruction is overcome by posterior proctotomy and dilatation, or colostomy and putting the bowel at rest.

Benign and malignant tumors cause persistent diarrhea, which continues until they are excised, short-circuited or an artificial anus is made. Colonic resection is indicated, since it effects a cure, and lateral anastomosis with a large opening is preferable to end to end anastomosis, which frequently leads to obstruction and recurrence of diarrhea.

Rectal cancers, according to their location, are extirpated by perineal, vaginal, sacral or abdominoperineal proctectomy, except when inoperable, and then colostomy is performed.

Polypi of the large intestine are treated like cancers, but rectal polyps are ligated and excised or removed by attaching my valve clamp to their pedicles.

Occasionally rectocolonic papillomas are cured by frequent colonic irrigation.

Foreign bodies inducing diarrhea are evacuated with high oil enemas, but when encysted or caught in a bowel kink, enterotomy or colotomy is required. Free bodies in the rectum are drawn through the proctoscope with forceps, but when imbedded, or if they have sharp angles, divulsion or division of the sphincter facilitates their extraction.

Colonic fecal impaction consequent on constipation, enterospasm or obstruction induces coprostatic diarrhea, until offending scybala are expelled by castor oil, massage and frequent high oil or hydrogen peroxid enemas, which disintegrate the masses so they can be washed out.

Fecal impactions in the sigmoid and rectum are broken up with a gouge through the proctoscope, or with the finger when low, after which they are evacuated by irrigation.

Adhesions causing obstructive diarrhea vary, and routine surgical procedures are impracticable. When threadlike or due to exudates, they are destroyed by massage, with the finger, or wiping glued intestinal loops apart; but organized fibrous bands and rigid sheathlike adhesions are exposed by celiotomy, and severed or dissected from the bowel. Their reformation is lessened by covering raw areas, floating the bowel in sterile oil or saline solution, encouraging post-operative peristalsis, and frequently changing the patient's posture.

Resection, exclusion or an artificial anus is indicated when the intestine is completely incapacitated by undestroyable adhesions.

Pericolonic or Jackson's membranes compressing the bowel are eliminated by ligating and severing their attachments and peeling them from the cecum or colon; but, in deplorable instances, the involved intestine is excised or excluded, or a vent is made above the block.

Angulations and twists are treated as above if caused by adhesions, but when due to ptosis, the intestine is straightened, replaced and anchored to the anterior or posterior abdominal wall by colopexy, unless its functioning power is permanently destroyed, in which case extirpation, short-circuiting or an artificial anus is imperative.

Chronic invagination of the sigmoid flexure into the rectum complicated by coprostatic diarrhea is quickly and permanently relieved by sigmoidopexy alone, or in conjunction with colopexy.

Colonic dilatation is quickly corrected by coloplication reinforced by colopexy; but when caused by constricting adhesions they are eliminated, or obstruction is relieved, by colectomy, ileosigmoidostomy or a cecal anus.

Diverticula occasionally induce frequent evacuations containing foul-smelling pus. Small pouches are ligated and removed, buried by inversion and suture or extirpated by elliptical incisions and closure of the wound; but large and inflamed diverticula complicated by peridiverticulitis or abscess are excised. Short-circuiting and colostomy are contraindicated unless there is perforation, or an abscess or fistula.

Sometimes a cure is effected by dissecting out the fistulous sinus opening, cleansing and draining the diverticular cavity, reinforced by suturing the bowel opening.

Splanchnoptosis, enteroptosis and coloptosis often cause alternating diarrhea and constipation that continue until ptotic organs are reanchored by gastropexy, colopexy, sigmoidopexy and nephropexy alone or combined.

Enterospasm is controlled by hot water drinking, high warm enemas, hot abdominal fomentations, and belladonna continued until intestinal contractions, colic, constipation and diarrhea are relieved. Where enterospasm is prolonged and causes partial or complete obstruction, resection or an artificial anus is sometimes indicated.

Hypertrophy of O'Beirne's sphincter at the rectosigmoidal juncture is occasionally responsible for obstructive diarrhea, and when not relieved by hot fomentations and belladonna, topical application to ulcers or stretching the narrowed intestine with an inflatable rubber bag, extirpation or exclusion may be necessary.

Thickened rectal valves responsible for coprostatic diarrhea are eliminated by my valvotomy.

Sphincteric hypertrophy producing constipation and diarrhea, formerly treated by divulsion under ether, is immediately overcome by severing the muscle, following eucain infiltration.

Fissure-in-ano inducing sphincter algia and fragmentary evacuations is quickly cured by splitting the anal canal under eucain anesthesia.

Hemorrhoids responsible for diarrhea are infiltrated, ligated and excised.

Procidentia recti is corrected by linear cauterization, removal of rectal flaps, or, in aggravated cases, by reinforcing these procedures by sigmoidopexy.

Coccygeal Abnormalities.—When the bone obstructs or perforates the rectum, coprostatic or irritating diarrhea ensues and continues until the coccygeal tip is excised.

In cases of mechanical diarrhea, however, produced when the bowel is atonic, dilated or partially paralyzed, or the patient suffers from autointoxication, removal of the obstruction does not cure unless reinforced by tonics, stimulation of the emunctories and colonoclysis to eliminate the toxins.

Finally, in deplorable cases of obstructive diarrhea with toxemia, I perform appendicostomy or cecostomy, when getting rid of the block, that the bowel may be cleansed of toxins and debris by through and through irrigations.

CONCLUSION

I would emphasize the frequency with which surgery is indicated in treating chronic enterocolonic diarrhea, and the rapid curability of the condition by operation reinforced by the therapeutic measures outlined.

471 Park Avenue.

Military Medicine and Surgery

THE EAR AND AVIATION

ISAAC H. JONES, A.M., M.D.

Major, M. R. C., U. S. Army

PHILADELPHIA

In aviation we have a practical example of the importance of the ear in maintaining equilibrium. It is now recognized that equilibrium is made possible by three senses—the balance-sense of the internal ear, sight, and a group of general impressions which for convenience is called the “muscle-sense.” It is not necessary for an individual to have perfect internal ears, perfect sight and perfect muscle-sense in order to have good equilibrium. If the internal ears are impaired, the individual can maintain his equilibrium by means of sight and the muscle-sense; if his sight is impaired, the ear-sense and the muscle-sense enable him to maintain his balance; and if his muscle-sense is impaired, as in tabes, his ear-sense and sight are sufficient to enable him to stand and walk with confidence and accuracy. For this reason we must remember that, through various toxemias, such as mumps, syphilis and the infectious fevers, a person may have an impairment and even a complete destruction of his ear balance-sense and yet not be in any way conscious of this defect, simply because his sight and muscle-sense make it possible for him to maintain his equilibrium.

These facts, however, take for granted that the individual is on “terra firma.” When the human being becomes a bird, as it were, he suddenly finds himself in an entirely new environment. Without functioning internal ears, it is impossible for a person to be a good bird-man. When flying through the air, on what does the aviator rely in order to maintain his equilibrium and that of the aeroplane? Can he rely on sight? Hardly; for when he is sailing through the clouds or darkness, his eyes cannot give him the slightest information about his position in space—not even whether he is right side up or upside down. As regards the muscle-sense, it is undoubtedly true that it plays a certain part; but when the aviator is seated on an unstable and rapidly moving machine, it is hardly conceivable that the weight of his body could determine and maintain his position in space merely by the sensing of gravity. In order, therefore, to preserve that wonderful accuracy necessary in controlling such a delicate mechanism as the flying machine, he relies preeminently on his *ear* balance-sense. It is easily conceivable that some of the unexplained accidents in aviating may be due to a concussion of the internal ear produced either by the deafening roar of the engine or by the decrease of the air-pressure when at great heights. Also in a rapid ascent from a denser to a rarer air there occurs an oxygen insufficiency which has a direct effect on the ear-mechanism through the blood stream. It is also highly probable that many an aviator has gone to his death because, all unknown to him, he did not possess a normal ear-mechanism; in the presence of a combination of difficulties in which all normal faculties would be requisite, because of an imperfect ear-mechanism he was unable to maintain his balance.

To realize the importance of the ear in the matter of flying, it is only necessary to consider a bird flying in a cloud. His muscle-sense naturally means practically nothing to him; his sight is of no help. He relies

almost exclusively, therefore, on normally functioning semicircular canals, which, as we know, are wonderfully developed in the bird.

Summarizing, therefore, even when an individual is standing or walking on the earth, his ears constitute his sense-organs of balance; as long as he remains on the earth he has in addition the contributory help of information received from his muscle-sense and his sight. When he rises above the earth and flies in the dark it is obvious that these contributory factors are practically eliminated and that he must rely almost exclusively on the ear balance-sense.

Since normal internal ears are such an asset—in fact a prime requisite—for the aviator, common prudence would suggest a most careful examination of the degree of function of one's internal ears before taking up flying as an occupation. The ear-tests furnish exact and mathematical data concerning the function not only of the internal ear, but also of the entire vestibular apparatus; this includes the ears themselves, the eighth nerve, the brain-stem, the cerebellum and the entire balance-mechanism.

When it was announced that a state of war existed between the United States and Germany, it at once became apparent that a tremendous number of aviators must be secured for the military service within the shortest possible time. The medical problem consisted of selecting thousands of physically equipped candidates for aviation and placing them in training for war service immediately. The Medical Department found it necessary to decide on new methods of physical examination and to adopt new standards of physical qualifications for this branch of the service. This had to be done not merely for one place or for one examining group; it was necessary to make the tests practicable for cities in all parts of the United States, without, at the same time, in any way lowering the requisite rigid standards or lessening the completeness of the examination. How could this be done? In a word, such an ideal could be attained only by: (1) the standardization of the tests, and (2) the standardization of the *examiners*.

STANDARDIZATION OF TESTS

The methods presented in this paper were adopted in May, 1917, as the standard for the United States Army. The following briefly summarizes the fundamental principles underlying the examination for aviators. The aviator must be in a sense the “super-man.” He must have $\frac{20}{20}$ vision without glasses. He must have $\frac{40}{40}$ hearing. Such requirements are higher than for most branches of military service. A candidate for every branch of service must conform to a certain physical standard; he must be a normal man, such as would satisfy the average life insurance company, with the additional requirements of a certain relative height, weight and chest measurement, and a definite visual and auditory acuity. Like any other candidate for service, the aviator must conform to all these requirements and in addition must possess visual and auditory acuity to a high degree. There is, however, an attribute not required by any other branch of the military service that is indispensable to the perfect aviator—a good *balance-mechanism*. Therefore the peculiar test, applied to the aviator alone, is the special examination of the equilibratory portion of the internal ear.

So presented in the official blank, the equilibrium and the vestibular tests are made thus:

The nystagmus, past-pointing and falling after turning are tested. The turning-chair must have a head-rest which will hold the head 30 degrees forward, a foot-rest and a stop-pedal. (The American Modification of the Bárány chair is officially required. This made possible the establishment of an absolute standard. While the tests could be made by using other types of turning-chairs, an exact quantitative estimation of the responses can be definitely established only by the use of a standardized chair.)

(a) *Nystagmus*.—First of all, a spontaneous nystagmus must be looked for. It is noted whether there is any twitching of the eyes when gazing straight ahead, or looking either to the extreme right, the extreme left, up or down. With the head forward 30 degrees, the candidate is turned to the right, eyes closed, ten turns in twenty seconds. The instant the chair is stopped, the stop-watch is clicked; the candidate opens his eyes and looks straight ahead at some distant point. There should occur a horizontal nystagmus to the left of twenty-six seconds' duration. The candidate then closes his eyes and is turned to the left; there should occur a horizontal nystagmus to the right, of twenty-six seconds' duration. A variation of ten seconds is allowable (either as low as sixteen seconds or as high as thirty-six seconds).

(b) *Pointing*.—1. The candidate closes his eyes, sitting in a chair facing the examiner, touches the examiner's finger held in front of him, raises his arm to the perpendicular position, lowers the arm, and attempts to find the examiner's finger. This is done first with the right and then with the left arm. The normal person is always able to find the finger.

2. The pointing test is repeated after turning to the right, ten turns in ten seconds. During the last turn, the stop-pedal is released, and as the chair comes into position, it becomes locked. The right arm is tested, then the left, then the right, then the left, until candidate ceases to past-point. The absolutely normal will past-point to the right three times with each arm, if needless delay is avoided. (However, one past-pointing to the right of each arm qualifies, if the nystagmus and falling are normal.)

3. The past-pointing is repeated after turning to the left. (Similarly one past-pointing of each arm to the left qualifies, if the nystagmus and falling are normal.)

(c) *Falling*.—The candidate's head is inclined 90 degrees forward. He is turned to the right, five turns in ten seconds. On stopping, the candidate quietly sits up, eyes closed, and should fall to the right. This tests the vertical semicircular canals. He is turned to the left, the head forward 90 degrees; on stopping, he again sits up, and should fall to the left.

Obviously these tests as presented in this blank are not intended to make a diagnosis of a pathologic lesion. The object is merely to determine *whether or not the ear-mechanism is normal*. If, in these tests, the candidate shows normal responses in nystagmus, past-pointing and falling, he is fit for the Aviation Service; if he does not, he is unfit for that service. These simple turning-tests eliminate all unnecessary time-consuming diagnostic procedures. The entire series of tests as outlined in the blank requires only three and three-fourths minutes, and yet in this short time we are able to determine the integrity of the internal ears, the eighth nerves, and the pathways through the medulla oblongata, the pons, the six cerebellar peduncles, the cerebellum itself and the cerebral crura to the cerebral cortex.

Incidentally, these tests are in no sense severe, and are in fact seldom regarded even as unpleasant. Occasionally nausea occurs after a few turnings; it is then merely necessary to stop the examination for the time being and to complete the remainder of the tests after an interval of a half hour. There is no need whatever to make these tests in any way distressing to the candidate.

These turning-tests quickly separate the obviously fit from the unfit. The majority of the candidates show normal responses; no further testing is required, and

they therefore qualify and are accepted. Some candidates show such markedly subnormal responses that they are immediately disqualified and rejected. A limited number give what might be termed "border-line" responses; the question then arises, Has this particular applicant *sufficient* balance-sense to become an aviator? It is here that the caloric test is useful. The turning has tested both the right and the left ears simultaneously. The caloric method enables us to test each ear separately. Water at 68 F. is allowed to run into the external auditory canal from a height of about 3 feet through a stop-nozzle, with the head tilted 30 degrees forward, until the eyes are seen to jerk or the individual becomes dizzy. The length of time from the beginning of the douching until the jerking of the eyes becomes apparent, or until the applicant says he is dizzy, is accurately measured by a stop-watch. The type of nystagmus is then noted. It should be rotary, and the direction of the jerk should be to the side opposite to the ear douched. The length of time shown by the stop-watch in the normal is forty seconds. The eyes are then closed and the past-pointing is taken. The head is then immediately inclined backward 60 degrees from the perpendicular (or 90 degrees from the original position). There should then appear a *horizontal* nystagmus to the side opposite to the ear douched. The eyes are then closed, and the past-pointing is taken with the head in this position. The left ear is then douched, and the same procedure carried out. If the caloric test applied in one of these "border-line" cases shows only a slight impairment of the responses from each ear, the candidate is qualified. A slight impairment would be indicated if, instead of the normal forty seconds of douching, there was required not more than ninety seconds of douching. If one ear shows normal responses, whereas the other ear shows responses only after *more* than ninety seconds of douching, the candidate is disqualified. Care should be taken to be certain that the cold water is reaching the drum-head during the caloric test, as wax or other obstruction in the external canal would interfere with the responses in a perfectly normal individual.

The examination of a candidate for the aviation service is a different matter from the examination of a patient. We are dealing with an alert mind, anxious to make the best showing possible. Many candidates feel that "jumping eyes" and evidences of vertigo are signs of weakness and would be counted against them. Because of this anxiety, many candidates attempt to shorten the duration of the nystagmus by fixing the eyes on some near object. It is perfectly possible by the fixing of the eyes to shorten the duration of the nystagmus. It is a common experience in this work to note that when many observers are standing about the candidate and in his line of vision, the nystagmus is usually of short duration. If these observers are asked to stand back out of the line of vision, the same candidate almost invariably shows a longer duration of nystagmus. Further to obviate fixation of the eyes, it is always necessary to place the chair near a large window so that the candidate has an unobstructed view of an object placed at "infinity"—over 100 feet. Furthermore, instead of obeying the natural impulse to past-point, candidates frequently make a mental calculation as to the vertigo induced, and voluntarily attempt *not* to past-point. This is also true of falling. In such instances, the examiner, bearing in mind the type of individual with whom he is dealing, urges the applicant to "act perfectly naturally," and is then

usually able to elicit a true response to the test. Supposing, however, that the candidate still fails to past-point, although he has shown a normal nystagmus and falling, we are able to decide the matter finally in the following way: First the quantitative estimation of vertigo is taken. The after-turning vertigo is measured as follows. The candidate is turned to the right, ~~ten~~ turns in ten seconds with the eyes closed. As he is being turned, he is asked to describe his sensations and to keep on telling in which direction he feels he is being turned; thus he will say, "To the right, to the right, to the right," etc., until the chair is stopped; then he will feel himself turning in the opposite direction and will say, "Now I am going to the left, to the left, to the left," etc., when as a matter of fact he is sitting perfectly still in the chair. The duration of this sensation of vertigo from the time that the chair is stopped until he ceases to feel that he is going to the left is taken in seconds with the stop-watch. The normal should show an after-turning vertigo of twenty-six seconds. The test is then repeated by turning to the left, and the candidate should exhibit a vertigo in the opposite direction of twenty-six seconds. Should the candidate show over sixteen seconds of vertigo in both directions, having previously shown a normal nystagmus and falling, the examiner then realizes that the absence of past-pointing was probably due to a calculated correction rather than to any pathologic condition. The question is definitely determined by douching the ears. Although a candidate can estimate the significance of the sensation of vertigo after turning, he has no control over this sensation after douching; he is unable to calculate the meaning of the vertigo produced by the caloric test. Therefore, if he fails to past-point after the douching-tests, he is definitely disqualified.

STANDARDIZATION OF EXAMINERS

So much for the standardization of the tests themselves. Equally important was the problem of the standardization of the examiners. For this purpose a medical officer was sent under special orders to each of thirty cities throughout the United States, and in each one of these cities there was established a medical unit for the examination of candidates for the Aviation Service. The requirements of the tests were fully explained to each medical unit, so that not only the same equipment is used, but also exactly the same technic. This rendered it impossible for any candidate to say, "I wish I had been examined in a certain city where the tests are easy, rather than in a certain other city where the tests are exacting." Those otologists were selected who were most expert in the Bárány-tests, and given intensive training by the medical officer sent for the purpose of establishing a uniform technic. Thus, in a few months the testing was put on an absolutely uniform basis in all examining centers.

In order to save time, already existing institutions, such as large hospitals or state universities with their equipments, were utilized as these examining centers. Volunteer staffs of civilian consultants were locally organized, and the work of the examining centers systematized to a point of highest efficiency, with the result that within a few days of the arrival of the medical officer at the examining center the work was in full swing. By this method of *decentralization*, the examination of thousands of applicants in a minimum space of time was made possible. First of all it was necessary to make sure that those in charge of each examining center were fully equipped and capable to

make these tests; this once assured, full authority and responsibility were vested in the medical officer in charge of each center. Thirty medical aviation centers, each examining from ten to forty candidates a day, provided immediately the thousands of men required.

It is obvious to the candidate himself, that if he is deficient in his ear balance-sense he is not only a danger to the service, but he is also unnecessarily imperiling his own life when he attempts to fly. Certain members of the medical profession and certain veteran fliers, because of the newness of these methods, expressed skepticism in regard to their value. One physician, a member of an examining unit, was surprised to find that when he himself was examined, he showed an almost complete lack of ear balance-sense. The turning and caloric tests failed to produce nystagmus, vertigo, past-pointing and falling. This impairment of the ear-mechanism was directly traceable to a severe attack of mumps in childhood, during which he had suffered from both of the usual complications of mumps—an orchitis and an involvement of the internal ears. His skepticism was changed to enthusiastic conviction when he thus was made to realize that without the Bárány tests he would have had no conception of this physical disability, the only suggestion of which, up to that time, had been his knowledge that he did not become seasick.

All experienced aviators that have been examined have, without exception, shown normal responses in the turning-chair. Those veteran aviators whose attention has been called to these methods of testing have expressed their conviction of the practicability of the safeguards provided by these tests in determining whether or not a man has what they speak of as "air-sense." One seasoned American flier of fifteen years' experience stated that his doubt changed to conviction after he was examined in the turning-chair; he volunteered a statement that from his intimate knowledge of the circumstances attending the death of at least three aviators, who were killed while flying, their failure to negotiate difficulties of no unusual degree which resulted in their death might now be understood as an expression of their lack of this sense. He further added that in his judgment, if these tests had been available in the early days of flying, many a life might have been spared.

The value of the past-pointing test is well illustrated by one candidate who proved to have a post-traumatic cerebellar lesion, which was first detected by the isolated absence of past-pointing of the left arm to the right. Neurologic examination then demonstrated classical signs of lesion of the left cerebellar hemisphere. Here was a man with distinctly impaired cerebellar function attempting to enter a service in which the utmost demands are made on the cerebellum.

One ardent applicant was disqualified because of a markedly impaired internal ear, in both the cochlear and vestibular portions. It has since been learned that he went to another country, where he was accepted in the aviation service as a flier. Obviously the requirement in that country is not so high as in the United States. At the present time in the United States a high standard is required because this country is in a position to pick and choose. The vast numbers of splendid applicants makes this possible. For this reason these hand-picked men will constitute not only the largest but also the most capable and finest aviation service in the world.

Medical Arts Building, Sixteenth and Walnut Streets.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address "Medic, Chicago"

Subscription price Five dollars per annum in advance

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SATURDAY, NOVEMBER 10, 1917

THE METHOD OF EXPERIMENT IN MEDICINE

"In a country rich in gold, observant wayfarers may find nuggets on their path; but only systematic mining can provide the currency of nations. In the search for natural knowledge, the experimentalists are the miners." There is a peculiar appropriateness in these words of Gowland Hopkins of Cambridge University at a time when men's minds are diverted by the great emergencies of war and are upset by the distorted values of every-day life. Nowadays it would require a foolhardy person to maintain that "there is nothing new under the sun," or to prophesy what cannot be done. The progressive evolution of science is expressed in the arts exemplified daily before us. We marvel at the newest phase of the conquest of the upper air or the ocean depths, at the irresistible force of the newest explosive or the perfection of the latest motor, all too often oblivious of the great strides that experimentation in medicine has brought about.

It is always refreshing and not infrequently stimulating to indulge in retrospect. What currency have the experimentalists in medicine provided in the passing years? The history of bacteriology and the entire structure of the modern conception of infectious diseases is a triumph of the experimental method. The real causes of diseases known from earliest history have been elucidated so that the modern therapist can build on the basis of this newer knowledge, and the sanitarian can prepare himself effectively for the struggle against invasion by micro-organisms. More recently even the diseases caused by pathogenic protozoa have yielded their story to the experimentalist.

Less startling, perhaps, but equally unique in its disclosures has been the discovery of the functions of internal secretion. The story of the pancreas, the thyroid structures, the suprarenals, the pituitary, the corpus luteum and the sex glands, each in turn presents a new point of view of regulation that takes us out of the domain of pure speculation into the field of biochemistry. It is only a few years at most since we were totally ignorant of these things. How imperfect and hampered medical thought would

appear today without them! Added to this is the inroad already made in the experimental study of natural immunity to which clinical medicine already owes a great debt.

It is well for those strenuously engaged in the daily routine of the physician's life to recall some of these illustrations. The art of the physician, says Hopkins,¹ remains as before, a noble and difficult one, which must always call for special personal endowments; but experiment has widened the knowledge on which it is based, and experiment alone could have secured the progress which the last half century has witnessed.

We cannot expect the public to wax enthusiastic over something that those most concerned fail to appreciate; nor can we hope for their much needed support in any feature of medical progress that the physician himself does not heartily endorse. Experimentation in medicine belongs to a profession rather than to a trade, and therefore is not purely self-supporting or conducted solely for gain. But, as Hopkins has formulated the matter, it is not financial assistance alone that the nation should provide for the investigator. This is not even the most important stimulus that the nation can provide for him. Recognition and proper standing in the body politic are the investigator's due, and these, at least, should be forthcoming.

DANGERS IN THE MANUFACTURE OF ARSENICAL INSECTICIDES

Any one who makes even a casual inspection of a considerable variety of industries in this country must become convinced that despite the growing attention paid to the dangers of occupational conditions, there is still enormous room for improvement and reform. Too few of the industries in which workmen are menaced by harmful dusts, fumes or gases take cognizance of the menace to the extent of providing adequate safeguards, especially if they are not enforced by direct provision of the law. Industrial hygiene is still scarcely beyond its beginnings in many factories of this country.

An illustration of an industry that might have been expected to make better provision against dangers that must long have appeared obvious to even the uninitiated is furnished by recent investigations under the direction of the New York State Department of Labor² regarding dangers in the manufacture of Paris green and Scheele's green. These arsenical compounds, the poisonous qualities of which have been known many years, are at present manufactured by ten firms in the United States, of which firms seven are located in the state of New York. Fully 1,000 tons are produced annually, the material now being used chiefly as an

1. Hopkins, F. G.: *Medicine and Experimental Science*, in *Science and the Nation*, edited by A. C. Seward, Cambridge, 1917.

2. *Dangers in Manufacture of Paris Green and Scheele's Green*, Special Bull. 83, State of New York Department of Labor, July, 1917.

insecticide. It appears that considerable illness exists among many of the workers engaged in the production of Paris green, an outcome due in a measure to a lack of knowledge among those engaged in its preparation, and a disregard of the extremely poisonous qualities that this salt possesses. The inspectors of the New York Industrial Commission's Division of Industrial Hygiene report that, as the workers are unacquainted with the dangerous and poisonous properties of the arsenical insecticides, many cases of arsenical poisoning are not discovered, because as soon as a slight irritation of the skin develops or nausea occurs, the men leave the industry, and the labor engaged therein is constantly shifting.

The chief source of danger lies in the poisonous dust produced—not the irritating dust of some industrial operations, which has only a mechanical action and acts directly on the parts most exposed, nor infected dust, which carries pathogenic germs; but poisonous dusts, which are gradually absorbed and produce an actual intoxication. The New York investigators report, for example, the chemical analysis made on the air in one of the packing rooms in which the filling of boxes from barrels was performed. Three hundred and five mg. of Paris green were found per cubic meter of air at 60 F. This material occurring in the air was generated in the process of hand filling, blown off the walls and ceiling, and stirred up from the floor in the act of walking. A proper method of weighing and filling under enclosed hoods, clean walls and floors would have eliminated this large amount of dust. Samples of underclothing were analyzed and found to contain 1.1 mg. of Paris green in a piece measuring 6 square inches.

As the result of findings such as these, orders have been issued in plants wherever the labor laws are applicable against all conditions found to be detrimental to health. These orders relate to the prohibition of eating within the factory; the cleaning of floors, walls and ceilings; the provision of running hot water, soap and individual towels; the installation of exhaust systems to dispose of the dust created in the process of manufacture; the furnishing of a suitable place in which to eat meals, and the adoption of suitable means to remove dust from the floors. The inspection of the workers in the New York State factories shows the importance of periodic medical examinations for men engaged in the production of poisonous products. It is evidently useless, however, to provide up-to-date facilities for the comfort of workmen at mealtime if cleanliness throughout the plants is so neglected that the accumulated toxic materials are tracked into the room on the shoes of workmen. What is needed is better education of the workers respecting the poisonous properties of the materials with which they are concerned, and a greater sense of responsibility on the part of the manufacturers and employers for the health of their employees.

PROBLEMS IN THE CAMPAIGN AGAINST THE HOOKWORM

The important investigations on the incidence and control of hookworm disease that are being made in many parts of the world by the International Health Board of the Rockefeller Foundation have brought to light many striking facts. To the casual student of the subject, it might appear that the sole essentials in the management of a malady having a definitely ascertained etiology would be to eradicate the causative organism or eliminate the channels of infection, and to administer suitable curative agents to those already afflicted. The importance of soil pollution in the spread of hookworm disease is now clearly recognized in the campaigns being conducted against it; but in the tropical and subtropical belt, which is the native habitat of the hookworm in different parts of the world, unanticipated local and geographic conditions have placed some surprising obstacles in the path of progress in certain regions.

The hookworm surveys made in 1916 in Barbados and in British Honduras brought to light many striking facts, recorded in the latest report of the International Health Board. Thus they showed the important relation between geological structure and hookworm infection. The greater part of the island of Barbados is composed of porous coral limestone, which allows rapid seepage and percolation. The ground dries quickly, a condition unfavorable to the growth of young hookworms; and even though the thin superlying stratum of soil is polluted by fecal matter, this may easily seep away during rain. The smaller portion of Barbados, known as the "Scotland district," has an underlying structure of impervious sandstone and clay. This picturesque highland district shows heavy infection; it is estimated that in it 25,000 persons suffer from hookworm disease within an area of less than 25 square miles. In British Honduras, when other contributing factors have been eliminated, the rate of infection is seen steadily to increase as one travels south, following a change in geological formation from porous limestone to impervious clay.

In the East there has arisen a difficulty in relation to soil pollution that is of greater importance than the spread of hookworm disease. In western countries the problem of human sewage is primarily one of hygiene. In the East, as Heiser has pointed out, it is also a question of direct economic importance, owing to the use of excrement as fertilizer. In China, human excrement is a source of revenue to the state. The director-general of the International Health Board has thus presented the situation: Human excrement is the only fertilizer available in sufficient quantities to supply agricultural needs. China has no sewerage system. Each night in urban centers the excrement is collected by coolies, who carry it in wooden buckets to

temporary storage depots outside the city walls. To these depots, farmers and gardeners go in tank boats to purchase supplies, which they convey up the rivers to their plantations of rice and mulberry. There they dig the excrement into the fields, or moisten it with water and sprinkle it over growing vegetation. A relatively light infection in Chinese cities may thus become a serious factor in spreading the disease to agricultural districts.

Here, then, agriculture and hygiene seem to clash. Secretary Greene of the Rockefeller Foundation states that the sudden stopping of soil pollution in China would mean the impoverishment of the soil unless some substitute were placed within the reach of the people. No such substitute is now available. If the problem could be economically solved in such a way as to utilize excrement without danger to the health of the people, the result would not only be of vast economic significance to the East, but might also prove of equal significance to countries in which the same material is entirely wasted. The time may come when, even in this enlightened country, the nitrogenous wastes of millions of persons will find some better utilization than the crude methods of sewage disposal now afford.

INCREASED RANK AND MORE AUTHORITY FOR MEDICAL OFFICERS

As most of our readers are aware, an amendment was introduced into Congress at the recent session which, if it had been adopted, would have given the medical officers in the Army the same rank that prevails in the Medical Corps of the Navy. Specifically the amendment provided that there should be twenty-five one-hundredths of 1 per cent. of major-generals, the same proportion of brigadier-generals, 4 per cent. of colonels, 8 per cent. of lieutenant-colonels, 23.5 per cent. of majors, 32 per cent. of captains, and 32 per cent. of lieutenants, *this to apply to both the regular and the reserve corps men*. Thus, if there are 10,000 medical officers in active service, there might be 25 major-generals, 25 brigadier-generals, 400 colonels, 800 lieutenant-colonels, 2,350 majors, 3,200 captains and 3,200 first lieutenants. This amendment lapsed without action by the ending of the session. The substance of the amendment, however, will be incorporated in a bill which will be introduced in both the Senate and the House at the coming session of Congress.

Medical officers must be equal in rank and authority with line officers if they are adequately to carry out the duties for which they will be held responsible. This fact has been emphasized by the experience of our allies in the present war, as well as by our own experience in the past. Our allies admit that in the beginning the medical officer did not have the rank, and consequently the authority, he should have had and that, for this reason, there have been grievous con-

sequences. Among these was the disastrous experience of the British Army in the Mesopotamian campaign as a result of the failure of the medical service. The report of this tragedy, made by a board of nonmedical men, showed that lack of authority of the medical officers was an important factor. The medical officers were practically ignored. They were not advised as to the character of the expedition that was being undertaken, and as a consequence, they were unprepared for what happened. When later a medical officer made urgent representations in regard to the actual conditions obtaining, which in his opinion needed prompt action, he was threatened with arrest and removal from his post. When the actual results came the blame was thrown on the medical department, of which this medical officer was a member. The medical officers were censured because they had not protested more vigorously. We had a similar experience in 1898 when our medical officers were criticized for insanitary conditions at Chickamauga and elsewhere, although there was plenty of evidence to show that they had protested against these conditions to line officers. The whole sad story is told in detail in the Dodge report. There, also, will be found testimony that line officers treated with contempt the recommendations and protests made by medical officers. The medical officer is without influence simply because his shoulder straps indicate lower rank than that of the line officer with whom he is associated. Some may sneer, but the fact remains that it is rank that counts in both the Army and the Navy.

Of course rank brings with it increased pay. This, however, is immaterial. At the same time, it should not be forgotten that most of the physicians now in the Medical Reserve Corps have not only left the comforts of their homes, but also have given up practices which in the majority of instances yielded far more income than the pay they would receive as medical officers of the Army even if they had conferred on them the highest rank that the proposed law would provide. Among these medical reserve officers are many of the most prominent men in our profession, including the leading men in the specialties, as well as our best surgeons and internists.

When the war broke out there were less than 450 medical officers in the regular Army Medical Corps. Today there are commissioned, including officers of the regular Army, the National Guard and the Medical Reserve Corps, at least 17,000 physicians. Less than 1,000 are in the regular Army Medical Corps. Under the present law these regular Medical Corps officers are entitled to the grades of lieutenant-colonel and colonel; and in the case of the surgeon-general, to that of brigadier-general¹; the highest rank that can be conferred on any one of the other 16,000—that is, on any reserve medical officer—is that of major.

1. Surgeon-General Gorgas has the rank of Major-General by special act of Congress.

May we remind our readers that the men in active service will be prevented by the regulations from using their influence in this matter, and that the duty of pushing this measure rests on those who stay at home? Every physician has representing him in Congress one man in the House of Representatives and another in the Senate. If every physician will let his representatives know that this proposed measure should become a law, and if in addition he will enlighten his neighbors in regard to the matter, an effective public opinion will be created. The time is opportune; congressmen are at their homes. Write or speak to your representatives now; get your neighbors to do likewise—not for the good of the medical profession, but for the good of the service.

Current Comment

SOME CRITERIA OF ABNORMALITIES IN MILK DUE TO THE STAGE OF LACTATION

According to the standard adopted for certified milk by the American Association of Medical Milk Commissions, cow's milk obtained within a period of forty-five days before parturition is excluded from use as a human food. This regulation is based on the widely accepted assumption that pregnancy influences the normal composition of milk. To test the supposition, Palmer and Eckles¹ have conducted an analytic investigation of a number of cows of various breeds in the herd of the department of dairy husbandry at the University of Missouri. Selecting as standards for the limits of normal composition the figures 4.5 per cent. for fats and 4 per cent. for proteins, they ascertained very conclusively that the stage of gestation bore no evident relation to the time when the milk and milk fat passed the limits of normality chosen for comparison. The changes in the composition may, indeed, become very marked at various periods in the milking cycle, exhibiting a high protein and fat content and an abnormal composition of the milk fat. The new comparative analyses indicate that the abnormalities, in the sense of extremes of composition, to which cow's milk is subject when parturition is approaching, are in reality due largely, if not entirely, to the stage of the lactation period. The duration of this varies considerably for different individuals. Palmer and Eckles state that cow's milk shows anomalies as soon as the lactation stimulus becomes an artificial one on the part of the dairyman. Many cows show the abnormalities several months before the next parturition; while cows that are very heavy producers with periods of parturition the usual interval of twelve to thirteen months apart may continue to produce perfectly normal milk up to the very hour of the next parturition. If the stage of lactation is the crucial factor in determining aberrations in the composition of the milk, how is the end of the period to be recognized? This question is

1. Palmer, L. S., and Eckles, C. H.: Gestation Versus Stage of Lactation as Factors Causing Abnormal Composition of Cow's Milk, *Am. Jour. Dis. Child.*, May, 1917, p. 413.

not easily answered, except on the basis of chemical analysis. The Missouri experts suggest that the percentage decrease in the milk flow from that when the cow was fresh affords some indication. They offer this practical advice: The milk from cows giving as low as a half-gallon a day should certainly be regarded with suspicion, and should be subjected to critical analysis, especially when the feeding of infants and children is concerned.

THE FEEDING OF WAR PRISONERS IN GERMANY

Among the duties that attach to the Medical Department of the Army in war is the inspection and supervision of the mess management, including not only the quality and quantity of the food, but also the hygiene of its preparation and distribution. This applies equally well to the prison camps, in which immense numbers of men are housed under the control of the nation whose captives they have become. *THE JOURNAL* publishes in this issue an article by Dr. Alonzo E. Taylor, professor of physiologic chemistry in the University of Pennsylvania, whose work formed the basis for the two noted reports to the American embassy at Berlin on the conditions existing among prisoners of the allied nations in Germany. This article on the feeding of war prisoners in Germany is especially timely. It is unusual because its point of view is broader than that of medicine, broader than that of science alone—in fact, as broad as humanity itself.

INTRAPERICARDIAL PRESSURE AND THE CIRCULATION

It is generally understood that one of the functions of the pericardium, if not its chief importance, is to check an excessive dilatation of the heart that might follow a pronounced rise in venous pressure which leads to the filling of the organ. Overfilling of the heart is prevented. Undue accumulation of fluid and rise of pressure within the pericardial cavity in turn produce a mechanical effect on the functions of the heart which may result in changes in arterial pressure. According to Kuno,¹ a very small amount of fluid in the pericardium causes diminution in the output of the heart. By further addition of fluid the output diminishes regularly. The arterial pressure changes only slightly until the amount of fluid in the pericardium reaches a certain limit. Beyond this limit the addition of a small amount of fluid causes a distinct fall of arterial pressure. The height of intrapericardial pressure which brings the circulation of blood to a standstill is just the same as that of venous pressure. If the venous pressure is raised during the standstill of the circulation, the blood flow is restored. In order to secure a recovery of the heart's action and circulation under a high intrapericardial pressure, therefore, it may become desirable to raise the venous pressure. This cannot well be done by injection into the veins. Kuno notes that an infusion of a large amount of blood causes no rise of venous pressure nor dilatation

1. Kuno, Y.: The Mechanical Effect of Fluid in the Pericardium on the Function of the Heart, *Jour. Physiol.*, 1917, 51, 221.

of the heart, or only a brief one. Such an infusion is therefore of no advantage to the circulation when this is hindered by pressure of fluid surrounding the heart. The intrapericardial pressure may sometimes be decreased, however, by the use of epinephrin; for this can diminish the volume of the heart and affect the organ favorably when it is compressed by fluid surrounding it.

THE BLOOD IN THE LUNGS

The capillaries of the lung are capable of great passive variations in capacity. This fact enables the lung to act as a sort of reservoir for one side of the heart. Any excess of output on the right side that cannot be dealt with promptly by the left heart is temporarily taken up by the wide lung capillaries, which offer very little resistance. Some idea of the extent of these variations is given by the current textbook statements. Thus, whereas at the height of inspiration the blood contained in the lungs is about one twelfth of the whole blood in the body, this amount is diminished during expiration to between one fifteenth and one eighteenth, and by forcible artificial inflation of the lungs may be lessened to one sixtieth.¹ In a recent experimental reinvestigation of the content of blood in the lungs in animals, however, Kuno,² of the Japanese Medical School at Mukden, has found that the amount is much larger than earlier authors have recorded. It varies from 9 to 19 per cent. of the total amount of blood. The amount of blood in the lungs increases with the acceleration of the circulation, that is, the amount of blood is about 2.2 times larger when the circulation is fast than when it is slow. When the lungs are edematous they may contain about one quarter of the whole blood, although the circulation is very slow. The time needed for the blood flow in the lungs is also more than twice as great when the circulation is slow than when it is fast. These observations, says Kuno, agree well with the necessities of life, since the amount of blood which comes in contact with the alveolar air may be directly proportional to the rapidity of the blood flow, or even increase in a higher ratio.

HUNGER AND APPETITE IN FEVERS

As has been pointed out at various times in THE JOURNAL,³ the mechanism of hunger can now be studied in a purely objective way, in large measure independent of the impressions of the subject. The pangs of hunger are associated with rhythmic contractions of the walls of the empty stomach, and are presumably due to them. These movements can be recorded graphically by suitable instruments; the time of their occurrence, their intensity, and the factors that modify them in any way can be ascertained with the precision that belongs to modern scientific method.

Impulses started by the gastric contractions are carried to the higher nervous centers, where they are recognized in normal consciousness as hunger. Appetite is not the mere sensation of pain from hunger contractions. It involves a psychic factor distinct from these physical changes, and concerns the memory of past experience with palatable foods. The clinician frequently observes conditions in which there is more or less complete loss of appetite and an absence of the pangs of hunger. This is especially true in the course of infectious diseases and in various acute exanthems. The absence of a compelling desire for food not infrequently offers a serious obstacle to the attempt to induce adequate nutrition. The reason for the loss of appetite has not been apparent, and at best the explanations commonly furnished are mere platitudes of vague hypothesis. In many instances the conditions that lead to an absence of hunger and appetite are associated with fever and the production of bacterial toxins. At the physiologic laboratory of the University of Chicago, Meyer and Carlson⁴ have attempted to ascertain whether or not the elevation of temperature itself produces any effect on the hunger contractions of the stomach. Their observations by the use of the graphic method on gastric motility indicate that there is an absence of hunger contractions and a lowering of the stomach tonus during fever in dogs when the temperature reaches 103 F. and above, this being especially true in the temporary fevers. The temperature elevation itself is a factor in the depression of the stomach tonus and an inhibition of hunger contractions. Bacterial toxins, namely, paratyphoid, *B. prodigiosus*, and tetanus and diphtheria toxins, have no direct action on the contractions of the stomach musculature. The fever or the toxins appear to induce a lowering of vagus tone, on which in part the hunger contractions are believed to depend. But Meyer and Carlson do not believe that this will account for the absence of hunger during a fever lasting from ten to twenty days. The fact that external heat itself has, as they showed, a depressing effect on gastric hunger contractions is regarded by the Chicago investigators as significant with respect to gastric motility. Thus they say that the gastric derangements in young infants with the onset of warm weather may be due in part to the heat factor itself. It is conceded, of course, that the gastric enzymes and the food play a part in the disturbance.

4. Meyer, Jacob, and Carlson, A. J.: Contributions to the Physiology of the Stomach, XLIII, Hunger and Appetite in Fever, Am. Jour. Physiol., 1917, 44, 222.

1. Starling, E. H.: Human Physiology, 1915, p. 935.
2. Kuno, Y.: On the Amount of Blood in the Lungs, Jour. Physiol., 1917, 51, 154.
3. The Stomach in Hunger, editorial, THE JOURNAL A. M. A., Feb. 8, 1913, p. 448; The Gastric Movements in Hunger, Sept. 27, 1913, p. 1044; The Call of the Empty Stomach, Oct. 4, 1913, p. 1300; The Voracity of Certain Diabetics, Feb. 21, 1914, p. 621; New Facts About Hunger, July 11, 1914, p. 169; Stomach Bitters, Jan. 2, 1915, p. 58.
Carlson, A. J.: The Control of Hunger in Health and Disease, Chicago, 1916.

Luxury in Sanatorium Management.—Among the blots on the history of sanatorium operation in the past has been the tendency to expend large sums of money on the elaborate equipment of quarters for officers, physicians, nurses and employees and to give to the officers the choice rooms and the choice locations in the grounds and buildings. The quarters for physicians and employees should be comfortable and adequately roomy, but the best outlook, the best location, the choice of accommodations, if there be a choice, should be given to the tuberculous patients for whom the institution is primarily intended. The pretentious luxury of officers' quarters in some public sanatoriums has been a lasting disgrace to those institutions and to their creators.—G. T. Palmer, in Illinois Health News.

Medical Mobilization and the War

THE MEDICAL OFFICER

*Between the living and the dead the Army surgeon
stands,
And life, oft hanging by a thread, lies in his skilful
hands;
A soldier at his country's call, he draws no faltering
breath,
But fights that mightiest foe of all, the final victor
Death!*

*To meet so dread a foe he brings the true physician's
mind,
Which holds, above all other things, the reverence for
mankind:
Did his own brother wounded lie, tho' toward him he
would speed,
He would not pass a foeman by, if his the greater need.*

*Within his breast, to duty true, no shrinking spirit
dwells,
Oft has he served, and fallen too, beneath the scream-
ing shells;
The hope to succour and to save, his one ambitious
thought;
If honors come to mark the brave, they come to him
unsought.*

*To snatch from ravening Death his prey with daunt-
less soul he speeds,
And few the words he has to say—his pity speaks in
deeds!
The life within him, tense and clear, from brain to
finger runs,
Nor does he heed, nor even hear, the roaring of the
guns!*

*This son of science, rarely found applauding crowds
before,
For whom no trumpet-blasts resound, too many oft
ignore;
Yet he, upon the storm-swept plain intent alone to save,
And wounded scorning all his pain, is bravest of the
brave!*

—R. H. G. Osborne.

PLASTIC SURGICAL SCHOOL OPENED

The school of plastic surgery recently created by the Surgeon-General was opened at Washington University, St. Louis, October 15, with twenty-six students. Prof. Robert Terry is superintendent of the school and is assisted by officers detailed by the Surgeon-General.

BUREAU OF MEDICAL SERVICE ESTABLISHED

A new medical bureau known as a Bureau of Medical Service of Foreign Commissions has been established by the American Red Cross to meet the call for medical and surgical supplies for the Red Cross commissions in France, Russia, Italy and Serbia. Dr. Richard M. Pearce of Philadelphia is director of the bureau. This bureau will attend to the sending forward of physicians and nurses as required. Drugs and medical supplies to the value of more than half a million dollars have already been shipped to Russia; three detachments of child welfare specialists have been recruited for service with the new Children's Bureau of the Red Cross in France, and the bureau is also furnishing bacteriologists and chemists and other needed personnel for the Red Cross establishments in Paris.

NEWS OF THE TRAINING CAMPS Colored Medical Officers' Training Camp at Fort Des Moines

The opening of this medical officers' training camp at Fort Des Moines, Iowa, marked a new departure in the policy of the Medical Department of the Army. Heretofore, except in a few isolated cases of medical officers in colored National Guard organizations, the colored medical officer did not exist. With the establishment of a colored division of the National Army, the need for trained medical officers became urgent. Already there were 1,200 colored men in training at the reserve officers' training camp for service with the infantry of the National Army. Among these were about thirty physicians. These were later transferred to the medical training camp and commissioned in the medical section of the officers' reserve corps.

With the men transferred from the line camp as a nucleus, the school was started, August 27. Soon there were 116 men in training. Of this number, twelve are dentists. These officers come from all sections of the country, as far west as California, as far south as Texas and Louisiana, as far north as Maine, and as far east as Massachusetts. They represent nearly every reputable medical school in the country, Harvard, Northwestern, the Universities of Michigan, Southern California and Pennsylvania, Columbia University, Howard, Meharry and many others, including two schools of homeopathy. A large proportion are hospital trained men, fourteen having served internships in one hospital, Freedmen's, a government institution at Washington, D. C.

With Lieut.-Col. E. G. Bingham, M. C., as commandant, and Majors H. C. Maddux, M. C., and T. Victor Keene, M. R. C.; Captains Morrill, M. R. C., and Axline, M. R. C., and Lieutenants Coates, M. C., and Gatewood, M. R. C., as assistants, intensive training in military discipline, drill, Medical Department "paper-work" and administration was begun. Parallel to the officers' training camp there is a training camp for enlisted men of the Medical Department. There are now in the latter camp about 900 men.

The general plan of the course of instruction was similar to that employed in the other training camps. The routine program has been interrupted from time to time with short hikes for practical work in field sanitation. The excellent and extensive system of trenches constructed on the fort by the student officers of the line camp afforded considerable opportunity for practical work in trench sanitation, and in the care and evacuation of the sick from the first line trenches to the rear. In field problems and map reading and drawing, the terrain of the reservation offered interesting situations.

The most pretentious single incident of the camp was the four day demonstration hike in charge of Major H. C. Maddux, M. C. This hike was started Wednesday morning, October 3, and lasted through to the following Saturday. The whole camp marched from Fort Des Moines through the city of Des Moines to the Iowa State Fair Grounds, a distance of 9 miles. The camp was officially designated "Camp Bingham." The marching column consisted of the instructors mounted, followed by the troops in full marching equipment, with a section of litter bearers. A pack train of ten pack mules with full medical combat equipment followed, and the rear was brought up by a squad of military police.

The marching column swung along the country roads and city streets singing and whistling "Tipperary," "Are You From Dixie?" and many other songs dear to their hearts. The march was made in three hours, and not a man fell out; on the arrival at "Camp Bingham" there was not a sore foot. Three motor trucks loaded with field ranges and cooking utensils preceded the marching column, and within half an hour after tents were pitched a hot meal was served to the weary, yet happy men.

The specific duties were so rotated at the camp that each section had instruction in the various activities of field service, camp infirmary work, pack train detachment duties, sanitary squads and military police. Each day a part of the command was taken to the nearby fields and instructed in the establishment of first aid stations, camp infirmaries, litter bearing on the battlefield, and the application of first aid measures. Especial attention was given to instruction in the rapid and careful evacuation of the wounded to the rear, also in the rapid moving of the first aid station. One detachment completely packed the combat equipment on the pack mule in four minutes and fifty-five seconds, and half an hour later set up the first aid station in less time.

The nights spent at the camp were cold and frosty, and the physicians, old and young, fresh from the comforts of modern civilization, found scant comfort resting on the

bosom of Mother Earth, covered with two thin blankets. Officers, like enlisted men, carried their entire equipment in blanket rolls on their backs; for the sake of the experience their bedding rolls were left at home. After the first night by rustling straw, hay, leaves and newspapers on which to make their beds, the succeeding nights were spent in greater comfort.

Each night huge camp fires were built, and around them crowded the shivering civilian physicians of yesterday. The early part of the night was spent around the camp fire with tales, songs, prophecies and longings; longings to do their bit in the war and return to their families and firesides.

On the morning of October 6, reveille was sounded at 4:30, and preparations for marching back to the fort were begun. The march was to start at 7 o'clock. At this hour every tent had been struck, grounds policed, and officers and soldiers alike stood awaiting the command "Forward—March."

The camp has not been neglected by distinguished visitors. September 18, Colonel Noble, M. C., visited the camp and reviewed the troops as an official representative of the Surgeon-General. His visit was followed by Colonel Legarde, M. C., who delivered a lecture on the "Newer Developments in Military Surgery."

October 15 was memorable because it marked the closing of the "line officers' camp" and the coming of many distinguished visitors. During the day we were given a very inspiring address by Mr. Emmett J. Scott, former secretary to the late Booker T. Washington, and now special assistant to the Secretary of War. Later in the day we were reviewed by Colonel Munson, M. C., Chief of the Medico-Military Division of the Surgeon-General's Office; Colonel Goodwin, R. A. M. C., and Colonel Charles Dirle of the French Army Medical Corps. So impressed were the latter visitors with the camp that at great personal trouble and inconvenience they returned, October 20, for another visit. During this visit we were given a short address by Colonel Munson, and a lecture on "Sanitation in the Trenches" by Colonel Goodwin. That evening we were given an illustrated lecture by Colonel Dirle of the French Army Medical Corps on "Medical Activities on the French Front." Monday evening, October 22, we were shown "The Activities of Our Medical Corps on the Mexican Border" by Colonel Bingham, in moving pictures.

The purely professional instruction has occupied the latter part of the course. We have had practical demonstrations and moving picture clinics in orthopedic surgery and in the treatment of infected wounds by the Carrel-Dakin method of wound sterilization.

The spirit of the camp epitomizes the spirit of the entire colored race in America, in its deep earnestness and desire cheerfully to do its bit in making the world safe for democracy.

At Fort Benjamin Harrison

CAMP GOSSIP

The chief interest of this camp centers around the permanent assignments of medical officers to various stations in this country and abroad which are now being made.

The conditions in the camp are good, notwithstanding the disagreeable, damp, cold weather. The barracks have been made comfortable by stoves, for which the quartermaster supplies an abundance of coal. One can readily understand that he is not generous enough to supply janitors to build and keep these fires going. That work is done by the orderlies who are detailed daily from among the medical officers.

The principle of learning to care for oneself, which is included in the course of instruction, is beautifully illustrated by the above-mentioned task. These things are all part of the work, and to show how well they are "playing the game" is the fact that, besides acting as janitors, the entire policing of our section of the camp is being done by its members. Not the least of these duties is that of keeping in order the long stretches of intersecting cinder paths which have been laid. Heretofore this policing work has been done by the enlisted men of the field hospitals, who have been in training here. Most of such troops, however, have completed their training and have been sent into active work away from this camp, leaving it to the medical officers to do their own work.

The rumor is abroad that the camp will close at the end of November, and in consequence the work of preparation is being intensified. Instruction in trench warfare, as it applies to the sanitary troops in actual campaign, is given great importance.

TWENTY-FOUR HOURS IN THE TRENCHES

A number of squads, consisting of twelve medical officers, eleven acting as medical corps men and one as captain, are given a tour of duty of twenty-four hours in the trenches. They participate with troops from all other branches of the service, there for a like purpose, in actual night and day battle maneuvers. Each man of these sanitary squads is equipped with all of the latest paraphernalia for such service, and is obliged to carry out in detail the duties of the position to which he is assigned. Of course, when the medical officers reach France or any of the other battle fronts, they will not perform the duties which are imposed on them as here described. They must be taught, however, what is to be expected of the men whom they will later command, and will learn this the more readily by doing it themselves. Hence in this work at this time they are acting as enlisted men. They are equipped as such on these tours of duty, are rationed as such, and also quartered as such, sleeping in a niche in the trench or on the hard planks in the dugout, curled up together to keep warm. They go "over the top" into "No Man's Land," and drag in the wounded just as if they were in actual battle. In this way they learn the possibilities and the limitations, and thus will be in a position to know what may be got out of their men in the future.

"You ask me about my night in the trenches," said Dr. E. W. Ill of Newark, N. J. "It was very interesting indeed, and I will try to tell you what it was like. At roll call in our company, twelve names were read off for this duty, and I noticed that all of the men chosen were under 30 years of age. These twelve were highly elated at being able to have the experience. We were marched, with Seng, one of our number, in command, to Lieutenant-Colonel Shockley, who told us to get our equipment at the medical supply headquarters, and then our blankets and rations. We each received as equipment a knapsack with a myriad of straps, cords, pockets, etc., and a belt with about twenty little packets of many first aid articles—bandages, cotton, gauze, adhesive plaster, etc. The belt also had many little holes in which to hang the hatchets, canteens and other parts of the equipment. For these things we signed a voucher, making us responsible for their return, as the government is very careful of its possessions.

"Before leaving camp we rolled into our blankets a heavy sweater and an Army slicker, and did it neatly for fear of summary punishment if we did not have it right. We received rations for three meals, consisting of six huge ham sandwiches, two hard-boiled eggs with salt, two bars of milk chocolate, a dozen sweet crackers, an apple and an orange, and we filled our canteens with ice water. We put on our heavy woolen underclothes and our trench coats and shoes, and at last got inside of all the other equipment—haversacks, hatchets, canteens, etc.

"At promptly 3 o'clock in the afternoon we collected our six litters, formed three groups of four men each, and began our 2 mile hike to the trenches, as we thought, heavily laden. On arriving there we found that our packs were about 20 pounds lighter than those of the enlisted men of the line. We reported at battalion headquarters, where two of us were left as reserve. The rest were immediately taken into the trenches, where we were given instructions on our duties, and informed that we would go in promptly at 7. While waiting we finished a part of our rations, with some water from our canteens, spread out our litters, took our blankets and sweaters from our packs, and lay down. It was getting cold and beginning to rain. Three or four large companies of the line, in single file, fully equipped, marched by, not a word being spoken except a muttered oath when some one or other stumbled over a tree stump, as there was no light. At 7 we started, but lost our way once, when we got into a drainage ditch instead of the trench, but at last hooked up with the sergeant, and were led to the first shelter, where, with the aid of a pocket light, we found a comfortable hole in the wall, and wrapped up in our blankets and went to sleep. It was so nice and snug that we almost hoped the sergeant would not find us. He did, however, and we were routed out and proceeded along the zigzag communicating trenches until we got to Shelter No. 5, where we were to spend another two hours. Desultory firing was going on all the time, and a few rockets, which were very pretty, were let off, but no wounded were brought back. Two of us tried to sleep on one litter and accordingly got nothing but crossbars for a resting place. It was becoming much colder, and we were also getting more uncomfortable all the time. At 11 we were aroused again to traverse some more zigzag trenches through the mud and water, until we reached Shelter No. 1,

at the front. Here we found two bunks, each about 9 feet long, one above the other, on which we attempted to get some rest. Time dragged on and we had almost given up hope of ever having anything to do when, at 12 o'clock sharp, a great noise informed us that a battle was going on. The sergeant poked his head in and yelled, 'Mac and Ill, there are some wounded to be brought in.' We scrambled out, leaving our blankets behind, and crawled over the top and out to look for wounded. It was very cold by this time, and the ground muddy and soggy, but we knew better than to get too high up, as the combatants were armed with paraffin bullets which some of our companions said 'stung like H—.' I finally encountered a body and said, 'Are you alive?' The man said, 'Yes, but badly wounded in the leg.' I told him to put his arms around my neck and I would drag him in. It was pitch dark, and we encountered rocks, mud, etc., en route, which was, to say the least, disagreeable. At last I saw the sandbags of the top of the trench and thought, 'Well, I will be safe from firing now,' when a flare went up, followed immediately by a fusillade of shots from the 'Germans' at the wounded man and myself. One hit me a stinging blow in the left leg, and I cursed a few times and told my wounded companion to 'scramble for himself.' He did, and we gained the trench without further mishap. The other men of our squad had similar experiences, some being hit in several places. When I got the man back I bandaged up his leg and we transported him to the rear, my own wounds being left undressed. My two other trips were unaccompanied by rifle fire, and I even had time to wrap up and get a little more sleep out in "No Man's Land," safe from the scrutiny of the ever-watchful sergeant.

"Without this actual experience I could not possibly have had other than a vague idea of the duties involved, together with the hardships to be expected. It is needless to say, and I am sure no one will accuse me of being a quitter when I do say it, that I am more than elated that duty in France for me will not be that of the enlisted man of the Medical Corps whom I represented in the battle just described, who goes out not only exposed to infantry fire and bombs, but without any protection whatever. His is the most dangerous work of all, as he is exposed to the fire from both sides. In fact, one of the squads reported on its return that its own first sergeant had been shot twice by our own guards because he was too frightened to halt when ordered to do so; while two other men lost their bearings completely and wandered too far over, where they were captured by the 'Germans.'"

TRAINING CAMP ACTIVITIES

The Commission on Training Camp Activities, appointed last April by the Secretary of War, has issued in pamphlet form a summary of its activities to date. The object of this commission, as stated in the pamphlet, is to supply the normalities of life to a half million young men in the training camps and to keep the surroundings of these camps clean and wholesome. The task is to furnish these young men a substitute for the recreational opportunities to which they have been accustomed, and to prevent and suppress vicious conditions which may arise in connection with the training camps. To carry out these activities the commission is enlisting the services of such existing agencies as the Y. M. C. A., the Knights of Columbus, the Playground and Recreation Association of America, the Travelers' Aid Society, the Young Women's Christian Association and many others. The American Library Association has undertaken the important task of furnishing books, magazines and general library facilities as well as trained librarians for the camps. A special library building is planned for each camp. Recreative athletic work has been placed in charge of a director, and supervision of the work in each camp will be looked after by an official athletic council. The manly art of boxing will be included, and the services of such disciples of the fistic art as James J. Corbett and "Kid" McCoy have been enlisted. Baseball and other athletic games are also provided for. Post exchanges for soldiers, and cooperative stores have been established in each camp. Camp music has been planned, with song leaders, and the singing of songs is especially to be emphasized among the soldiers. A song book, "Songs of the Soldiers and Sailors," has already been published. Dramatic entertainment will also be provided. A fully equipped modern theater building seating 3,000 is being erected at each of the national camps. The organization of programs for these entertainments has been placed in the hands of leading theatrical managers of the country, and the best talent will be employed. The Redpath Entertainment Bureau has already been giving

entertainments in the various camps. Educational work has not been neglected. There will be courses in English, French, French geography and other subjects, and an educational campaign in sex hygiene through the agency of the American Hygiene Association and the Y. M. C. A. There will also be a considerable degree of supervision over the recreational activities of the soldiers in the cities and towns adjoining the camps. With the aid of many state (public and semi-public) agencies, the control of prostitution in the neighborhood of the Army camps has been attacked, and already important results have been accomplished in the way of the abolition of "red light districts" and the suppression of vice in many of the cities surrounding the Army camps. The personnel of the commission is as follows: Raymond B. Fosdick, New York, chairman; Lee F. Hanner, New York; Thomas J. Howells, Pittsburgh; Marc Klaw, New York; Joseph Lee, Boston; Malcolm L. McBride, Cleveland; Dr. John R. Mott, New York; Charles P. Neill, Washington, D. C.; Lieut.-Col. Palmer E. Pearce, U. S. Army, and Dr. Joseph E. Raycroft, Princeton University, with Jasper J. Mayer, secretary to the commission. The funds to support this great work will come from private subscription through the organization named, from various state, municipal and other organizations in the extension of their regular lines of work, and in some instances from government grants in the way of salaries, etc. Some of the entertainment features are expected to be self-supporting through nominal admission charges. The Navy Department has a similar commission, of which Mr. Raymond B. Fosdick is also chairman. A report of the latter commission is soon to be issued.

NEWS OF THE CANTONMENTS

Thirty-First Division, Camp Wheeler, Macon, Ga.

With the arrival of 10,000 drafted men, the amount of sickness has greatly increased, especially measles. Measles had existed in all regiments for a year continuously. The draft men brought in cases on every train. Fortunately there have been almost no complications or sequelae.

The camp is being visited almost daily by the officers or agents of various committees and organizations interested in the welfare of the Army. Some of these bodies are of real value; others of the visitors never accomplished anything more than making reports.

Pneumonia is the disease of the camp. Fifty-one patients have entered the hospitals, with three deaths to date. Many of the patients are by no means out of danger. The strength of the command has passed the 21,000 mark. The 'commissioned personnel of the division is now in excess of authorized strength. The enlisted personnel is 75 per cent. strength.

A reception and luncheon was given by Mrs. Charles Holt in Macon for General Steiner, Major Weeden, M. C., and others, Wednesday evening. Many from the camp attended.

Lieutenant Miner of the Sanitary Corps addressed the officers at the medical school on the subject of vice suppression, Thursday. Vice suppression is a live question in this camp. Macon is not at all clean, and there is much venereal disease. Captain McCampbell, M. C., of the Surgeon-General's Office, was also here working along the same lines.

ONE HUNDRED AND SIXTH SANITARY TRAIN

In the assignment of new officers of the Medical Reserve Corps just arrived from the medical officers' training camp, Fort Oglethorpe, the complement of all companies is now complete. Wednesday afternoon, a field problem on a small scale was planned by the division surgeon and carried out with fair success. The participating units were the Sanitary Detachment of the One Hundred and Eighteenth Field Artillery, under Major Taylor, who performed the duties of the regimental surgeon; the Florida and Georgia field hospitals, which furnished sixty men, acting as patients; and Ambulance Company No. 122, under Captain Blackwell, which established the dressing station and evacuated the wounded from the regimental collecting station by litter to the dressing station, and thence by ambulance to a theoretical field hospital established at the camp. While many rough edges were noted and much to criticize was found, all felt that the afternoon was profitably spent.

The weekly social of the officers of the train with ladies was held, Hallo'een. The party took the form of a dinner-dance, dinner being served at 6 o'clock in the mess hall of the One Hundred and Twenty-First Ambulance Company which was very prettily decorated with autumn foliage.

An interesting lecture was given by Lieutenant Miner of the Sanitary Corps, Thursday afternoon, November 1, on the work being done in repression of vice in the cantonment zones.

Many of the officers of the train, with ladies, attended an invitation dance given by the officers of the One Hundred and Twenty-Fourth U. S. Infantry at the Hotel Dempsey, Saturday evening, November 3.

Fortunately the train has so far escaped the outbreak of measles that has been so evident in other sections of the camp. We are "tapping wood."

Seventy-Seventh Division, Camp Upton, Yaphank, N. Y.

The medical work in this cantonment has been dominated during the past two months by the physical examination of the men of the National Army. These men have reached the camp in increments of at times from 2,000 to 3,000 in a single day, and orders have required that this entire number should be examined, and their necessary papers made out in one day so that they might be examined, mustered in, assigned to organizations and in uniform the third day after their arrival, inclusive. The amount of stress imposed on the medical staff by the rapidity of this work has placed a severe tax on both officers and men and has obligated to a certain extent relative neglect of other work, such as regular drill and instruction.

The camp has been singularly free from serious infectious diseases. Measles, which has been and still is one of the most serious contagions in military encampments, has been present, but ten cases only have occurred, eight of which occurred in a single organization and apparently from a single focus of infection. No secondary cases have as yet developed, and at present a single patient remains in hospital convalescing. No diphtheria cases have been discovered and yet the Schick test which was applied in about 3,000 instances showed the usual percentage of susceptibility to this disease. One man with pertussis entered the camp with an increment of the National Army, but there have been no secondary cases. One case of mumps only has been reported and there have been no instances of either typhoid or paratyphoid fever, though sporadic cases were fully expected. Examinations for carriers are under way, but thus far results have been fortunately negative.

Owing to the fact that the base hospital unit is still building and untenable, this institution has been housed in ordinary barracks, frequently moving from one to another as they have been displaced by the military organizations normally assigned to these buildings. Within the next ten or fourteen days it is expected that the most essential buildings of the base hospital will be in such condition that a last move may be to this unit of over seventy buildings which in every way is ideally adapted to the needs of the service. The buildings, although hastily constructed, are well made, conveniently arranged and equipped with practically every convenience to be found in the most modern civil hospitals.

A regular course of lectures and instruction on military medicine has been started under the supervision of Lieutenant-Colonel Reynolds, the division surgeon, and additional arrangements have been made for clinical demonstrations, papers and lectures by the various departments of the hospital. Regular sessions of a base hospital medical society under the direction of Major Jay Whitham, commandant of the base hospital, have been projected, and in addition to the work presented by the various members of the staff, members of the profession from New York City and elsewhere will be on our programs. The regular meeting of the medical section of the New York Academy of Medicine in New York City was given over to the staff of the Upton Base Hospital on October 16, and by invitation of the president of the New York Academy of Medicine the program of the February open meeting of the academy will be given by members of the various staffs of this hospital.

The members of the dental staff at Upton are holding regular meetings of a dental society in which the program and clinics are given both by members of the local staff and by outside talent. The location of this camp, so accessible to New York, has made it possible to keep these activities of a very high scientific grade. The hospital library will include all modern standard textbooks and all the current native and foreign journals will be at hand.

Eightieth Division, Camp Lee, Petersburg, Va.

There are now 175 medical officers on duty at Camp Lee, only three of whom are of the regular Medical Corps, Division Surgeon Lieut.-Col. Thomas L. Rhoads, M. C., Division Sanitary Inspector Henry P. Carter, M. C., and Major Ferdinand Schmitter, M. C., commanding officer of the base hos-

pital. Fortunately for these three medical officers and the welfare of the Eightieth Division, nearly all of the 175 medical reserve officers have had training at one of the medical officers' training camps, the greater number of them having been at Camp Greenleaf, Ga. The training there was of great assistance, though a marked change in the character of the work took place at Camp Lee. Lieut. S. W. Tunnell of Philadelphia describes his first few days quite graphically:

At 8 a. m., I received orders to report to Colonel —, at depot brigade. At 8:30 I reported, and was instructed to be prepared to examine three battalions, 1,800 men that were expected at noon, in just three hours and a half. Note.—Absolutely barren, unfinished buildings, supplies at 2 miles' distance, roads muddy to the junction of the lower to the middle third of leg, no transportation.

10:30 a. m. (two hours later): "Sir, we are prepared to begin examinations." On receipt of order assigning me as surgeon to the depot brigade, I walked for one-half hour through the most affectionate mud that one could imagine and located my commanding officer. Lieutenant, "Reporting for duty, Sir." Six little words were all that I volunteered to exchange for the following volley fired after one squint at a little note book. "You are assigned to me as senior surgeon. You will have as your assistants [here he named two other medical officers]. We expect 1,800 men at noon today and you must be prepared to examine them. There is the infirmary over there [pointing to a two story wooden building]. It is absolutely empty, in fact it isn't finished, and there is no equipment available. You may borrow, beg or steal (borrowing without knowledge of owner), but you must be prepared to begin examinations at 12 o'clock."

There was not the slightest doubt in my mind that the colonel meant just exactly what he said. I then conversed two more words, "Yes, sir," saluted and departed. About that time the other two officers reported and we were off. In five minutes we had twelve empty nail kegs which we officially took as office chairs, sent one officer to the medical supply depot, a mile and a half away, for triple typhoid vaccine, smallpox vaccine, and an emergency recruiting outfit. We sent another officer with a requisition for stationery supplies to the quartermaster 2 miles away. This left four officers. Two gas pipes immediately became hammers, nails became plentiful when a dental surgeon eased a carpenter's toothache by plugging a cavity with a piece of cotton from a nearby field with a nail. In fact, that is how we learned where the nails were. Scrap boards spontaneously jumped into table tops and a leg flew on each corner. We walked through the officers' quarters, and as there was no one at home, we borrowed two more tables and two benches. We found a tomato can and made a half pint of ink with some ink tablets which an officer carried for his fountain pen. We found a plumber working close by with a foreign body in his right eye, and while I was removing the particle some one of the officers borrowed a dozen plugs for gas pipes from his kit, which we used for ink wells. To our fountain pen brigade we added a dozen penholders made with a penknife from sticks in case there were no others available. We gathered some more cotton from the field and stole a cake of soap to cleanse the arms from vaccinations. We telephoned to an ambulance company to borrow twelve enlisted Medical Department men to use as clerks and help run the infirmary. About this time one of the officers returned from the medical supply depot with our vaccines, recruit outfit, cotton syringes, eye card and finger print outfit. The other officer returned with real stationery, and we then proceeded to consolidate the ground that we had gained. In two hours' time we had generated our equipment from nothing and established a system which later examined 329 men in one day.

The draft men did not begin to arrive until about 5 o'clock in the afternoon, when we immediately examined for contagious disease. The physical examinations we postponed until morning because we had no lights. Our borrowed enlisted Medical Department personnel arrived that night. We drew their beds from the supply officer and had them attached to the battalion for mess. Each man immediately became a clerk, assigned to their desks and instructed in their work. The following morning our complete force reported for duty at 7 o'clock, and the wheels of a polished system began to grind out examinations.

FIELD HOSPITAL NO. 318

This company was organized, July 1, 1917, in the medical officers' training camp at Fort Oglethorpe, Ga., by Lieut.-Col. R. L. Carswell, M. C., provisional director of field hospitals, and was placed in charge of Lieutenant Comfort, N. G. Conn., assisted, after July 10, by student commissioned officers. Capt. Elliott B. Edie, M. R. C., was made commanding officer, August 6, and the commissioned personnel completed by assignment of Capt. William D. Hunter, M. R. C.; Lieut. J. H. Boyles, M. R. C.; Lieut. L. F. Boland, M. R. C.; Lieut. M. I. Mendeloff, M. R. C., and Lieut. P. J. Bean, M. R. C. The enlisted personnel was received from the recruit camp.

A field hospital with its horses and wagons, fourteen tents and field kitchen looks so much like a Wild West show that the observer instinctively looks for the Indians and the Deadwood stage coach. The company participated in two reviews during the last week of August. These were regarded as part of the graduation exercises of the medical officers' training camp, and every officer and enlisted man marched past the reviewing officers with a feeling of pride that he was a member of the first class to graduate from Colonel Page's university. Field Hospital No. 318 entered the National Army cantonment at Camp Lee, Va., August 27,

being one of the few organizations with an enlisted personnel. The company was called on for details of men for special duty, varied in kind, but all a part of the great task of preparing for the reception of the selected men. This work now being completed, the "details" have been returned and the reunion of the company was celebrated in the company mess rooms on the evening of October 25. Short talks were made by the officers, and a musical entertainment was given by the men. Announcement was made of the final result of the Liberty Loan campaign. The per capita subscription of the company was \$81, nearly \$20 more than Camp Lee's average. It is expected that the sanitary train will be completed about November 1 by the organization of three field hospitals and one ambulance company, with officers from Fort Oglethorpe and men from the depot brigade. The officers and men of the Three Hundred and Eighteenth look forward with pleasure to a resumption of regular training in the duties of the sanitary soldier, and hope to be of service in the instruction of the new companies.

AMBULANCE COMPANY NO. 319

This organization, now a unit of the Three Hundred and Fifth Sanitary Train, Eightieth Division, had its origin in a persistent and insistent appeal of Richmond chapter, American Red Cross, through its president, at the time Henry W. Anderson, now in charge of the Roumanian commission. This appeal thus forcefully made to the headquarters of the American Red Cross at Washington during the earlier part of July received favorable consideration, and, July 10, authority was granted by Lieut.-Col. C. H. Connor, in charge of the organization of all the Red Cross ambulance companies, to Richmond chapter to form and equip a unit, to be known as the Red Cross Ambulance Company No. 46.

Pursuant to an order from the division surgeon, in accordance with instructions from the Surgeon-General's Office, October 15, numbering of the ambulance company was adjusted. No. 46 ceased to be, and the number 319 was given. The officers of the organization were chosen with the object of furnishing the command with men especially fitted to instruct the personnel along the lines that make for excellence in ambulance work. The commanding officer, Lieut. C. H. Lewis, is from Richmond. The junior surgeons are Lieut. George S. Hurt, Kentucky; Lieut. Julius J. Hulcher, Richmond; Lieut. Oliver C. Brunk, Richmond, and Lieut. Ray A. Moore, Richmond. The enlisted personnel is as diversified as it is remarkable intellectually. Great care was exercised in the selection of these men for this service, and as a result experts from every conceivable line of human endeavor can be found: mechanics, chauffeurs, carpenters, pugilists, lawyers, physicians, chemists, clerks, football artists; a fat man so fat that S. O. is necessary to outfit him; thin men so thin that they would have to suffer a fracture to reduce.

AMBULANCE COMPANY NO. 317

Ambulance Company No. 317 was organized as Red Cross Ambulance Company No. 43 of Raleigh, N. C. The original promoters were John G. Allen, Raleigh, N. C., and Kenneth R. Ellington, New York (a Tar Heel by birth). The former is now a first lieutenant in the Signal Corps, and the latter an ensign in the Navy.

The officers are Charles L. Scott, Sanford, N. C., University of Maryland, 1899, commissioned as First Lieutenant, M. R. C., June 8, 1917, and Captain, M. R. C., August 21; Vance P. Perry, M. C., Va., 1916, Kinston, N. C., commissioned First Lieutenant, M. R. C., in July; Dewitt D. Clark, Clarkton, N. C., commissioned First Lieutenant, August 1, and Neil G. Nicholson, M. C., Va., 1917, Mount Gilead, N. C., commissioned First Lieutenant, Sept. 1, 1917.

The volunteer enlisted men are from middle and eastern North Carolina, and range in ages from 18 to 40, representing some of the best blood and oldest families as well as individual specimens of manhood and intellect.

Eighty-Fourth Division, Camp Zachary Taylor, Louisville, Ky.

Seven companies of the Three Hundred and Thirty-Sixth Infantry are quarantined on account of measles. Hundreds of relatives visited the camp, Sunday, but were unable to get closer to the barracks than to talk to the men across a little ravine back of Company F's quarters. Several thousand visitors, many bearing flowers and edibles for the sick soldiers, visited the base hospital. Four cases of cerebrospinal meningitis have been reported from the regiment. The medical detachment of the regiment under the command of

Capt. C. C. Osborn is working night and day to stop the epidemics of measles and meningitis. Lieut. J. D. Holston daily examines more than 2,000 men, looking for suspects. Lieuts. Samuel R. Laubscher and Charles H. Davis are kept busy with a corps of men spraying the throats of every man in the regiment to prevent infection.

The office building and barracks which have been constructed for the use of the British and French officers detailed to the camp were completed last week.

Physicians, social workers and laymen interested in the treatment of social questions met at the Seelbach Hotel, October 31, to discuss steps to be taken for the prevention and treatment of venereal diseases among the soldiers at Camp Zachary Taylor. The meeting was called by Edward H. Griffith, representative of the War Department. One of the chief speakers was Col. John H. Allen, division surgeon, who told of the work already done by the authorities at the camp toward the suppression of disease, and Major L. D. Frick, who urged the reporting of vice diseases by physicians.

Col. S. B. Pearson holds the record for rapid promotion from Captain to Lieutenant-Colonel since arriving at Camp Zachary Taylor. He is a cavalry officer, twenty-two years in the service, and is camp quartermaster. Under his direct supervision is the camp bakery, in which the principal article of the soldiers' food is prepared. Every day the force under him bakes 10,000 loaves of white wheat bread, enough to feed 30,000 men three times a day. The ration allows each man a pound of bread a day, which it has been found is slightly in excess of the actual consumption. Once a week the student bakers prepare what is known as war bread, a loaf that has a heavy crust and weighs 4 pounds. This heavy crust has been found by the French to facilitate shipment, as it prevents breaking and crumbling.

BASE HOSPITAL ACTIVITIES

Mrs. Leonard Wood, wife of Major-Gen. Leonard Wood, and Mrs. Draper, of New York, were recent visitors at Camp Zachary Taylor, in the interest of the Red Cross. They expressed pleasure in finding the base hospital in such excellent condition. Mrs. Wood complimented the site on which the camp is located, and said she considered it an ideal place for the training of soldiers. They are visiting the army camps of the United States in the interest of the Red Cross.

The base hospital laboratory is now fully equipped, and it is doing excellent work. All patients with pneumonia are examined to identify the type of pneumococcus. In two cases the types have been identified as I and IV, and the appropriate serums used. An ample supply of white mice has been obtained for this work.

A most comprehensive plan of examination has been outlined of all the drafted men from eastern Kentucky for hookworm, with probably an examination of all of the Kentucky troops later on. This will be done under the supervision of Captain Fox. It is estimated that 200 specimens can be examined a day, and those men in whom hookworm is found will later be examined by Major Hamburger physically and by the psychologic board also, a careful record being made of each case.

A number of interesting cases are under observation in the base hospital. Several cases of cross-infections have been encountered. One man had a very severe discoloration of his skin from a catarrhal jaundice, and on the eighth day was admitted to the contagious ward with measles, presenting a measles rash of peculiar color. Another patient had mumps with a bilateral orchitis following, and later a typical typhoid. To this man two prophylactic injections of typhoid vaccine had been given. One man had a severe cardiospasm, with subsequent relief from esophageal dilatation. An officer was admitted with severe bleeding from a duodenal ulcer. The roentgen ray is being used to great advantage in all these gastric cases.

Owing to the number of cases of measles, four isolation wards have been opened. The following is a record of the severe cases in the hospital, November 4: meningitis, 4; measles, 94; pneumonia, 21; typhoid fever, 4; mumps, 12, and diphtheria, 1. Two perfectly well meningitis carriers have been found and isolated.

It is the purpose of Major Hamburger to have all tincture of digitalis used at the base hospital standardized on the cat by the method of Hatcher and Eggleston, and as outlined by Lieut. Willard J. Stone. This will be done by Prof. C. O. Zahner in the Department of Physiology of the University of Louisville Medical Department.

SPECIAL EXAMINING BOARDS

A board of psychologic examiners has been convened at Camp Zachary Taylor, which is one of the four camps chosen

by the Medical Department of the Army for this work to be done in. The entire army here will be standardized by putting each man through certain physical and mental tests, so that they may be properly classified, artisans properly assigned, etc. More will be written of this work later. It is under the supervision of Lieut. Marion R. Trabue, S. C.

All of the men are now being examined by a special board of ten examiners for tuberculosis under the supervision of Capt. M. J. Lichty.

PERSONALS

Major Worthington has instituted food conservation in the officers' mess at the base hospital, meatless and wheatless days, and certain meals without butter. Those who help themselves to butter in quantities too bounteous, and leave some uneaten, are specially reported by the mess orderlies.

An order has been issued prohibiting officers and enlisted men from entering certain districts in Louisville, and has been read to each organization in camp. Any man found in these districts will be arrested by the members of the provost guard or military police. One of the unused city police stations has been equipped and used as headquarters for the military police.

Dr. Fred L. Koontz, M. R. C., spent a few hours in Louisville last week en route from Fort Oglethorpe to Philadelphia, to which city he has been ordered for a course of intensive training in head surgery at the University of Pennsylvania Hospital under Drs. Frazier and Spiller.

Dr. John B. Richardson has been ordered to Bellevue Hospital for a course in fractures.

Miss Helen Pond of Framingham, Mass., a dietitian, has reported to Major Worthington of the base hospital. She is a welcome addition to the staff of the hospital.

Lieut. James W. Bruce, M. C., Louisville, was married at 5:30, November 5, to Miss Edith Campbell, daughter of Mr. and Mrs. Charles D. Campbell, at Christ Church Cathedral. The wedding, originally set for December, was hurried because of Lieutenant Bruce receiving traveling orders.

Eighty-Fifth Division, Camp Custer, Battle Creek, Mich.

LIBERTY LOAN

The "Liberty Loan" proved of considerable interest from a competitive standpoint during the last week. The division subscribed \$1,389,750. This figure is high, considering that the division is at less than half strength. The sanitary personnel of the division has accomplished a wonderful showing. Base hospital, \$21,050; field hospital, \$29,300; ambulance companies, \$38,050. In the field hospitals, Field Hospital No. 340, under the command of Capt. J. D. McGaughey, showed the largest subscription average of \$103 for each man in the company. The general average for all field hospitals was over \$97 per man.

SANITARY TRAIN

The medical personnel of the sanitary train is now complete, so that the training of the sanitary troops is progressing rapidly. Although the rainy weather has in some respects handicapped outside work, it has in no way brought it to a complete standstill. The men seem to get along just as well in the rain as they do on clear days, due entirely to the unusual enthusiasm that seems to exist among them. It is not such a difficult task as one might expect in training these men in the duties of nurses, the operating room assistants and ward managers. They seem to grasp the subject pertaining to medicine and surgery very rapidly indeed and in quizzes seem to answer up as well as some medical students in their first and second years. There is no doubt that these men will be ready to fill the various places when the time comes for active service.

NOTES

Major Wood, commanding officer of the base hospital, read a paper before the Kalamazoo Medical Society, October 23, on "The Organization of the Base Hospital." His paper was exceedingly interesting and covered the matter thoroughly in every detail. The meeting was well attended, both by the members of the society and officers from the camp.—Majors Irons and Frick of the base hospital were in Chicago attending the meeting of the Clinical Congress.—Capt. W. P. Nicolson, Jr., of the 338th Ambulance Company recently spent two days in Chicago.

Eighty-Seventh Division, Camp Pike, Little Rock, Ark.

A recent order transferring enlisted men from this cantonment, in order to fill up the necessary quota in the National Guards of their respective states, has wrought temporary

havoc with the enlisted personnel of the sanitary train. The present indications are that with the exception of the Red Cross ambulance companies and a small detachment of regular Army men brought here from Fort Riley, Kan., that the train will be compelled to part with most of its men.

Major R. H. Davies of Chicago, who is assistant adjutant of the sanitary train and acting director of field hospitals, is living in hopes that the contingents from the northern camps who are to be brought here will be of such excellence as to more than balance the loss of men and training time entailed by this transfer.

November 1 has been officially set as the date for the beginning of a comprehensive course of training for the enlisted and commissioned personnel of the medical department in this division. Major R. H. Davies is to have general supervision of the training under the direction of Lieut.-Col. Robert M. Thornburg, division surgeon, and his assistant. Major R. R. Jones of Fort Oglethorpe and Pittsburgh. The course in gas defense, which will be very complete, will be given by Captain Gussow, who is attached to the division surgeon's office and sent here from the school for gas defense at Fort Sill, Okla.

Colonel Chamberlin of the Surgeon-General's Office made a sanitary inspection of Camp Pike, Sunday, October 28. It would have been difficult to find anything resembling dirt in the sanitary train area for some hours before his arrival.

A lieutenant-colonel, a line officer, who visited the area a few days ago, said that this section of the camp had made more elaborate and successful effort at beautifying their surroundings than any other part of the camp which he had visited.

It "spoke well" he said for the "spirit" of the medical personnel. One thing is certain, no branch of the service has shown a greater willingness to do their full duty than have the medical profession who have left their "all" and have entered on this strenuous and in a way very unnatural existence.

One is vividly impressed with the difference between an enlisted personnel acquired by choice and one acquired by draft in the comparison of the Red Cross Ambulance Company of Topeka, Kan., now a part of the sanitary train, with the material many of the companies here may have to work with. This company is commanded by Lieutenant Lerrigo of Topeka, a member of the Kansas State Board of Health and an author of note. His four junior officers are all graduates of Washburn College and a large percentage of the 118 members of this company are from the same institution.

These men give a "sing" every Tuesday night in their barracks, which is very largely attended by the officers of the sanitary train.

Last week Liberty Loan Day was observed by the 312th Sanitary Train. The exercises were in charge of Capt. J. B. Steele, M. R. C., of Chattanooga, and an address was delivered by a prominent attorney of Little Rock. Over \$10,000 was subscribed by the members of the train.

Health conditions are in general good in the Eighty-Seventh Division. The epidemic of measles seems to be abating somewhat.

Among those who have been notified of their promotion recently are Lieut. R. H. Davies of Illinois and Capt. J. W. Thornton of Iowa to the rank of Major, and Lieuts. J. B. Steele of Tennessee, A. J. Lyons of Illinois, C. A. Richards of Wisconsin and Paul R. Howard of Nebraska to the rank of Captain.

DISEASE CONDITIONS AMONG TROOPS IN
THE UNITED STATESExtracts from Telegraphic Reports Received in the Office
of the Surgeon-General for the Week Ending
Oct. 26, 1917

| | |
|---|----------------|
| 1. Total strength of troops | 1,000,971 |
| Admission rate per 1,000 (disease only) | annual 927.5 |
| Non-effective rate (all causes) | 22.8 |
| 2. National Guard-strength | 315,717 |
| Admission rate per 1,000 all camps (disease only) | annual 1,056.8 |
| Non-effective rate all camps (all causes) | 26.1 |
| The following camps show admission rate for disease higher than average: Wheeler, Beauregard, A. L. Mills, Cody, Kearney, Sevier, Doniphan, Shelby and Bowie. | |
| The following camps showing non-effective rate higher than average: Beauregard, A. L. Mills, Wheeler, Shelby, MacArthur and Bowie. | |
| 3. National Army-strength | 413,717 |
| Admission rate per 1,000 all camps (disease only) | annual 900.4 |
| Non-effective rate all camps (all causes) | 18.7 |
| The following camps show admission rate for disease higher than average: Pike, Dix, Travis, Jackson, Lewis and Dodge. | |

The following camps show non-effective rate, all causes, higher than average: Pike, Lewis, Dix, Dodge and Travis.

4. Venereal Disease:
- Admission rate Regulars 63
- Admission rate National Guard (camps)134.5
- Admission rate National Army138.7
- The following camps, National Guard, have rate above average:
Wheeler, Sheridan, Sevier, A. L. Mills, Logan and Bowie.
- The following camps, National Army, have rate above average: Pike,
Jackson, Dix, Lee, Travis, Lewis and Gordon.
5. Number of cases of pneumonia263
- Highest number in any one camp.....Taylor 33
- Number of cases of meningitis 35
- Highest number in any one campDodge 4

6. SPECIAL DISEASES REPORTED DURING THE WEEK ENDING
OCTOBER 26, 1917

| Division | Pneumonia | Dysentery | Malaria | Venereal | Paratyphoid | Typhoid | Measles | Meningitis | Scarlet Fever | Strength of Command |
|---------------------|-----------|-----------|---------|----------|-------------|---------|---------|------------|---------------|---------------------|
| 27th, Wadsworth.. | .. | .. | .. | 63 | .. | .. | .. | .. | .. | 29,529 |
| 28th, Hancock.... | .. | .. | .. | 52 | .. | .. | .. | 1 | .. | 28,632 |
| 29th, McClellan.... | 1 | .. | .. | 43 | .. | .. | 8 | 1 | .. | 25,148 |
| 30th, Sevier..... | 8 | .. | 2 | 104 | .. | .. | 169 | 2 | .. | 22,817 |
| 31st, Wheeler..... | 22 | 1 | 15 | 119 | .. | .. | 164 | 1 | .. | 19,919 |
| 32d, MacArthur.. | 1 | 1 | .. | 2 | .. | .. | 1 | .. | .. | 23,517 |
| 33d, Logan..... | 7 | .. | 25 | 66 | 1 | .. | .. | .. | 1 | 21,653 |
| 34th, Cody..... | 7 | 2 | .. | 40 | .. | .. | 8 | .. | .. | 22,830 |
| 35th, Doniphan.... | 2 | .. | 4 | 44 | .. | .. | 1 | .. | .. | 25,135 |
| 36th, Bowie..... | 24 | .. | .. | 66 | .. | 11 | 75 | .. | .. | 21,789 |
| 37th, Sheridan.... | 3 | .. | .. | 128 | .. | .. | 12 | 1 | .. | 24,051 |
| 38th, Shelby..... | 11 | 1 | 8 | 48 | .. | .. | 22 | 2 | .. | 21,832 |
| 39th, Beauregard.. | 5 | .. | 1 | 6 | .. | .. | 14 | .. | .. | 6,437 |
| 40th, Kearney.... | 4 | .. | .. | 5 | .. | .. | 4 | .. | .. | 13,331 |
| 41st, Greene*..... | .. | .. | .. | .. | .. | .. | .. | .. | .. | ..... |
| 42d, A. L. Mills.. | 1 | .. | 4 | 31 | .. | .. | 1 | .. | .. | 9,092 |
| 76th, Devens..... | 3 | .. | 1 | 7 | .. | 1 | 4 | .. | .. | 30,966 |
| 77th, Upton..... | 1 | .. | .. | 35 | .. | .. | .. | .. | .. | 29,843 |
| 78th, Dix..... | 1 | .. | .. | 94 | .. | .. | .. | .. | .. | 20,040 |
| 79th, Meade..... | .. | .. | .. | 5 | .. | .. | .. | .. | .. | 17,990 |
| 80th, Lee..... | .. | 1 | .. | 132 | .. | .. | .. | 3 | .. | 28,253 |
| 81st, Jackson.... | 6 | 10 | 6 | 84 | .. | .. | 64 | .. | .. | 14,380 |
| 82d, Gordon..... | 1 | .. | .. | 39 | .. | .. | 11 | .. | .. | 14,183 |
| 83d, Sherman.... | 22 | 1 | .. | 34 | .. | .. | 1 | .. | .. | 32,579 |
| 84th, Taylor..... | 33 | .. | .. | 20 | .. | .. | 33 | .. | .. | 26,612 |
| 85th, Custer..... | 1 | .. | .. | 6 | .. | .. | 19 | .. | .. | 17,921 |
| 86th, Grant..... | 12 | .. | .. | 21 | .. | .. | .. | .. | 1 | 27,218 |
| 87th, Pike..... | 5 | 2 | 32 | 292 | .. | .. | 216 | 1 | .. | 22,424 |
| 88th, Dodge..... | 3 | .. | .. | 15 | .. | .. | 5 | 4 | .. | 22,484 |
| 89th, Funston.... | 13 | .. | 1 | 42 | .. | .. | 1 | 4 | 1 | 37,899 |
| 90th, Travis..... | 17 | .. | 9 | 130 | .. | .. | .. | .. | .. | 29,892 |
| 91st, Lewis..... | 1 | .. | .. | 146 | .. | .. | 1 | 1 | .. | 35,930 |

* Not reported.

| | Regulars, U. S. Army, in U. S. only, 1916 | | All Troops in U. S., week ending Oct. 26, 1917 | | Nat'l Guard, All Camps, week ending Oct. 26, 1917 | | Nat'l Army, All Camps, week ending Oct. 26, 1917 | |
|---|--|-------|---|-------|--|--------|---|-------|
| | Cases | Rate | Cases | Rate | Cases | Rate | Cases | Rate |
| Admissions, dis- eases only, an- nual rate per 1000 | | 613 | .... | 776.6 | .... | 1056.8 | .... | 900.4 |
| Pneumonia..... | | 2.59 | 25 | 6.2 | 96 | 15.8 | 119 | 14.9 |
| Dysentery..... | | 3.97 | 1 | 0.2 | 5 | 0.8 | 14 | 1.7 |
| Malaria..... | | 12.62 | 19 | 4.7 | 59 | 9.7 | 49 | 8.1 |
| Venereal..... | | 91.0 | 254 | 6.3 | 817 | 134.5 | 1104 | 138.7 |
| Paratyphoid.... | | 0.31 | 0 | 0 | 1 | 0.1 | 0 | 0 |
| Typhoid..... | | 0.21 | 0 | 0 | 11 | 1.8 | 1 | 0.01 |
| Measles..... | | 20.29 | 80 | 19.8 | 479 | 78.8 | 355 | 44.6 |
| Meningitis..... | | 0.29 | 5 | 1.2 | 8 | 1.3 | 13 | 1.6 |
| Scarlet fever.... | | 0.59 | 16 | 3.9 | 1 | 0.1 | 2 | 0.2 |

7. Deaths by Causes:
- Pneumonia, lobar 22
- Cerebrospinal meningitis 6
- Chronic interstitial nephritis 1
- Parenchymatous nephritis 1
- Acute nephritis 1
- Tubercular meningitis 1
- Diabetes mellitus 1
- Enterocolitis 1
- Gastritis, toxic 1
- Peritonitis 1
- Appendicitis 1
- Erysipelas 1
- Anesthetic (ether) 1
- Abscess, multiple, right kidney 1
- Suicide 6
- Traumatism by firearms 2
- Traumatism by automobile 1
- Traumatism by crushing 1
- Traumatism 1
- Surgical shock 1
- Cause not reported 2

ORDERS TO OFFICERS OF THE
MEDICAL CORPS

Major EDWARD W. LAZELL, Colorado N. G., specialist in nervous and mental diseases, to be relieved from duty with Field Hospital Company No. 4, Camp Mills, Garden City, L. I., N. Y., and to report in person to the commanding general of the camp hospital and to the commanding officer of Base Hospital No. 36, United States Army General Hospital No. 1, New York, N. Y., for duty in his specialty.

Lieut.-Col. GEORGE N. CRABTREE, U. S. Army, retired, now on duty as assistant chief surgeon, Aviation Section, Signal Corps, U. S. Army, Washington, D. C., in addition to his present duties to be assigned to temporary duty as Attending Surgeon, Washington, D. C., during the absence of Lieut.-Col. Theodore C. Lyster, Medical Corps.

Major WILLIAM K. BARTLETT, now at Walter Reed General Hospital, Takoma Park, D. C., to be relieved from station at Fort Des Moines, Iowa, and directed to report in person to the commanding officer of Walter Reed General Hospital, Takoma Park, D. C.

Major CHARLES E. DOERR upon the arrival of Major Osgood at Fort Ontario, N. Y., to be relieved from duty with Field Hospital No. 28, Fort Ontario, N. Y., and directed to proceed to Fort Ethan Allen, Vt.

Major BENJAMIN B. WARRINER, now on duty in connection with aviation, to be assigned to duty with the Aviation Section, Signal Corps, at S. C. Aviation School, Mineola, L. I.

Lieut. NICHOLSON F. CURTIS, now on duty in connection with aviation, to be assigned to duty with the Aviation Section, Signal Corps, at S. C. Aviation School, Mineola, L. I.

Major JOHN T. AYDELOTTE to be relieved from duty at Fort D. A. Russell, Wyoming, and directed to proceed to Fort Sam Houston, Texas.

Lieut. JAMES I. GLOAT to be relieved from duty at Fort Bliss, Texas, and directed to proceed to New York, N. Y., Port of Embarkation.

Major EDGAR D. CRAFT, U. S. Army, retired, to be relieved from duty at Camp Dodge, Des Moines, Iowa, on arrival of Major Alexander T. Cooper, Medical Corps, and directed to report by wire to the commanding general, Western Department, for assignment to duty.

Major SIDNEY L. CHAPPELL, now on duty at Fort Benjamin Harrison, Ind., to be directed to proceed to Madison Barracks, N. Y.

Lieut. GERALD C. BATES, N. G., Adrian, Mo., to be ordered to active duty and directed to proceed to Fort Sill, Oklahoma, and report in person to the commanding general, Camp Doniphan, that place, for duty.

Major JOHN P. FLETCHER, now on duty at the Motor Ambulance Depot, Louisville, Ky., to proceed to Washington, D. C., and report in person to the Surgeon-General of the Army for consultation.

Major CHARLES T. KING to be relieved from duty with the 57th Infantry, Fort Sam Houston, Texas, and directed to proceed to Camp Mills, Garden City, L. I., N. Y., for duty as commanding officer of the base hospital.

Lieut. LLOYD E. TEFFT to be relieved from duty at Fort Grant, Canal Zone, and directed to proceed to Camp Mills, Garden City, L. I., N. Y.

Capt. HARRY J. O'BRYAN, N. G., Watertown, S. D., to proceed to Fort Snelling, Minn.

Major WILLIAM B. BORDEN to be relieved from duty at Madison Barracks, N. Y., and directed to proceed to Fort Benjamin Harrison for the purpose of organizing and commanding Hospital Train 20.

Major JOHN W. MEEHAN to be relieved from duty at Syracuse, N. Y., and directed to proceed to Fort Benjamin Harrison, to organize and command Hospital Train 21.

To report before the president of the board appointed in Paragraph 19, Special Orders, No. 50, War Department, March 2, 1917, for examination for promotion, Col. HENRY D. SNYDER, office of the Surgeon-General of the Army, Washington, D. C.; Majors WILLIAM K. BARTLETT, Walter Reed General Hospital, Takoma Park, D. C.; WILLIAM A. DUNCAN, office of the Surgeon-General of the Army, Washington, D. C.; and PAUL L. FREEMAN, Fort Meyer, Va.

Major HERBERT C. GIBNER, now on duty in the Hawaiian Department, to be directed to report to the president of the board to be convened by the commanding general, Hawaiian Department, for examination for promotion.

Col. ALBERT E. TRUBY, now on duty in the Panama Canal Department, to report in person to the president of the board to be convened by the commanding general, Panama Canal Department, for examination for promotion.

To report to the president of the board to be convened by the commanding general, American Expeditionary Force, France, for examination for promotion, Col. JAMES R. CHURCH; Lieut.-Cols. CHARLES L. FOSTER, JAMES D. HEYSINGER and JOSEPH F. SILER; Majors THOMAS W. BURNETT, ROBERT M. CULLER, LUCIUS L. HOPWOOD, CLEMENS W. McMILLIAN, HENRY J. NICHOLS, OMAR W. PINKSTON, GUY V. RUKKO, ARTHUR N. TASKER and HARRY H. VAN KIRK.

To report to the president of the board to be convened by the commanding general, Western Department, for examination for promotion, Col. ELMER A. DEAN, Presidio, San Francisco, Calif.; Lieut.-Col. WILLIAM H. TEFFT, Fort Douglas, Utah.; and Major WILLIAM R. DAVIS, Fort Rosecrans, Calif.

To report to the president of the board to be convened by the commanding general, Central Department, for examination for promotion, Cols. PERCY M. ASHBURN, Fort Benjamin Harrison, Ind.; and HENRY S. GREENLEAF, Fort Snelling, Minn.; Lieut.-Cols. HENRY F. PIPES and GIDEON McD. VAN POOLE, Fort Benjamin Harrison, Ind.; Majors HENRY C. PILLSBURG, Fort Riley, Kan.;

WILLIAM S. SHIELDS, Chicago, Ill.; FRANK W. WEED, Camp Funston, Fort Riley, Kan.; HOWARD H. BAILY, Camp Grant, Rockford, Ill.; and WILLIAM A. WICKLINE, St. Louis, Mo.

To report to the president of the board to be convened by the commanding general, Eastern Department, for examination for promotion, Col. FRANCIS M. C. USHER, Fort Slocum, N. Y.; Lieut.-Cols. ORVILLE G. BROWN, Camp Mills, Garden City, L. I., N. Y.; JOHN R. BOSLEY, Fort Ontario, N. Y.; SAMUEL M. DELOFFRE, Plattsburg Barracks, N. Y.; GEORGE F. JUENEMANN, Reorganization Camp, Gettysburg, Pa.; HENRY D. THOMASON, Fort Ontario, N. Y.; Majors WILLIAM C. DAVIS, Camp Dix, Wrightstown, N. J.; CHARLES L. GANDY, Allentown, Pa.; PAUL W. GIBSON, New York City; LOUIS H. HANSON, Syracuse, N. Y.; HARRY G. HUMPHREYS, Fort Hancock, N. J.; EDGAR C. JONES, Newport News, Va.; FREDERICK E. MACY, Fort Jay, N. Y.; FERDINAND SCHMITTER, Camp Lee, Petersburg, Va.; and WILLIAM W. VAUGHAN, Allentown, Pa.

To report to the president of the board to be convened by the commanding general, Southern Department, for examination for promotion, Lieut.-Cols. WILLIAM P. BANTA, Nogales, Ariz.; ROBERT L. CARSWELL, Fort Sam Houston, Tex.; and ROBERT C. LOVING, San Antonio, Tex.; Majors CLARENCE L. COLE, Fort Sam Houston, Tex.; and EIDE F. THODE, Fort Clark, Tex.

To report to the president of the board to be convened by the commanding general, Southeastern Department, for examination for promotion, Lieut.-Cols. CRAIG R. SNYDER, Camp McClellan, Anniston, Ala.; ARTHUR M. WHALEY, Camp Sevier, Greenville, S. C.; and LOUIS C. DUNCAN, Fort McPherson, Ga.; Majors CHARLES E. FREEMAN, Camp Pike, Little Rock, Ark.; CHARLES W. HAVERKAMPF, Fort Oglethorpe, Ga.; LEARTUS J. OWEN, Camp Greenleaf, Fort Oglethorpe, Ga.; and EDWARDS C. REGISTER, Hot Springs, Ark.

Major GLENN I. JONES, now on duty at Camp Devens, Ayer, Mass., Northeastern Department, to report to the president of the board to be convened by the commanding general, Northeastern Department, for examination for promotion.

Lieut.-Col. JUNIUS C. GREGORY to be relieved from duty at the Medical Officers' Training Camp, Fort Benjamin Harrison, Ind., and directed to proceed to Fort Oglethorpe, Ga., for duty as instructor.

Major LEARTUS J. OWEN to be relieved from duty at the Medical Officers' Training Camp, Camp Greenleaf, Fort Oglethorpe, Ga., and directed to proceed to Washington, D. C., and report in person to the Surgeon-General of the Army, for duty in his office.

Col. ALEXANDER N. STARK, now on duty at headquarters, Southeastern Department, Charleston, S. C., as department surgeon, to be directed to proceed to Washington, D. C., and report in person to the Surgeon-General of the Army for consultation.

Col. HENRY C. FISHER, now at Camp McClellan, Anniston, Ala., to proceed to Vicksburg, Miss., for the purpose of investigating and reporting on the suitability, for medical purposes, of the camp of Confederate Veterans at that place.

Capt. THOMAS J. LYNCH, N. G., to be relieved from duty with Field Hospital No. 137, Sanitary Train No. 110, Camp Doniphan, Fort Sill, Oklahoma, and to report in person to the commanding officer of the base hospital, Fort Sill, Oklahoma, for duty.

ORDERS TO OFFICERS OF THE MEDICAL RESERVE CORPS

Alabama

To Boston, Mass., for a course of instruction in orthopedic surgery from the Army Medical School, Lieut. HENRY W. GRADY, Birmingham.

To Camp Beauregard, Alexandria, La., for duty, Lieuts. JOHN M. BALL, Eufaula; CLIFFORD V. MAYHALL, Naleyville.

To Camp Jackson, Columbia, S. C., for duty from Fort O., Columbia, S. C., for duty, from Fort O., Lieuts. ROBERT GOLDWAITE, Montgomery; OTIS W. LITTLE, Salco.

To Camp Mills, Garden City, L. I., 41st Division, for duty, from Camp Greenleaf, Lieut. WILLIAM C. HATCHETT, Toney.

To Camp Sevier, Greenville, S. C., for duty, Lieut. COLUMBUS M. WOOLEY, Thorsby.

To Camp Shelby, Hattiesburg, Miss., from Camp Greenleaf, for duty, Lieut. ALBERT D. McFADDEN, Bellwood.

To Camp Wheeler, Macon, Ga., for duty, Lieut. LEWIS H. HAMNER, Camp Hill.

To Camp Wheeler, Macon, Ga., for duty, Lieutenant CRENSHAW, Hope Hill.

To Fort Benjamin Harrison, for duty in connection with orthopedic work, Lieut. WYATT S. ROBERTS, LaFayette.

To Fort Oglethorpe, Ga., for a course of instruction, Lieut. ALEXANDER W. GRAVES, Ashland.

To Fort Oglethorpe, Ga., for a course of instruction, Lieut. RAYFORD HODGES, Woodville.

To Neurological School, Chicago, Ill., for intensive training in brain surgery, from Fort O., Lieut. W. THEO. LANGLEY, Camp Hill.

To Philadelphia, Pa., University Hospital, for a course of instruction in fracture and upon completion of this course to proceed to Montgomery, Ala., for temporary duty as surgical assistant, from Fort O., Capt. WILLIAM M. JORDAN, Birmingham.

To his home and the inactive list of the Medical Reserve Corps from Camp Sheridan, Capt. CHARLES A. THIGPEN, Montgomery.

Arizona

To Camp Cody, Deming, N. M., for duty, Lieut. ROBERT V. PARLETT, White Piver.

Arkansas

To Camp Beauregard, Alexandria, La., for duty, from Fort Riley, Lieut. PHILIP H. THOMAS, JR., Clarendon.

To Camp Dodge, Des Moines, Ia., and report to the Commanding Officer for duty in the genito-urinary and dermatologic section, Lieut. VELSPEA H. RAGSDALE, Fitzhugh.

To Camp Doniphan, Fort Sill, Okla., for duty from Fort Riley, Lieuts. MATT F. HOUSTON, Clarendon; for duty in the division of ophthalmology, section of surgery of the head, ARIS. W. COX, Helena.

To Camp Greenleaf, Fort O., for a course of instruction, Lieut. MARSHALL ALLEN, O'Kean.

To Camp Jackson, Columbia, S. C., for duty from Fort Oglethorpe, Lieut. DEWELL GANN, JR., Little Rock.

To Camp Logan, Houston, Tex., for duty, from Fort Riley, Lieut. PAT MURPHY, Little Rock.

To Camp MacArthur, Waco, Tex., for duty, Capt. ANTHONY C. THIELLIERS, Varner.

To Fort Benjamin Harrison, for a special course of instruction in tuberculosis examination, Capt. PERRY C. WILLIAMS, Texarkana.

To Fort Oglethorpe, Ga., for a course of instruction, Lieut. LOREN WALLIN, Dermott.

To Fort Oglethorpe, Ga., for a course of instruction, Lieut. ERTON E. POYNER, Green Forest.

To St. Louis, School of Plastic and Oral Surgery, Washington University, for a three weeks' course of intensive training in head surgery, from Fort Oglethorpe, Lieut. JAMES W. BUTTS, Helena.

California

To Camp Cody, Deming, N. M., for duty, Lieut. LIVA C. McLAIN, Bakersfield.

To Camp Jackson, Columbia, S. C., for duty from Fort Oglethorpe, Lieut. ARTHUR M. GREENWOOD, San Diego.

To Camp Lewis, American Lake, Washington, for duty in the laboratory of the base hospital, Lieut. ROY W. HAMMACK, Los Angeles.

To Camp Mills, Garden City, L. I., 41st Division for duty, from Allentown, Pa., Lieut. FRANK E. McCULLOUGH, Lincoln.

To Camp Mills, Garden City, L. I., 41st Division, for duty, from Fort Benjamin Harrison, Ind., Lieut. SMITH S. JOHNSON, San Francisco.

To Houston, Texas, Aviation Section, Signal Corps, for duty, Capt. LOREZO F. LUCKIE, Los Angeles.

To Los Angeles, Calif., Aviation Section, Signal Corps, for duty, Capt. WILLIAM H. ROBERTS, Sonora.

To Mineola, L. I., Aviation Section, Signal Corps, for duty, Lieut. BRUNO F. SANDOW, Oakland.

To New York, N. Y., for instruction in orthopedic work, from the Army Medical School, Washington, Lieut. ORAL B. BOLIBAUGH, Reedley.

To Post Graduate Hospital, New York City, for a course of instruction in urology, from U. S. Army Transport Sherman, San Francisco, Lieut. THOMAS R. PETCH, Eureka.

To Report to Commanding Officer, Western Department, for duty, Lieut. JOSEPH H. GATTON, San Francisco.

To San Francisco, Calif., Aviation Section, Signal Corps, for duty, Lieut. ELBRIDGE J. BEST, San Francisco.

To San Francisco, University of California, for duty, Lieut. FREDERICK C. LEWITT, San Francisco.

Honorably discharged from the Medical Reserve Corps on account of being physically disqualified for active service, Lieut. JOHN C. PAINE, Exeter.

Canal Zone

To Mineola, L. I., Aviation Section, Signal Corps, for duty, Captain EDWARD P. BEVERLEY, Balboa.

To New York, N. Y., for instruction in orthopedic work, from Army Medical School, Washington, D. C., Panama City.

To Washington, D. C., and report to the surgeon-general for instructions, Capt. HERBERT C. CLARK, Ancon.

Colorado

To Boston, Massachusetts General Hospital, from Medical Officers' Training Camp, Fort Riley, Kan., for a course of instruction on fractures and on completion of this duty to Camp Doniphan, Fort Sill, Okla., for temporary duty as surgical assistant, Capt. CLARENCE B. INGRAHAM, JR., Denver.

To Camp Greenleaf, Fort Oglethorpe, for a course of instruction, Lieut. DANIEL B. RILEY, Ignacio.

To Camp Logan, Houston, Tex., for duty from Fort Riley, Lieuts. WINFIELD S. CLELAND, Delta; BERT MENSER, Denver.

To Camp Travis, Fort Sam Houston, Texas, for duty, from Fort Riley, Kan., Lieut. ALECK F. HUTCHINSON, Durango.

To Fort Benjamin Harrison, Hospital Train 20, for duty, from Medical Officers' Training Camp, Fort Benjamin Harrison, Lieut. WILLIAM C. LUCAS, Weldona.

To Mineola, L. I., Aviation Section, Signal Corps, for duty, Lieuts. WILLIAM W. JONES, Denver; Lieut. ROBERT LEVY, Denver.

To New York City, Bellevue Hospital, for a course of instruction in fractures and on completion of this duty to Camp Custer, Battle Creek, Mich., 85th Division, for temporary duty, from Camp Custer, Lieut. ROBERT G. PACKARD, Denver.

To St. Louis, School of Plastic and Oral Surgery, Washington University, for a three weeks' course of intensive training in head surgery, from Fort Riley, Lieut. FRED H. CARPENTER, Denver.

Connecticut

To Boston, Mass., for a course of instruction in orthopedic surgery from the Army Medical School, Lieut. FREDERICK K. HERPEL, Hartford.

To Camp Greenleaf, Fort Oglethorpe, for a course of instruction, Capt. ROBERT E. PERDUE, Norwich.

To *Camp McClellan*, Annapolis, Ala., for duty as assistant to the chief of the Medical Service, from Fort Benjamin Harrison, Lieut. JOHN C. ROWLEY, Hartford.

To *Fort Oglethorpe*, Ga., for a course of instruction, Lieuts. LEVERNE HOLMES, Manchester; RUSSELL B. STREET, Suffield.

To *Mineola, L. I.*, Aviation Section, Signal Corps, for duty, Capt. MICHAEL J. SHEAHAN, Derby.

To *New Haven, Conn.*, Aviation Section, Signal Corps, for duty, Capt. HAROLD S. ARNOLD, New Haven.

To *Rockford, Ill.*, for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Lieut. CHARLES H. TURKINGTON, Pitchfield.

Delaware

To *Camp Meade*, Annapolis Junction, Md., for duty, Lieut. ROBERT R. ROTH, New Castle.

To *St. Louis*, School of Plastic and Oral Surgery, Washington University, for a three weeks' course of intensive training in head surgery, from Fort Riley, Lieut. JOHN B. ELLIOT, Laurel.

District of Columbia

To *Boston, Mass.*, for a course of instruction in orthopedic surgery, from the Army Medical School, Lieuts. JOHN R. DEVELLING, Washington; EDWARD B. MACON, Washington.

To *Camp Wheeler*, Macon, Ga., for duty, from Fort Oglethorpe, Capt. FRANCIS P. MORGAN, Washington.

To *Mineola, L. I.*, Aviation Section, Signal Corps, for duty, Lieut. CHARLES W. HYDE, Washington.

To *Neurological School*, Chicago, Ill., for a course of instruction in brain surgery, Lieut. GRAFTON D. TOWNSHEND, Washington.

To *New York, N. Y.*, for instruction in orthopedic work, Capt. EARL OSTERHAUS, Washington.

To the *Office of the Surgeon-General*, for duty in charge of the subdivision of otolaryngology, section of surgery of the head, Major CHARLES W. RICHARDSON, Washington.

Honorably discharged from the Medical Reserve Corps, Capt. VICTOR B. RENCH, Washington.

Florida

To *Boston, Mass.*, for a course of instruction in orthopedic surgery, from the Army Medical School, Lieut. LAURENT L. LAROCHE, Cocoa.

To *Camp Jackson*, Columbia, S. C., for duty from Fort Oglethorpe, Lieut. LOUIS B. BOUCHELLE, Sanford.

To *Camp Lee*, Petersburg, Va., for duty, to be relieved from his present duties at that camp, Lieut. BENNETT A. BURKE, Titusville.

To *Camp Mills*, Garden City, L. I., 41st Division, for duty, from Allentown, Lieuts. PAUL L. GOSS, Mulberry; WILLIE J. VINSON, Tarpon Springs.

To *Fort Oglethorpe*, for a course of instruction, Lieut. THOMA E. PARRISH, Dania.

To *Mineola, L. I.*, Aviation Section, Signal Corps, for duty, Lieuts. JAMES L. PENNINGTON, Fountain; CLAUDE V. GAUTIER, Passagrille.

To his home and the inactive list of the Medical Reserve Corps on account of being physically disqualified for active service, from Allentown, Pa., Lieut. EDGAR S. STRICKLAND, Miccosukee.

Georgia

To *Atlanta, Ga.*, Base Hospital No. 43, and on completion to the inactive list of the Medical Reserve Corps, Lieut. EDGAR H. GREENE, Atlanta.

To *Camp Gordon*, Atlanta, Ga., for duty in the orthopedic service, Lieut. OSCAR L. MILLER, Atlanta.

To *Camp Greenleaf*, Fort Oglethorpe, for a special course of instruction in tuberculosis examinations, Lieuts. ENOCH C. SEALE, Atlanta, and LUCIUS F. WRIGHT, Atlanta.

To *Camp Jackson*, Columbia, S. C., for duty, from Fort Oglethorpe, Lieut. JOSEPH E. MERCER, Baxley.

To *Camp Lee*, Petersburg, Va., for duty in connection with venereal diseases, Lieut. JAMES J. BEATON, Waycross.

To *Camp Mills*, Garden City, L. I., 41st Division, for duty, from Allentown, Pa., Lieut. MARK E. PERKINS, Miller.

To *Camp Pike*, Little Rock, Ark., 87th Division, for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Camp Greenleaf, Fort Oglethorpe, Ga., Lieut. JESSE M. ANDERSON, Columbus.

To *Camp Wadsworth*, Spartanburg, S. C., for temporary duty, from Fort Oglethorpe, Lieut. GEORGE L. FUQUAY, Savannah.

To *Camp Wheeler*, Macon, for duty, Lieuts. BOWMAN J. WISE, Plains; JOHN H. TERRELL, Jr., Canon; EGBERT M. TOWNSEND, Tilton.

To *Mineola, L. I.*, Aviation Section, Signal Corps, for duty, Lieuts. JOHN H. HALL, Atlanta; THOMAS E. BLACKBURN, Swainsboro.

To *Fort Oglethorpe*, for a course of instruction, Lieut. ROBERT F. McLEOD, Pine View.

To *St. Louis, Mo.*, Washington University, for a course of instruction, from Base Hospital No. 43, Atlanta, Ga., Lieut. JAMES W. ROBERTS, Jr., Atlanta.

To *Washington, D. C.*, Aviation Section, Signal Corps, for duty, Lieut. SAMUEL A. ALEXANDER, Savannah.

Idaho

To *Camp Lewis*, American Lake, Washington, for temporary duty, Lieut. FREDERICK W. DIDIER, Harrison.

To *Camp Travis*, Fort Sam Houston, for duty, from Fort Riley, Kan., Lieuts. SAMUEL T. FANCETT, Bonners Ferry; GEORGE G. FITZ, Richfield.

To *Fort Riley*, Kan., for duty, Lieut. DONALD S. NUMBERS, Parma.

To *Mineola, L. I.*, Aviation Section, Signal Corps, for duty, Lieut. CLYDE T. SMITH, Pocatello.

Illinois

To *Boston, Mass.*, for a course of instruction in orthopedic surgery, from the Army Medical School, Lieut. HARVEY E. WEBB, Chicago.

To *Camp American University*, Washington, D. C., for duty with the 30th Engineers, from the Army Medical School, Lieut. ALFRED E. JONES, Chicago.

To *Camp Beauregard*, Alexandria, La., for duty, from Fort Riley, Capt. EMMETT A. GARRETT, Peoria; Lieuts. WILLIAM THOMSON, Belknap; NEIL R. FUNK, Chicago; EDWARD H. RATEGAN, Chicago; EDWIN B. GODFREY, Springfield; HAMES L. LEWIS, Joliet.

To *Camp Cody*, Deming, N. M., for duty in connection with the division of otolaryngology, section of surgery of the head, Lieut. DOUGLAS A. LEHMAN, Harrisburg.

To *Camp Custer*, Battle Creek, Mich., for duty, Lieuts. SHERMAN DAVIS, Chicago; GRANT J. GRAY, Chicago.

To *Camp Funston*, Fort Riley, for duty, Lieut. RAYMOND EVANS, Eaton.

To *Camp Doniphan*, Fort Sill, Okla., for duty from Fort Riley, Kan., Capt. ROBERT G. MCCARTHY, Chicago.

To *Camp Grant*, Rockford, Ill., for duty, Capt. EMIL WINDMUELLER, Woodstock; Lieut. CARL V. A. WEICHEL, Barrington; HARRISON C. CHAMPLIN, Chicago; LEO G. HOGAN, Chicago.

To *Camp Greenleaf*, Fort Oglethorpe, Ga., for a course of instruction, Lieuts. HARRY M. KEDGE, Chicago; ELMER MAURICE SMITH, Georgetown; ARVID E. KOHLER, Moline; GEORGE L. RATHBUN, New Windsor; LEON W. KELSON, Paxton; HENRY STERN, South Chicago.

To *Camp Logan*, 33rd Division, Houston, Tex., for duty, Major DANIEL W. ROGERS, Chicago; Lieuts. WILLIAM R. MANGUM, Bridgeport; WALTER D. HALL, Chicago; OLIVER C. HARGREAVES, Chicago; ORVIL O'NEAL, Shattuc; JOHN B. HAZEL, Jr., Staunton; HARLEY A. ZINSSER, Washington.

To *Camp McClellan*, Annapolis, Ala., for duty as assistant to the chief of the Medical Service, Lieut. FRANK EVANS, Springfield.

To *Camp Mills*, Garden City, L. I., 41st Division, for duty from Allentown, Lieuts. EARL K. LANGFORD, Chicago; JOSEPH C. KIMBALL, Joliet.

To *Camp Pike*, Little Rock, Ark., for duty as chief of the surgical service, Major HUGH McKENNA, Chicago.

To *Camp Taylor*, Louisville, Ky., from Fort Benjamin Harrison, Lieut. WILLIAM H. CREDE, Chicago.

To *Camp Travis*, Fort Sam Houston, Tex., for duty, from Fort Riley, Kan., Lieuts. WALTER A. DEW, Belleville; GLENN S. EVANS, Forrest; MORRIS FINKELBERY, Springvalley.

To *Camp Wadsworth*, Spartanburg, S. C., for duty, Lieut. ORVAN A. PHIPPS, Toledo.

To *Chicago*, Neurological School, for a course of instruction in brain surgery, Major SAMUEL C. PLUMMER, Chicago; Lieut. FRED L. GLASCOCK, Chicago.

To *Fort Benjamin Harrison*, Ind., for a special course of instruction in tuberculosis examination, Capt. CHARLES H. POWELL, Old Ripley; Lieuts. EDWIN S. GILLESPIE, Wenona; TIMOTHY C. WEBER, West Salem.

To *Fort Oglethorpe*, for a course of instruction, Capt. JOHN B. HOWE, Chicago; Lieuts. FRANK J. JIRKA, Chicago; ALFRED C. WENDT, Chicago; LUCIEN N. LINDSEY, Forsyth; RALPH A. CLARIDGE, Kaneville; SAMUEL L. OREN, Lewiston.

To *Fort Sam Houston*, Tex., Camp Travis, for duty from Fort Riley, Kan., Lieut. ANDREW J. AIRD, Carterville.

To *Hoboken, N. J.*, for duty, from Fort Benjamin Harrison, Lieut. GEORGE N. PRATT, Chicago.

To *Mineola, L. I.*, Aviation Section, Signal Corps, for duty, Lieuts. GROVER C. OTRICH, Belleville; RALPH H. KUHN, Chicago; CHARLES P. SMALL, Evanston.

To *New York*, for instruction in orthopedic work, from Army Medical School, Lieut. MARCUS H. HOBART, Chicago.

To *Pittsburgh, Pa.*, from Fort Benjamin Harrison for a course of instruction on fractures and on completion of this duty to Camp Doniphan, Fort Sill, Okla., for temporary duty as surgical assistant, Capt. CHARLES H. PARKES, Chicago; for a course of instruction on fractures and on completion of this duty to Fort Riley, Kan., and report for temporary duty as surgical assistant, from Fort Benjamin Harrison, Capt. WILLIAM G. LEE, Chicago.

To *Plattsburg Barracks*, N. Y., for duty in connection with orthopedic work, from Camp Sheridan, Lieut. JAMES H. VETTER, Chicago.

To *Rockefeller Institute*, for a course of instruction and on completion of this duty to Fort Logan, Colo., for temporary duty, from Fort Benjamin Harrison, Capt. VERNON C. DAVID, Chicago.

To *Rockford, Ill.*, for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Lieut. JOSEPH URKOV, Chicago.

To *St. Louis*, School of Plastic and Oral Surgery, Evans Dental Institute, for a three weeks' course of intensive training in head surgery, from Fort Oglethorpe, Lieut. WILLIAM H. MALEY, Galesburg.

To *Walter Reed General Hospital*, Takoma Park, D. C., for duty, from State Psychopathic Hospital, Ann Arbor, Mich., Lieut. EDWARD J. STRICKLER, Chicago.

To his home and the inactive list of the Medical Reserve Corps of the Army on account of being physically disqualified for active service, Lieut. JAMES A. BOYER, Carmi.

Indiana

To *Boston, Mass.*, for a course of instruction in orthopedic surgery, from the Army Medical School, Lieut. HASKETT L. CONNER, Indianapolis.

To *Camp Beauregard*, Alexandria, La., for duty, from Fort Riley, Lieut. EDWARD L. DEWEY, Whiting.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Capt. LEWIS F. MOBLEY, Summitville.

To *Camp MacArthur*, Waco, Tex., for duty, from Fort Benjamin Harrison, Lieut. SIDNEY G. CORTNER, Otisco.

To *Camp Meade*, Annapolis Junction, Md., for duty, from Phipps Clinic, Baltimore, Md., Lieut. WILLIS W. CAREY, Fort Wayne.

To *Camp Mills*, Garden City, L. I., 41st Division, for duty, from Allentown, Lieuts. LLOYD A. ELLIOT, Elkhart; WALTER M. STOUT, Indianapolis; JAMES G. KIDD, Roann; for duty from Fort Benjamin Harrison, Lieuts. HENLY H. HUBBARD, Boswell; HOMER E. LINE, Chili.

To *Camp Sevier*, Greenville, S. C., for duty, Capt. WILLIAM E. GEORGE, Crawfordville.

To *Camp Sherman*, Chillicothe, Ohio, for duty, from Fort Benjamin Harrison, Lieuts. CHARLES E. STON, Shoals; MALCOLM B. FYFE, Wheatfield.

To *Camp Travis*, Fort Sam Houston, Tex., for duty from Fort Riley, Kan., Lieut. DANIEL D. JONES, Berne.

To *Fort Benjamin Harrison*, for a special course of instruction in tuberculosis examination, Lieut. JULIUS J. GROSVENOR, Richmond.

To *Fort Oglethorpe*, for a course of instruction, Lieuts. NAPOLEON LA BONTA, Indianapolis; CLAUDE B. NEIDHAMER, Indianapolis; FREEMAN R. BANNON, Kokomo; GEORGE H. DAY, New Albany.

To *Mineola, L. I.*, Aviation Section, Signal Corps, for duty, Lieuts. BERNARD J. LARKIN, Indianapolis; EARL D. JEWETT, St. Paul.

To *Rockefeller Institute*, New York City, for a course of instruction and on completion of this course to proceed to Camp Taylor, Louisville, Ky., for temporary duty, from Fort Benjamin Harrison, Lieut. FREDERICK A. HENDERSON, Kokomo.

To *Rockford, Ill.*, for duty from Fort Benjamin Harrison, Lieut. EDGAR R. HIATT, Portland.

To *St. Louis*, School of Plastic and Oral Surgery, Evans Dental Institute, for a three weeks' course of intensive training in head surgery, Capt. ALFRED P. ROOPE, Columbus.

To *St. Louis*, School of Plastic and Oral Surgery, Washington University, for a three weeks' course of intensive training in head surgery, from Fort Benjamin Harrison, Capt. GEORGE B. BREEDLOVE, Martinsville; from Fort Riley, Lieut. FRED G. EBERHARD, South Whitley.

To his home and honorably discharged from the Medical Reserve Corps on account of being physically disqualified for active service, from Fort Benjamin Harrison, Capt. JOSEPH K. WORTHINGTON, Indianapolis.

Iowa

To *Boston*, Massachusetts General Hospital, from Medical Officers' Training Camp, Fort Riley, for a course of instruction on fractures and on completion of this duty to Camp Lewis, American Lake, Washington, for temporary duty as surgical assistant, Capt. CARL J. SNITKAY, Belle Plaine.

To *Camp Beauregard*, Alexandria, La., for duty, from Fort Riley, Lieuts. MERLE BONE, Albion; ROY C. GUTCH, Chariton; EDWARD L. HALLINAN, Clinton; WALTER G. FINLEY, Mondamin.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Capt. CHALMERS A. HILL, Council Bluffs; JOHN W. SHUMAN, Sioux City; ROBERT C. CRUMPTON, Webster City.

To *Camp Jackson*, Columbia, S. C., for duty from Fort Oglethorpe, Lieut. JOHN F. MEANY, Rockwell.

To *Camp Logan*, Houston, Tex., for duty from Fort Riley, Lieut. RALPH J. SELMAN, Blakesburg.

To *Camp Logan*, Houston, Tex., for duty from Fort Riley, Lieuts. BENJAMIN C. HAMILTON, JR., Jefferson; PAUL NICOLAI, Livermore; JOHN W. STIERS, Muscatine; CLYDE R. VAN VOORHIS, Prairie City; EDMUND W. WILSON, Rolfe; HERBERT PEASE, Slater.

To *Camp Travis*, Fort Sam Houston, Tex., for duty, from Fort Riley, Kan., Lieut. ROY K. KEECH, Cedar Rapids.

To *Fort Oglethorpe*, for a course of instruction, Lieuts. GEORGE W. FRANK, Buffalo; ERWIN J. GOTTSCH, LeMard; ROBERT G. HINRICHS, Palmer.

Kansas

To *Camp Beauregard*, Alexandria, La., for duty, from Fort Riley, Lieuts. CHARLES J. BLISS, Mayetta; UEN S. HARRISON, Topeka.

To *Camp Doniphan*, Fort Sill, Okla., for duty, from Fort Riley, Lieuts. HERBERT W. JURY, Clafin; CHARLES A. DIETER, Hope; HARRY H. HUDSON, Newton; MEADE A. BUTTON, Topeka.

To *Camp Greenleaf*, Fort Oglethorpe, Ga., for a course of instruction, Capt. FRANKLIN T. JOHNSON, JR., Elmdale; Lieut. CASPER J. MIDDLEKAUFF, Hays.

To *Camp Logan*, Houston, Texas, for duty, from Fort Riley, Lieut. JAMES G. STEWART, Topeka.

To *Camp MacArthur*, Waco, Tex., for duty, Lieuts. ALEXANDER B. SCOTT, Bucklin; THOMAS E. CRUMP, Parsons.

To *Camp Travis*, Fort Sam Houston, Tex., for duty, from Fort Riley, Lieut. RALPH C. HENDERSON, Erie.

To *Fort Riley*, for duty, Lieuts. WILLIAM H. HEUSCHELS, Corning; MARK BEACH, Fort Riley; MALCOLM NEWLON, Lincoln.

To *Kelly Field*, Signal Corps, Aviation School, San Antonio, Tex., from Fort Benjamin Harrison, for duty, Lieut. PAUL C. CARSON, Ashland.

To *Philadelphia*, to the School of Plastic and Oral Surgery, Evans Dental Institute, for a three weeks' course of intensive training, Lieut. IVAN R. BURKET, Ashland.

To *St. Louis*, School of Plastic and Oral Surgery, Washington University, for a three weeks' course of intensive training in head surgery, from Fort Riley, Lieut. JESSE D. COOK, Topeka.

Kentucky

To *Army Medical School*, Washington, D. C., for the required course of instruction, Lieut. FLOYD V. KILGORE, Louisville.

To *Camp Beauregard*, Alexandria, La., for duty, from Fort Riley, Kan., Lieuts. ARTHUR C. GOODMAN, Louisville; WILLIAM A. KRIEGER, New Port; MARVIN C. PENTZ, Nicholasville.

To *Camp Greenleaf*, Fort Oglethorpe, Ga., for a course of instruction, Lieut. CLAY CRAWFORD, Fort Thomas.

To *Camp Logan*, Houston, Tex., for duty, from Fort Riley, Kan., Lieuts. LOUIS M. TOMLINSON, Harveyville; GROVER A. BECKETT, Sunrise.

To *Camp Meade*, Annapolis Junction, Md., for duty, from Phipps Clinic, Baltimore, Capt. WALTER A. LACKEY, Paducah.

To *Camp Mills*, Garden City, L. I., 41st Div., for duty, from Fort Benjamin Harrison, Lieut. ALBERT E. HOLMES, Louisville.

To *Camp Sevier*, Greenville, S. C., for duty, Lieut. WILLIAM T. BRUNER, Louisville.

To *Camp Travis*, Fort Sam Houston, Tex., for duty, from Fort Riley, Kan., Lieut. ROBERT B. MORRIS, Bowling Green.

To *Camp Wadsworth*, Spartanburg, S. C., for duty, Lieut. HOMER L. NICKELL, Salt Lick.

To *Camp Wheeler*, Macon, Ga., for duty, from Fort Oglethorpe, Lieut. JOHN P. WHEELER, Carrollton.

To *Fort Benjamin Harrison*, Hospital Train 20, for duty, from Medical Officers' Training Camp, Lieut. WILLIAM B. DOHERTY, Louisville; for a course in tuberculosis examination, Lieut. CHARLES F. VOIGHT, Valley Station.

To *Fort Oglethorpe*, for a course of instruction, Lieut. JOHN D. GRANT, Maysville.

To *Fort Sheridan*, Ill., for duty with Hospital Train A, from Fort Benjamin Harrison, Lieut. WILLIAM B. DOHERTY, Louisville.

To *Harvard Medical School*, Boston, Mass., for a course of instruction in orthopedic surgery, and on completion of this course to proceed to his home and return to the inactive list of the Medical Reserve Corps, Lieut. OTTO P. HODGE, Grants Lick.

To *New York City*, Bellevue Hospital, for a course of instruction in fractures, and on completion of this duty to Camp Taylor, Louisville, Ky., 84th Div., for temporary duty, from Camp Taylor, Lieut. JOHN B. RICHARDSON, JR., Louisville.

To *Rockford, Ill.*, for duty, from Fort Benjamin Harrison, Lieuts. WILLIAM J. YOUNG, Louisville; for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, ALFRED H. KELLY, Shively.

Relieved from duty at the Medical Officers Training Camp, Fort Des Moines, Iowa, and returned to the inactive list of the Medical Reserve Corps, Lieut. VAN J. DAVIS, Paducah.

To his home on completion of the course at the school of plastic and oral surgery, Washington University, St. Louis, Mo., and returned to the inactive list of the Medical Reserve Corps, Capt. ROBERT M. COLEMAN, Lexington.

Louisiana

To *Boston, Mass.*, for a course of instruction in orthopedic surgery, from the Army Medical School, Lieut. KARL F. KESMODEL, New Orleans.

To *Camp Beauregard*, Alexandria, La., for duty, Lieut. WALTER H. REILLEY, New Orleans.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Lieuts. ALFRED L. LEWIS, Bogalusa; SIDNEY F. BRAND, New Orleans.

To *Camp Mills*, Garden City, L. I., 41st Div., for duty, from Camp Greenleaf, Fort Oglethorpe, Lieut. JOHN G. LILLY, St. Joseph.

To *Camp Travis*, Fort Sam Houston, Tex., for duty, from Fort Riley, Kan., Lieut. PRENTISS E. PARKER, Bourg.

To *Camp Wheeler*, Macon, Ga., for duty, from Fort Oglethorpe, Lieut. WILLIAM T. MCNEESE, Augie.

To *Chicago, Ill.*, Neurological School, Presbyterian Hospital, for intensive training in brain surgery, and on completion of this course to return to his present station, from Fort Oglethorpe, Capt. THOMAS P. LLOYD, Shreveport.

To *Cornell Medical College*, N. Y., for a course of instruction in military roentgenology, from Medical Officers' Training Camp, Camp Greenleaf, Fort Oglethorpe, Lieut. ELEAZOR R. BOWIE, New Orleans.

To *New York City*, Bellevue Hospital, for a course of instruction in fractures and on completion of this course to Fort Oglethorpe for temporary duty in the Provisional Base Hospital, from Fort Oglethorpe, Lieut. THOMAS RAGAN, Shreveport.

To *Reorganization Camp*, Gettysburg, Pa., for duty, from Army Medical School, Lieut. FARRAR B. PARKER, New Orleans.

Maine

To *Boston, Mass.*, for a course of instruction in orthopedic surgery, from the Army Medical School, Capt. WILLIAM C. WHITMORE, Portland.

To *Camp Logan*, Houston, Tex., for duty, from Fort Riley, Lieut. MILTON O. HOUGHTON, Paris.

To *Camp Wadsworth*, Spartanburg, S. C., for duty, Lieut. JAMES W. LOUGHLIN, Newcastle.

Maryland

To *Boston, Mass.*, for a course of instruction in orthopedic surgery, from the Army Medical School, Lieut. ARTHUR M. BACON, Baltimore.

To *Camp Jackson*, Columbia, S. C., for duty, from Fort Oglethorpe, Lieuts. JAMES S. AKEHURST, Baltimore; WILLIAM L. MILLEA, Baltimore.

To *Camp Mills*, Garden City, L. I., 41st Div., for duty, from Camp Greenleaf, Fort Oglethorpe, Lieut. JOHN R. DOWNES, Preston.

To *Camp Wadsworth*, Spartanburg, S. C., for duty, Lieuts. HOWARD H. JOHNSTON; for duty as assistant to the chief of the medical service and as tuberculosis specialist, Lieut. ARTHUR F. PETERSON, Baltimore.

To *Camp Wheeler*, Macon, Ga., for duty, from Fort Oglethorpe, Lieut. ALEXANDER McC. STEVENS, Easton.

To *Chicago, Ill.*, Neurological School, for intensive training in brain surgery, Lieut. WILLIAM R. GERAGHTY, Baltimore.

To *Hoboken, N. J.*, for duty, Lieut. JAMES A. ETHERIDGE, Baltimore.

To *Pittsburgh*, for a course of instruction on fractures and on completion of this duty to Camp Shelby, Hattiesburg, Miss., for temporary duty as surgical assistant, Lieut. HARRY GROSS, Baltimore.

To *Plattsburg Barracks*, N. Y., in connection with ophthalmology and otolaryngology, section of surgery of the head, Capt. ALEXANDER D. MCCONACHIE, Baltimore.

To *Saranac Lake, N. Y.*, for ten days' instruction in laboratory methods in the diagnosis of tuberculosis and on completion of this instruction to be returned to his proper station, from Camp Devens, Ayer, Mass., Lieut. GEORGE B. WISLOCKI, Baltimore.

To his home on completion of the course at the school of plastic and oral surgery, Washington University, St. Louis, Mo., and returned to the inactive list of the Medical Reserve Corps, Lieut. FRED RANKIN, Baltimore.

Massachusetts

To *Boston*, as instructor in orthopedic surgery, Capt. MARK H. ROGERS, Boston; for a course of instruction in military roentgenology, Capt. JOHN H. LINDSAY, Fall River.

To *City Hospital, Boston*, for a course of instruction in fractures, and on completion of this course to proceed to Camp Devens, for duty as surgical assistant, from Camp Devens, Lieuts. ROBERT L. JONES, Lowell; for a course of instruction on fractures, and on completion of this course to Plattsburg Barracks, N. Y., for temporary duty as surgical assistant, Lieut. WILLIAM F. RYAN, Lowell.

To *Boston, General Hospital*, for a course of instruction on fractures, and on completion of this duty to Fort McPherson, Ga., for temporary duty, from Fort Benjamin Harrison, Lieut. DAVID D. SCANNELL, Boston.

To *Camp Custer*, Battle Creek, Mich., for duty, from Fort Benjamin Harrison, Lieut. OSCAR L. SPENCER, Lynn.

To *Camp Devens*, Ayer, Mass., for duty, from Fort Benjamin Harrison, Lieut. JOHN F. STREETER, Springfield.

To *Camp Greene*, Charlotte, N. C., for duty as assistant to the chief of the Medical Service, Lieut. ALFRED E. JOHNSON, Greenfield.

To *Camp MacArthur*, Waco, Tex., for duty, from Fort Benjamin Harrison, Lieuts. RIDGELY F. HANSCOM, Newton; JOHN A. SUL-LIVAN, Pittsfield.

To *Camp Mills*, Garden City, L. I., 41st Div., for duty, from Fort Benjamin Harrison, Lieuts. WERNER HILTPOLD, Easthampton; WILLARD W. LEMAIRE, Lynn.

To *Fort Oglethorpe*, for a course of instruction, Capt. STARR A. MOULTON, Winthrop; Lieut. JOSEPH SEGAL, Boston.

To *Fort Ontario*, New York, for duty as commanding officer of Field Hospital No. 28, from Fort Benjamin Harrison, Major GEORGE OSGOOD, Cohasset; for duty as commanding officer of Field Hospital No. 30, Capt. DANNA W. DRURY, Boston; for duty with Field Hospital No. 30, from Fort Ethan Allen, Vt., Capt. HARRY E. SEARS, Beverly; HENRY M. FIELD, Norwood; Lieuts. ROLF C. NORRIS, Methuen; from Camp Devens, WHITMAN G. STICKNEY, Beverly.

To *Kelly Field*, Signal Corps, Aviation School, San Antonio, Tex., from Fort Benjamin Harrison, for duty, Lieut. SAMUEL B. KAUFMAN, Fall River.

To *New York City*, for instruction in orthopedic surgery, Lieut. ALFRED A. FENTON, Norwood.

To *Philadelphia*, School of Plastic and Oral Surgery, for a three weeks' course of intensive training, Capt. RALPH C. WIGGIN, Cambridge.

To *Philadelphia*, University Hospital, from Medical Officers' Training Camp, Camp Greenleaf, Fort Oglethorpe, Ga., for a course of instruction on fractures, and on completion of this course to Camp Wadsworth, Spartanburg, S. C., for temporary duty as surgical assistant, Lieut. DONALD MUNRO, Milton.

To *St. Louis*, School of Plastic and Oral Surgery, Washington University, for a three weeks' course of intensive training in head surgery, from Fort Benjamin Harrison, Lieut. CHARLES F. CANEDY, Greenfield.

To *Camp MacArthur*, Waco, Tex., 32d Div., National Guard, for temporary duty as cardiovascular examiner, Capt. GEORGE D. HENDERSON, Holyoke.

To *Walter Reed General Hospital*, Takoma Park, D. C., for a course in tuberculosis examination, Capt. FRANCIS R. BURKE, Quincy.

To *Washington, D. C.*, and report to the commanding officer for the required course of instruction, Lieut. WALTER L. PERRY, Worcester.

Mexico

To *New York City*, for instruction in orthopedic work, from Army Medical School, Lieut. OTTO R. BROWN, Tampico Tamps.

Michigan

To *Boston*, for a course of instruction in orthopedic surgery, from the Army Medical School, Capt. CURTIS D. PILLSBURY, Ann Arbor.

To *Camp Beauregard*, Alexandria, La., for duty, from Fort Riley, Lieuts. AURA A. HOYT, Battle Creek; DAVID LITTLEJOHN, Bridgman.

To *Camp Custer*, Battle Creek, Mich., for duty, Lieuts. JOHN E. HESLOP and SLIL A. MARTINDALE, Hillsdale.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Lieut. WORTH W. WALTON, Mancelona.

To *Camp MacArthur*, Waco, Tex., for duty, from Fort Benjamin Harrison, Capt. CLARENCE M. WILLIAMS, Alpena; Lieut. WILLIAM J. RYNEARSON, Marshallville.

To *Camp Mills*, Garden City, L. I., 41st Div., for duty, from Fort Benjamin Harrison, Lieut. GEORGE F. LISTER, Willman.

To *Camp Shelby*, Hattiesburg, Miss., for temporary duty, from Medical Officers' Training Camp, Fort Benjamin Harrison, Lieut. BURT F. GREEN, Hillsdale.

To *Camp Travis*, Fort Sam Houston, Tex., for duty, from Fort Riley, Kan., Lieuts. HARRY S. BERMAN, Detroit; JOHN W. EVERS, Flint; VAN D. BARNES, Morenci; ROBERT McK. GREENSHIELDS, Romeo; GEORGE L. ALGER, Saginaw.

To *Camp Wheeler*, Macon, Ga., for duty in the orthopedic service, Lieut. LEE C. DONNELLY, Detroit.

To *Fort Benjamin Harrison*, Ind., for a course of instruction in tuberculosis examinations, Lieut. RAY L. FELLERS, Detroit.

To *Fort Oglethorpe*, for a course of instruction, Lieuts. MARTIN W. CAVENEY, Detroit; CHARLES J. FOLEY, Detroit; WILLIAM Y. KENNEDY, Detroit; WILLIAM WESTRATE, Holland.

To *Fort Riley*, Kan., for duty as plastic and oral surgeon, in the section of surgery of the head, from School of Plastic and Oral Surgery, Washington University, St. Louis, Major PETER D. MACNAUGHTON, Calumet.

To *Kelly Field*, Signal Corps, Aviation School, San Antonio, Tex., from Fort Benjamin Harrison, for duty, Lieut. ROBERT D. SCOTT, Rudyard.

To *Mineola, L. I.*, Aviation Section, Signal Corps, for duty, Lieut. PHILLIP I. FROUDE, Detroit.

To *St. Louis*, School of Plastic and Oral Surgery, Washington University, for a three weeks' course of intensive training in head surgery, Capt. WILLIAM C. McCUTCHEON, Cassopolis.

To *St. Louis*, School of Plastic and Oral Surgery, Evans Dental Institute, for a three weeks' course of intensive training in head surgery, from Fort Oglethorpe, Capt. RALPH E. BALCH, Kalamazoo; Lieut. BERNHARD FRIEDLAENDER, Saginaw.

Honorably discharged from the Medical Reserve Corps, Lieut. MARSHALL B. MCCAULELAND, Imlay City.

Minnesota

To *Camp Beauregard*, Alexandria, La., for duty, from Fort Riley, Lieuts. JOHN C. BROWN, St. Paul; JOHN J. PLATT, St. Paul.

To *Camp Custer*, Battle Creek, Mich., for duty, Capt. CHARLES R. CHRISTENSON, Minneapolis.

To *Camp Doniphan*, Fort Sill, Okla., for duty, from Fort Riley, Lieut. ANTON G. SANDERSON, Minnesota.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Lieut. REINHART G. OLSON, Nicollet.

To *Camp Logan*, Houston, Tex., for duty, from Fort Riley, Lieut. VIRGIL H. MOATS, Minneapolis.

To *Camp Robinson*, Sparta, Wis., for duty, Lieut. CHARLES K. HOLMES, St. Paul.

To *Camp Travis*, Fort Sam Houston, Tex., for duty, from Fort Riley, Kan., Lieuts. EDWARD T. FITZGERALD, Morris; DAVID S. FLEISCHHAUER, Wabasha.

To *Camp Wadsworth*, Spartanburg, S. C., for duty, Lieut. AUGUST F. HUNTE, Truman.

To *Chicago*, Neurological School, Presbyterian Hospital, for intensive training in brain surgery and on completion of this course to return to his proper station, from Minneapolis, Major JAMES F. CORBETT, Minneapolis.

To *Chicago*, Neurological School, Presbyterian Hospital, for intensive training in brain surgery, from Fort Riley, Capt. EARL H. MARCUM, Bennidji.

To *Fort Benjamin Harrison*, Ind., for a special course of instruction in tuberculosis examinations, Lieut. THOMAS G. CLEMENT, Vernon Center.

To *Fort Oglethorpe*, for a course of instruction, Capt. WILLIAM E. WRAY, Campell; Lieut. ELMER A. CARBERRY, Minneapolis.

To *Fort Worth*, Tex., Aviation Section, Signal Corps, for duty Capt. JOHN C. STALEY, St. Paul.

To *Mineola, L. I.*, Aviation Section, Signal Corps, for duty, Lieut. ARTHUR J. LEWIS, Hemming.

To *Rockefeller Institute*, New York City, for a course of instruction and on completion of this course to return to his proper station, from Fort Sheridan, Ill., Lieut. GEORGE D. RICE, St. Cloud.

To *St. Louis*, School of Plastic and Oral Surgery, Washington University, for a three weeks' course of intensive training in head surgery, from Fort Riley, Lieut. FLOYD W. BURNS, St. Paul.

Mississippi

To *Boston*, for a course of instruction in orthopedic surgery, from the Army Medical School, Lieut. EGBERT H. WESSON, New Albany.

To *Camp Beauregard*, Alexandria, La., for duty, from Fort Riley, Capt. JOHN S. MCINTOSH, Mt. Olive; Lieuts. CLAUD C. GREENE, Baltzer; CHARLES A. MARTIN, Chanky; DANIEL S. JOHNSON, Houston; PHIL R. POLK, Oak Vale.

To *Camp Jackson*, Columbia, S. C., for duty, from Fort Oglethorpe, Capt. BERNARD H. BOOTH, Drcw; Lieuts. JAY R. LANNING, Corinth; REGINALD S. ANNIS, Stillmore.

To *Camp McClellan*, Anniston, Ala., for duty as assistant to the chief of the medical service, Lieut. HILTON R. CARR, Water Valley.

To *Camp Mills*, Garden City, L. I., 41st Div., for duty, from Camp Greenleaf, Fort Oglethorpe, Lieut. CHARLES E. LEHMBERG, Artesia.

To *Camp Travis*, Fort Sam Houston, Tex., for duty, from Fort Riley, Kan., Lieut. WILLIAM A. D. JAMES, Midnight.

To *Camp Wheeler*, Macon, Ga., for duty, from Fort Oglethorpe, Lieut. ARMEN F. WICKS, Okolona.

To Fort McPherson, Atlanta, Ga., for duty in the genito-urinary and dermatologic section of the base hospital, from Fort Oglethorpe, Lieut. WALLACE L. BRITT, Jackson.

To Fort Oglethorpe, for a course of instruction, Lieut. ERIC A. McVEY, Lambert.

To Mineola, L. I., Aviation Section, Signal Corps, for duty, Lieut. SOLOMON R. BOYKIN, Puckett.

To Philadelphia, University Hospital, for a course of instruction on fractures and on completion of this course to proceed to Camp MacArthur, Waco, Tex., for temporary duty as surgical assistant, Capt. WALTER R. McKINLEY, Columbus.

To St. Louis, School of Plastic and Oral Surgery, Washington University, for a three weeks' course of intensive training in head surgery, from Fort Oglethorpe, Lieut. HEWITT JOHNSTON, Biloxi.

Missouri

To Boston, for a course of instruction in orthopedic surgery, from the Army Medical School, Lieut. NOBLE D. McCORMACK, St. Louis.

To Camp Beauregard, Alexandria, La., for duty, from Fort Riley, Lieuts. CHESTER A. POE, Fruitland; ROSCOE C. CAMPBELL, Highbee; LAWRENCE R. GAUSEPEHL, St. Elizabeth; JAMES A. LOGAN, Warsaw.

To Camp Dodge, Des Moines, Iowa, for duty, from Rockefeller Institute, New York, Lieut. FRANK R. TEACHENER, Kansas City.

To Camp Doniphan, Fort Sill, Okla., for duty, from Fort Riley, Kan., Lieut. SAMUEL B. AVERY, Troy.

To Camp Funston, Fort Riley, Kan., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Lieut. JAMES R. SANFORD, Kansas City.

To Camp Greenleaf, Fort Oglethorpe, Ga., for a course of instruction, Lieuts. ROBERT R. CUTLER, Berger; LESLIE C. RANDALL, Licking.

To Camp Logan, Houston, Tex., for duty, from Fort Riley, Lieuts. NORMAN A. SCHWALD, Cole Camp; GEORGE H. BRAGDON, Reeds; JOSEPH T. BRENNAN, Vichy.

To Camp McArthur, Waco, Tex., for duty, Lieuts. HERBERT S. LANGSDORF, St. Louis; JOHN H. MURPHY, St. Louis.

To Camp Mills, Garden City, L. I., 41st Division for duty, from Allentown, Pa., Lieut. WILFORD A. FAIR, Pleasant Hill.

To Camp Shelby, Hattiesburg, Miss., for duty in the surgical service, from Fort Logan H. Rooks, Ark., Lieut. HORACE A. LOWE, Springfield.

To Camp Travis, Fort Sam Houston, Tex.; for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Kansas City, Mo., Capt. MINFORD A. HANNA, Kansas City.

To Camp Upton, Yaphank, L. I., N. Y., for duty as oral surgeon, section of surgery of the head, from the School of Plastic and Oral Surgery, Washington University, St. Louis.

To Fort Benjamin Harrison, for a special course of instruction in tuberculosis examination, Lieuts. JAMES B. BIGGS, Bowling Green; JACOB J. KENNEDY, Frankford.

To Fort Oglethorpe, for a course of instruction, Lieuts. EDWARD A. HOEFER, Marceline; DOUGLAS WYATT, Mineola; GUSTAVE G. KALMUT, St. Louis; WILLIAM H. ALLEN, Ulrich; for the required course of instruction, from Fort Logan H. Rooks, Ark., Lieut. OLIVER S. GILLILAND, Kansas City.

To Cornell Medical College, N. Y., for a course of instruction in military roentgenology, Lieut. ROZIN C. SHAWHAN, Hale.

To Kansas City, Mo., Aviation Section, Signal Corps, for duty, Lieut. THEODORE S. BLAKESLEY, Kansas City.

To Mineola, L. I., Aviation Section, Signal Corps, for duty, Lieut. CLYDE O. BROWN, St. Louis.

To Montgomery, Ala., Auxiliary Remount Depot, No. 312, for duty, from Fort Riley, Kan., Lieut. DAVID E. SCHMALHORST, St. Louis.

To New York City, Bellevue Hospital, from Fort Riley, for a course of instruction on fractures and on completion of this duty to Camp Kearney, Linda Vista, Calif., for temporary duty as surgical assistant, Lieut. RODERICK D. STREETOR, Moberly.

To Rockford, Ill., for duty from Fort Benjamin Harrison, Lieut. CHARLES M. BAUMAN, St. Louis.

To Washington, D. C., for temporary duty in the office of the Surgeon-General, from Fort Benjamin Harrison, Lieut. FRANK L. MORSE, St. Louis.

To his home on completion of the course at the school of plastic and oral surgery, Washington University, St. Louis, Mo., and returned to the inactive list of the Medical Reserve Corps, Lieut. SHERMAN B. HIBBARD, Kansas City.

Montana

To Camp Beauregard, Alexandria, La., for duty, from Fort Riley, Lieut. JAMES L. JENSON, Denton.

To Camp Travis, Fort Sam Houston, Tex., for duty, from Fort Riley, Kan., Lieuts. WILLIAM A. ALEXANDER, Forsyth; DAVID A. BAKER, Jordon.

To Fort Oglethorpe, for a course of instruction, Lieut. FERRIA L. ARNOLD, Billings.

Nebraska

To Boston, Massachusetts General Hospital, from Fort Riley, for a course of instruction on fractures and on completion of this duty to Camp Taylor, Louisville, Ky., for temporary duty as surgical assistant, Lieut. HENRY FITZGIBBON, Omaha.

To Camp Beauregard, Alexandria, La., for duty, from Fort Riley, Lieuts. ROY E. HALL, Fullerton; HENRY B. FROSH, Lincoln.

To Camp Custer, Battle Creek, Mich., for duty, Capt. DANIEL B. STIDWORTHY, Homer.

To Camp Greenleaf, Fort Oglethorpe, for a course of instruction, Lieut. TYRE K. JONES, Ainsworth.

To Camp Logan, Houston, Tex., for duty, from Fort Riley, Lieut. FRANCIS A. WELLS, Axtell.

To Camp Travis, Fort Sam Houston, Tex., for duty, from Fort Riley, Kan., Lieuts. CLIFFORD L. HOOPER, Lewellen; LEO D. HARMAN, Table Rock.

To Camp Wheeler, Macon, Ga., for duty, from Fort Oglethorpe, Lieut. EMIL A. LYNWOOD, Omaha.

To Fort Oglethorpe, for a course of instruction, Lieuts. LOUIS L. BURSTEIN, Blair; WALTER L. JOHNSON, Steinauer.

To Fort Riley, Kan., for duty, Lieut. WILLIAM C. BARTLETT, Alma.

To Mineola, L. I., Aviation Section, Signal Corps, for duty, Lieuts. RALPH C. CHRISTIE, Clarks; WILLIAM L. ROSS, JR., Florence.

To New York City, Bellevue Hospital, from Fort Riley, for a course of instruction on fractures and on completion of this duty to Camp Dodge, Des Moines, Ia., for temporary duty as surgical assistant, Lieut. BENJAMIN R. McGRATH, Grand Island.

To Omaha, Neb., Aviation Section, Signal Corps, for duty, Capt. ADOLPH B. LINDQUEST, Omaha.

To report in person to the officer in charge, Physical Examining Unit, Aviation Section, Signal Corps, for duty, Lieut. CLAUDE T. UREN, Omaha.

Nevada

To Camp Logan, Houston, Tex., for duty, from Fort Riley, Lieut. WILLIAM C. ROLLER, Reno.

New Hampshire

To Boston, Mass., for a course of instruction in military roentgenology, Lieut. ERNEST W. LOWE, Fremont.

To Camp Greenleaf, Fort Oglethorpe, for a course of instruction, Lieut. THERON H. HUCKINS, Tilton.

To St. Louis, School of Plastic and Oral Surgery, Washington University, for a three weeks' course of intensive training in head surgery, Lieuts. JOHN J. OSTERHOUT, Keene; from Fort Benjamin Harrison, JOHN B. WARDEN, Whitefield.

New Jersey

To Boston, for a course of instruction in orthopedic surgery, from the Army Medical School, Lieut. CHARLES E. BRENN, Camden.

To Camp Beauregard, for duty, Capt. HERBERT L. COOPER, Pennsgrove.

To Camp Custer, Battle Creek, Mich., for duty, Lieut. BONNETTE W. HOAGLAND, Woodbridge.

To Camp Dix, Wrightstown, N. J., for temporary duty, Lieut. SIDNEY C. LEVINE, Paterson.

To Camp Gordon, Atlanta, Ga., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Oglethorpe, Lieut. GEORGE E. HARHAN, Verona.

To Camp Greenleaf, Fort Oglethorpe, for a course of instruction, Lieuts. GEORGE T. BARCKLOS, Newark; WILLIAM HENLEY SMITH, Trenton.

To Camp Jackson, Columbia, S. C., for duty, from Fort Oglethorpe, Lieut. LEO E. FROOMESS, Elizabeth.

To Camp Mills, Garden City, L. I., 41st Div., for duty, from Allentown, Lieut. CLAUDE W. THOMAS, Woodstown.

To Camp Shelby, Hattiesburg, Miss., for duty, from Camp Jackson, Lieut. FRANK H. PINCKNEY, Morristown.

To Camp Wheeler, Macon, Ga., for duty, from Fort Oglethorpe, Lieuts. PHILIP DuB. BUNTING, Elizabeth; ARTHUR H. TEMPLE, Passaic.

To Fort Benjamin Harrison, for a special course of instruction in tuberculosis examination, Lieuts. LEROY D. WHITNEY, Belleville; GEORGE B. EMORY, Newark.

To Fort Oglethorpe, for a course of instruction, Lieut. JAMES S. KNOWLES, Tuckahoe.

To Charlotte, N. C., Campe Greene, for duty in the surgical service, from Fort Oglethorpe, Lieut. ADOLPH VON P. FARDELMANN, Jersey City.

To Chicago, Neurological School, for a course of instruction in brain surgery, Lieuts. STEPHEN T. QUINN, Elizabeth; EDWIN N. RIGGINS, Orange.

To New York City, Bellevue Hospital, for a course of instruction in fractures and on completion of this duty to United States General Hospital, for temporary duty, from United States Army General Hospital, Lieut. VICTOR B. SEIDLER, Montclair.

To New York City, Post-Graduate Medical School and Hospital, for a course of instruction in urology and dermatology, Lieut. ROCCO M. NITTOLI, Newark.

To Rockford, Ill., for duty, from Fort Benjamin Harrison, Lieut. RAOUL A. HERBERT, Cohoes.

To the inactive list of the Medical Reserve Corps, from Camp Devenis, Ayer, Mass., Lieut. CAESARE MONDINI, Asbury Park.

New Mexico

To Camp Cody, Deming, New Mexico, for duty, Capt. OLIVER R. HAYMAKER, Roswell.

New York

To Army Medical School, Washington, D. C., for the required course of instruction, Lieuts. WESLEY C. COX, Brooklyn; WILLIAM S. MARTENS, Shrub Oak; from the Colon Hospital, Ancon, Canal Zone, WILLIAM S. McCANN, New York.

To Boston, Boston City Hospital for a course of instruction in fractures and on completion of this duty to Plattsburg Barracks, N. Y., for temporary duty, from Plattsburg Barracks, Major ROBERT W. ANDREWS, Poughkeepsie; for a course of instruction in orthopedic surgery from the Army Medical School, Lieuts. ARTHUR H. NYLEN, Brooklyn; EDMUND B. SPAETH, Elmira; JOHN W. McKEEVER, Newburgh; CORNELIUS A. DENEHY, New York.

To *Camp Beauregard*, Alexandria, La., for duty, from Fort Riley, Lieuts. EDWARD L. BENJAMIN and LEONARD A. JASLOW, New York; STANLEY S. INGALLS, Rome.

To *Camp Custer*, Battle Creek, Mich., for duty, from Fort Benjamin Harrison, Lieut. ROSWELL F. FOSTER, Westfield.

To *Camp Devens*, Ayer, Mass., for duty, Capt. FREDERIC S. COLE, Poland.

To *Camp Gordon*, Atlanta, Ga., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from the Walter Reed General Hospital, Takoma Park, D. C., Lieut. EDWARD C. EHLERS, New York City.

To *Camp Grant*, Rockford, Ill., for duty, Lieut. ALLEN N. MOORE, Lockport.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Lieuts. FREDERIC DAMRAU and WILLIAM L. WOLFSON, Brooklyn; ROBERT P. DOBBIE, Buffalo; CLAUDE E. CHAPIN, Evans Mills; ELBRIDGE A. CARPENTER, PHILIP KORN and MATTHEW F. OLSTEIN, New York City; ERWIN C. MacFARLAND, Rome; WILLIAM W. CARLESTON, Waterloo.

To *Camp Jackson*, for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Camp Wadsworth, Lieuts. EPHRAIM GOLDMAN, New York; EDWARD N. PACKARD, Saranac Lake.

To *Camp Logan*, Houston, Texas, for duty, from Fort Riley, Lieuts. JOHN E. HESLIN, Albany; RAY H. HUMPHREY, Union.

To *Camp MacArthur*, Waco, Texas, for duty, from Fort Benjamin Harrison, Major DANIEL A. SINCLAIR, New York.

To *Camp Mills*, Garden City, L. I., Forty-First Division, for duty, from Allentown, Pa., Lieuts. WILLIAM G. PHILLIPS, JR., Brooklyn; MARK F. HEALY, New York.

To *Camp Sevier*, Greenville, S. C., for duty in the genito-urinary and dermatologic section, from Plattsburg Barracks, Lieut. JOSEPH A. LANAHAN, Albany.

To *Camp Shelby*, Hattiesburg, Miss., for duty in the orthopedic service, Capt. CLARENCE E. COON, Syracuse.

To *Camp Sherman*, Chillicothe, Ohio, for duty as a member of a board for the special examination of the command for tuberculosis, Capt. CONSTANTINE L. BJERRING, Brooklyn; Lieut. GEORGE H. SHAW, Camillus.

To *Camp Travis*, Fort Sam Houston, for duty from Fort Riley, Kan., Lieut. FREDERICK G. EATON, Saratoga.

To *Camp Upton*, Yaphank, L. I., N. Y., for duty as a member of a board for special examination of the command for tuberculosis, from Fort Myer, Lieut. HENRY C. DREW, Brooklyn.

To *Camp Wadsworth*, Spartanburg, S. C., for duty, Lieuts. GEORGE S. PRICE, Fairport; JAMES STEIN, New York City.

To *Canal Zone*, to report for duty in the pathologic laboratory of the Ancon Hospital, Lieut. RAY S. NELSON, New York City.

To *Fort Benjamin Harrison*, Ind., Hospital Train 21, for duty from Fort Benjamin Harrison, Lieut. LEO R. TIGHE, Poughkeepsie; for a special course of instruction in tuberculosis examination, Lieuts. SIDNEY TRATTNER, New York City, and ADELBERT C. ABBOTT, Syracuse.

To *Fort Leavenworth*, Kan., for duty from Reorganization Camp, Syracuse, NOAH P. NORMAN, Watkins.

To *Fort Oglethorpe*, Ga., Camp McClellan, Anniston, Ala., Camp Sheridan, Montgomery, Ala., Fort McPherson, Atlanta, Ga., Camp Wheeler, Macon, Ga., Camp Hancock, Augusta, Ga., Camp Jackson, Columbia, S. C., Camp Sevier, Greenville, S. C., Camp Wadsworth, Spartanburg, S. C., Camp Greene, Charlotte, N. C., for the purpose of consultation on matters pertaining to nervous and mental diseases, Major PEARCE BAILEY, New York City.

To *Fort Oglethorpe*, for a course of instruction, Lieuts. SAMUEL N. MOSKOWITZ, Brooklyn; ARTURE C. ARCHE, New York City.

To *Fort Omaha*, Neb., and report to the commanding officer, United States Army Balloon School, from Fort Benjamin Harrison, Lieut. PHILIP LEHMAN, Brooklyn.

To *Fort Riley*, Kan., for duty, Lieut. RANSLEY J. MILLER, New York.

To *Fort Sheridan*, Ill., for duty with Hospital Train B., from Fort Benjamin Harrison, Lieut. LEO R. TIGHE, Poughkeepsie.

To *Fort Worth*, Texas, Aviation Section, Signal Corps, for duty, Major ATTILIO N. CACCINI, New York City.

To *Chicago Neurological School*, for intensive training in brain surgery, from Fort Oglethorpe, Capt. RALPH P. HUYCK, Herkimer; Lieut. WELLINGTON A. LEBKICHER, Fordham.

To *Gettysburg*, Pa., for duty, from Field Hospital No. 30, Fort Ontario, Major ARTHUR W. CUTLER, Oreorta.

To *Hoboken*, N. J., for duty in base hospital to be established at Camp Merritt, Tenafly, N. J., Capt. EDWARD S. RIMER, West New Brighton.

To *Kelly Field*, Signal Corps, Aviation School, San Antonio, Texas, from Fort Benjamin Harrison, for duty, Lieuts. JOSEPH BRUMBER and MILTON H. GOLDBERG, Buffalo; JOHN C. LEE and PHILIP J. LIPSETT, New York City; RICHARD P. DOODY, Troy.

To *Mineola*, L. I., Aviation Section, Signal Corps, for duty, Lieuts. DAVID H. WEBSTER, New York City; GARRETT M. CLOWE, Schenectady; SCOTT R. FISHER, Syracuse.

To *Cornell Medical College*, New York City, for a course of instruction in military roentgenology, Lieuts. IRVIN S. STARTZ, Blackwell's Island; JAMES J. CLARK, Olean; from Camp Upton, Yaphank, L. I., N. Y., HYMAN I. TEPERSON, Brooklyn; HUGO A. SIEBENEICHEN, New York City.

To *New York City*, Post-Graduate Medical School and Hospital, for a course of instruction in urology and dermatology, Lieut. MAURICE LENZ, New York City.

To *New York City*, U. S. Army General Hospital No. 1, for duty, from Fort Benjamin Harrison, Lieut. WILLIAM P. HERRICK, New York City.

To *Philadelphia*, for the purpose of giving lectures at the Neurological School of the University of Pennsylvania, and on completion of this duty to return to his proper station in this city, Major THOMAS W. SALMON, New York City.

To *Philadelphia*, School of Plastic and Oral Surgery, for a three weeks' course of intensive training, Capt. CARL EGGERS, New York City.

To *Rockefeller Institute*, New York City, for a course of instruction, and on completion of this course to proceed to Plattsburg Barracks, from Fort Benjamin Harrison, Lieut. ISADORE SEFF, New York City; from Fort Slocum, New York, Lieut. PERCY H. WILLIAMS, New York City.

To *Rockford*, Ill., for duty from Fort Benjamin Harrison, Capt. OTTO C. J. VON RENNER, Buffalo; Lieuts. JOSEPH F. WARD, Brooklyn; FLOYD A. BENJAMIN, Cherry Creek; WALBER R. GRUNEWALD, Crescent; VICTOR G. BOURKE, Livingston; JAMES W. BEVERIDGE and HERBERT B. HENSON, New York City; JOHN L. BISHOP, Niagara Falls; RUPERT V. GIBBONS, Oyster Bay; CLAYTON L. GIFFORD, Troy.

To *Syracuse*, Reorganization Camp, for duty, from Base Hospital No. 32, Fort Porter, N. Y., Lieut. HOWARD C. FAIRBANKS, Tonawanda.

To *Takoma Park*, D. C., for a special course in tuberculosis examinations, Lieut. EDWARD C. EHLERS, New York City.

To *Washington*, D. C., and report to the Surgeon-General for duty in his office, Major SIGMUND POLLITZER, New York City.

To *Yaphank*, L. I., N. Y., for temporary duty, Lieuts. LEON ANTOPOLSKY and MORRIS BROOKS, New York City.

Honorably discharged from the Medical Reserve Corps on account of being physically disqualified for active service, Capt. WILLIAM J. JONES, JR., and Lieut. FRANCIS A. AULETA, New York.

To the inactive list of the Medical Reserve Corps from duty at Camp Taylor, Washington, D. C., Lieut. ALFRED BRAUN, New York City.

To his home and the inactive list of the Medical Reserve Corps, from Fort Benjamin Harrison, Capt. Sidney Cohn, New York City.

To his home on completion of the course at the school of plastic and oral surgery, Washington University, St. Louis, and returned to the inactive list of the Medical Reserve Corps, Lieuts. SAMUEL L. FISHER, Brooklyn; JOHN L. EDWARDS, Hudson; and ROBERT T. FRANK, New York.

North Carolina

To *Camp Beauregard*, Alexandria, La., for duty, Lieuts. ANDREW B. HOLMES, Council; CHARLES T. ROEBUCK, Williamston; from Fort Oglethorpe, RANDOLPH E. WATTS, Oriental.

To *Camp Greene*, Charlotte, N. C., for duty in the surgical service, from Fort Oglethorpe, Lieut. WILLIAM W. GREEN, Tarboro.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Lieut. CHARLES A. HENSLEY, Burnsville.

To *Camp Jackson*, Columbia, S. C., for duty from Fort Oglethorpe, Lieuts. PINKNEY J. CHESTER, Mooresville; GEORGE B. MORRIS, Mount Olive; ALFRED MORDECAI, Raleigh.

To *Camp Sevier*, Greenville, S. C., for duty, Capt. RAYMOND POLLOCK, New-Bern.

To *Camp Wheeler*, Macon, Ga., for duty, from Fort Oglethorpe, Lieuts. NUMA H. CREWS, Henderson; HECTOR McL. PERSON, Saulston; CHARLES L. SWINDELL, Wilson.

To *New Orleans*, Charity Hospital, for a course of instruction on fractures, and on completion to proceed to Camp Gordon, for duty as surgical chief, Major JAMES S. BROWN, Hendersonville; on completion of this course to proceed to Camp Kearney, Linda Vista, Calif., for temporary duty as surgical assistant, Lieut. LAURIE J. ARNOLD, Lillington.

To *Walter Reed General Hospital*, Takoma Park, D. C., for a special course of instruction in tuberculosis examination, Lieut. JOHN S. McKEE, Raleigh.

North Dakota

To *Camp American University*, Washington, D. C., for duty with the Thirtieth Engineers, from the Army Medical School, Lieut. EDWARD F. KENNEDY, White Earth.

To *Camp Logan*, Houston, Texas, for duty, from Fort Riley, Lieut. AXEL W. SWENSON, Bisbee.

To *Fort Oglethorpe*, for a course of instruction, Lieut. JOHN P. GREAVES, Sherwood.

Ohio

To *Boston*, for a course of instruction in orthopedic surgery, from the Army Medical School, Lieut. OTTIS L. GRAHAM, Kinsville.

To *Camp Beauregard*, Alexandria, La., for duty, from Fort Riley, Capt. ODO A. HOPKINS, Middlefield; Lieut. SHERMAN E. G. PEDIGO, Marshfield.

To *Camp Cody*, Deming, N. M., for duty, Lieut. FRANK E. SNIDER, Madisonville.

To *Camp Custer*, Battle Creek, Mich., for duty, Lieut. WILMER E. GRIFFITH, Hamilton.

To *Camp Devens*, Ayer, Mass., for duty at the Remount Station, from Fort Riley, Lieut. JULIEN E. BENJAMIN, Cincinnati.

To *Camp Dodge*, Des Moines, Iowa, for duty at the Remount Station, from Camp Funston, Fort Riley, Kan., Lieutenant BENJAMIN, Cincinnati.

To *Camp Doniphan*, Fort Sill, Okla., for duty, from Fort Riley, Lieut. WILLIAM P. V. EVERS, Tedrow.

To *Camp Greenleaf*, Fort Oglethorpe, Ga., for a course of instruction, Capt. STARR FORD, Cincinnati; RUFUS SOUTHWORTH, Glendale; Lieuts. ROBERT R. SATTLER and RALPH W. STALEY, Cincinnati; FRANK S. GIBSON, Cleveland; JOYCE WARWICK VAN LUE, Gettysburg.

To *Camp Jackson*, Columbia, S. C., for duty from Fort Oglethorpe, Lieut. VERNON G. DANFORD, Trimble.

To *Camp MacArthur*, Waco, Texas, for duty, from Fort Benjamin Harrison, Capt. ORRA L. NORRIS, Deshler; Lieuts. CHARLES H. WELLS, Columbus; WILLIAM T. STEWART, Morning Sun.

To *Camp Mills*, Garden City, L. I., Forty-First Division, for duty, from Allentown, Pa., Lieut. THOMAS R. KENNERDELL, Cleveland.

To *Camp Sheridan*, Montgomery, Ala., for duty, Lieut. RALPH W. HARDINGER, Cincinnati.

To *Camp Travis*, Fort Sam Houston, Texas, for duty, from Fort Riley, Kan., Lieuts. CLARENCE M. DOUTHITT, Athens; MORTON R. KITTREDGE, Evansport; CARL E. EDWARDS, Jolly; HERMAN O. HODSON, Washington.

To *Camp Wadsworth*, Spartanburg, S. C., for duty, Lieuts. HARRY C. CRAGG, Cincinnati; JOHN H. NORRICK, Fredricktown; CHARLES C. MANDEVILLE, Galion.

To *Chicago Neurological School*, for a course of instruction in brain surgery, Lieuts. CHARLES E. KIELY, Cincinnati; from Fort Benjamin Harrison, SAMUEL ZIELONKA, Cincinnati.

To *Cincinnati*, Aviation Section, Signal Corps, for duty, Capt. ARTHUR C. BACHMEYER, Cincinnati.

To *Fort Benjamin Harrison*, Ind., for a special course of instructions in tuberculosis examination, Lieuts. MARION WHITACRE, Cincinnati; CHARLES R. DEEDS, Dalton.

To *Fort Oglethorpe*, for a course of instruction, Lieuts. ARTHUR L. STOTTER, Cleveland; CARROLL H. SKEEN, Greenfield; CLYDE B. TERWILLEGAR, Milford.

To *Mineola, L. I.*, Aviation Section, Signal Corps, for duty, Lieut. JOHN C. LARKIN, Hillsboro.

To *New York City*, Bellevue Hospital, from Fort Riley, for a course of instruction on fractures and on completion of this duty to Camp Bowie, Fort Worth, Texas, for temporary duty as surgical assistant, Lieut. SAMUEL C. SMITH, Ada; on completion of the duty to Fort McPherson, Ga., for temporary duty, from Fort Oglethorpe, Lieut. FLOYD W. McRAE, Jr., Cleveland.

To *Cornell Medical College*, New York City, for a course in military roentgenology, Lieut. HORACE K. BECKWITH, Toledo.

To *Philadelphia*, School of Plastic and Oral Surgery, Evans Dental Institute, for a three weeks' course of intensive training, from Columbus Barracks, Capt. JOHN W. MEANS, Columbus; Lieut. LOUIS H. SCHRIEVER, Cincinnati.

To *Pittsburgh*, from Fort Benjamin Harrison, for a course of instruction on fractures, and on completion of this duty to proceed to Camp Meade, Annapolis Junction, Md., for temporary duty as surgical assistant, Capt. ROBERT C. RIND, Springfield; on completion of the duty to Camp Pike, Little Rock, Ark., for temporary duty as surgical assistant, Lieut. HERMAN P. McGAY, Cleveland; on completion of this duty to proceed to Jefferson Barracks, Mo., for duty as surgical assistant, Lieut. DELBERT E. HOOVER, Warren.

To *Rockefeller Institute*, New York City, for a course of instruction in laboratory work, from Allentown, Pa., Lieuts. ROY P. FORBES, Cleveland; WILLIAM H. BUNN, Youngstown; from Fort Thomas, Ky., JOSEPH C. RANSOHOFF, Cincinnati.

To *St. Louis*, School of Plastic and Oral Surgery, Evans Dental Institute, for a three weeks' course of intensive training in head surgery, from Fort Oglethorpe, Lieut. ARTHUR J. McCracken, Bellefontaine; School of Plastic and Oral Surgery, Washington University, for a three weeks' course of intensive training in head surgery, from Fort Oglethorpe, Lieut. THOMAS A. MITCHELL, Owensville.

Oklahoma

To *Camp Beauregard*, Alexandria, La., for duty, Lieuts. FRANCIS R. FIRST, Cashion; CLAUDE E. PUTNAM, Oklahoma City; GEORGE W. TILLY, Pryor.

To *Camp Cody*, Deming, N. M., for duty, Lieut. ULUS E. NICKELL, Davenport.

To *Camp Doniphan*, Fort Sill, Okla., for duty, Lieuts. DANIEL S. LEE, Guymon; PAUL R. SIBERTS, Cooperton.

To *Camp Jackson*, Columbia, S. C., for duty, from Fort Oglethorpe, Lieut. FRANK W. ROGERS, Carnegie.

To *Camp Logan*, Houston, Texas, for duty from Fort Riley, Lieut. ISAAC F. CLARK, Avant.

To *Camp MacArthur*, Waco, Texas, for duty, Lieuts. WILLIAM A. L. GOSSEY, Prague; JOSEPH H. JANSING, Tryon.

To *Chicago Neurological School*, Presbyterian Hospital, for intensive training in brain surgery, from Fort Benjamin Harrison, Lieut. Fred L. Patterson, Fargo.

To *Minneola, L. I.*, for duty, Aviation Section, Lieuts. MONTIE C. COMER, Clinton; ROBERT C. McCREERY, Erich; GEORGE A. NYLUND, Gate; ROSS D. LONG, Oklahoma.

Oregon

To *Camp America University*, Washington, D. C., for duty with the Thirtieth Engineers from Fort Leavenworth, Kan., Lieut. PHILIP J. KEISER, North Bend.

To *Camp Beauregard*, Alexandria, La., for duty as plastic and oral surgeon, section of surgery of the head, from School of Plastic and Oral Surgery, Washington University, St. Louis, Capt. JUSTIN M. WAUGH, Hood River.

To *Camp Kearney*, Linda Vista, Calif., for duty as a member of a board for the special examination of tuberculosis, Lieut. LEON G. HOLLAND, Portland.

To *Camp Lewis*, American Lake, Wash., for duty at the remount depot, Lieut. WILL H. POTTER, Scio.

To *Camp Logan*, Houston, Texas, for duty, from Fort Riley, Lieut. JOHN N. SMITH, Salem.

Pennsylvania

To *Army Medical School*, Washington, D. C., for the required course of instruction, Lieut. ROBERT SHOEMAKE, Ogontz.

To *Boston*, for a course of instruction in orthopedic surgery, Lieuts. ALBERT W. GREENWALL, HENRY K. B. HUFFORD, Philadelphia; HAROLD D. ROGERS, West Chester; SUMMER C. SIMPSON.

To *Camp Dix*, Wrightstown, N. J., for duty, from Fort Oglethorpe, Lieut. RUSSELL G. WITMAN, Conshohocken.

To *Camp Gordon*, Atlanta, Ga., from Camp Greenleaf, Fort Oglethorpe, Ga., Lieuts. ANDREW ANDERS, HENRY C. GODFREY, Philadelphia; for duty as member of a board of medical officers for the special examination of the command for tuberculosis, AUGUSTUS H. EGGERS, Pittsburgh.

To *Camp Greene*, Charlotte, N. C., for duty as assistant to the chief of the medical service, from Fort Benjamin Harrison, Lieut. PHILIP A. SHEAFF, Philadelphia.

To *Camp Greenleaf*, Fort Oglethorpe, Ga., for a course of instruction, Capt. CLARENCE F. M. LEIDY, Philadelphia; Lieuts. IVOR D. FENTON, Mahanoy City; JOHN ALEXANDER, WILLIAM V. COYLE, Philadelphia; FRANK W. McCORKLE, Pittsburgh.

To *Camp Hancock*, Augusta, Ga., for duty, from Camp Wadsworth, Major WILLIAM P. BARNDOLLAR, Pittsburgh.

To *Camp Jackson*, Columbia, S. C., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Major JOHN W. BOYCE, Pittsburgh; Lieuts. URBAN H. REIDT, Jeanette; EDGAR N. COWEN, Philadelphia; for duty from Fort Oglethorpe, JOSEPH C. McFATE, Meadville; AUGUSTINE J. MULLIGAN, Mont Alto; HARRY CHERASHORE, ADOLPH H. FRIEDMANN, WILLIAM HANNUM, Philadelphia; CLARENCE W. LURTIG, DAVID McCULLOCH, Pittsburgh.

To *Camp Lee*, Petersburg, Va., for duty, Lieut. CHESTER S. SIERAKOWSKI, McKees Rocks.

To *Camp Logan*, Houston, Texas, for duty from Fort Riley, Lieuts. JOHN R. MARTIN, Bitner Gap; FRANCIS I. STUART, Philadelphia.

To *Camp MacArthur*, Waco, Texas, for duty, from Fort Benjamin Harrison, Lieuts. GEORGE B. BEACH, Scranton; CLAUDE W. WALKER, Schenectady.

To *Camp Meade*, Annapolis Junction, Md., for duty, Lieut. WARREN H. BUTZ, Cornwells.

To *Camp Mills*, Garden City, L. I., Forty-First Division, for duty from Allentown, Pa., Lieuts. DWIGHT E. LONG, Freeburg; CHARLES J. CAVANAUGH, JOSEPH W. DENNIN, Philadelphia; WALTER E. LANG, Allentown; HERBERT L. RANSOM, Pittston; CONNEL E. MURRIN, Scranton; JAMES L. JUNK, Connelville; DONALD D. JOHNSTON, Philadelphia.

To *Camp Pike*, Little Rock, Ark., for duty, Lieut. THOMAS McS. BARRETT, Dixmont.

To *Camp Sevier*, Greenville, S. C., for duty, Lieut. BRADLEY H. HOKE, Coalport.

To *Camp Shelby*, Hattiesburg, Miss., from Camp Greenleaf, Lieut. ADDISON M. ROTHROCK, Reading.

To *Fort Sheridan*, Ill., for duty, with Hospital Train B., from Fort Benjamin Harrison, Lieut. SIGMUND S. GREENBAUM, Philadelphia.

To *Camp Travis*, Fort Sam Houston, Texas, for duty, Lieut. THOMAS G. GREIG, Pittsburgh.

To *Camp Upton*, Yaphank, L. I., N. Y., for duty in the genito-urinary and dermatologic section, Lieut. JOSEPH V. KLAUDER, Philadelphia.

To *Camp Wheeler*, Macon, Ga., for duty from Fort Oglethorpe, Lieuts. JACOB J. SCHWEGLER, Kennett Square; WILLIAM F. CRAIG, Philadelphia.

To *Fort Benjamin Harrison*, Hospital Train 21, for duty, from Medical Officers Training Camp, Fort Benjamin Harrison, Lieut. SIGMUND S. GREENBAUM, Philadelphia.

To *Fort Monroe*, Va., for duty in the laboratory of the hospital in connection with pneumonia work, from Army Medical School, Lieut. MAURICE GOLDBERG, Philadelphia.

To *Fort Sam Houston*, Texas, for treatment at the base hospital, from Austin, Texas, Lieut. GEORGE W. H. CONRAD, Philadelphia.

To *Fort Worth*, Texas, Aviation Section Signal Corps, for duty, Lieut. EPHRAIM E. CAMPBELL, Butler.

To *Chicago Neurological School*, for a course of instruction, on completion of which to return to his home and to the inactive list of the Medical Reserve Corps, Major SAMUEL VICTOR KING, Pittsburgh; for intensive training in brain surgery, and on completion of this duty to return to his proper station, from Camp Greenleaf, Fort Oglethorpe, Ga., Capt. DAVID O. THOMAS, New Kensington; Lieuts. WILLIAM J. POTTS, Greensburg; THOMAS P. MARTIN, Mayfield; ERNEST W. DOWNTON, Starruca; DENNIS R. MURDOCK, Greensburg.

To *Mineola, L. I.*, Aviation Section, Signal Corps, for duty, Lieuts. WILLIAM S. SHIMER, Philadelphia; JAMES E. DULL, Somerset; FOSTER A. BECK, Wind Gap, Pa.; JAMES M. HAMMETT, Winburne.

To *New Orleans*, Charity Hospital, for a course of instruction on fractures, and on completion to proceed to Camp Wadsworth, for duty as surgical assistant, Capt. STILLWELL C. BURNS, Philadelphia; for a course of instructions on fractures, and on completion of this duty to Houston, Texas, Camp Logan, for temporary duty as surgical assistant, Lieut. JAMES C. MURFIN, Philadelphia.

To *New York City*, for instruction in orthopedic work, from Army Medical School, Lieuts. PHILIP J. LUKENS, Jr.; CHARLES E. YOHO, Philadelphia.

To *New York City*, Bellevue Hospital, from Fort Oglethorpe, for a course of instruction on fractures and on completion of this duty to Camp Green Charlotte, N. C., for temporary duty as surgical assistant and anesthetist, Lieut. WALTER B. HARVEY, Pittsburgh; from Walter Reed General Hospital, Takoma Park, D. C., for a course of instruction on fractures and on completion of this duty to return to his proper station, Lieut. BASIL R. BELTRAM, Philadelphia.

To *Philadelphia, Pa.*, University Hospital, for a course of instruction on fractures and on completion of this duty to Camp Sevier, Greenville,

S. C., for temporary duty, from Camp Greenleaf, Fort Oglethorpe, Capt. McE. LUMAN, Uniontown; for a course of instruction on fractures and on completion of this to proceed to Camp Meade, Annapolis Junction, Md., for duty as surgical assistant, from temporary duty at Camp Meade, Lieut. HAROLD E. HERSH, Palmerton.

To Philadelphia, Pennsylvania School of Plastic and Oral Surgery, Evans Institute, for a course of instruction and on completion to return to his proper station, Lieut. CHARLES W. HOFFMAN, Rimersburg.

To Rockefeller Institute, New York City, for a course of instruction and on completion of this duty to proceed to Camp Hancock, Augusta, Ga., for temporary duty, from Camp Hancock, Augusta, Ga., Lieut. GEORGE M. LAWS, Philadelphia.

To Rockford, Ill., for duty from Fort Benjamin Harrison, Major ARTHUR W. YALE, Philadelphia.

To St. Louis, School of Plastic and Oral Surgery, Washington University, for a three weeks' course of intensive training in head surgery, from Fort Oglethorpe, Lieut. THOMAS S. HICKS, Braddock.

To Yaphank, L. I., N. Y., for duty, from Camp Upton, Lieut. SAMUEL H. BETTLER, Brighton.

To his home and the inactive list of the Medical Reserve Corps, Capt. ARTHUR C. MORGAN, Philadelphia.

To his home and the inactive list of the Medical Reserve Corps, on account of being physically disqualified for active service, Lieut. HAROLD A. CHERING, Edinboro.

To his home on completion of the course at the school of plastic and oral surgery, Washington University, St. Louis, and returned to the inactive list of the Medical Reserve Corps, Lieut. WILLIAM BATES, Philadelphia.

Honorably discharged from the Medical Reserve Corps, Lieut. FRANCIS A. McMULLIN, Philadelphia.

Rhode Island

To Boston, for duty in connection with the division of otolaryngology, section of surgery of the head, Capt. ALVAH A. FISHER, Providence.

To Rockford, Ill., for duty from Fort Riley, Lieut. BYRON J. BROWN, Providence.

South Carolina

To Camp Jackson, Columbus, S. C., for duty, from Fort Oglethorpe, Lieuts. JAMES A. NORTON, Conway; FRANK D. MOWER, Newberry.

To Camp Wadsworth, Spartanburg, S. C., for duty, Lieut. BENTON MCQ. MONTGOMERY, Kingstree.

To Fort Oglethorpe, for a course of instruction, Lieuts. DANIEL D. STRAUSS, Bennettsville; DAVID L. BRYSON, Winnsboro.

To Philadelphia, for temporary duty in the Aviation Section, Signal Corps, and on completion to return to Charleston, S. C., for duty in the physical examining unit, Aviation Section, Signal Corps, Capt. CHARLES W. KOLLOCK, Charleston.

South Dakota

To Camp Beauregard, Alexandria, La., for duty, from Fort Riley, Lieut. FRED F. KEENE, Wessington Springs.

To Camp Dodge, Des Moines, Iowa, for temporary duty, Capt. ALBERT E. BROWN, Webster.

Tennessee

To Army Medical School, Washington, D. C., for the required course of instruction, Lieut. STEWART LAWWILL, Chattanooga.

To Camp Beauregard, Alexandria, La., for duty, Lieut. JOHN W. FROST, Dyer.

To Camp Jackson, Columbia, S. C., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Lieuts. LEOPOLD SHUMACKER, Chattanooga; OWEN S. DEATHERIDGE, Nashville; for duty, from Fort Oglethorpe, Lieut. JUSTIN E. LACY, Jasper.

To Camp Sevier, Greenville, S. C., from Fort Oglethorpe, for duty, Lieuts. GEORGE E. WILSON, Cardiff; HERBERT ACUFF, Knoxville; KYLE C. COPENHAVER, Mascot; WILLIAM H. DELOP, LaFollette.

To Fort Oglethorpe, for a course of instruction, Lieuts. WILLIAM K. VANCE, Jr., Bristol; WENDALL P. BAUGH, Elkton; THOMAS W. MENSEE, Nashville; WILLIAM A. CASHION, Puryear.

To Mineola, L. I., Aviation Section, Signal Corps, for duty, Lieut. CLYDE C. HARDISON, Lewisburg.

To New Orleans Charity Hospital, for a course of instruction on fractures, and on completion of this course to proceed to Hattiesburg, Miss., for temporary duty as surgical assistant, from Fort Oglethorpe, Lieut. DANIEL B. CLIFFE, Franklin.

To St. Louis School of Plastic and Oral Surgery, Washington University, for a three weeks' course of intensive training in head surgery, from Fort Oglethorpe, Lieut. DORSEY T. GOULD, Lawrenceburg.

Texas

To Army Medical School, Washington, D. C., for the required course of instruction, Lieut. WILLIAM E. NESBIT, San Antonio.

To Boston, for a course of instruction in orthopedic surgery, from the Army Medical School, Lieuts. EDMUND D. MILLS, Galveston; ROBERT L. HOWELL, Snyder.

To Camp Bowie, Fort Worth, Texas, for duty, Lieut. ROBERT B. WOLFORD, Childress.

To Camp Cody, Deming, N. M., for duty, Lieuts. HENRY BRADBROOK, Cat Springs; ROBINSON H. SALMON, Maypearl; JOSEPH V. DOZIER, Menard; ISADOR BRAUN, Shiner.

To Camp Greenleaf, Fort Oglethorpe, for a course of instruction, Lieut. JESSE LEE HALL, Bertram.

To Camp Logan, Houston, Texas, for duty from Fort Riley, Capt. ALE OLSON, Morse.

To Camp MacArthur, Waco, Texas, for duty, Lieuts. JOHN W. BROWN, Pearsall; WESLEY S. NEAL, Weatherford.

To Camp Travis, Fort Sam Houston, Texas, for duty as a member of a board of medical officers for the special examination of the command

for tuberculosis, Capt. GEORGE S. MILNEA, Houston; for duty as plastic and oral surgeon, section of surgery of the head, from School of Plastic and Oral Surgery, Washington University, St. Louis, Capt. ROBERT F. MILLER, Brenham.

To Fort Oglethorpe, for a course of instruction, Lieuts. ERNEST J. STEVES, San Antonio; C. ZENO HOLT, Texaline.

To Love Field, Hawes, Texas, for duty with the Signal Corps, Aviation School, Lieut. JAMES T. COLWICK, Dallas.

To Mineola, L. I., Aviation Section, Signal Corps, for duty, Lieuts. CLIFFORD C. PARRISH, Fort Worth; OMER O. GAIN, Honey Grove; GARNETT MILLER, Moody; AARON L. ROBERTS, Myra; ARTHUR G. NEIGHBOR, Rosenberg; HENRY W. PICKETT, Sulphur Springs.

To New Orleans Charity Hospital, for a course of instruction in fractures and on completion of this duty to Camp Logan, Houston, Texas, Thirty-Third Division, for temporary duty in the base hospital, from base hospital, Camp Logan, Houston, Texas, Lieut. WILLIAM P. BARTON, Overton.

To report by telegraph to the commanding general, Southern Department, for assignment to duty, from Camp Cody, Deming, N. M., Capt. JOSEPH S. JONES, Galveston.

To report by wire to the commanding general, Southern Department, for assignment to duty, Lieuts. MARCUS M. CARR, GEORGE B. MILLER, Dallas.

Utah

To Fort Oglethorpe, for the required course of instruction, from Camp Beauregard, Alexandria, La., Lieut. FRANCIS C. TYNG, Salt Lake City.

Vermont

To Boston City Hospital, from Fort Ethan Allen, Vt., for a course of instruction in fractures and on completion of this course to proceed to Fort Ethan Allen, Vt., and report to the commanding general, Northeastern Department, Lieut. ROBERT L. MAYNARD, Burlington.

Virginia

To Boston, for a course of instruction in orthopedic surgery, from the Army Medical School, Lieut. PERCY E. DUGGINS, Norfolk.

To Camp Greenleaf, Fort Oglethorpe, for a course of instruction, Lieut. FRANK L. WYSOR, Clifton Forge.

To Mineola, L. I., N. Y., Aviation Concentration Camp, for duty, from Essington, Pa., Capt. JOSEPH N. BARNEY, Fredericksburg; Lieut. HARRY D. HOWE, Hampton.

To Philadelphia, School of Plastic and Oral Surgery, Evans Dental Institute, for a three weeks' course of intensive training, Lieut. SAMUEL P. CAST, Portsmouth.

To return to the inactive list of the Medical Reserve Corps, Lieut. HARRY D. HOWE, Hampton.

Washington

To Chicago Neurological School, for a course of instruction in brain surgery, Lieut. GEORGE W. SWIFT, Seattle.

To communicate by telegraph with the commanding officer, Western Department, for assignment to duty, Capt. ALBERT LESSING, Seattle.

To communicate by telegraph to the commanding general, Western Department, for assignment to duty, Capt. MARION M. NULL, Seattle.

To Fort Oglethorpe, Ga., for a course of instruction, Lieut. ARTHUR B. GOULD, Kent.

West Virginia

To Camp Meade, Annapolis Junction, Md., for duty, Lieut. MICHAEL P. LINK, Matewan.

To Camp Greenleaf, Fort Oglethorpe, Ga., for a course of instruction, Lieut. JULIUS C. SCHULTZ, Huntington.

To Camp Lee, Petersburg, Va., for duty, Lieuts. HARLOW R. CONNELL, Kimball; JOHN S. GIBSON, Wevaco.

To Camp MacArthur, Waco, Texas, for duty, from Fort Benjamin Harrison, Lieut. GEORGE W. SHRIVER, Clendenin.

To Fort Oglethorpe, for a course of instruction, Lieut. RUFUS E. WOODALL, Charleston.

Honorably discharged from the Medical Reserve Corps, on account of being physically disqualified for active service, Lieut. JAMES R. VERMILLION, Princeton.

Wisconsin

To Boston, Massachusetts General Hospital, from Medical Officers' Training Camp, Fort Riley, for a course of instruction on fractures and on completion of this duty to Camp Pike, Little Rock, Ark., for temporary duty as surgical assistant, Lieut. FRANK H. RUSSELL, Neenah.

To Camp Beauregard, Alexandria, La., for duty, Lieut. JOHN E. MCGINNIS, Green Bay.

To Camp Custer, Battle Creek, Mich., for duty, Capt. CLEMENT F. DOUGHERTY, Richland Center.

To Camp Doniphan, Fort Sill, Okla., for duty from Fort Riley, Kan., Lieut. HARRY E. MACLAUGHLIN, Waupaca.

To Camp Grant, Rockford, Ill., for duty, Lieut. WILLIAM T. LOCHEMES, Milwaukee.

To Camp Logan, Houston, Texas, for duty from Fort Riley, Lieuts. WILLIAM H. REMER, Chaseburg; LESLIE J. PHILLIPS, Weyerhauser.

To Camp Travis, Fort Sam Houston, Texas, for duty, from Fort Riley, Kan., Lieut. ERNEST C. HOWELL, Fennimore; RALPH T. GILCHRIST, Milwaukee; JOHN H. HOGAN, Racine.

To Fairfield, Ohio, Signal Corps, Aviation Section, for duty with the squadron at that station, Capt. WILL G. MERRILL, Grand Rapids.

To Fort Oglethorpe, for a course of instruction, Lieuts. JAMES G. CONLEY, Darlington; LEON H. FLANCHER, Milwaukee.

To Kelly Field, Signal Corps, Aviation School, San Antonio, Texas, from Fort Benjamin Harrison, Lieut. JAMES J. FITZGERALD, Eagle.

To Los Angeles, for a course of instruction in military roentgenology, Lieut. JAMES P. GILLIS, Deerbrook.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

New Officers Elected.—At a meeting of the California Board of Medical Examiners, held October 15, the following officers were elected: Dr. Percy T. Phillips, Santa Cruz, president; Dr. Harry V. Brown, Los Angeles, vice president, and Dr. Charles B. Pinkham, San Francisco, secretary-treasurer.

New Tuberculosis Sanatorium.—The board of supervisors of Los Angeles County has recommended the purchase of the 454-acre Wilson ranch property at Sylmar, in the San Fernando Valley, as a site for a tuberculosis sanatorium for the joint use of Los Angeles, Santa Barbara and Ventura counties. It is planned to expend \$100,000 for the erection of buildings, of which Los Angeles will appropriate \$70,000, the balance being divided between Santa Barbara and Ventura counties.

DISTRICT OF COLUMBIA

Physicians Plan Club.—The District Medical Society is planning to erect a club house to cost \$100,000. The building will have an amphitheater with a seating capacity of 600.

Society Celebrates Centennial.—October 17, the Medical Society of the District of Columbia celebrated its one hundredth anniversary. The meeting was held at the New National Museum, and was presided over by Dr. G. Wythe Cook, who made an address formally instituting the celebration of the society centennial. Addresses were then made by Dr. Guy Steele, Cambridge, president of the Medical and Chirurgical Society of Maryland; Dr. John Champlin, president of the Rhode Island Medical Society, and Dr. Elmer B. Cooley, Danville, president of the Illinois State Medical Society. A historical address was delivered by Dr. Daniel Smith Lamb. At the centennial banquet held at the Hotel Raleigh in the evening, Dr. Joseph Stiles Wahl officiated as toastmaster.

GEORGIA

Tuberculosis Clinics.—At the trimonthly meeting of the Central Council of Charitable and Philanthropic Organizations of Savannah, held October 9, recommendations were made for the establishment of three tuberculosis clinics.

License Revoked.—A report from the State Board of Medical Examiners of Georgia states that the license of Dr. Charles W. Miller, Atlanta, has been revoked on the ground that he had sold forged eclectic licenses to two individuals to practice medicine.

First District Physicians Elect Officers.—At the annual meeting of the Congressional District Medical Society, held in Savannah, Statesboro was selected as the next place of meeting, and the following officers were elected: president, Dr. Robert L. Miller, Waynesboro, and vice presidents, Drs. Luther A. De Loach, Glennville, and Antonio J. Waring, Savannah.

New State Board Members and Officers.—Dr. Alexander G. Little, Valdosta, has been appointed by the governor as a member of the State Board of Medical Examiners of Georgia, in place of Dr. Frederick D. Patterson, Cuthbert, term expired. Dr. Henry W. Terrell, La Grange, was appointed to fill the vacancy caused by the death of Dr. Francis M. Ridley. At the October meeting of the board, Dr. Jarrett W. Palmer, Ailey, was elected president; Dr. Alfred F. White, Flovilla, vice president, and Dr. Charles T. Nolan, Marietta, secretary-treasurer.

ILLINOIS

Billings and His Russian Experiences.—Dr. Frank Billings, head of the American Red Cross Mission to Russia, will narrate his experiences at the benefit meeting for Russian War Relief, to be held in Orchestra Hall, Chicago, November 13, by the Chicago Anti-Cruelty Society.

Red Cross Council Named.—Dr. George T. Palmer, Springfield, president of the Illinois Tuberculosis Association, has appointed the following as war council to have charge of the sale of 1917 Red Cross seals in the state: Dr. Frank Billings, Chicago; Dr. C. St. Clair Drake, director of the Illinois Department of Public Health; Dr. James W. Pettit, Ottawa,

and Mr. W. T. Thurber, association director of the Red Cross for Illinois.

Personal.—Dr. Arrie Bamberger, Chicago, has been appointed attending physician at Cook County Hospital.—Lieut. Walter D. Stevenson, M. R. C., U. S. Army, Quincy, has been ordered to active duty at Camp Sherman, Chillicothe, Ohio, and has been placed in charge of the division of surgery of the head.—Dr. Jonathan M. Wyland, Moline, underwent an operation on the spine, at Mercy Hospital, Davenport, November 2.

Merger of Societies.—It is suggested that ex-interns of the Illinois Charitable Eye and Ear Infirmary, Chicago, who have been gathering about once a year for clinics and discussions, join with graduate interns of other recognized hospitals for the care of the diseases of the eye, ear, nose and throat, that a larger organization may be formed and greater good accrue to the membership. For particulars regarding this new organization, ex-interns are requested to address Dr. Ralph H. Woods, La Salle.

CHICAGO

Physicians' Club Gives Banquet to Billings.—At a testimonial banquet given to Dr. Billings by the Physicians' Club of Chicago, November 1, a special event was the presentation to Dr. Billings of a silver loving cup with the following inscription:

"To our friend, Dr. Frank Billings, the great scientist, philanthropist, and patriot. Presented by the Physicians' Club of Chicago, Nov. 1, 1917."

The cup was presented to Dr. Billings, on behalf of the club, by Governor Frank O. Lowden of Illinois, who was introduced by Dr. A. M. Corwin, president of the club. Governor Lowden said in part:

"The very pleasant duty falls to me tonight to present this handsome loving cup to your distinguished guest of honor. I appreciate more than I can express that this cup has been put in my hands to be placed in his. All of us not only admire Dr. Billings for his great ability during all these years, but personally I have a deep affection for him, and I know that I voice the sentiments of not only those present, but the people of Illinois and of other states when I say that he has justly earned this gift on account of the great and distinguished services he has rendered to humanity, to his country, and as I believe, to the world."

Dr. Arthur O'Neil was next introduced as toastmaster of the evening. Other speakers who addressed the meeting were the Russian Consul, J. Antoine Volkoff, Marquis Eaton of the Chicago chapter of the Red Cross, Dr. Arthur Dean Bevan, President of the American Medical Association, and Dr. William E. Quine.

INDIANA

Conference on Mental Defectives.—The Indiana Society of Mental Hygiene, and the State Committee on Mental Defectives will hold a general conference on mental defects, at the Hotel Claypool, Indianapolis, November 13.

Bonds for Hospital Sold.—A bond issue of \$100,000 for the Allen County Tuberculosis Hospital was sold, October 13, to the German-American National Bank of Fort Wayne on a bid of \$371 premium. Work on the hospital will be started as soon as the contract is awarded.

Personal.—Dr. Joseph E. Sharp, Indianapolis, was shot and seriously wounded, October 27, by an Italian, who was frenzied with grief on account of the death of his child.—Dr. Oscar E. McWilliams, Anderson, is ill at his home.—Dr. Otto B. Pettijohn was run down by an automobile in Indianapolis, October 22, and was seriously injured about the head and shoulders.—Dr. Solomon P. Stoddard, Indianapolis, was struck and slightly injured by an automobile, October 22.—Dr. Adrian E. Fauve, Fort Wayne, has arrived in Europe.—Dr. Edmund M. Van Buskirk has been appointed president of the Fort Wayne Board of Health, succeeding Dr. Henry O. Bruggeman, resigned to enter the military service.—Dr. Harmer M. Newman, South Milford, is reported to be critically ill.—Dr. Alfred Henry, Indianapolis, has been elected president of the Mississippi Valley Conference on Tuberculosis.

MARYLAND

Training in Hospitals.—The Johns Hopkins Hospital and the South Baltimore Eye, Ear and Throat Hospital have come forward and offered to take some of the men stationed at Fort McHenry and give them practical training. The Hopkins has taken six men, while the South Baltimore Eye, Ear and Throat Hospital has asked for four.

Dinner for Physicians.—A dinner was recently given at the Belvedere Hotel by a number of officers of the Medical

Reserve Corps, selected by the Surgeon-General's Office to take special studies in psychiatry at the Henry Phipps Psychiatric Clinic, in honor of their teachers, Dr. Adolf Meyer, Dr. Charles M. Campbell and Dr. Francis L. Dunham.

Personal.—Dr. Harry S. Jarrett of Towson is a patient at the Mercy Hospital, in Baltimore, where he has been ordered to take absolute rest for several weeks.—Dr. Albert G. Webster, Belmar, has been appointed health officer of the Fourteenth District of Baltimore County, succeeding Dr. William F. Clayton, Overlea, deceased.—Dr. William S. Baer, Baltimore, who went across with the Johns Hopkins unit, has arrived in Paris.

Committee to Study Schoolchildren.—A committee was appointed at a meeting in Baltimore, October 26, to make a survey of all children attending school to determine the number of mentally deficient pupils in Baltimore schools. It will be given a hearing at a meeting of the school board, whose cooperation will be asked in following up the plan. Dr. F. J. Dunham of the Henry Phipps Clinic, Johns Hopkins University, Dr. William T. Howard of the city health board, Dr. Anna D. S. Abercrombie, examining physician of the Bureau of Labor and Statistics, Dr. Arthur P. Herring of the State Lunacy Commission and Mr. J. W. Chapman, Jr., president of the school board, have discussed the question of the best method to adopt to overcome the obstacles that now confront mentally deficient children.

MISSOURI

Social Service Department Opened.—The Barnard Free Skin and Cancer Hospital, St. Louis, has opened up a social service department with two social workers for the investigation of the social side of cancer.

State Board Election.—At a recent meeting of the Missouri State Board of Health, the following officers were elected: president, Dr. Wilson J. Ferguson, Sedalia; vice president, Dr. T. Hurley Wilcoxon, Bowling Green, and secretary, Dr. George H. Jones, Jefferson City. The other members of the board are Dr. Thomas A. Son, Bonne Terre; Dr. Marc R. Hughes, St. Louis; Dr. William A. Clark, Jefferson City, and Dr. Tolman W. Cotton, Van Buren.

Mount St. Rose Sanitarium Rebuilds.—Mount St. Rose Sanitarium, St. Louis, has recently added a new building at a cost of \$140,000, the whole plant representing an investment of about \$350,000. This institution is devoted exclusively to the care and treatment of tuberculosis, and is the first institution of its kind in the Middle West. It is conducted by the Sisters of St. Mary, and was established by them in 1902. Dr. Louis C. Boisliniere is the medical director.

Personal.—Dr. James E. Ball, Richmond, has been appointed a member of the medical staff of State Hospital No. 2, St. Joseph.—Dr. Elmer T. McGaugh, Richmond, has been appointed physician of Buchanan County, succeeding Dr. James E. Ball.—Dr. John W. Vaughan, St. Louis, was seriously injured in a collision between his automobile and a motor truck, October 24.—Dr. John D. Hayward, St. Louis, is reported to have won the suit brought against him by Mrs. Mary Sparks for \$5,000 damages for injuries claimed to have been received by the breaking of an operating table.—The Surgeon-General of the Army has appointed Major Llewellyn Sale, St. Louis, chief of the medical service for the special study of cardiovascular diseases at Camp Wadsworth, Spartanburg, S. C., and Major Oliver H. Campbell, St. Louis, chief of the medical service of the same study at Camp McArthur, Waco, Texas.—Dr. Porter E. Williams, Bunceton, has been elected superintendent of State Hospital No. 2 at St. Joseph to succeed Dr. Eugene H. Bullock, Edina, appointed land reclamation commissioner.—The death of Dr. James H. Elliott, West Plains, councilor of the Twenty-Seventh District, created a vacancy in that office which the president, Dr. Robert E. Schlueter, has filled by appointing Dr. Henry C. Shuttee, West Plains.—Dr. William A. Clark, Jefferson City, has been appointed penitentiary physician to take the place of Dr. James C. Welch, Salem, resigned.

Conditions of Rural Schools.—Missouri's rural schools show many serious deficiencies in health conditions, according to the report of a sanitary survey of the rural schools of north-east Missouri, which appears in the November issue of the *Rural School Messenger*. The report, which was undertaken by the Department of Chemistry and Sanitation at the State Normal School, especially emphasizes the state's crying need of laws to provide health inspection in the schools. Attention is called to the fact that 98.2 per cent. of the schools investigated have no medical inspection whatever. Only 3.5 per cent. have dental inspection, and only 1.7 per cent. make

any effort to examine children for adenoids, although 491 cases were reported to the investigating committee. Provision for testing the eyesight of children is made by only 19.4 per cent., and for testing pupils for defective hearing, by 10.7 per cent. The report cites 311 cases of malnutrition and 646 cases of defects in speech, and although 173 pupils are suffering from spinal curvature and sixty from chorea, scarcely a third of the schools have made any provision for the health and comfort of the defective child. Seating arrangements that are a perpetual invitation to spinal curvature and other physical defects are common, as the great majority of the children are required to sit at desks that cannot be adjusted to their individual needs. Other conditions that militate against the health of the pupils in a large percentage of the schools are lack of disinfection of schoolrooms, polluted water supply, defective toilet arrangements, lack of modern heating and ventilating systems, and improper disposal of sewage. The committee recommends the passage of new health laws, the installation of school physicians, and more liberal support of the various public health agencies of the state.

NEW YORK

Centennial of Medical Society.—At the centennial meeting of the Steuben County Medical Society, held at Bath, October 17, Dr. Francis S. Swain, Corning, was elected president; Dr. Floyd L. Spaulding, Cohocton, vice president, and Dr. D. R. Wakeman, Cornell, secretary-treasurer.

Central Association Meets.—At the forty-ninth annual meeting of the Medical Association of Central New York, held in Auburn, October 18, the following officers were elected: president, Dr. John J. Buettner; vice presidents, Drs. Owen E. Jones, Rochester, and Nelson G. Russell, Buffalo; secretary, Dr. Robert Burns, Syracuse (reelected), and treasurer, Dr. Thomas F. Laurie, Auburn (reelected).

New York City

Harvey Society Lecture.—The second lecture in the Harvey Society series, delivered, November 10, at 8:30, by Dr. Carl L. Alsberg of the United States Department of Agriculture, was on the subject "Current Food Problems."

White Mice Wanted.—As the European war has cut off the supply of white mice, Dr. William H. Park, director of the department of health laboratories, has advertised for all who have white mice for sale to communicate with the research laboratory at the foot of East Sixteenth Street.

Microscopic Society Exhibition.—The exhibition of the New York Microscopic Society was held, November 13, at the National Museum of American History. The exhibition was devoted in a great measure to the demonstration of the department of health of the practical use of the microscope in safeguarding the public health. Demonstrations were also made showing the use of the microscope in the arts, sciences and industries.

Dr. Baruch Honored.—A bronze tablet commemorating Dr. Simon Baruch's connection with the campaign for public baths in this city was unveiled at the Simon Baruch Public Baths, formerly the Rivington Street baths, October 29. The tablet was donated by Mrs. Belle Baruch through the Association for the Promotion of Hygiene and Public Baths. Borough President Marcus M. Marks made the address of acceptance in behalf of the city.

Federal Control of Habit-Forming Drugs.—Police Commissioner Wood has written a letter to the attorney-general strongly urging the United States government to enact additional legislation, placing the sale of these drugs directly in the hands of the federal government with zone districts for the distribution, and severe penalties for the alteration of certificates calling for drugs. Commissioner Woods states that there are 2,000 arrests of drug users in New York every year.

Is Tuberculosis Adequately Reported?—A recent bulletin of the department of health publishes the statistics pertaining to tuberculosis during the second quarter of 1917, and compares them with the figures for the corresponding period of 1916. The comparison shows a slight decrease in the death rate from pulmonary tuberculosis, and for other forms of the disease as well. There is a very marked decline in the number of new cases reported during the second quarter of 1917. It is pointed out that this would be a source of great satisfaction were there not sufficient evidence to account for the belief that this decrease is accounted for to a certain extent by the failure of many physicians to report cases of tuberculosis under their care to the health department. It

seems that it is still necessary to call the attention of physicians to the sanitary regulation requiring that all cases of tuberculosis be reported to the health department and the failure to do so is a violation of the sanitary code, that is, a misdemeanor which subjects the offender to criminal prosecution.

OREGON

Society Changes Name.—At the meeting of the Klamath County Medical Society, held at Klamath Falls, it was decided to change the name of the organization to the Klamath and Lake County Medical Society.

Personal.—Dr. D. Everette Standard and Susie V. Standard have taken up the practice at Huntington, vacated by the call to military service of Samuel C. Standard.—Dr. William F. Amos, Portland, is ill with otitis media.—Dr. Esther Pohl Lovejoy, Portland, who went to France last August in Red Cross service, is on duty in Paris.—Dr. Edmond J. Labbe, Portland, has started for France.

New Medical Building.—Plans are being made for the construction, at an early date, of the first unit of the new medical school of the University of Oregon. The sum of \$117,000 is available for this work. This building and the new county hospital will occupy a site of 20 acres on one of the hills above South Portland. Eventually other buildings are to be erected, comprising all the necessary facilities for a great medical school.

PENNSYLVANIA

State Hospital for Inebriates.—Lewis J. Sadler, Carlisle, was elected president of the commission appointed by the governor to select a site and erect a state hospital for the treatment of inebriates, October 30. The legislature has appropriated \$200,000 for this work.

Welfare and Efficiency Conference.—The fifth annual Pennsylvania Welfare and Efficiency Conference will be held in the House of Representatives, Harrisburg, November 21 and 22. These conferences are held annually for the purpose of stimulating discussions on the problems of industries and labor, with special reference to the reduction of the enormous number of diseases and deaths, and the numerous industrial accidents.

Conference of Industrial Physicians and Surgeons.—The Department of Labor and Industry announces that the fifth conference of industrial physicians and surgeons will be held at the state capitol, Harrisburg, November 20. At the morning session the medical and surgical problems of the staff of the largest industries representative of Pennsylvania will be considered, and in the afternoon the question of industrial diseases will be taken up.

War's Levy on the Hospital Interns in Pennsylvania.—Dr. John M. Baldy sends the following data regarding the approved general hospitals in Pennsylvania, and the effect of the war on the interns of these hospitals. According to Dr. Baldy there are seventy-two general hospitals approved for internship in Pennsylvania, and in these there are normally required 418 interns. The total number of interns at present is 327, leaving ninety-one vacancies, or nearly 22 per cent.

Personal.—Dr. Henry W. Linebaugh, New Cumberland, suffered a cerebral hemorrhage, October 22.—Dr. Josiah J. Myers, Nescopeck, fractured several ribs and dislocated a shoulder by a fall at the Berwick Planing Mill.—Dr. John A. McKean, Washington, sustained serious injuries by falling from a ladder, October 18.—Dr. Wallace R. Hunter, Erie, has been reappointed a trustee of the State Hospital for the Insane, Warren.—Dr. Thomas Lambie, for seven years a medical missionary in the Sudan, was appointed a minister of the United Presbyterian Church at a special meeting in Pittsburgh, recently.

Philadelphia

To Conserve Baby Lives.—The Philadelphia Pediatric Society will hold a public meeting, November 13, at the College of Physicians, to devise means for preventing and arousing interest in the infant mortality percentage of the country. Last year 5,200 babies died in Philadelphia before they reached their first birthday.

Moynihan in Philadelphia.—Sir Berkeley Moynihan, senior consulting surgeon of the British Royal Army, who arrived in this country from England a short time ago, was entertained at a dinner at the Bellevue-Stratford Hotel, by the Philadelphia Medical Club, the College of Physicians, the Academy of Surgery and the Philadelphia County Medical Society, November 7.

Infantile Paralysis.—The health department reports that 143 victims of the infantile paralysis epidemic of 1916, under its care, have been cured. This result was accomplished through the combined efforts of the city department with hospitals, dispensaries and private physicians, supplemented by the financial assistance of the Emergency Aid. Of those restored to health, eighty-four patients were treated by private physicians and thirty-eight at dispensaries. Hospitals have discharged four as cured; two other cured were treated in their own homes.

Base Hospital School Will Be Opened Here.—A fully organized school to train the enlisted men of a base hospital has been instituted at the Second Regiment Armory. The new school will be under the direction of Major John S. Lambie, Fort Bliss, Texas, commanding officer, and Major William M. L. Coplin, director of Base Hospital No. 38. The various hospitals of the city have agreed to offer facilities for the training. They will take 153 men, and detail them to duty in wards, dispensaries, operating rooms and laboratories. The men are divided into various units on duty at the Jefferson, Pennsylvania, Samaritan, Jewish, Lankenau, Frankford, Polyclinic and St. Joseph's hospitals. Others are to be detailed to hotels for kitchen work and to familiarize themselves with practical cooking. The first lecture was given, October 27, by Dr. William W. Keen.

TENNESSEE

Memorial Hospital in China.—H. Alexander, Nashville, will erect a hospital at Ping Tu, China, in memory of his wife. The institution will be known as the Luella Roach Alexander Hospital for Women.

New Building Dedicated.—A new building, the Anderson Anatomical Hall, at the Meharry Medical College of Nashville, was dedicated, October 19. It is the gift of Dr. John W. Anderson, Dallas, Texas, who contributed \$10,000 for its erection.

Personal.—Dr. Charles S. Briggs has been appointed chief surgeon of the Tennessee Central Railroad, to fill the vacancy caused by the resignation of Dr. Lucius E. Burch, Nashville, who has entered the military service.—Dr. Roy Wells, Clarksville, has been placed in charge of the United Fruit Company's Hospital, Panama.

UTAH

Physicians' Club Organized.—The Physicians and Surgeons Club of Cache Valley was organized at Logan, October 19, with an initial membership of seven. Dr. Heber K. Merrill, Logan, was elected president; Dr. Ralph O. Porter, vice president, and Dr. Ernest P. Oldham, secretary-treasurer, all of Logan.

Health Association Meeting.—At the meeting of the Utah Public Health Association in Salt Lake City, October 4, the following physicians were elected members of the board of directors: Robert W. Ashley, Salt Lake City; Theodore B. Beatty, Salt Lake City; G. H. Brimhall, Provo; Clarence M. Clark, American Fork; R. Garn Clark, Panguitch; Ephraim G. Gowans, Salt Lake City; Robert S. Joyce, Ogden; Howard P. Kirtley, Salt Lake City; Horace G. Merrill, Provo; George W. Middleton, Green River; Edwin M. Nehner, Castlegate; E. G. Peterson, Logan; Joseph A. Phipps, Tooele; Charles C. R. Pugmire, Morgan; Matthew S. Reay, Randolph; Ezra C. Rich, Ogden; J. E. Talmage; J. A. Widtsoe, Salt Lake City, and C. A. Broadas, Delta.

WISCONSIN

Gifts to Medical School.—The medical library of the late John L. C. Cronyn, Buffalo, consisting of 1,000 volumes, has been donated to the library of Marquette University School of Medicine, Milwaukee, by the Cronyn family.

Anthrax in Milwaukee.—The first case of anthrax in human beings to be reported in Milwaukee was recently isolated by Health Commissioner Lewis J. Daniels in South View Hospital. The patient is a hide stripper in a tannery.

Women Elect Officers.—At the annual meeting of the Wisconsin Medical Women's Association, October 2, Dr. Irene Stemper, Oconomowoc, was elected president; Dr. Ada B. Chamblor, Milwaukee, vice president, and Dr. Belle P. Nair, Winnebago, secretary-treasurer.

Sanatorium Almost Ready.—The first private charitable tuberculosis sanatorium in the state, founded by the Madison Anti-Tuberculosis Society, will be ready to receive patients by November 15. The sanatorium is located on a wooded

slope overlooking Lake Waubesa, and will accommodate at present thirty patients. The buildings were donated by Dr. Charles H. Vilas, Madison. Dr. Louis R. Head, Madison, is president of the association.

Chiropractic Treatment Not Acceptable.—The Wisconsin commission having in charge the enforcement of the workmen's compensation law has held that chiropractic treatment does not constitute "medical and surgical treatment." Sylvester Jones, Janesville, was injured last February while in the employ of Sanford Severhill, both parties being under the compensation. Severhill held compensation insurance with the Employees' Mutual Liability Insurance Company. For a time Jones was treated by a physician, but later of his own volition changed to a chiropractor. The decision of the commission is that Jones is not entitled to reimbursement for the chiropractor's charges under the terms of the compensation law, which requires the employer to furnish "medical and surgical treatment."

CANADA

Deserved Promotion.—Col. Henry R. Casgrain, Windsor, who recruited Canadian Station Hospital No. 3, has been promoted to senior officer of Hospital No. 8, which is now in France. Colonel Casgrain, who had been invalided home, has left for France to assume his new duties.

Medical Board at Work.—The traveling medical board, consisting of Dr. Clarence H. Brown, Ottawa, and Dr. Stock, Toronto, and Dr. James H. McGarry, Niagara Falls, to examine all men eligible for the first draft under the military service act, commenced work at Niagara Falls, October 12, and will continue until all widowers and married men without children have been examined.

GENERAL

Soo Line Physicians Elect Officers.—At the annual meeting of the Minneapolis, St. Paul and Sault Ste. Marie Railway Surgical Association, held in Chicago, October 22 and 23, under the presidency of Dr. John M. Dodson, Chicago, the following officers were elected: president, Dr. George M. Steele, Oshkosh, Wis.; vice president, Dr. David C. Pierpont, Ironwood, Mich., and secretary-treasurer, Dr. John H. Rishmiller, Minneapolis (reelected). Minneapolis was selected as the next place of meeting.

Warning.—A warning has been received from Milwaukee regarding a young man who calls himself Joseph C. Grimble, who gives a history of military experience in France and Belgium, where he says he was seriously wounded and was under the care of Dr. Alexis Carrel. He has scars on the hip and scrotum, has some shortening of the right leg, is about 5 feet, 5 inches in height, 127 pounds in weight, and fair complexion. It is reported that he is an impostor, and is attempting to obtain money under false pretenses.

Formulation of Milk Ordinance.—To assist communities in making their milk supply safe, the United States Department of Agriculture has issued a "Guide for Formulating a Milk Ordinance." This document, *Department Bulletin 585*, suggests a form of ordinance designed to protect the community against fraud and disease, and to insure cleanliness in the production and handling of milk. Health officers and physicians interested in improving milk supplies may obtain copies of this bulletin free, on application to the department.

Campaign of Washington State Medical Association Against Venereal Diseases.—The Committee on Venereal Prophylaxis of the Washington State Medical Association is furnishing to the soldiers and sailors of that state a printed slip on the subject of venereal diseases. Prophylactic stations have been established at the Municipal Dock, Tacoma, and in the Joshua Green Building, Seattle. These stations are manned by an army personnel. The committee is assisted by furnished rooms and equipment, and the circulars which the military authorities aid in distributing.

Personal.—Dr. Augustine M. Fernandez-Yberra, for the last eight years a practitioner of Havana, sailed for Europe, October 29, as traveling correspondent for England, Switzerland, Italy and Spain, for the Havana journal *El Dia*.—Lieut. Percy G. Hamlin, M. R. C., U. S. Army, Richmond, Va., who was on duty with the British troops on the western front, was wounded, October 5.—Lieut. Archibald F. Graham, M. R. C., U. S. Army, Paterson, N. J., on duty with the British forces, has been seriously wounded in the thighs.—Lieut. Clement A. Fogerty, M. R. C., U. S. Army, Philadelphia, who went to England early in August, has been made assistant surgeon in the Southwark Hospital, London.

PARIS LETTER

PARIS, Oct. 11, 1917.

The War

THE CABINET OFFICIAL IN CHARGE OF THE ARMY
MEDICAL DEPARTMENT

A decree recently appeared in the *Journal Officiel* setting forth the powers of the undersecretary of state for the Service de santé militaire. They are as follows: Article 1. The undersecretary of state has charge of the Service de santé, and directs the activities of this service by and for the state war department. Propositions of every nature concerning the personnel of this service are discussed and prepared in concrete form by him before they are presented to the minister for his consideration. Article 2. The undersecretary of state has, within the limits of his powers, the right to use the ministerial signature. He will likewise correspond directly with the commander-in-chief and the regional commander-in-chief.

Donations from the American Red Cross to the City of Paris

The president of the municipal council of Paris received from Mr. Beatty, director-general of the American Red Cross, 266,667 francs (\$53,333.40) to be divided, with the cooperation of the prefect of the department of the Seine, among the families of the Parisian officers and soldiers who have seen the longest service. The president of the General Council of the department of the Seine received 133,333 francs (\$26,666.60) to be distributed under the same conditions to the families residing within the confines of that district outside of Paris.

Donations from the American Automobile Club

The American Automobile Club has sent to the Automobile Club of France 23,140 francs (\$4,628) to be given to the Association of French Women (one of the three societies of the Red Cross) for the purpose of purchasing automobile ambulances.

Death of Dr. Alphonse Boissard

We are advised of the death of Dr. Alphonse Boissard, aged 65, honorary obstetrician to the hospitals of Paris. In 1883, he presented to the Faculté de médecine de Paris a thesis which was a classic on the pelvis and perineum from the obstetric point of view. He was chief of the clinic of Pinard, and in 1891 he received the title of accoucheur of the hospitals of Paris. With Budin he held the chair of adjunct professor of the maternity during 1896 and 1897, and in 1898 he was made accoucheur. Among the subjects that occupied his attention must be mentioned, first, provoked or produced abortion. He also gave much thought to evacuation of the uterus in cases of retained dead fetus, and made interesting researches on the bladder troubles of the parturient. He was president of the Obstetrical Society of Paris, of which he was one of the founders.

LONDON LETTER

LONDON, Oct. 16, 1917.

The War

THE WAR MUSEUM AT THE COLLEGE OF SURGEONS

At the Royal College of Surgeons, Sir Alfred Keogh, director-general of the army medical service, opened an exhibition of specimens of military injuries. This has been arranged by the college staff under the supervision of Arthur Keith, and is temporarily housed in the college museum. At the same time Sir George Makins, president of the college, conferred the diploma of honorary fellowship on Sir Alfred Keogh in the presence of a large gathering of the heads of the army and navy medical services and representatives of the medical services of France, Serbia, the United States, and our overseas dominions. The president paid a high tribute to Sir Alfred Keogh's brilliant career and great administrative ability. In replying, Sir Alfred said that John Hunter would have gloried to see that day, for the exhibition was indeed the vindication of his life work. It included specimens sent in by the medical services of the armies of the oversea dominions as well as by the Royal Army Medical Corps, and it was hoped that eventually these would go to the dominions to form the nuclei of pathologic museums there. It was also hoped that out of the superabundance of materials that this war would supply, local museums would be created in some of the military hospitals.

As early as the third month of the war, an army medical committee was constituted to compile the medical history.

One of the aims was to collect from casualty clearing stations and military hospitals examples of the wounds and diseases suffered by soldiers; to dissect and examine such specimens in order fully to understand their extent and nature so that the best treatment might be adopted, and to preserve instructive examples so that they might be examined and studied by army surgeons not only of today but for many generations to come. In the earlier phases of the war, when every endeavor had to be concentrated on the immediate medical needs of the army, the depleted staff of the army medical college in London was not in a position to undertake the formation of such a collection. Hence in May, 1915, Dr. Morley Fletcher, secretary of the Medical History Committee, asked the assistance of the council of the Royal College of Surgeons. The council at once placed its museum staff and workrooms at the disposal of the army council. Circular memoranda were issued to medical officers, detailing the aims of the committee and the methods to be observed in the selection, preservation and dispatch of specimens. The museum staff of the Royal College of Surgeons had been depleted by the needs of the war, and hence its efforts were necessarily confined to storing, preserving and indexing the specimens as they arrived, and in keeping a record of the clinical histories. The original intention was to postpone the examination, study and exhibition of specimens until the end of the war, when a body of experts could be appointed for this purpose. But it was urged by Sir Arthur Sloggett, the director-general of medical services in France, that the collection possessed an immediate educative value and that every effort should be made to realize that value for the benefit of medical officers. The council of the Royal College of Surgeons was again approached by the War Office with this object in view. Arrangements were made to proceed with the preparation of specimens for exhibition. Materials for their preservation and exhibition were supplied by the War Office. Mr. S. G. Shattock, F.R.S., pathologic curator to the college, and Mr. Cecil Beadels, assistant curator, undertook the dissection, examination and exhibition of wounds as they affect the various systems of the body—bones, muscle, joints, blood vessels, deeply seated organs, etc. The conservator of the museum, Arthur Keith, assumed responsibility for the description and arrangement of macerated specimens illustrating the lesions inflicted by modern missiles, as far as bones and joints are concerned.

While the actual dissections and preparations of wounds make up the major part of the exhibition, there are many important subsidiary sections. There are series of drawings made at the bedside to record appearances which cannot be preserved or perpetuated in any other way. Col. F. M. Caird has contributed a series of realistic drawings of trench foot, results of guillotine amputations, and other clinical conditions. A section is devoted to means employed to protect soldiers from injury—helmets, breastplates, respirators and gas masks. From the Queen's Hospital, Sidcup, where plastic operations for the alleviation of face deformities are undertaken, there are sketches, models and casts showing how successfully the most ghastly mutilations of the face are treated. The military orthopedic hospital at Shepherd's Bush is represented by casts and drawings of deformed limbs before and after operation. There is a remarkable series of models, casts and photographs showing war wounds of the jaw, the means adopted for their treatment, and the results. From the commencement of this enterprise an imperial view of its possibilities has been taken. The aim has been not only to build up a "central" or "national" collection, but also to encourage the Canadian, Australian and New Zealand army medical services to share in a common endeavor. Such specimens as are sent by these services are ear-marked for special collections to be set up in those countries. In every case, when the Medical History Committee does not desire to retain a specimen for the "national" collection, the sender has the right to have such specimens forwarded to the medical museum of his university or hospital. There are also on exhibition for the purposes of comparison the sparse records that have come down to us from former wars.

Surveying these collections, one ardently wishes that military surgeons of former campaigns had taken some pains to preserve the conditions they were called on to face. It is hard for a surgeon to realize that the conditions he is only too familiar with in the heat of a campaign are unknown to those who do not share his labors. In our former wars we have been too apt to attend to the medical exigencies of the campaign, and when it closed to bury the experience instead of consolidating it for the use of a future generation.

Besides its direct utility to army medical officers, the collection serves other useful purposes. There are certain conditions which must appear but rarely in the experience of the individual surgeon, and are yet not uncommon when experiences are pooled at a central depot. Almost at the commencement of the war a heart was received from which a surgeon successfully removed a bullet when the soldier was alive, and no wound of entrance to the heart was perceived at the time of operation or afterward. Soon two similar examples of fragments of metal in the heart were received, which may now be seen on exhibition. It was then inferred that such foreign bodies must first enter a large vein and be subsequently swept on to the heart in the circulation. Further experience has shown that such is their origin; cases in which foreign bodies, such as bullets and fragments of shell, have been swept into the heart are by no means rare. Quite early in the war, three examples of fracture of the neck were received. All three were caused in the same way: the soldier had dived into shallow water and his head had struck the bottom. Examination of the specimens showed that in most cases the lives of such soldiers could be saved by the prompt adoption of certain means, and that death will certainly be produced by improper handling. Many more instances could be cited in support of the immediate utility of the collection.

The collection is stored in three rooms which were devoted to the exhibition of anatomic and pathologic preparations, many of them the work of John Hunter, and most of them mounted in glass jars filled with inflammable spirit. At the outbreak of war they had to be placed in cellars for safety, for the authorities well knew that the people who trained their guns on the invaluable collections of the Natural History Museum of Paris in the spring of 1871 would not respect any British collection, no matter what its scientific value or humanitarian worth. There is a section labeled "Means of Protection." It includes metal helmets, breastplates, masks, respirators and other inventions that are being employed for the protection of soldiers. Several helmets are shown bearing evidence that the head of the wearer has been saved from a wound which otherwise would have proved mortal. With these helmets are shown a series of calvaria, perforated, with fatal results, by missiles that could have been turned aside by protective helmets. The gas masks for the protection of the lungs are of various patterns and dates. On one table are shown wounds of the vault of the skull. This series begins with examples of extensive destruction—injuries caused by large fragments of shell or by bullets of high velocity—giving rise to an "explosive" effect, a shattering of the whole skull. Then follow examples of minor wounds of the forehead and frontal bone, showing many forms and many stages of healing. On this and on the next table are to be seen many examples of wounds caused by missiles that have passed through the skull from side to side. On the other hand, "gutter" wounds, caused by a bullet or missile merely plowing the surface of the skull, are scarcely represented. There are two specimens in which a blow has caused a fracture of the inner plate of bone, and yet the corresponding outer plate remains intact. Numerous examples illustrate the fact that the injury to the external plate of the skull is no index to the extent of injury to the internal plate. A table is devoted to specimens illustrating the wounds and injuries of the face and jaws. In some cases of fractured jaw the dental splints that have been used to keep fragments in position are still attached to the specimens. Injuries to the spinal column are displayed in infinite variety. In one remarkable specimen a bullet has entered and passed along the spinal canal in the dorsal region, shattering the laminae as it passed. The bodies of the vertebrae are fissured on the median plane, showing the rending or "explosive" effect of a bullet of high velocity. A study of the specimens of fractured thigh bones shows that there are several types of fracture produced by missiles, but the prevailing type is that described by the term "butterfly" or X-shaped type. There is a tendency for a bullet to break the part off the bone into two main fragments resembling the two wings of a butterfly. In most cases the articulator has restored these fragments to their proper place in the whole bone, thus giving a somewhat misleading idea, except to the expert, of the disorder produced by a bullet wound of a bone. Most bones struck by projectiles show fine fissures far beyond the point of impact. Injury of bone produces a much more extensive rupture and exposure of torn surface than a mere casual examination reveals. Injuries of the knee, injuries of the leg, the condition of "stumps" removed by secondary amputation, injuries to the ankle and foot are represented in a consecutive manner. In one remarkable instance the lower end of the broken tibia has become united to the upper end of the broken fibula.

In Room 2 the peculiar characters of the wounds encountered in modern warfare may be studied in their immediate and their remote effects. Such examples as are available from former wars are set out—chiefly dried or bone preparations; also examples of gunshot wounds culled from civil practice. The Napoleonic wars are represented; there are specimens from soldiers who fought with Sir John Moore in his retreat to Corunna; there are a few examples from Waterloo. On the other hand, examples of the wounds and injuries of the Crimean War are more plentiful; there is quite a good series from the Austro-Prussian and Franco-Prussian wars, those from the latter war having been collected by a former president of the college, Sir William MacCormac. In those wars we see the same type of bone injury, the same septic inflammatory sequelae, as may have been noted in the specimens of the present war. The wounds produced by shrapnel and by shell fragments are of the same nature now as in former wars; the septic sequelae are also the same. It is not, however, until we come to the examples obtained from the Soudanese campaign of 1898 that we recognize the results produced by missiles of high velocity—the shattering, expansive, “explosive” effects. Passing to modern military wounds, wounds of entrance, wounds of exit, wounds at various stages of healing, and sepsis are shown. There are specimens of “excised wounds” of patients from whom the surgeon has sought to remove the injured and infected tissues as soon as possible after the date of infliction. Then commences a series illustrating injuries to the chest, pleura and lungs, with various sequelae that may ensue. There follow wounds of the structures on the posterior mediastinum (esophagus and aorta), then of the diaphragm, and finally of the heart. There is one remarkable injury of the heart; the anterior wall of the right ventricle is extensively lacerated—yet the officer (a member of the Flying Corps) brought his machine safely to earth! The vascular injuries so common in this war are very completely represented. One preparation is particularly worthy of study—a dissection of the popliteal space pierced by a bullet of high velocity. The damage extends far beyond the immediate track of the missile.

In drawings, Sergeant A. K. Maxwell most accurately delineates war wounds. He has succeeded in rendering a permanent and faithful record of conditions which could not be recorded except by pen and brush. His rendering of the appearance of muscles at various stages of invasion by the bacillus that produces gas gangrene are particularly worthy of attention. One stand shows specimens which could not be obtained in any former war—the lungs of men who suffered in the first cloud of poisonous gas sent over our lines by the enemy early in 1915 at Ypres. The effects may be studied at all stages, and the effect on the whole respiratory system. On the same stand are shown the changes that become apparent in the kidney in cases of trench nephritis. Here, too are represented the conditions, organic disturbances and disorganization produced by the gas-producing organism. It need not be said that the museum should be visited by every American surgeon who comes to London.

Marriages

CAPT. CHARLES BARTON, M. R. C., U. S. Army, Camp Zachary Taylor, Louisville, Ky., to Miss Henrietta Kiesow of Detroit, at the Durrett Place, near Camp Taylor, October 21.

LIEUT. JAMES ALFRED GOULD, M. R. C., U. S. Army, Westboro, Mass., to Miss Mary MacLean of Taunton, Mass., in Providence, R. I., September 11.

LOUIS FLEMING FALLON, M.D., St. John's, Newfoundland, to Miss Anna Hilder Elizabeth Bjork of Perth Amboy, N. J., at St. John's, October 2.

WALTER ULYSSES MEIER, M.D., Haskill, N. J., to Miss Anna Margaret Metzger of Williamsport, Pa., October 18.

CAPT. JOHN FRANCIS McCLOSKEY, M. R. C., U. S. Army, to Miss Pauline J. Grotz, both of Philadelphia, October 15.

LIEUT. FRANK J. STODDEN, M. R. C., U. S. Army, Wayne, Neb., to Miss Veronica Bradley of Omaha.

WILLIAM MARKUS, M.D., to Miss Leona Freedman, both of Cleveland, October 16.

WINTHROP WARREN BUTTMAN, M.D., to Miss Beatrice Lambeth, both of Denver, October 17.

EDWARD COLLINS OESTERREICHER, M.D., to Miss Elda Mary Schmehl, both of Bethlehem, Pa., October 20.

Deaths

Silas Dean Presbrey, M.D., Taunton, Mass.; Harvard Medical School, 1865; aged 79; a Fellow of the American Medical Association; one of the founders of Morton Hospital, Taunton; first city physician of Taunton; president of the Bristol North District Medical Society in 1869-1870; one of the founders and once president of the Massachusetts Medico-Legal Society; once vice president of the American Academy of Medicine; for many years a member of the board of education, and a member of the board of trustees of the Bristol Academy, and medical examiner (coroner) for the north district of Bristol County; since 1881 a member of the board of water commissioners of Taunton; died at his home, October 23.

Charles Cummins Hunt, M.D., Seattle; formerly of Dixon, Ill.; Bellevue Hospital Medical College, 1865; aged 77; formerly a Fellow of the American Medical Association; a member, and in 1891 president of the Illinois State Medical Society; for forty-seven years a practitioner of Dixon; assistant surgeon of the One Hundred Sixty-Ninth and the One Hundred Thirty-Seventh Ohio Volunteer Infantry during the Civil War; one of the organizers of the Dixon Hospital; died at his home in Seattle, September 9, from cerebral hemorrhage.

Lieut.-Col. Henry Allers, M. C., N. G., N. J., Harrison, N. J.; New York University, New York City, 1881; aged 61; formerly a Fellow of the American Medical Association; a member of the Medical Society of New Jersey and first vice president of the Association of Military Surgeons of the United States; formerly major and surgeon of the First New Jersey Infantry; deputy physician of Hudson County, N. J.; a member of the Board of Health of Harrison; who had been ill for a long while, died recently at his home.

Archibald G. Thomson, M.D., Philadelphia; University of Pennsylvania, Philadelphia, 1892; aged 48; formerly a Fellow of the American Medical Association; a member of the American Laryngological Association; well known as an ophthalmologist; a member of the staff of University, Wills, and the Orthopedic Hospital; died in the private hospital of Dr. Francis X. Dercum, Philadelphia, October 22, from heart disease.

James F. Blackwelder, M.D., Litchfield, Ill.; Cincinnati College of Medicine and Surgery, 1864; aged 76; formerly a Fellow of the American Medical Association; an honorary member of the Montgomery County Medical Society; acting assistant surgeon in the Army throughout the Civil War; formerly a member of the city council of Litchfield; died at his home, October 9, from diabetes.

Byron C. Stolp, M.D., Wilmette, Ill.; Bennett Medical College, Chicago, 1873; aged 66; a Fellow of the American Medical Association; a pioneer resident of Wilmette, and a well-known physician of the north shore; a member of the medical staff of the Evanston Hospital since its foundation; who was run down by an automobile, October 30, in Wilmette, died from his injuries, November 2.

Lieut. James Brown Griswold, M. R. C., U. S. Army. Morristown, N. J.; Dartmouth Medical School, Hanover, N. H., 1893; aged 46; chief sanitary officer of Camp Dix, Wrightstown, N. J.; a member of the staff of Memorial Hospital, Morristown; and gynecologist to Roosevelt Hospital; died at his home, October 25, from pneumonia.

Thomas Edward Deveny, M.D., Watervliet, N. Y.; Albany, N. Y., Medical College, 1901; formerly a member of the Medical Society of the State of New York; for several years police surgeon of Watervliet; who was thrown from his automobile on the Albany road, October 21; died in St. Peter's Hospital, Albany, from his injuries, October 24.

Henry Everett Sutton, M.D., St. Cloud, Minn.; University of Minnesota, College of Homeopathic Medicine and Surgery, Minneapolis, 1901; aged 41; a member of the Minnesota State Medical Association; a lieutenant in the Minnesota National Guard during the Spanish-American War; died at his home, October 22.

William Francis Gutherson, M.D., Paterson, N. J.; College of Physicians and Surgeons in the City of New York, 1904; aged 39; a member of the Medical Society of New Jersey and New York Pathological Society; a member of the staff of St. Joseph's Hospital, Paterson; died at his home, October 22, from pneumonia.

Thomas Scilles Kennedy, M.D., New Orleans; Tulane University, New Orleans, 1869; professor of pediatrics in the New Orleans Polyclinic; for fifteen years in charge of the Children's Clinic of the Charity Hospital, New Orleans; a Confederate veteran; died at his home about October 20.

James Benjamin Livingston, M.D., West Middlesex, Pa.; Western Reserve University, Cleveland, 1866; aged 87; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of Pennsylvania; died at his home, October 18, from senile debility.

Thomas Joseph Henry McCormick, M.D., Boston, Mass.; Harvard Medical School, 1900; aged 40; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; died at his home in Roxbury, Boston, October 10, from heart disease.

Joseph J. Knapp, M.D., Youngsville, Pa.; College of Physicians and Surgeons, Baltimore, 1891; aged 63; a member of the Medical Society of the State of Pennsylvania; a director and vice president of the First National Bank of Youngsville; died at his home, October 19.

John Quincy Adams, M.D., Amesbury, Mass.; Bellevue Hospital Medical College, 1872; aged 67; a member of the Massachusetts Medical Society; a prominent socialist and once candidate for governor on that ticket; died at his home, October 19.

John L. Schoolcraft, M.D., Schenectady, N. Y.; Albany, N. Y., Medical College, 1869; aged 64; a Fellow of the American Medical Association; health officer of Schenectady in 1914-1915; died at his home, October 23, from cerebral hemorrhage.

Owen W. Grubbs, M.D., Harrison, Ohio; Medical College of Ohio, Cincinnati, 1888; aged 57; died at his home, October 23, from the effects of a gunshot wound of the heart, believed to have been accidentally self-inflicted while cleaning his shotgun.

Howard Chew Garrison, M.D., Kansas, N. J.; Hahnemann Medical College, Philadelphia, 1894; aged 53; a member of the staff of the West Jersey Homeopathic Hospital, Camden; died in a hotel in Atlantic City, October 23, from nephritis.

John H. Wood, M.D., Champaign, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1878; aged 74; a veteran of the Civil War; formerly mayor of Deland, Ill.; died at his home in Champaign, October 18, from malignant disease.

George N. Carnachan, M.D., Bruce, Wis.; Louisville, Ky., Medical College, 1878; aged 60; a Fellow of the American Medical Association; died in the Sacred Heart Hospital, Eau Claire, Wis., October 25, after a surgical operation.

Pitt Harold Jones, M.D., Springfield, Maine; New York University, New York, 1884; aged 55; for two terms a member of the house of representatives of Maine; town treasurer of Springfield; died in his automobile, October 14.

Harry Valentine Sanns, M.D., Le Sage, W. Va.; Medical College of Ohio, Cincinnati, 1880; aged 57; a member of the West Virginia State Medical Association; died in Rochester, Minn., August 16, from carcinoma of the colon.

David McIntyre, M.D., Boston; New York University, New York, 1886; aged 59; a Fellow of the American Medical Association; a well-known obstetrician of South Boston; died at his home, September 2, from diabetes.

Edwin Dorset Newton, M.D., Atlanta, Ga.; Jefferson Medical College, 1869; aged 82; surgeon in the Confederate service during the Civil War; died at the home of his sister in Athens, Ga., October 19, from pneumonia.

Elbridge A. Shay, M.D., St. Louis, Mo.; Cleveland University of Medicine and Surgery, 1883; aged 68; professor of anesthesia in the St. Louis College of Physicians and Surgeons; died at his home, October 20.

Mary Darrach, M.D., New York; New York Medical College and Hospital for Women, 1904; founder of the Darrach Home for Crippled Children, New York; died in Atlantic City, October 18, from pneumonia.

William Lewis Tallman, M.D., Chicago; Bellevue Hospital Medical College, 1881; aged 58; died at his home, October 27, from cerebral hemorrhage.

G. H. Clemens Richard, M.D., Cincinnati; Eclectic Medical Institute, Cincinnati, 1856; aged 89; died at his home, October 13.

John Carder Champlin, M.D., Block Island, R. I.; Boston University, 1885; aged 57; died at his home, in August, from nephritis.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

"PATENT MEDICINES" IN CANADA AND THE UNITED STATES

A Comparison of Therapeutic Claims Made in the Two Countries

A little more than five years ago an article was published in this department comparing the labels on certain "patent medicines" that were sold, respectively, in the British Isles and in the United States. It was shown that the federal Food and Drugs Act in this country had increased alike the protection of the purchaser and the veracity of the seller. The present article aims to draw a similar parallel between the claims made for certain "patent medicines" in the United States and in the Dominion of Canada.

The national law in the United States governing interstate commerce in "patent medicine" guards the public by means of two prohibitions that may be briefly expressed in their essentials as follows: It prohibits "false or misleading" statements regarding the composition or source of origin of any

DODD'S KIDNEY PILLS IN CANADA

| A POSITIVE CURE FOR ALL KIDNEY DISEASES. | | |
|--|--------------------|-------------------------|
| CURES - BACKACHE | CURES - RHEUMATISM | PURIFIES THE BLOOD |
| HEADACHE | BRIGHT'S DISEASE | CLEANSSES THE SYSTEM |
| INDIGESTION | DIABETES | CURES - FEMALE WEAKNESS |

DODD'S KIDNEY PILLS IN THE UNITED STATES

| A TREATMENT FOR KIDNEY DISEASES. | | |
|----------------------------------|------------------|-----------------------|
| FOR - BACKACHE | FOR - RHEUMATISM | FOR - FEMALE WEAKNESS |
| HEADACHE | URINARY AND | PURIFYING THE BLOOD |
| INDIGESTION | BLADDER TROUBLE | CLEANSING THE SYSTEM |

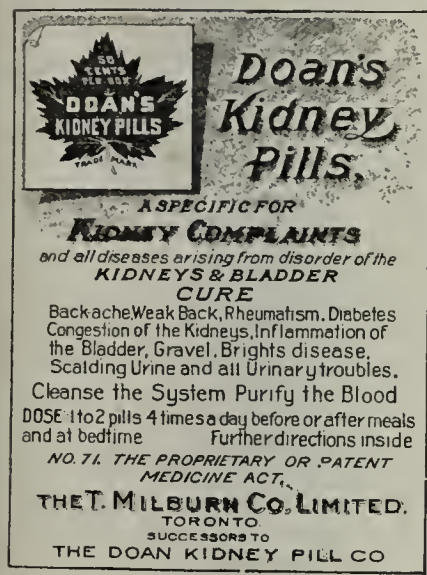
drug product; it prohibits, also, "false and fraudulent" claims for therapeutic effects. The law governing the sale of "patent medicines" in Canada prescribes certain regulations for labeling, and specifically prohibits the use of cocaine in any "patent medicine." It does not, however, offer any protection to the Canadian public against false, misleading or fraudulent claims that may be made for products of this class.

What follows is not to be construed in any sense as a criticism of the Canadian law; the object of the comparisons made is to show that so far as curative claims for "patent medicines" are concerned, Canada is in the same position that the United States was before the passage of the federal Food and Drugs Act, June 30, 1906. Manufacturers of "patent medicines" who wish to sell their preparations in Canada are under no legal restrictions as to the claims they may make for them. In the United States therapeutic claims—made on the trade package—must be kept within certain limits. If false and fraudulent claims are made the manufacturer lays himself open to prosecution under the federal law. If, then, we find that certain claims are made for a "patent medicine" sold in Canada that are not made for the same product sold in the United States, we are justified in inferring that such claims are in the prohibited list, that is, they are false, misleading or fraudulent.

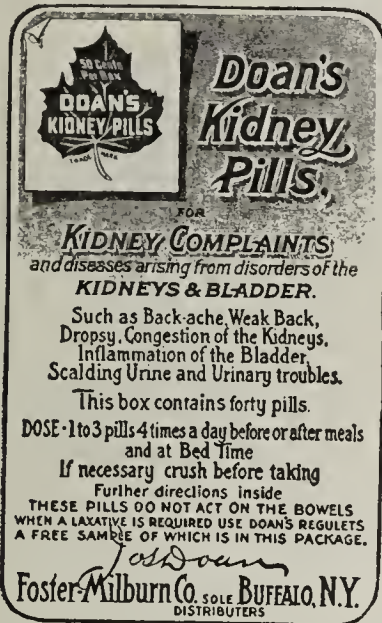
Within the last few weeks we have had purchased on the open market in Canada certain "patent medicines" that are sold also in the United States. We purpose comparing the claims made on the Canadian trade packages with the claims made for the same products sold south of the international boundary.

DODD'S KIDNEY PILLS

"Dodd's Kidney Pills" were analyzed a few years ago by the chemists of the British Medical Association, who reported that the principal ingredient was potassium nitrate. Other constituents found were baking soda, soap, hard paraffin, wheat flour, powdered turmeric and minute quantities of resins and plant extractives. Practically the same findings were reported by the state chemists of North Dakota in their 1915 *Bulletin*. These pills are sold in Canada under claims



CANADA



UNITED STATES

Photographic reproduction (reduced) of the labels of "Doan's Kidney Pills" as sold in Canada and the United States, respectively. It is worthy of note that while in Canada (where the law does not prohibit lying on the label) Doan's Kidney Pills are sold as a "cure" for Bright's disease and diabetes, in selling their pills in the United States the manufacturers specifically state that the pills "are not recommended for Bright's disease or diabetes."

which, if made in the United States, would undoubtedly subject the manufacturers to prosecution on the charge of making false and fraudulent statements regarding the therapeutic value of their product. Compare:

CANADA

"A Positive Cure for all Kidney Diseases—Cures—Backache, Headache, Indigestion. Cures—Rheumatism, Bright's Disease, Diabetes. Purifies the Blood Cleanses the System. Cures — Female Weakness."

"Bright's Disease— . . . Dodd's Kidney Pills is the only remedy that has cured Bright's disease."

"Diabetes— . . . Dodd's Kidney Pills will cure this disease."

". . . Dodd's Kidney Pills will cure any form of heart disease."

". . . are the only cure for kidney disease."

". . . the best kidney remedy obtainable."

UNITED STATES

"A Treatment for Kidney Diseases — For — Backache, Headache, Indigestion. For—Rheumatism, Urinary and Bladder Trouble. For—Female Weakness, Purifying the Blood, Cleansing the System."

"Bright's Disease—" (Statement omitted — no claim made that Dodd's Pills are of any value in this disease).

(No reference whatever to diabetes.)

(No reference whatever to heart disease.)

(No such statement anywhere.)

(No such statement anywhere.)

DOAN'S KIDNEY PILLS

"Doan's Kidney Pills" also have been analyzed by the chemists of the British Medical Association, who reported finding

oil of juniper, hemlock pitch and powdered fenugreek, as well as potassium nitrate—the latter, in spite of the claim made in the British Isles (and also in Canada), that these pills were "purely vegetable." The state chemists of Connecticut also have analyzed these pills and reported that their active ingredients appear to be potassium nitrate, pitch and possibly a trace of oil of juniper and other unidentified organic drugs. In Canada Doan's Pills are "a specific for kidney complaints," but in the United States the manufacturer more conservatively—or cautiously—mentions merely that they are "for kidney complaints." Again comparing:

CANADA

"Doan's Kidney Pills, A Specific for Kidney Complaints and all diseases arising from disorder of the Kidneys & Bladder Cure Backache, Weak Back, Rheumatism, Diabetes, Congestion of the Kidneys, Inflammation of the Bladder, Gravel, Bright's disease, Scalding Urine and all Urinary troubles, Cleanse the System, Purify the Blood."

"These Pills are composed of rare and valuable medicinal agents. . ."

". . . will absolutely cure backache, all forms of Kidney Disease, Diabetes, Bright's Disease, etc."

". . . a purely vegetable medicine. . ."

UNITED STATES

"Doan's Kidney Pills for Kidney Complaints and diseases arising from disorders of the Kidneys & Bladder, such as Back-ache, Weak Back, Dropsy, Congestion of the Kidneys, Inflammation of the Bladder, Scalding Urine and Urinary troubles."

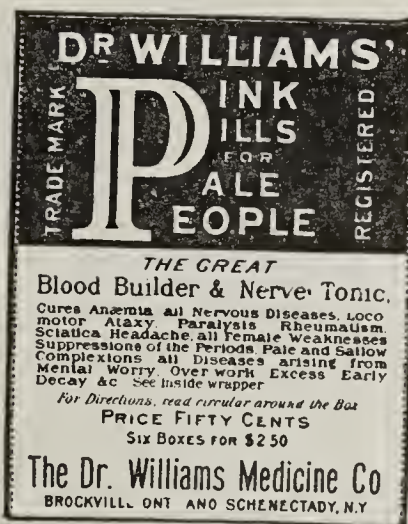
(No such claim made.)

". . . are not recommended for Bright's disease or diabetes."

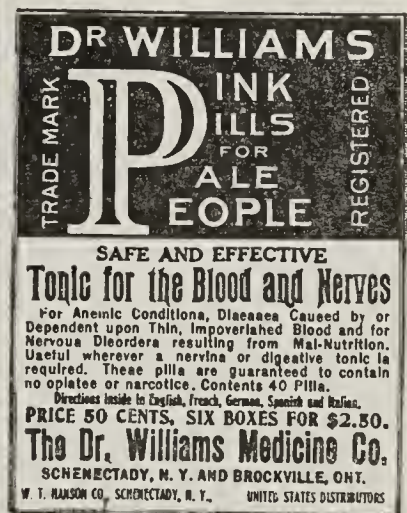
(No such claim made.)

Every physician and many an intelligent layman knows that neither Doan's Kidney Pills nor any other drug "will absolutely cure . . . all forms of kidney disease, diabetes, Bright's disease, etc." This statement is a preposterous falsehood on its face, but the manufacturers of Doan's Kidney Pills have made it where there is no legal restriction on lying, although in the United States they emphasize specifically that their pills "are not recommended for Bright's disease or diabetes" and add: "Both these are serious disorders and the patient should be under the supervision and instruction of a competent physician."

If Doan's Kidney Pills really contain "rare and valuable medicinal agents," as is claimed in the Canadian trade package, there is no law in the United States that would prohibit



CANADA



UNITED STATES

Photographic reproduction (reduced) of the labels of "Williams' Pink Pills" as sold in Canada and the United States, respectively. Notice that the Canadian public is told that these pills will "cure" all nervous diseases, locomotor ataxia, paralysis, female weaknesses, etc. The same pills when sold in the United States are not invested with such marvellous powers.

the manufacturer from saying so. There is, however, a law that specifically prohibits false or misleading statements regarding the composition of drug products. In view of the fact that the claim of "rare and valuable medicinal agents" is omitted from the trade package in the United States, the inference is fairly obvious.

WILLIAMS' PINK PILLS FOR PALE PEOPLE

"Dr. Williams' Pink Pills for Pale People" are a much over-advertised proprietary modification of the common Blaud's pill. The manufacturers have been found guilty in the United States courts of making false and fraudulent claims for their product in reckless and wanton disregard of their truth or falsity for the purpose of defrauding purchasers. Let us compare the claims made today for Pink Pills in the United States with those made for the same product in Canada:

CANADA

"Cures Anemia, all Nervous Diseases, Locomotor Ataxia, Paralysis, Rheumatism, Sciatica, Headache, all Female Weaknesses, Suppressions of the Periods, Pale and Sallow Complexions, all Diseases arising from Mental Worry, Over-Work, Excess, Early Decay, Etc."

"This wonderful remedy is offered to the public . . ."

"Dr. Williams' Pink Pills also invigorate the Blood . . ."

"Suppression of the Menses. .

"Locomotor Ataxia . . ."

UNITED STATES

"For Anemic Conditions, Diseases Caused by or Dependent upon Thin, Impoverished Blood and for Nervous Disorders resulting from Mal-Nutrition. Useful wherever a nervine or digestive tonic is required."

"These pills are offered to the public . . ."

"Dr. Williams' Pink Pills are designed to invigorate the Blood . . ."

(Omitted.)

(Omitted.)

It is worthy of note that while the claims now made in the United States, as quoted above, are more conservative than those on which the government charged the company with fraud, yet the claims on which the company was found guilty of fraud were not nearly so positive and blatant as those quoted above as being made today for the Canadian product.

| PAINE'S Celery Compound | | |
|-----------------------------|-----|-----------|
| Each Fluid Ounce Represents | | |
| Celery Seed | - - | 10 grains |
| Calisaya Bark | - - | 2 " |
| Cascara Sagrada | - - | 2 " |
| Senna Leaves | - - | 9 " |
| Prickly Ash Bark | - - | 1 " |
| Sarsaparilla Root | - - | 2 " |
| Hops | - - | 1 " |
| Ginger Root | - - | 2 " |
| Dandelion Root | - - | 1 " |
| Mandrake Root | - - | 1 " |
| Black Haw | - - | 1 " |
| Gentian Root | - - | 1 " |
| Chamomile Flowers | - - | 2 " |
| Black Cohosh Root | - - | 1 " |
| Yellow Dock Root | - - | 1 " |
| Potassium Nitrate | - - | 4 " |
| Dilute Phosphoric Acid | - - | 15 minims |
| SOLVENT: Glycerin, Water. | | |
| 12 | | |

CANADA

Photographic reproduction (reduced) of page 12 from the booklets accompanying the bottles of Paine's Celery Compound as sold, respectively, in Canada and the United States. It will be seen that the only ingredient whose quantity is given the public in the United States is the alcohol—which the law demands. In Canada, where the law does not demand it, the presence of alcohol is not mentioned, although the alleged quantities of the other ingredients are given. Canadian officials state that an analysis of Paine's Celery Compound on sale in Canada disclosed the presence of over 16 per cent. alcohol. The Canadian public would be justified in assuming from the alleged formula published that the stuff contained no alcohol but that the solvents used were glycerin and water.

PAINE'S CELERY COMPOUND

"Paine's Celery Compound" belongs to the "bracer" type of nostrums; that is, it is a preparation whose most potent and active drug is alcohol. Some years ago it used to be one

| PAINE'S Celery Compound | |
|----------------------------|--|
| Contains: | |
| Alcohol, 19.85 per cent. | |
| Celery Seed, | |
| Calisaya Bark, | |
| Cascara Sagrada, | |
| Senna Leaves, | |
| Prickly Ash Bark, | |
| Sarsaparilla Root, | |
| Hops, | |
| Ginger Root, | |
| Dandelion Root, | |
| Mandrake Root, | |
| Black Haw, | |
| Gentian Root, | |
| Chamomile Flowers, | |
| Black Cohosh Root, | |
| Yellow Dock Root, | |
| Potassium Nitrate, | |
| Glycerin, | |
| Sugar, | |
| Water. | |
| 12 | |

UNITED STATES

of the most widely advertised of "patent medicines." The concern, apparently, had testimonials galore, many of them from individuals whose ability along certain special lines was as great as their ignorance of the nature, cause and treatment of disease was abysmal. According to one of the old advertising booklets sent out by manufacturers of Paine's Celery Compound, Sarah Bernhardt was "convinced that it is the most powerful nerve strengthener that can be found," while "Edward L. Preetorius, Manager of the *Westliche Post*" considered this medicated booze "the only remedy that will restore

PAINE'S
CELERY
COMPOUND
THE GREAT REMEDY
FOR
Nervous Diseases,
Neuralgia, Rheumatism,
Nervous Debility,
Biliousness, Dyspepsia,
Constipation, Piles,
Liver Complaint,
Kidney Troubles, Female
Complaints, and Diseases
Arising from Impure
Blood.
It Strengthens the Nerves
It Restores the Torpid Liver
to its Normal Condition,
Gives Tone to the Stomach,
Invigorates the
Kidneys,
Relieves Constipation,
Produces a Healthy Appe-
tite, Sound Digestion,
Regular Stools,
Clear Skin and a Vigorous
Body.

CANADA

Photographic reproduction (reduced) of the labels of "Paine's Celery Compound" as sold in Canada and the United States, respectively. Note that the claims made on the Canadian label that this nostrum "strengthens," "restores," "invigorates" and "relieves" are absent from the label used in the United States.

the nerves which have been shattered by overwork, worry or business cares." The same booklet declares that "Rev. Zephaniah Meek, D.D., Editor of the *Central Methodist*," had used several bottles "with immediate effect as well as permanent benefit." Especially significant of the way in which the public was fooled in those days before the presence and amount of alcohol had to be declared on the labels was the alleged testimonial of "Francis Murphy, Founder of the Blue Ribbon Movement," who endorsed Paine's Celery Compound as "a splendid remedy."

These are but a few of the endorsements of Paine's Celery Compound published in the good old days. The claims made today on the trade package as it is sold in the United States, are relatively conservative and innocuous. A booklet that comes around the bottle gives a list of drugs that are said to enter into the composition of this nostrum. No quantities, however, are vouchsafed (in the United States) except that of the one ingredient which the law requires to be made public, namely, alcohol, of which it has 19.85 per cent. The list gives fifteen vegetable drugs and, in addition, potassium nitrate, glycerin and sugar. As the state chemists of Connecticut, who have analyzed the stuff, point out, the list of these fifteen vegetable drugs "loses much of its impressiveness when it is seen that the total amount of vegetable extractives

WELLS &
RICHARDSON CO.'S
PAINE'S
CELERY
COMPOUND
RECOMMENDED BY
THE PROPRIETORS
FOR
Nervous Debility
Dyspepsia
Neuralgia
and
Rheumatism
Wells & Richardson Co.
Proprietors
Burlington, Vermont, U. S. A.

UNITED STATES

is less than 1.5 per cent." Much more impressive is the nearly 20 per cent. alcohol! The booklet accompanying the Canadian trade package also contains a list of the alleged ingredients. This list differs from that found in the packages sold in the United States in that it contains a quantitative statement of the various drugs listed! It tells how many grains of each of the fifteen vegetable drugs are represented in each fluid-ounce of Paine's Celery Compound; also it tells the amount of potassium nitrate. But one thing it does *not* tell—the amount of alcohol! In fact, it does not even admit that the Canadian product contains any alcohol! On the other hand, it emphasizes the alleged fact that the "solvent" in the Canadian product is glycerin and water; also it mentions that in each fluidounce there are 15 minims of dilute phosphoric acid, a drug whose presence is not mentioned in the product sold in the United States. As Paine's Celery Compound without alcohol seemed almost as much of an anomaly as *Hamlet* with *Hamlet* left out, we wrote to the Inland Revenue Department of Canada calling attention to these facts. The Inland Revenue Department replied that Paine's Celery Compound, as sold in Canada (giving no information regarding the amount or even the presence of alcohol), had been examined and, as a result, alcohol (over 16 per cent. by volume) *was* found, while phosphoric acid could not be detected!

The claims in the trade package of Paine's Celery Compound as sold, respectively, in Canada and the United States varied thus:

CANADA

Solvent: "Glycerin, Water."

"A True Nerve Tonic, an Active Alterative, a Reliable Laxative and Diuretic. It Restores Strength, Renews Vitality, Purifies the Blood, Regulates the Kidneys, Liver and Bowels."

"A Reliable Medicine for general nervous debility and diseases arising from a debilitated nervous system. A powerful Alterative and Diuretic; a Valuable Remedy for Dyspepsia, Biliousness, Constipation, Piles, Liver Complaint, Neuralgia, Rheumatism, Fever and Ague, and Kidney Trouble; also Female Complaints, and diseases arising from an impure state of the Blood. It acts at the same time as a tonic, reviving the energies and spirits, making it one of the best medicines in existence for aged people."

"The Great Remedy for Nervous Diseases, Neuralgia, Rheumatism, Nervous Debility, Biliousness, Dyspepsia, Constipation, Piles, Liver Complaint, Kidney Troubles, Female Complaints, and Diseases Arising from Impure Blood."

From a comparison of the old advertising in our files, it seems that the people of Canada are being served with claims for Paine's Celery Compound of the vintage of '98.

HALL'S CATARRH MEDICINE

"Hall's Catarrh Cure" (Canada), or "Hall's Catarrh Medicine" (United States), was found, by government chemists, to contain more than 13 per cent. alcohol, over 10 per cent. potassium iodid, 3 per cent. of sugar and a small amount of some bitter extract, probably gentian, with small quantities of cardamom and caraway and water. This nostrum has for years used an obviously false name ("Hall's Catarrh Cure"). Finally the state of Nebraska declared the stuff misbranded because of the use of the word "cure." The company took an appeal, but before the matter reached the Appellate Court apparently changed its mind and asked for a dismissal of the appeal, expressing at the same time its purpose of changing the name of its preparation to "Hall's Catarrh Medicine." The difference in the claims on the trade packages in Canada and the United States may briefly be shown:

UNITED STATES

Alcohol, 19.85 per cent.

(Omitted entire.)

(Omitted entire.)

"Recommended by the Proprietors for Nervous Debility, Dyspepsia, Neuralgia and Rheumatism."

CANADA

"Hall's Catarrh Cure."

(No alcohol declared.)

"\$100 Reward For any Case of Catarrh That Can't be cured with Hall's Catarrh Cure."

UNITED STATES

"Hall's Catarrh Medicine."

"Alcohol 14 per cent. 3 ounces."

(No reward offered.)

The "offer" of this concern, to pay \$100 for any case of "catarrh" that the nostrum fails to cure, has been made for many years. One case has been recorded of an individual who, after taking twenty-six bottles of the stuff, wrote to the nostrum company telling them that instead of being benefited he felt worse and asked them either to refund his money or to pay him the hundred dollars in accordance with their "offer." He, of course, got neither; the company said that he had not taken enough to give the medicine a fair chance! The exploiters still make this "offer" in their newspaper advertising in the United States, but have eliminated it from the trade package. It is significant that the federal law does not con-



CANADA

UNITED STATES

Photographic reproduction (reduced) of the labels of "Hall's Catarrh Medicine" as sold in Canada and the United States, respectively. Comparison of the labels shows that the presence and amount of alcohol is admitted where the law demands it (in the United States), but no mention is made of it in Canada. While the stuff is called a "cure" in Canada, where there is no penalty for false and fraudulent therapeutic claims, it is a "medicine" in the United States. In the United States also the "\$100 Reward" does not appear on the trade package.

trol claims made elsewhere than on the trade package. In Canada, as the quotations above show, the hundred dollar "offer" still appears on the trade package.

HOOD'S SARSAPARILLA

Like most of the so-called sarsaparillas, Hood's nostrum is an alcoholic solution of vegetable extractives and potassium iodid. The difference in the claims made in Canada and the United States are shown:

CANADA

"Contains 18 per cent. alcohol. The smallest quantity that will extract and preserve all the remedial properties of the ingredients."

"The Great Blood Purifier and Tonic, for Eradicating Scrofula, Scrofulous Sores and all Scrofulous Diseases, and for Purifying, Enriching and Vitalizing the Blood and Restoring and Renovating the whole system."

UNITED STATES

"Contains 16½ per cent. alcohol. Used only as a solvent and preservative. This is a concentrated medicine, to be taken only in small doses, according to the directions enclosed."

(Omitted.)

It will be noticed that the Canadian product contains 18 per cent. alcohol which the manufacturers declare is "the smallest quantity that will extract and preserve all the remedial properties of the ingredients." The stuff sold in the United States under the same name contains only 16.5 per cent. alcohol. Is it to be inferred that some of the "remedial properties" are lacking?



CANADA



UNITED STATES

Photographic reproduction (reduced) of the labels of "Dr. Chase's Nerve Pills" as sold, respectively, in Canada and the United States. Chase's Nerve Pills use to be a "Nerve Food" in the United States—but that was before there was a law penalizing falsehood.

DR. CHASE'S NERVE PILLS

This somewhat insignificant humbug used to be called "Dr. Chase's Nerve Food" before the federal Food and Drugs Act made falsifying expensive. Then "Food" became "Tablets" and still later "Pills." It is still a "Food" in Canada. Compare:

CANADA

"Dr. Chase's Nerve Food."

"Builds up the system, Cures Thin and Watery Blood, Nervous Prostration, Brain Fag, Nervous Headache, Female Trouble, Pale & Sallow Complexion, Heart Failure, Dizziness & Fainting, Sleeplessness and General Weakness."

"... makes it impossible for the following diseases and symptoms of diseases, to exist..."

"... this great food cure..."

"There is no preparation known which will so quickly create new, rich blood..."

UNITED STATES

"Dr. A. W. Chase's Nerve Pills."

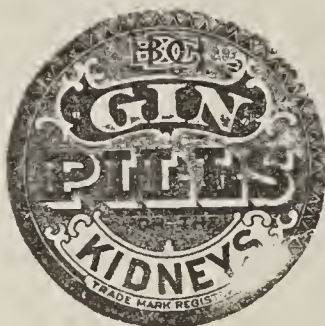
"Used in the Treatment of Thin and Watery Blood, Nervous Prostration, Brain Fag, Nervous Headache, Nervous Dyspepsia, Pale & Sallow Complexion, Irregular Heart Action, Dizziness & Fainting, Sleeplessness and General Weakness."

"... make it next to impossible for the following diseases and symptoms of diseases, to set in..."

"... this great nerve medicine..."

"There is no preparation known which will more quickly create new, rich blood..."

It will be seen that, aside from the change in the name of the product, the difference in the claims is essentially the difference between the "lie direct" and the "lie with circumstance."



CANADA



UNITED STATES

Photographic reproduction (reduced) of the labels of "Gino Pills" as sold, respectively, in Canada and the United States. Of course, gin cannot be put up in pill form and, therefore, it would be a violation of the United States Food and Drugs Act to sell this nostrum as "Gin Pills."

GINO PILLS

While it is obviously impossible to put up brandy, whisky or gin in pill form, one finds on the Canadian market "Gin Pills" which are recommended "for the kidneys." The same preparation sold in the United States is not, of course, called "Gin Pills," as that would at once bring the manufacturers

in conflict with the federal law prohibiting false or misleading statements regarding composition. Here we find them as "Gino Pills for the Kidneys." The variations in claims made for these pills in Canada and the United States, respectively, are not especially striking, but are nevertheless worthy of the study of those interested in truthful advertising:

CANADA

"Gin Pills for the Kidneys."

"The various ingredients composing the formulae are the best known to the medical profession..."

"For this purpose (laxative) there is nothing better than the National Lazy-Liver Pills."

UNITED STATES

"Gino Pills for the Kidneys."

"The various ingredients composing the formulae are among the best known to the medical science..."

"For this purpose (laxative) we know of nothing better than National Lazy-Liver Pills."

SUMMARY

The nostrums to which we have called attention are not the only ones whose varying claims in Canada and the United States have been examined. They are, however, sufficient to bring out these facts: The "patent medicine" industry as a whole is founded on falsehood; misleading and false claims will be made for such preparations, at least in the majority of cases, just so long as the manufacturers are subject to no restraint except their own consciences. As has been shown time and again in these pages, nostrum exploiters in the United States have greatly modified the claims for their products as such claims appear on the trade packages, because federal and state laws have provided penalties for falsehood and fraud. These same manufacturers have continued to falsify and mislead in those avenues of publicity (newspapers, etc.) which are not subject to legislative restraint. The same manufacturers have continued to falsify even on their trade packages in Canada where there is no law prohibiting it.

The "patent medicine" interests in the United States have complained loudly and frequently that their business has been and is unduly hampered by legislation. They have insisted that while it was admitted there were certain concerns in their line of business that were not above criticism, the business as a whole was no worse than any other industry. Unfortunately for them and still more unfortunately for the public, these protestations of innocence are not borne out by facts. Even a cursory study of the "patent medicine" problem will show that while in occasional and rare instances a "patent medicine" manufacturer will voluntarily modify his statements and temper his claims, in general, the "patent medicine" industry is just as dishonest as it dares be.

Garbage.—New York's garbage, by treatment in a \$3,000,000 recovery plant of the latest type, yields grease for 70,000,000 cakes of soap; 1,500 tons of nitrogen; 2,000 tons of phosphoric acid, 500 tons of potash. With the nitrogen, and the glycerin from soap making, there is a recovery of material yielding 3,500,000 pounds of high explosives, while the phosphoric acid and potash, as well as the nitrogen, are valuable in the making of commercial fertilizers. This plant operating under the so-called Cobwell process, which treats garbage almost entirely by chemical methods, has effected increased recoveries of valuable products amounting to at least 25 per cent. more than recoveries under the best previous reduction methods used for New York's garbage. In soap, for instance, there is an additional recovery of grease for 10,000,000 cakes a year, and in high explosives material for 700,000 pounds. The chemical treatment followed not only eliminates all odors incident to the old boiling process, by which garbage was cooked for a long period in water, but saves many of the rich chemical elements which were formerly lost. Under the old process it is said a large percentage of these elements were cooked into a rich soup, and then the soup was thrown away. Moreover, a considerable percentage of grease was burned by the high temperature driers used before degreasing, and the cooking process had a splitting effect on the material which led to considerable losses of glycerin. The new process saves these. The plant is more expensive to install, but much more economical in operation.—*Weekly Bulletin*.

Correspondence

CORNEAL TATTOOING

To the Editor:—I notice in THE JOURNAL, Oct. 27, 1917, p. 1420, an article by F. H. Verhoeff of Boston on a substitute for tattooing the cornea with India ink for the purpose of obliterating white corneal scars, etc. His method consists in injecting a solution of India ink into the layers of the cornea by means of a hypodermic syringe. Never having tried this method, I am not in a position to criticize it; but it seems to me that it is not at all an ideal procedure. I have for years abandoned the old method of tattooing the cornea with needles and India ink. This procedure is undoubtedly satisfactory when skin tattooing is under consideration, but it is not at all satisfactory for corneal tattooing. It requires a good deal of force to thrust the needles into the cornea, and then when this is done the black stain produced by each needle is very minute, and the needles have to be thrust in over and over and over again, and even then a large area of the cornea will be left untattooed.

My method of tattooing the cornea is extremely simple. I merely take a cataract knife and scrape off the corneal epithelium where I desire to produce a black stain. This can be done with great accuracy, and is especially useful when we wish to produce a round stain simulating a pupil. Having scraped off the corneal epithelium with the exactness which is possible with this procedure, I then rub into the cornea a thick emulsion of the India ink with a little cotton tightly twisted on a toothpick or cotton holder. This is done thoroughly several times in order to force the ink to soak into the tissues. The eye is not closed for about ten minutes in order to give the ink an opportunity to stain the tissues. The usual postoperative dressings are then made. Of course, a certain amount of this stain will wear off, and it may be necessary to repeat the little operation in a few days or weeks until a good India ink stain is produced. Still, I have seen several cases in which only one treatment was necessary, and I do not remember having done it more than twice. Naturally, in the course of a year or two it is sometimes necessary to give the cornea another India ink staining.

This method of staining the cornea is simple, efficacious and accurate. It has always given satisfactory results, and is a procedure to be recommended.

FRANK ALLPORT, M.D., Chicago.

"SCIENCE"

To the Editor:—May I be permitted to correct a misstatement regarding the teachings of Christian Science which appeared in your issue of October 13 under the caption "Science," namely, that "for the Christian Scientist, germs do not exist; the tubercle bacillus is but a creature of the medical man's disordered fancy." Christian Science does not teach that germs exist only in the mind of the medical man. It teaches that disease, like physicality itself, is in the realm of false belief, and that is where it needs to be corrected or "cured" and not by something administered to the body. THE JOURNAL appears to consider such teaching as worthy only of a sneer; but it should not be forgotten that the profession, as a whole, is granting a constantly increasing importance to mental causes, such as fear, in the production even of germ diseases.

Our critic implies that to look through a microscope and see a germ settles the question between medicine and Christian Science in favor of the doctor. Of course it does not, any more than to bruise your knuckles on a stone floor settles the question as to materiality of matter. In spite of the bruised knuckles, the modern physicist insists that the "material" atom is a mass-point of force—absolutely immaterial. In other words, another case of false belief. In the same way and for similar reasons the Christian Scientist, in spite of the microscope, is convinced that disease, like all evil, is the product of the human mind.

Christian Scientists and the medical profession do not agree as to what the mental factor is in a disease such as

tuberculosis, but the profession would no longer contend that it is nothing.

EVERY COONLEY, Committee on
Publication for Illinois, Chicago.

[COMMENT.—As most of our readers probably know, Mrs. Eddy's followers have what is possibly the most alert press bureau of any organization in the world. Every article that can in any way be construed as a criticism of "Christian Science" is answered by the "Committee on Publication." Mr. Coonley's letter is of this class.

The mental processes of the professional "Christian Scientist" are so hopelessly awry that one must despair of answering the casuistic arguments offered. Mr. Coonley's letter would indicate that his sect believed that the medical profession took no account of the mental element in the treatment of disease, although, of course, it knows perfectly well that applied psychotherapy antedated not only Mrs. Eddy but Quimby also, by many centuries.

The statements in the letter above to the contrary notwithstanding, it is a fact that to Christian Scientists "the tubercle bacillus is but a creature of the medical man's disordered fancy"—in the sense, obviously meant in our editorial, of being the immediate and proximate cause of tuberculosis. The letter admirably illustrates the loose and illogical modes of thought employed by Mrs. Eddy's professional followers. Mr. Coonley points to the physicist's philosophical definition of matter as "a mass-point of force" as proof of the unmateriality of matter, and insists that bruising one's knuckles on a stone floor does not settle "the question as to the materiality of matter." To most normal intellects it *does* most effectively settle the question. Nor are "Christian Scientists" themselves averse to coming "down to earth" in certain phases of their "healing" activities. It is a matter of common observation and frequent comment that while Mrs. Eddy's followers insist that disease is wholly a "question of mind," they are by no means averse to being paid for their "treatments" by those conglomerations of "mass points of force" which, in the parlance of the unregenerate, are known as material dollars.—Ed.]

THE ETIOLOGY OF SCURVY

To the Editor:—I have read the editorial on this subject in THE JOURNAL (Sept. 1, 1917, p. 728), and think that my experience here may be of interest, as I treated about 3,000 cases in the year 1915.

This island lies in the Caribbean Sea close to and north of Venezuela, and the climate is very dry, there being only a few months a year in which it rains. The food of the poorer and laboring people consists chiefly of small or Guinea corn, corn meal, fish, generally salted, and a small amount of goat or sheep meat, fresh or salted and dried. In a normal year between April and November there are practically no green vegetables to be had except the small amount imported, which is hardly sufficient to supply the richer persons in the town. In a year of drought not only do the people suffer from a lack of green vegetables and fruit but all the rain water becomes exhausted, and then they must drink water from wells that are more or less brackish. During the years 1912, 1913 and 1914, so little rain fell that the people were unable to get any crops. Being helped by the government and by working in the mines and aloes plantations, they were able to buy enough corn meal to keep from starving, but they suffered greatly from scurvy.

That scurvy is probably a disease caused by the lack of some necessary substance contained in fresh vegetables and fruit is shown by the following observations:

The greatest sufferers were the people in the districts in which the food consisted almost entirely of corn meal.

The richer class living in the same districts under the same conditions but who were able to afford fresh vegetables and fruit did not show any symptoms of scurvy.

Lime juice helped to prevent and to cure.

As soon as the rains came and the people were able to get fresh vegetables, the scurvy disappeared.

This year has also been very dry; and although the people of the outlying districts have had good drinking water, they have not had any fresh vegetables for months, and I am again beginning to see patients with symptoms of scurvy. I have observed that those who have had scurvy are more susceptible to it.

GEORGE R. HOPKINS, M.D., Aruba, Dutch West Indies.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ANTITYPHOID INOCULATION

To the Editor:—The statement has been made that during the Boer War there was at least a certain amount of antityphoid inoculation employed, and that in spite of this there was a large incidence of typhoid fever among the English troops. Can you give me any information as to the truth or error of this statement, or refer me to any medical literature from which I can gain such knowledge?

WINFRED OVERHOLSER, M.D., Westboro, Mass.

ANSWER.—In the Boer War, according to the Antityphoid Commission Report made to the Army Medical Department of Great Britain in 1913, an extended trial of antityphoid inoculation was made by Sir Almroth E. Wright. The inoculation was voluntary, and there are official records of the inoculation of 14,626 men out of a total strength of 328,244 men who served during the three years of the war. "Owing to the difficulties of obtaining accurate statistical information, which appears to be inseparable from active service in the field, the evidence in the case of typhoid vaccine and its power to protect against attack proved disappointing, and it was only in certain units that the material was of sufficient homogeneity to be of value."

Dr. Wright believed that the extent of the disease was diminished about one-half, and that the mortality was favorably influenced to an even greater extent. At that time the cultures were heated to 60 C. in order to destroy their vitality. It has since been shown that this amount of heat injures or destroys to a great extent the power of the vaccine to produce a good response in the formation of those substances on which the body depends for its protection. According to Rosenau (Preventive Medicine and Hygiene), in 1900, during the Boer War, Wright, together with Leishman, prepared a vaccine and supervised the inoculation of 100,000 British troops. The results in India were quite encouraging, but for various reasons, the same procedure in South Africa was not as satisfactory as had been anticipated. Leishman explains the lack of success by saying that the vaccine may have been made less efficient by the use of too great heat in killing the bacilli.

In a recent address before the Clinical Congress of Surgeons, as reported in THE JOURNAL last week, Sir Berkeley Moynihan said that 98 per cent. of English soldiers have been voluntarily inoculated against typhoid, with the result that they have had only 292 deaths from that disease and only 6,022 cases altogether, whereas in the South African War they had 57,684 cases with over 8,000 deaths, although the present army, infinitely larger, is living under much more difficult circumstances.

SHOTGUN VACCINES FOR "COLDS"

To the Editor:—Has there been work done of sufficient extent to be of value in justifying use of mixed "shotgun" vaccines to abort or immunize "common colds," that is, rhinitis, pharyngitis, acute bronchitis, coryza, etc.?

CHARLES E. BENNETT, M.D., Aneta, N. D.

ANSWER.—We know of no investigation which demonstrates that the use of the commercial mixed vaccines are of value in the prevention or treatment of "common colds" or of similar affections. The Council on Pharmacy and Chemistry accepts for New and Nonofficial Remedies mixed vaccines only on condition that their usefulness has been established by acceptable clinical evidence; so far it has not admitted any of the "influenza" or "catarrhal" mixed vaccines.

SALARY AND ALLOWANCES OF M. R. C. OFFICER

To the Editor:—1. If a physician with a dependent wife enlists in the Medical Reserve Corps, is any allowance made for his wife aside from his regular salary?

2. When a physician accepts a commission, does his salary date from the time of his acceptance or from the time he is actually called into service or training?

C. M. MURRELL, M.D., Matherville, Ill.

ANSWER.—1. No.

2. An officer's salary commences on the day on which he reports for active duty. He is on active duty when he goes into training.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 13-14. Sec., Dr. T. J. Stout, Brinkley.
ARKANSAS: Eclectic: Little Rock, Nov. 13. Sec., Dr. C. E. Laws, 803½ Garrison Ave., Fort Smith.
CONNECTICUT: New Haven, Nov. 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.
CONNECTICUT: Homeopathic: New Haven, Nov. 13. Sec., Dr. E. C. M. Hall, 82 Grand Ave., New Haven.
CONNECTICUT: Eclectic: New Haven, Nov. 13. Pres., Dr. J. W. Fyfe, Saugatuck.
DELAWARE: Wilmington, Dec. 11-13. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.
FLORIDA: Jacksonville, Dec. 4-5. Sec., Dr. W. M. Rowlett, Citizens Bank Bldg., Tampa.
KENTUCKY: Louisville, Dec. 4-6. Sec., Dr. A. S. McCormack, Bowling Green.
LOUISIANA: New Orleans, Dec. 6-8. Sec., Dr. E. W. Mahler, 730 Audubon Bldg., New Orleans.
MAINE: Portland, Nov. 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.
MARYLAND: Baltimore, Dec. 11. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.
MASSACHUSETTS: Boston, Nov. 13. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.
MISSOURI: St. Louis, Dec. 17-19. Sec., Dr. George H. Jones, 206 Washington St., Jefferson City.
NEBRASKA: Lincoln, Nov. 14. Sec., Dr. J. J. Hompes, 612 Security Mutual Life Bldg., Lincoln.
NEW HAMPSHIRE: Concord, Dec. 10-12. Sec., Dr. W. S. Croshy, Beacon Bldg., Manchester.
OHIO: Columbus, Dec. 4-6. Sec. Pro-tem., Dr. Herbert M. Platter, 105 E. State St., Columbus.
SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozar, 1806 Hampton St., Columbia.
TEXAS: Dallas, Nov. 20-22. Sec., Dr. M. F. Bettencourt, Mart.
VIRGINIA: Richmond, Dec. 11-14. Sec., Dr. J. W. Preston, McBain Bldg., Roanoke.
WEST VIRGINIA: Clarksburg, Nov. 21-23. Chairman, Dr. S. L. Jepson, Capitol Bldg., Charleston.

REPORT OF THE THIRD EXAMINATION OF THE NATIONAL BOARD OF MEDICAL EXAMINERS

The third examination of the National Board of Medical Examiners was held in Chicago, Oct. 10-18, 1917. The subjects of the examination and the relative value of each were: anatomy, 100; physiology, 75; chemistry, 75; pathology, 50; materia medica, pharmacology and therapeutics, 75; medicine, 200; surgery, 200; obstetrics and gynecology, 100; hygiene and sanitation, 50, and medical jurisprudence, 25. A percentage of 75 was required to pass. Falling to 65 per cent. in two subjects, or below 50 in one subject constituted failure. Of the sixty-five who applied, sixty-two were found to have the essential preliminary and medical qualifications, and twenty-nine of these appeared for the examination. Of these twenty-two passed, six failed, and one for good reasons had to withdraw before completing the examinations. The results for the candidates examined were as follows:*

| Names of Candidates and Colleges | PASSED | Year of Graduation |
|---|--------|--------------------|
| Robert W. Keeton, Northwestern Univ. Med. School..... | | 1916 |
| Gordon E. Hein, Northwestern Univ. Med. School..... | | 1916 |
| Martin R. Broman, Rush Medical College..... | | 1916 |
| Francis J. Scully, Rush Medical College..... | | 1915 |
| William D. Inlow, Rush Medical College..... | | 1917 |
| Frederick W. Slobe, Rush Medical College..... | | 1917 |
| John W. Thornton, Rush Medical College..... | | 1915 |
| Josephine E. Smith, Rush Medical College..... | | 1917 |
| Harold L. Hickey, Northwestern Univ. Med. School..... | | 1917 |
| George W. Scupham, Northwestern Univ. Med. School..... | | 1916 |
| John W. Visser, Rush Medical College..... | | 1917 |
| Edward F. Mielke, Rush Medical College..... | | 1917 |
| Earle K. Hallock, Rush Medical College..... | | 1916 |
| Carl Freund, Rush Medical College..... | | 1917 |
| Frank W. Young, Northwestern Univ. Med. School..... | | 1917 |
| Edmund Andrews, Rush Medical College..... | | 1915 |
| Jay Ireland, Rush Medical College..... | | 1917 |
| Arthur K. Baldwin, Rush Medical College..... | | 1916 |
| Hermon G. Bumpus, Harvard Medical School..... | | 1915 |
| Willard H. Watrous, Northwestern Univ. Med. School..... | | 1916 |
| Aloysius J. Larkin, Rush Medical College..... | | 1916 |
| Edgar H. Albers, Northwestern Univ. Med. School..... | | 1917 |

| FAILED | |
|--|------|
| Rush Medical College..... | 1916 |
| Northwestern University Medical School..... | 1917 |
| University of Pennsylvania..... | 1913 |
| Rush Medical College..... | 1915 |
| State University of Iowa Medical School..... | 1916 |
| Northwestern University Medical School..... | 1917 |

*The names are given in order of the numbers in the table of "Averages Obtained."

AVERAGES OBTAINED

| Candi- date's Number | Anatomy | Chemistry | Pharmacology, Ma- teria Medica and Therapeutics | Obstetrics and Gynecology | Hygiene | Medicine | Surgery | Pathology | Bacteriology | Physiology | Medical Juris- prudence | General Averages of Candidates |
|--------------------------------------|---------|-----------|---|------------------------------|---------|----------|---------|-----------|--------------|------------|----------------------------|-----------------------------------|
| 1 | 78 | 96 | 90 | 87 | 84 | 85 | 87 | 88 | 80 | 96 | 96 | 87 |
| 2 | 81 | 76 | 94 | 85 | 88 | 88 | 89 | 84 | 90 | 88 | 84 | 86 |
| 3 | 77 | 88 | 88 | 95 | 84 | 89 | 84 | 87 | 88 | 76 | 92 | 83 |
| 4 | 85 | 83 | 72 | 82 | 82 | 86 | 87 | 92 | 88 | 92 | 96 | 85 |
| 5 | 85 | 76 | 84 | 82 | 90 | 87 | 88 | 82 | 82 | 92 | 84 | 85 |
| 6 | 85 | 64 | 96 | 92 | 84 | 88 | 85 | 85 | 80 | 88 | 88 | 85 |
| 7 | 80 | 68 | 86 | 90 | 86 | 84 | 89 | 85 | 86 | 80 | 92 | 84 |
| 8 | 82 | 70 | 90 | 100 | 76 | 87 | 74 | 86 | 70 | 87 | 80 | 82 |
| 9 | 91 | 76 | 84 | 85 | 78 | 85 | 77 | 88 | 86 | 76 | 68 | 81 |
| 10 | 69 | 59 | 92 | 87 | 92 | 88 | 85 | 70 | 80 | 81 | 88 | 81 |
| 11 | 77 | 84 | 84 | 75 | 86 | 79 | 82 | 85 | 76 | 88 | 80 | 81 |
| 12 | 71 | 64 | 78 | 85 | 86 | 83 | 85 | 79 | 84 | 85 | 80 | 80 |
| 13 | 68 | 88 | 84 | 90 | 76 | 85 | 80 | 71 | 78 | 77 | 84 | 80 |
| 14 | 91 | 72 | 72 | 78 | 76 | 88 | 82 | 81 | 76 | 88 | 76 | 80 |
| 15 | 67 | 73 | 84 | 76 | 76 | 86 | 86 | 90 | 78 | 80 | 84 | 80 |
| 16 | 75 | 80 | 72 | 70 | 76 | 80 | 91 | 76 | 78 | 88 | 84 | 79 |
| 17 | 75 | 83 | 78 | 76 | 56 | 85 | 90 | 86 | 80 | 76 | 84 | 79 |
| 18 | 74 | 89 | 85 | 82 | 66 | 84 | 90 | 72 | 74 | 81 | 72 | 79 |
| 19 | 72 | 86 | 85 | 87 | 82 | 82 | 87 | 76 | 76 | 60 | 76 | 79 |
| 20 | 76 | 60 | 88 | 90 | 70 | 82 | 76 | 80 | 78 | 82 | 96 | 79 |
| 21 | 54 | 81 | 68 | 90 | 76 | 80 | 85 | 84 | 76 | 84 | 80 | 78 |
| 22 | 80 | 64 | 84 | 75 | 66 | 82 | 75 | 66 | 76 | 72 | 88 | 75 |
| 23 | 69 | 54 | 86 | 75 | 62 | 79 | 82 | 84 | 70 | 74 | 60 | 74 |
| 24 | 72 | 59 | 84 | 75 | 62 | 84 | 69 | 76 | 68 | 72 | 72 | 73 |
| 25 | 76 | 64 | 80 | 72 | 60 | 85 | 90 | 63 | 68 | 71 | 74 | 73 |
| 26 | 72 | 64 | 88 | 64 | 60 | 78 | 90 | 80 | 60 | 64 | 50 | 70 |
| 27 | 51 | 52 | 78 | 64 | 52 | 88 | 85 | 64 | 72 | 70 | 72 | 68 |
| 28 | 61 | 49 | 76 | 60 | 66 | 78 | 63 | 75 | 78 | 72 | 64 | 67 |
| General av- erage by subjects. | 74.2 | 72.6 | 83.6 | 81.1 | 74.3 | 84.3 | 83.9 | 79.2 | 77.2 | 80 | 80.4 | 79.2 |

EXAMINATIONS AND TIME ALLOWED

| Subject | Kind of Examination | |
|--|---------------------|--|
| | Written | Other, and Remarks |
| Anatomy..... | 3 hours | Oral with prepared Spec. 20 min. for each candidate |
| Chemistry..... | 3 hours | Two hours laboratory in physiologic chemistry |
| Physiology..... | 3 hours | Laboratory 2 hours |
| Pathology..... | 3 hours | Laboratory exam. 20 min. each cand. |
| Bacteriology..... | 2 hours | Laboratory 2 hours |
| Materia medica, phar- macology and ther- apeutics..... | 3 hours | Laboratory 2 hours |
| Medicine..... | 3 hours | Clinical lab. ½ hour each cand.; clin. med. 3 hours |
| Surgery..... | 3 hours | Lab. op. surg. and applied anatomy, 2 hours; clin. exam., 3 hours |
| Eye, ear, nose and throat..... | | Clinical exam., 30 min. each candidate |
| Dermatology..... | | Clinical exam., 20 min. each candidate |
| Obstetrics and gynec- ology..... | 3 hours | Oral exam. of 10 min. for each cand. |
| Hygiene..... | 2 hours | |
| Medical jurisprudence. | 2 hours | |

The examination consisted of written, oral, laboratory and clinical tests. The questions asked were as follows:

ANATOMY

Written Examination.—1. Describe the elbow joint with overlying structures and muscular attachments in immediate vicinity. 2. Name cavities of heart and describe the valves. 3. Define synarthrosis, amphiarthrosis, diarthrosis. Example of each. 4. Through what arteries is collateral circulation established after ligation of common carotid? 5. Origin, insertion, action and nerve supply of (a) triceps extensor cubiti; (b) serratus magnus; (c) pectoralis minor; (d) biceps femoris. 6. Describe the lacrimal apparatus.

Oral Examination.—Each candidate was examined orally for twenty minutes during the course of the written examination.

Gross Anatomy.—For this purpose the skeleton, prepared museum preparations, and fresh dissections were used.

Histology.—Identification of specimens under the microscope, (1) skin epithelium, (2) liver, (3) cartilage, (4) small intestine, (5) spinal cord.

PHYSIOLOGY

Written Examination.—1. Describe the methods by which may be determined the events of the cardiac cycle in the right and left sides of the heart, respectively, in man. Detail the results. 2. (a) What is the normal stimulus of the respiratory nerve center? (b) What is meant by the "buffer" action of the blood salts and what is its use? (c) What condition supervenes when the "buffer" action is inadequate? 3. (a) What relation has the "pulse pressure" in an artery to the volume of blood passing through it? (b) What are the factors determining pulse pressure? 4. Give evidence as to the functions of the thyroid gland. 5. Describe the origin and function of secretin. 6. Give the various functions of the sympathetic nerve. 7. Describe the stages of protein digestion. 8. Give the qualitative and quantitative essentials for the diet of a working man.

Practical Examination.—Each candidate was required to make 4 or 5 tests, as time permitted, of the following: Demonstrate the circulation in the web, mesentery, tongue or lung of a curarized frog. Differentiate the various vessels and point out the specific character of blood flow in them. 2. On a minor arterial schema eject by an intermittent pump water through (a) a rigid tube without peripheral resistance; (b) a rigid tube with peripheral resistance; (c) through an elastic tube without peripheral resistance; (d) through an elastic tube with peripheral resistance. Describe the results and deduce from them an explanation of the fundamental features of the blood circulation. 3. With the polygraph demonstrate and describe the human jugular pulse with the carotid or radial pulse as a chronoscope. 4. Obtain by the auscultatory method the human blood pressures with the subject in the recumbent and in the standing positions. Discuss the results. 5. Compare the maximal blood pressures in the brachial artery when the arm is held at various levels. Explain results. 6. With the human subject in the supine position, obtain the maximal blood pressure in the brachial artery; now apply a sandbag to the abdomen and repeat. Explain the difference, if any. 7. Pith a frog or terrapin and demonstrate on it by faradic stimulation the inhibitory function of the vagus nerve. Apply to the heart a solution of atropin and repeat. 8. Draw carefully graphic tracings representing the following: (a) The radial pulse; indicate on it the various phases of the heart's activity. (b) The normal arterial blood pressure tracing in the dog as obtained with mercury manometer, and the effect on it of vagus inhibition of various degrees. Explain. (c) The arterial pressure tracing in a rabbit and the effect of stimulating the depressor nerve. Explain. (d) Tracings representing the "auricular" and the "ventricular" forms of the jugular pulse. 9. (a) On a revolving smoked cylinder obtain the curve of a single muscular contraction excited by an induction shock. (b) Obtain the summation of two contractions. (c) Obtain an incomplete and a complete tetanus. (d) Varying the strength of the current, obtain a series of contractions from minimal to maximal. 10. Demonstrate the action of curare on the transmission of the motor impulse in a frog's nerve. 11. Make a nerve-muscle preparation from a hind limb of a frog, preserving the sciatic nerve, and dividing it close to the cord, cutting away the thigh muscles, dividing the femur at its lower third and leaving intact the skin of the leg and foot. Suspend the preparation inverted by a clamp at the knee: The foot will be extended when the gastrocnemius muscle contracts. Introduce a galvanic current into the nerve for a few seconds. Note the period of contraction and the relative effects of ascending and descending currents. Make and break the current and describe the results. Dip the end of the nerve into a saturated solution of NaCl and describe the results. Pinch the nerve and note results. Tie a string tightly round the middle of the nerve and note the effects of pinching on either side of the ligature. 12. (a) In a frog in which the brain has been destroyed, note the powers which have been lost and preserved. (b) Suspend the animal by the lower jaw and describe the reflex obtained by mechanical and chemical stimulation. (c) Inject under the skin of the back 1 drop of a 1 per cent. solution of strychnin: Note the changed response to stimulation; note the effect of destroying the spinal cord: Explain results. 13. (a) With the materials provided, test the reaction of saliva. (b) By means of the reagents provided, trace the changes induced in starch paste by digesting it with saliva. (c) Note the effect of cooling, of boiling the saliva. 14. Pour a little defibrinated blood into each of the four test tubes: Keeping one for comparison, add to the second an equal volume of water and warm slightly; to the third add a few drops of ether or chloroform and shake; to the fourth add a little bile and shake. Note and explain the conversion into "laky blood." 15. Arrange the spectroscope and obtain a series of absorption spectra of hemoglobin with various dilutions of laky blood. Describe. Obtain the spectrum of reduced hemoglobin with Stokes' fluid, and then reoxidize. Prepare carbon monoxid, hemoglobin and compare its spectrum with that of oxyhemoglobin.

PHYSIOLOGIC CHEMISTRY

Written Examination.—1. What is an amino acid and how many and what amino acids are found in the protein molecule? 2. Give the characteristic color tests for proteins and the significance from a chemical standpoint of each test. 3. Define a purin body and tell what purin substances are formed in the animal body, what relation they have to one another, and in what form each is eliminated. 4. Give the steps in the formation of urea, uric acid and hippuric acid in the body, and the significance of an excess or a deficiency of each of these substances in the urine. 5. Discuss in detail the coloring matters of the blood and the urine, giving the formation and function of these coloring matters and the significance of their presence in excess in the urine.

Laboratory Examination.—Candidates divided into two groups. Each group allowed two hours. Questions asked: 1. Make a quantitative estimation of the sugar in a sample of urine. Determine quantitatively the amount of glucose. 2. Estimate the amount of free hydrochloric acid in a sample of gastric content. 3. Make and report on the chemical and microscopic examination of a sample of urine. 4. Make and report on the examination of a sample of gastric content. 5. Determine the presence or absence of albumin reducing sugar. 6. Make and report on the chemical and microscopic examination of a sample of urine.

MATERIA MEDICA AND THERAPEUTICS

Written Examination.—Answer the first six questions; of the remaining six choose four: 1. (a) Give the source and physical properties of strychnin. (b) Describe the action of strychnin on the spinal cord. 2. (a) Describe two therapeutic uses of atropin, and state the proper dose to be given in each instance. (b) Describe two therapeutic uses of caffeine, and state the proper dose to be given in each instance. 3. (a) Describe the source and physical properties of morphin. (b) Explain the analgesic action of morphin. (c) Explain the constipating effect of opium. 4. (a) What are the different stages of ether anesthesia? (b) Describe the stage of surgical anesthesia. (c) Describe the effect of hydrated chloral on the central nervous system, and give the principal therapeutic uses. 5. (a) Describe the pharmacologic action of digitalis on the heart muscle. (b) In which forms of cardiac disturbance does digitalis exert its best therapeutic effect? 6. What are the indications for the use of mercury in syphilis? 7. (a) Discuss fully the administration of quinin in malaria. (b) Write a prescription containing quinin, with full directions to the patient. 8. (a) Give the source of salicylic acid. (b) Describe the effects of large doses of the salicylates. (c) Write a prescription containing sodium salicylate, with full directions to the patient. 9. Describe the pharmacologic action and therapeutic use of epinephrin. 10. Name two dissimilar drugs classed as circulatory depressants, and state in what conditions you would use each. 11. Name two evacuates acting mainly on (a) small intestine; (b) large intestine; (c) rectum. (d) Define a cholagogue,

and give one example. 12. (a) Name three preparations of iron used in medicine. (b) Discuss the relative value of iron and arsenic in anemia.

Practical Examination—Individual Laboratory Tests—One Hour.—The candidate is supplied with two frogs and two unknown test solutions. Inject 1 c.c. of the drug solution furnished into the abdominal lymph sac of the frog. Observe the effects and make a careful protocol and record of the changes in the (a) skin; (b) pupils; (c) reflexes; (d) general condition. Discuss the results, and give opinion as to the drug used.

Demonstration Test—One Hour.—A dog is prepared as follows: Anesthetized with ether, trachea exposed and severed, after which tracheal cannula is inserted and connected with ether bottle, artificial respiration being continued. The carotid artery is exposed and artificial cannula inserted, connected with manometer. A cannula has been inserted into Wharton's duct, and the chorda tympani and vagus nerve isolated, doubly ligated and cut. The right femoral vein is exposed and cannula inserted. Various drug solutions (marked A. B. C., etc.) will be introduced into the animal and the candidate is required to record his observation as to the effect on blood pressure, heart rate, respiration (rate and depth), salivary flow and size of pupil, and to interpret the same as indicated in each instance. 1. Note the effect of stimulation of the peripheral chorda tympani, and of the central and peripheral ends of the vagus. 2. Note the effect of the injection of 2 c.c. of drug solution A. 3. Repeat test No. 1. 4. Note the effect of the injection of 2 c.c. of drug solution B. 5. Repeat test No. 1. 6. Note the effect of the injection of 2 c.c. of drug solution C. 7. Repeat test No. 1. 8. Note the effect of a second injection of drug solution A. Diagnose the drug used in each instance and state the reasons.

BACTERIOLOGY, MEDICAL ZOOLOGY AND IMMUNITY

Written Examination.—1. (a) What are the most important points differentiating streptococci from pneumococci? (b) What are our present views as to types of pneumococci, and what bearing has this on the success of serum treatment of pneumonia? 2. (a) What are the general characteristics of *B. dysenteriae*, and how do we separate Shiga strains from Flexner ones? (b) Name the anaerobic and aerobic spore bearers of pathogenic importance in man. 3. (a) Name the various organisms which may cause meningitis. (b) What are the laboratory methods of diagnosis of a tuberculous meningitis, and what are the characteristics of the spinal fluid of such a case? 4. (a) How does an antitoxic serum differ from an antimicrobial one, and give two or more examples of each? (b) What is the difference between active and passive immunity. 5. (a) What are the laboratory methods for the diagnosis of a hookworm infection, and outline the life history of the parasite? (b) How do the segments and head of *Dibothriocephalus latus* differ from those of *Taenia saginata*?

Laboratory Examination—Two Hours.—Isolation and description of plate cultures prepared from discharge of the throat. Given several animal parasites for identification. Given several stained preparations for identification of special micro-organisms.

PATHOLOGY

Written Examination.—Answer five of the following questions: 1. Discuss post-traumatic embolism. 2. Contrast in parallel columns the distinguishing characteristics, gross and microscopic, of benign and malignant tumors of the breast. 3. Contrast in parallel columns the distinguishing characteristics, gross and microscopic, of the lesions in internal organs, of syphilis and tuberculosis. 4. Discuss the pathology of chronic interstitial hepatitis. 5. State briefly the pathologic conditions which may be present ten hours after the receipt of a nonfatal perforating gunshot wound of the abdomen. 6. An unknown middle-aged man has died six hours after having been found on the street, apparently in a drunken stupor: Give the general necropsy technic and the probable essential findings. 7. A man 48 years of age has died two years after the onset of typical pernicious anemia: Tabulate the gross and microscopic changes probably present in the several affected organs.

Laboratory Examination.—During the course of the written examination each candidate was given gross specimens and microscopic sections chosen from the following: Gross: Pulmonary tuberculosis; arteriosclerosis; infarct of spleen; carcinoma of breast; hepatic cirrhosis; typhoid ulcer of bowel. Microscopic: Glomerular nephritis; osteosarcoma; uterine polyp; leukoplakia; broncho-pneumonia.

MEDICAL JURISPRUDENCE

Written Examination.—1. (a) Define lunacy as legally recognized. (b) Name and briefly describe the varieties of insanity usually recognized. (c) What do you understand by "interdiction"? 2. (a) Define the medicolegal importance of feigned diseases. (b) Give three (3) examples of feigned diseases and indicate the method by which each may be discovered or confounded. 3. (a) Name one irritant poison, and give the symptoms or evidences found. (b) Give the mode of determining that death was due to such poison, including the postmortem findings. 4. (a) What is the difference between a "material" and an "expert" witness? (b) Give an example of a hypothetical question. 5. (a) What is the function of a coroner? (b) Give brief outline of the procedure to be followed in examining a body supposedly dead of asphyxiation by illuminating gas.

HYGIENE

Written Examination.—Give the routes of entry and exit of the casual organism in each of the following diseases: mumps, syphilis, dysentery, cerebrospinal meningitis, malaria. 2. What rôle does environment play in the spread of disease? 3. Discuss the advantages and disadvantages, from the hygienic point of view, of milk as a food. 4. Outline the steps in the eradication of an epidemic of bubonic plague. 5. What are the public health duties of a physician? 6. Discuss the biologic transmission of disease, and name the diseases so spread.

MEDICINE

Written Examination.—Answer ten of the following questions: 1. (a) Discuss the etiology of aortic insufficiency as it pertains to childhood, the adult, and the patient past 50 years of age. (b) Describe the murmur and vascular phenomena characteristic of aortic insufficiency. (c) What is understood by the incomplete types of angina pectoris? 2. Give the physical and other clinical signs required as a basis for a definite or probable diagnosis of pulmonary tuberculosis in the absence of the demonstration of tubercle bacilli in the sputum. 3. (a) Discuss the diagnostic signs of acute appendicitis and the indications for surgical treatment. (b) Give the diagnostic symptoms of chronic disease of the appendix. 4. (a) Discuss the clinical significance of nucleated red cells in blood smears (properly stained). (b) Define splenic anemia,

and discuss its relation to diseases of the blood. 5. (a) Describe the urinary findings in chronic nephritis. (b) Discuss the causes of death in chronic nephritis. 6. (a) Discuss briefly the principles which govern the diet treatment in diabetes mellitus. (b) What are the criteria of improvement in this condition? 7. Outline in parallel columns the differential diagnostic signs of epilepsy and hystero-epilepsy. 8. In the case of a man 48 years of age with a right motor hemiplegia which came on suddenly following a short period of unconsciousness: (a) Discuss the several causes of this condition. (b) Outline the characteristic symptoms of the above. (c) Discuss the prognosis. 9. In the case of a child 6 months of age affected with summer diarrhea, give the method of arriving at a diagnosis, and outline a plan of treatment for the condition. 10. Given a case of a girl 8 years of age who is suddenly taken ill with vomiting, headache and a moderate fever: a laxative is given, but the fever continues with an increase in the headache and vomiting. Twenty-four hours later a thorough action of the bowels is obtained, but the temperature is still 102.6 F., pulse 112, respiration 24. The physical signs at this time are negative with the exception of some rigidity of the neck. State how you would investigate further, and give the plan of treatment according to the results obtained. 11. (a) Discuss the etiology of amebic dysentery. (b) Outline a plan of treatment for this condition. 12. Describe the characteristic symptoms of plague.

Laboratory Examination—One Hour.—1. Specimen of urine for chemical and microscopic examination, the candidate being given one of the following specimens: (a) With albumin and casts; (b) with sugar and diacetic acid; (c) with large amount of pus. 2. Examination of slides representing the following: *Plasmodium malariae*, leukemia, and pernicious anemia.

A written report on each specimen was required, and a brief oral examination on the clinical condition represented by the specimen.

Clinical Examination.—This examination was held in laboratories and wards of Cook County and Presbyterian hospitals.

Bedside Examination—Two Hours.—To each candidate was assigned a patient referred to as a long case, and given one hour and twenty minutes for the examination of the same. A written clinical history was required, which included the physical examination, and he was expected further to ask for the laboratory tests, with other special findings required by the nature of the disease condition. During twenty minutes of the time allowed, he was examined orally on the clinical history and diagnostic conclusions.

The candidate was assigned to a second patient referred to as a short case, where the physical examination was made before the examiner, and he was examined in regard to the findings and the disease condition concerned. For a period of ten to twenty minutes the candidate was further examined by the examiner in neurology in connection with patients presenting special neurologic conditions.

SURGERY

Written Examination.—Answer five of the following questions:

1. Give symptoms, prognosis and treatment of abscess of the brain.
2. Give diagnosis and differential diagnosis of carcinoma of the lip.
3. Give diagnosis, differential diagnosis and treatment of chronic cystic mastitis.
4. Give diagnosis, differential diagnosis and treatment of strangulated inguinal hernia.
5. Give diagnosis, prognosis and treatment of fracture of upper third of femur.
6. Give diagnosis, differential diagnosis and treatment of stone in the bladder.

Laboratory Examination in Operative Surgery and Applied Anatomy: Candidates were examined in two groups; two hours for each group. (a) Operative test: one of the following operations on a dog: 1. Trephine; 2. tracheotomy; 3. thoracotomy; 4. nephrectomy; 5. gastrotomy; 6. tendon suture; 7. nerve suture. (b) *Applied Anatomy:* Examination on living models. 1. Boundaries of antecubital fossa and relations of contents. 2. Describe the triangles of the neck and their contents. 3. Position and relation of structures at ankle joint. 4. Demonstrate Nelaton's line and Bryant's triangle. 5. Course and distribution of ulnar and external popliteal nerve.

Clinical Examination.—This was held in the wards at Presbyterian and Cook County Hospitals, two hours being allowed for each candidate. During one hour a long case was examined, and a written history prepared, after which a quiz was given of twenty minutes. Each candidate was also given two short cases which he could examine for fifteen minutes and then stand an examination of five minutes on each case.

Each candidate was examined thirty minutes on appropriate cases by the examiner in eye, ear, nose and throat diseases, and the same length of time by the examiner in dermatology.

OBSTETRICS AND GYNECOLOGY

Written Examination.—1. Describe briefly the changes that take place in the fecundated ovum up to the time that segmentation is complete. 2. Discuss pernicious vomiting in pregnancy. (a) Etiology; (b) Symptoms, including urinary findings; (c) Treatment. 3. Describe the clinical history, mechanism of labor and the treatment of a face presentation, left mento-anterior position. 4. Discuss the pathogenesis, symptoms and differential diagnosis of acute pyelitis complicating pregnancy. 5. Bacteriology, symptoms and treatment of puerperal sepsis. 6. Causes, ordinary complications and treatment of proclivity uteri. 7. Causes, symptoms and treatment of chronic endocervicitis. 8. Causes, symptoms and treatment of vesicovaginal fistula. 9. Clinical history, diagnosis and treatment of purulent pelvic inflammation. 10. Diagnosis, prognosis and treatment of coexisting uterine fibroids and pregnancy.

Oral Examination.—During the course of the written examination each candidate was examined orally for ten minutes in clinical obstetrics.

Italian Colony for Malarial Children.—Five years ago a society was founded at Rome to care for children with malaria, and a sanatorium was equipped for them at Cosenza. The children are from the families coming to work during the season in the salt marshes. The pavilions sheltered twenty-five the first year and up to seventy-seven in 1913. The number since has somewhat declined. The children live out of doors practically all the time, and have regular school and other advantages. The sanatorium is not endowed but is supported by voluntary gifts. Its official title is the Colonia silana per bambini malarici, and the headquarters are Piazza Nicosia, Rome.

Book Notices

THE TREATMENT OF INFECTED WOUNDS. By A. Carrel and G. Dehelly. Translation by Herbert Child. With Introduction by Sir Anthony A. Bowlby, K.C.M.G., K.C.V.O., F.R.C.S., Surgeon-General, Army Medical Service. Cloth. Price, \$2. Pp. 238, with 97 illustrations. New York: Paul B. Hoeber, 1917.

Shortly after the outbreak of the war, Alexis Carrel, M.D., of the Rockefeller Institute, in collaboration with H. D. Dakin, Ph.D., of the Herter Laboratories, New York, seeking to discover the best means of treating war-wound infections, adopted the "*chemiotherapeutic*" method. To be successful, it was necessary, according to their views, to choose (1) a suitable antiseptic, which, in degree of concentration used and in length of time it must be applied, would be fatal to microbes but would "not produce obvious damage to the tissue," and (2) a proper surgical technic for the antiseptic treatment of the septic wounds. Carrel and Dehelly have told the story of the evolution and practice of this Carrel-Dakin method in this book, and it has been ably translated from the French by Herbert Child.

Unfortunately the chemical phase of the treatment has received far more attention than the surgical phase, owing, in part, to the needless advertising of antiseptics under non-scientific names. For the past two years, medical literature has been flooded with accounts and descriptions of Dakin's fluid, Dakin's fluid modified, Dakin's new antiseptic (Chloramin-T), Dakin's newest antiseptic (Dichloramin-T) and Dakin's water sterilizer (Halazone), etc. Yet in all these "discoveries" the potent agent has always been active chlorin (positively charged chlorin $[Cl^+]$), the same substance with which the medical profession has had well tried experience when employing calcium hypochlorite (bleaching powder) and the much abused solution of chlorinated soda (Labarraque's solution). True, Dakin has introduced some more adaptable forms for utilizing the available (oxidizing) chlorin; but they are not free from objections, nor do they seem to deserve the dignity that has been accorded them. Carrel and Dehelly apparently believe that the modified Dakin's solution ("neutral solution of chlorinated soda, N. N. R.") is the agent *ad perfectum*. The details of making this solution are given in full—essentially the treatment of a solution of assayed calcium hypochlorite with calculated amounts of sodium carbonate and bicarbonate, and dilution of the resultant liquid until it has a strength of from 0.45 to 0.50 per cent. sodium hypochlorite—no more, no less. The authors uphold Dakin's claim that this solution is neutral, is isotonic with the blood, has a high bactericidal power, is very slightly toxic, that "tissues provided with a normal circulation resist perfectly the action of Dakin's solution under the conditions of our experiments," etc. In the introduction the authors, in criticizing other work, state that "proceedings of learned societies are laden with reports based for the greater part on experiments and observations, incomplete, vitiated by faulty methods." We therefore expected this book to be scientifically reliable, but our anticipations have in many instances met disappointment. The terms used, such as "chloride of lime," are archaic, and much analytic evidence is lacking. The method of assay for the available chlorin in calcium hypochlorite directs that hydrochloric acid may be employed. This will give high results because of presence of chlorate; hence it is important that acetic acid and not hydrochloric acid be used. After the solution has been prepared, Dakin devised a method of testing its "neutrality" by throwing some powdered phenolphthalein on the surface of the solution; absence of a red color, he states, shows that it is not alkaline. It is, indeed, surprising that phenolphthalein should thus be used when every student in elementary analysis is taught that it is not reliable in such conditions. Dakin's solution is *not* neutral, but is alkaline, and should be alkaline when prepared in the manner described. If to some of Dakin's solution alkali be added, and the solution then tested by phenolphthalein, it will still give the "neutral" reaction. Just what limit of alkalinity the test indicates in practice awaits to be seen. The statement is also made in this book, and considerable stress has been laid on this point by various writers, that Dakin's

solution "is isotonic to blood serum." However, McClendon has recently shown that, if the directions are followed, Dakin's solution is quite hypertonic. It may be that in this connection Dakin has a point in common with the adversary of chemical antiseptics, Sir Almroth Wright. In a comparison of the superiority of Dakin's solution over solution of chlorinated soda (Labarraque's solution), no data are given as to the source or composition of the latter. After all that has been written, it is possible that again we shall witness the completion of the cycle, with Labarraque's solution (diluted) as the beginning and the end, while some such salt as sodium bicarbonate will be added for hypertonicity.

Technical surgery in the war zone has had an indefatigable worker in Alexis Carrel. That he has done wonderful work is becoming better recognized, although the credit for the work has been inadvertently hidden by the mystery of Dakin's solution. It is still debatable whether the success is due to the irrigation of the wounds by hypochlorite solutions, as he explains in this book, or to the careful study of the patient, the bactericidal control of the wound, and the constant irrigation, in other words, cleanliness—asepsis.

Despite the foregoing criticisms, the book is well worth reading by every physician interested in the treatment of wounds. The reader should consider it in a conservative frame of mind, and not allow himself to be carried away by the enthusiasm that unfortunately attaches to the introduction of every new therapeutic procedure.

Medicolegal

Death from Fasting and Water Cure

(*Feige vs. State (Ark.)*, 194 S. W. R. 865.)

The Supreme Court of Arkansas reverses for error in the trial a conviction of defendant Feige of the crime of manslaughter, and remands the case for a new trial. The court says that one Stratton, who had been stricken with paralysis, employed the defendant to treat the disease according to a fasting and water cure which was being practiced by the latter, which required the patient to abstain totally from the use of foods, and to drink all the water possible. The defendant took Stratton through a thirty-five day fast. During the last seventy-five hours of the fast, Stratton was seized with a severe attack of hiccups, to relieve him from which the defendant placed a wide leather strap around his body and buckled it up as tight as he could draw it. Mrs. Stratton became alarmed; the defendant was discharged, and two physicians were employed. When they took charge of the patient he was in a semicoma; his pulse was weak, fast and intermittent. They gave him a hypodermic of sparteine and then treated him for hiccups and a weakened condition. He recovered from the hiccups, but never recovered from the weakened condition, and died at the expiration of five days. The evidence on the part of the state tended to show that the treatment prescribed and administered by the defendant to Stratton was irrational, unreasonable, unscientific, and the proximate cause of his death. The evidence on the part of the defendant in a measure tended to show that the fasting and water cure, as practiced by him, was rational, reasonable and scientific, and had wrought wonderful cures, and that it might have worked a cure on Stratton had he been permitted to continue the fast. The cause was submitted to the jury on the theory that one who practices medicine for a remuneration would be guilty of involuntary manslaughter if death resulted to the patient on account of gross ignorance or lack of skill in selecting and administering the remedy. The instruction embodying this idea correctly declared the law as applicable to the theory advanced by the state. None of the instructions given clearly presented the theory of the defendant. The evidence in the record warranted an instruction allowing for a mistake in judgment. The defendant was at least entitled to an instruction defining the difference between a felonious lack of knowledge and skill, on the one hand, and a mere mistake of judgment, on the other. In other

words, the jury should not have been left in a position to confuse a mistake of judgment with gross ignorance or lack of skill. The defendant asked, and was refused, the following instruction which correctly presented the law applicable to the theory advanced by him, and to which he was entitled on the whole record: "Involuntary manslaughter is the involuntary killing done without design, intention, or purpose of killing, but in the commission of some unlawful act, or in the improper performance of some lawful act. For a mere mistake of judgment in the selection and application of remedies resulting in the death of his patient, a physician is not criminally liable; and whether one who assumes to practice medicine is grossly ignorant of the art or the selection of remedies or their application, or inapplicable or rashly applied, are all questions to be determined by the evidence." It was also insisted that an error was committed because the prosecuting attorney referred to the fact that the defendant did not have a license to practice medicine. The trial court indicated that it was an improper argument, as that issue was not involved in the case. It is unnecessary for the supreme court to comment on it, as the prosecuting attorney will not likely repeat the statement on a new trial. There was no error in a refusal to permit the defendant to read excerpts to the jury from a book entitled "McFadden's Physical Culture."

Not Bound to Follow Patient and Be Liable for Care of Wound

(*Miles vs. Harris*, (Tex.), 194 S. W. R. 839.)

The Court of Civil Appeals of Texas affirms a judgment rendered in favor of the defendant, and denies the plaintiff a rehearing, in this action for alleged negligence in letting a gauze packing remain in the body of the plaintiff's wife, on whom the defendant performed an operation in the abdominal region. The court says the defendant's evidence was to the effect that he performed the operation in the usual way; that the insertion of the gauze pack was necessary; that several days after the operation he attempted to remove the gauze pack, but the removal created or again started a dangerous flow of blood, which, under such circumstances as shown by the testimony, made it necessary to desist; that the plaintiff removed his wife from the defendant's sanatorium without the defendant's consent, and over his objection, during his temporary absence. The defendant and the attendant physician and nurse all testified to this fact, and further that the plaintiff was then informed that the pack had not been removed, because of which, and because of the presence of fever, it would be dangerous to remove the patient. The evidence further seemed uncontradicted that the family physician knew the gauze had been placed in the wound, and that, on the return of the plaintiff's wife to her home, he suspected its presence, but relied wholly on the assurance of the plaintiff and his wife that it had been abstracted. That there was evidence in behalf of the plaintiff of contrary import on one or more of the submitted issues could not alter the conclusion. Such evidence merely presented a conflict, which it was the function of the jury to determine. Under such circumstances and under the findings of the jury, the court knows of no rule that made it the duty of the defendant to follow the patient and be further liable for the due care of her wound. Again, the court says that it would seem that about the only material issue necessary for submission was the issue of whether the defendant was guilty of negligence which directly and proximately caused the gauze pack to remain in the person of the plaintiff's wife longer than it should have remained therein. That the defendant may, as the plaintiff insisted, have failed to remove the gauze in time; may have permitted the abdominal wound to heal without its removal; may have failed to inform the plaintiff or his wife of its presence in the body of Mrs. Miles at and before her removal from the sanatorium; that the defendant may have failed to advise the family physician that the gauze had not been removed—all seemed to constitute circumstances merely from which to infer negligence which resulted in the gauze remaining in the person of Mrs. Miles longer than it should. They were not, as it seems to the court, issues of themselves, but constituted

mere evidences of the main fact to be proved, and hence it was not necessary to submit them to the jury in the form of special issues. If the defendant was not guilty of negligence in permitting the gauze pack to remain in the person of Mrs. Miles, as the jury found, it could not be material in this case that she suffered from that cause, for in such case the defendant at least could not be legally bound to respond in damages.

Society Proceedings

COMING MEETINGS

Amer. Public Health Association, Washington, D. C., Dec. 4-7.
Southern Medical Association, Memphis, November 12-15.

INTERSTATE ASSOCIATION OF ANESTHETISTS

Meeting held at Toledo, Ohio, Oct. 9-11, 1917

The President, DR. ISABELLA C. HERB, Chicago, in the Chair

Nitrous Oxid-Oxygen Anesthesia

DR. CHARLES W. MOOTS, Toledo, Ohio: Any operation of modern surgery can be satisfactorily performed under gas-oxygen anesthesia alone, without even the adjunct of local infiltration with novocain. Team work involves complete cooperation of the entire surgical force during the preoperative, operative and postoperative periods. Accurate diagnosis, painstaking preparation, sedatives, alkalization, a preliminary narcotic and cheerful environment suffice to bring the patient to the operating room in the best possible condition for operation and anesthesia. The extreme Trendelenburg posture is never permitted, and any other changes of position are gradually made. The velvet touch and thorough saturation with the anesthetic give sufficient relaxation for any abdominal work. Experience shows that nothing serious happens to a patient on the table without showing circulatory changes. Therefore my expert anesthetists keep me continually informed regarding systolic, diastolic and pulse pressure, along with the pulse rate and the respiratory rate and volume. The character of the respirations is of great importance, especially in hazardous risks.

Further Researches in Blood Changes Under Nitrous Oxid-Oxygen Anesthesia

DR. THEODORE D. CASTO, Philadelphia: In a previous paper I reported that nitrous oxid-oxygen anesthesia in man gives rise to a decrease in the erythrocytes, and that thirty or forty minutes after anesthesia there is a tendency for the count of erythrocytes to return to the normal value determined prior to anesthesia. My present communication includes, besides cellular alterations, a consideration of the influence of nitrous oxid-oxygen anesthesia on the degree of alkalinity of the blood. Albino rats were used for experimental purposes. Marriott's method of determining the hydrogen ion concentration, to determine the alkaline reserve, was used. Anesthesia was continued from thirty to sixty minutes. After definite periods of anesthesia, the animals were killed by quick decapitation, and blood counts and hydrogen ion concentration tests made. In the blood counts of twenty-one animals, the erythrocytes showed a difference of 4.8 millions per cubic millimeter between the highest and the lowest counts. The erythrocytes were decreased after gas-oxygen anesthesia for from thirty to sixty minutes, the maximum decrease being 70 and the minimum 1 per cent., with an average of 25 per cent. Macrocytes and microcytes were present in a few cases, but no poikilocytes or nucleated cells. Reaction to staining was slightly diminished in the erythrocytes in a few animals. The leukocyte count revealed an increase in eight experiments and a decrease in twelve. A study of the different varieties of leukocytes, however, showed a marked tendency on the part of the polymorphonuclear lymphocytes to increase. Of the twenty animals studied, eighteen gave a decrease in polymorphonuclear neutrophils, varying from 1 to 75 per cent., and sixteen of the animals gave an increase in lymphocytes varying from 5 to 23 per cent. The transitional eosinophils showed no change of spe-

cial interest. There was no constant change in the segmentation of the polymorphonuclear neutrophils.

Liquid Air and Electrolytic Oxygen for Anesthetic Purposes

DR. C. C. McLEAN, Dayton, Ohio: The increasing demand for oxygen in medical work makes it imperative to secure a pure and cheap supply of oxygen. Commercial oxygen for the welding process is now produced by the atmospheric or electrolytic methods. Medicinal oxygen is produced chemically. Chemical oxygen must have its poisonous chlorin residue eliminated. In neither the liquid air nor electrolytic process is chlorin contamination a problem. The impurity in electrolytic oxygen is hydrogen, the impurity in liquid air oxygen is nitrogen, both inert gases, and so far as is known, harmless in the quantities in which they are found. Provided the commercial oxygen is prepared for medicinal purposes and stored in cylinders not previously contaminated by poisonous gases, it may be utilized without danger. The following standards of purity are recommended: The gas should be neutral to moist litmus paper, and when passed through an aqueous solution of silver nitrate it should produce no turbidity. Not more than an opalescence should be produced when 2 liters of the gas are passed slowly through an aqueous solution of barium hydroxid. When 5 liters of gas are passed slowly through an aqueous solution of sodium hydroxid, then over heated copper oxid and finally through an aqueous solution of barium hydroxid, no turbidity should be produced. The gas should contain at least 94 per cent. of oxygen on the dry basis, and should contain no liquids and no solids.

Lung Complications Following Operations Under Anesthesia

DR. E. I. McKESSON, Toledo, Ohio: In a compiled series of 39,438 operations under all forms of anesthesia, lung complications followed in 3.03 per cent. of the cases in which figures are available. There was a total mortality of 1.06 per cent. Of these lung complications, 48 per cent. were pneumonia; and of the pneumonia cases, 48 per cent. were fatal. In one of the series of cases, 70 per cent. of the lung complications occurred in the five winter months. In attempting to reduce the incidence of postoperative lung complications, it is essential to maintain the temperature of the operating room at 80 F., to use a thick, warm, comfortable mattress on the operating table; to avoid careless operating, and to prevent the patient from sweating. It is equally as important to institute prophylactic measures of oral hygiene previous to operation, and for the anesthetists to use such methods of narcosis and technic as maintain an open airway, preclude the hypersecretion of mucus, and obviate the inspiration of blood or septic material. After operation, patients should be returned to a warm bed, should be protected from drafts, and should be permitted their customary weight of underwear. Etherization should be avoided in all cases in which it is contraindicated. Tight binders should be eliminated, sufficient opiate should be given to relieve pain, and full breathing should be encouraged. The position of the patient in bed should be changed frequently during the first week.

Some Observations on the Causes of Postoperative Nephritis

DR. KARL R. RUDELL, Indianapolis: These observations are the result of a critical study of about 500 cases to determine the relative importance of ether anesthesia and focal infection in the causation of postoperative nephritis. In the series, 59.3 per cent. examined before operation showed evidence of an existing nephritis; 5.6 per cent. showed albumin alone; 0.7 per cent. showed albumin and pus cells, and 17 per cent. showed albumin, pus cells and casts. In the postoperative urines, 64 per cent. gave evidence of kidney involvement, an increase of 4.7 per cent. The majority showing postoperative kidney disturbance, in which the preoperative urines were normal, proved to be simple cases of albuminuria which subsided in a few days. Postoperative nephritis, in my opinion, is produced by a combination of causes, among which are the existence of a kidney already crippled by infection; an increase in waste products to be eliminated,

incident to operative trauma, and possibly the dissolution of lipoids; a decrease in the liquid output due to a diminution in the ingestion of liquids, and an increased loss of fluids through the skin, lungs and intestinal tract; a lessening of its eliminative power by a lowered blood pressure in the kidney itself; a lowering of the power of resistance of the body by loss of heat due to prolonged anesthesia and shock; and lastly, the filtering of bacteria and their toxins, thrown directly into the blood and lymph streams from focal areas of infection. Ether plays a very insignificant rôle in the production of postoperative nephritis.

Comparative Dangers and Availability of Nitrous Oxid-Oxygen Anesthesia

DR. J. R. McCURDY, Pittsburgh: While the anesthetic statistics collected by A. H. Miller give nitrous oxid-oxygen anesthesia the lowest mortality, it is interesting to note that deaths under this anesthetic are becoming more frequent as it comes into more general use. These fatalities can almost invariably be traced to incompetent or inexperienced administrators, extrahazardous risks, or the pushing of the anesthetic beyond safe limitations to accommodate the demands of the operator for greater relaxation. In the hands of experts, nitrous oxid-oxygen anesthesia is establishing itself as the safest anesthetic. Its chief danger is asphyxia, and this untoward complication can be almost instantly corrected by the proper admixture of oxygen. Its effects on the respiratory system are minimal, and it can be used to advantage in the presence of all pulmonary complications. It does not lower body resistance or disturb metabolism, and its administration is singularly free from postoperative pulmonary complications. Even uncompensated heart lesions may be safely handled, and lengthy administrations do not show the cardiac collapse incident to ether depression following its initial stimulation. Of all anesthetics, it affects blood pressure the least, and contrary to the usual opinion, it is not contraindicated by preexisting hypertension.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

October, LXXVI, No. 4

- 1 Study of Chloroform, Ether and Nitrous Oxid-Oxygen in Pregnancy and Labor. C. H. Davis, Chicago.—p. 557.
- 2 Nitrous-Oxid Analgesia in Four Hundred and Seventy-Six Cases of Obstetrics. W. C. Danforth, Evanston, Ill.—p. 563.
- 3 *Statistical Study of Causes of Abortion. G. D. Royston, St. Louis.—p. 571.
- 4 Case of Double Obliquely Contracted Pelvis (Roberts), Associated with Acute Lumbar Lordosis Due to Infantile Paralysis in Early Childhood. E. M. Lazard, Los Angeles.—p. 585.
- 5 *Simple Method of Performing Extraperitoneal Cesarean Section. T. H. Cherry, New York.—p. 590.
- 6 Case of Cesarean Section in Primipara Followed in Next Pregnancy by Normal Delivery. F. Warner, Columbus, Ohio.—p. 598.
- 7 Puerperal Septicemia. W. Krusen, Philadelphia.—p. 605.
- 8 Injuries at Birth, Premature Births and Stillbirths. C. S. Miller, Philadelphia.—p. 615.
- 9 Obstetric Problems and Coroner's Office. W. S. Wadsworth, Philadelphia.—p. 622.
- 10 Prenatal Care. F. C. Child, Philadelphia.—p. 631.
- 11 Maternity Insurance. L. Lehrfeld, Philadelphia.—p. 636.
- 12 Case of Acute Inversion of Uterus Following Parturition. J. M. Griffin, Warrensburg, N. Y.—p. 639.
- 13 Ductless Glands in Gynecology. S. W. Bandler, New York.—p. 644.

3. Study of Causes of Abortion.—During the four and a half months of Royston's investigation 563 patients were examined. Among these 563 a history of abortion was elicited in 178. Of these, 164 were subjected to detailed study. The 164 patients selected had a grand total of 664 pregnancies, 348 of which ended in abortion. Criminal abortion was the most common factor in the series. Fifty-one out of 164 women confessed to an induced labor. Many of these women had the performance repeated a number of times. These 51

women had in all 220 pregnancies of which more than half, namely 118 (52.4 per cent.) resulted in abortion. Of these 118, 84 (71.1 per cent.) were frankly acknowledged to have been induced. Comparing the percentage of induced abortions with the abortions in his entire material, Royston arrived at the figure 23.8 per cent. Only twenty (39.2 per cent.) produced living children after having had abortions induced. Only 10 out of the 51 patients had normal genital organs; the remaining 41 were more or less permanently disabled. Among the 164 cases, 46 gave a positive Wassermann and 5 patients with definite histories gave negative reactions after having been treated. Three additional patients showed lesions of the disease, though with negative histories and negative Wassermann reactions. These latter three had taken no specific treatment and were possibly cases of latent syphilis. Excluding these three mentioned, 51 patients were undoubtedly syphilitic. Only 12 of the 51 patients with syphilis gave a history, or showed any lesions of the disease. This means that between one-fourth and one-third of Royston's entire material was syphilitic; it shows that 34 out of 46 (73.9 per cent.) had latent syphilis. Among 51 patients, there were 186 pregnancies, 115 (61.8 per cent.) of which ended in abortion. Before syphilitic infection occurred, 3.8 per cent. aborted as compared with 78 per cent. after infection. In cases in which 48.8 per cent. survivors were born before, only 5.2 per cent. survived after syphilitic infection. Abortions are caused by syphilis much more frequently than the medical public realizes. Royston suggests that any patient who gives a history of one or more previous abortions had best be considered a victim of syphilis until incontrovertible proof to the contrary is obtained. Any other general disease of the mother may produce an abortion provided it is severe enough to affect the fetus or the placenta through changes in the maternal circulation. Of such there were 40 among the 164.

5. New Method of Extraperitoneal Cesarean Section.—The procedure employed by Cherry is very similar to the Hirst method. The patient is prepared as for any abdominal section, incision in the median line is made from the symphysis to the umbilicus through skin, fat and fascia of the recti. The muscles are separated by blunt dissection exposing the transversalis fascia and peritoneum. At this stage the edges of the muscle are bluntly dissected off the peritoneum for a slight distance until the deep epigastric vessels are seen, which allows for freer play of the peritoneum. The peritoneum is opened vertically, and the cut edges of the parietal peritoneum are then sutured to the visceral peritoneum in such a manner that an oval area about 5 inches long and 3½ inches wide in the lower uterine segment is left exposed, care being taken to interrupt and tie this continuous suture at several points to prevent it acting as a purse string. This procedure shuts out the general peritoneal cavity. The thin lower uterine segment is then incised in the median line for 4½ inches and the blades of the obstetrical forceps are introduced to the sides of the fetal head, and the child extracted. The placenta and membranes are then delivered. One cubic centimeter of pituitary extract is given intramuscularly at this stage followed immediately by 30 minims of ergotol. The uterine wound is then closed by interrupted chromic gut sutures; a continuous seromuscular suture is made over this line of sutures and the sutured edges of parietal and visceral peritoneum are sutured together. The rest of the wound is closed in the usual manner without drainage.

Arkansas Medical Society Journal, Little Rock
October, XIV, No. 5

- 14 Acidosis. B. C. Middleton, Texarkana.—p. 97.
- 15 Postgripal Otitis Media. J. L. Jones, Searcy.—p. 101.
- 16 Biography of Gallstone. E. D. Holland, Hot Springs.—p. 104.
- 17 Local Magnesium Sulphate Treatment of Acute Salpingitis. J. W. Butt, Helena.—p. 105.

Bulletin of Johns Hopkins Hospital, Baltimore
October, XXVIII, No. 320

- 18 *Effects of Serum Therapy in Acute Lobar Pneumonia. A. Bloomfield, Baltimore.—p. 301.
- 19 *Study of Incidence of Types of Pneumococci Isolated from Acute Lobar Pneumonia and Other Infections. M. C. Clough, Baltimore.—p. 306.

- 20 Epidemiologic Study of Lobar Pneumonia. V. P. W. Sydenstricker and A. C. Sutton, Baltimore.—p. 312.
- 21 *Study of Bacteremia in Lobar Pneumonia. A. C. Sutton and C. E. Sevier, Baltimore.—p. 315.
- 22 Mechanism of Convulsive Phenomena and Allied Symptoms. C. M. Campbell.—p. 318.
- 23 Fasciolopsinae of China: Study of Two Species from Chekiang Province. N. W. Brown, Baltimore.—p. 322.

18. Serum Therapy in Acute Lobar Pneumonia.—Eleven cases are reported on by Bloomfield. They were all instances of frank lobar pneumonia, in which the Type I pneumococcus was demonstrated in the sputum or blood. Nearly all the patients came in with the disease well advanced—thus presenting conditions unfavorable to treatment. In addition to the serum, hydrotherapy, digitalis, and symptomatic measures were employed. The pneumococcus was usually isolated from the sputum by mouse inoculation, and the type determined by agglutination with stock immune serums. The serum was warmed to body temperature and injected intravenously by gravity, at the rate of 2 to 4 c.c. a minute. A preliminary desensitizing dose of 1 to 5 c.c. was given subcutaneously or intravenously. Blood cultures were made before and after treatments, and samples of blood were drawn for the agglutination tests. In five of the cases pneumococci were present in the blood before treatment was begun. In four of these the blood promptly became sterile after the injection of the serum, although in one case there was a terminal sepsis after fourteen days. In another case the one injection reduced the colonies from 900 to 25 per cubic centimeter, but did not prevent death; one patient died without any reappearance of the organisms in the blood. In six cases no organisms were present on admission, and the blood remained sterile throughout. All these patients recovered. The serum is, therefore, clearly an effective agent in sterilizing the blood, and in preventing the development of septicemia. The agglutinins were studied in eight of the cases. There was a striking variation in the titer of various patients' serums even after injection of the same amount of serum. The titer of the patient's serum following therapy bore no constant relation to the outcome of the case. Therefore, it is not a guide to the efficacy of treatment. There was no striking change in the clinical course of the cases which could clearly be attributed to the serum. This series throws little light on the curative value of the serum.

19. Types of Pneumococci Isolated from Acute Lobar Pneumonia.—In all, 121 strains of pneumococci were isolated by Clough and the groups determined. The percentage incidence of Groups I (35.2), III (14.8) and IV (25.9) in the lobar pneumonias in adults corresponds very closely to figures obtained at the Rockefeller Institute in their pneumonias. The striking feature in this series is the relatively very low percentage of typical Group II pneumococci (5.5) and the correspondingly high percentage of atypical Group II strains (16.7). The small series (13) of lobar pneumonias in children showed a slightly lower incidence of Groups I (30.8) and III (0.0) with a correspondingly higher incidence of Groups IV (30.8) and Atypical II (23.1) as compared with the lobar pneumonias of adults. If, however, the empyemas in children are added to the pneumonias and the percentage of these sums calculated, the incidence of Groups I and II becomes slightly higher than in the pneumonias in adults. This discrepancy is explained in two ways. In the first place, only lung puncture material was used for the cultures in this series, while most of the cultures obtained by the other authors were from sputum. In the second place, all the cases in the series were lobar pneumonias, while other authors included bronchopneumonias with lobar pneumonias in their statistics. Of the atypical Group II pneumococci isolated from lobar pneumonias (23.1) in children and from empyemas (14.3) three out of the six belonged to Subgroup II B.

A Group I pneumococcus was isolated from one out of ten cases of bronchopneumonia. The other cases were due to Types III, IV and Atypical II in about equal percentages. An interesting case in which a Group I was isolated from an otitis media and from mouth sputum gave a history of a mild pneumonia following "grippe" nine months previously, and presumably had been a carrier throughout this period. The

total mortality of the series was high (50 per cent.). In all of eight cases due to the pneumococcus mucosus the patients died. The mortality of the Group IV cases was relatively very high (57.2 per cent.). The explanation is probably the greater average age of the cases of this group (46.5 years), and the very high percentage of associated diseases in these cases (71.4 per cent.), as compared with 26.3 per cent., 33.3 per cent., and 25 per cent. in the fixed types. Marked alcoholism is included as an associated disease on account of the large part which it seems to play in the incidence and mortality of pneumonia. The same explanation is offered for the mortality of the pneumonias due to Atypical II strains (60 per cent.), which is higher than one would expect with organisms which are usually relatively avirulent. Several terminal pneumonias and one postoperative pneumonia were included in this study, all of which were due to Type IV or Atypical II organisms.

21. Bacteremia in Lobar Pneumonia.—Sutton and Sevier endeavored to determine the course of the sepsis in cases with positive blood cultures, to see whether this varied according to the type of infecting organism, and finally to determine the relation of the bacteremia to prognosis. Of the entire series of sixty-six cases only three patients died whose blood cultures were persistently negative. No patient recovered who had, at any time of the disease, over 5 colonies per cubic centimeter of blood, whether he received specific therapy or not, with the exception of one patient who had 20 colonies per cubic centimeter on admission, and a severe alcoholic delirium. This patient, however, received a serum within a few hours of admission, and subsequent doses until after his temperature had become normal. All the deaths excepting that of the patient showing a negative blood culture, occurred in the four months between December 8 and April 8, although sixteen cases occurred before or after this period. This is also the period within which all the positive cultures were obtained. Do the fixed types vary in virulence throughout the year, or does the severity of the initial exposure during the period of maximal changes in weather predispose to the type of pneumonia that runs its course with a septicemia? In general, the incidence of septicemia runs parallel with the mortality. If the cases with a transient sepsis, having only an occasional colony early in the disease, are omitted, the percentages of positive blood cultures and mortality are practically identical. As regards prognosis, the authors have found blood cultures the most valuable aid. Of the patients with persistently negative blood cultures 93 per cent. recovered without any complications. Of the patients with positive cultures, all with over 5 colonies per cubic centimeter at any period of the disease died, except one with 20 colonies on admission, who received serum therapy.

Boston Medical and Surgical Journal

October 18, CLXXVII, No. 16

- 24 Progress in Tuberculosis; A Collective Abstract of Important Articles Published During 1916. J. B. Hawes, 2d, and P. C. Bartlett, Boston.—p. 537.
- 25 Rationale of Neurasthenia and of Disturbances of Arterial Tension. G. E. Barnes, Herkimer, N. Y.—p. 543.
- 26 Intestinal Stasis. M. H. Wentworth, Concord.—p. 548.
- 27 Cases of Dislocations of Shoulder, with Complications. F. F. Henderson, Boston.—p. 550.
- 28 Etiology and Pathology of Perforating Gastric and Duodenal Ulcers. F. W. White, Boston.—p. 555.
- 29 *Use of Emanuel-Cutting Mastiche Test in Examining Spinal Fluid from Psychopathic Subjects. C. E. Smith and L. G. Lowrey, Boston.—p. 557.
- 30 Botulismus; Report of Two Fatal Cases. R. Bine, San Francisco.—p. 559.
- 31 Long Umbilical Cord, Causing Three Loops Around Neck. M. J. Konikow, Boston.—p. 560.
- 32 Thoracopagus; Unusual Cause of Dystocia; Report of Case. S. Cline, Boston.—p. 561.

29. Emanuel-Cutting Mastiche Test on Spinal Fluid.—The authors tested the fluids from 268 patients. Of these, seventy-four fall into the general group of syphilis of the nervous system, the majority of the remainder being nonsyphilitic psychopaths and nonpsychopaths, with the addition of three cases of acute meningitis. In all cases the following tests were made: Wassermann test in blood and spinal fluid; albumin, globulin, cell count and colloidal gold tests, in spinal fluid. Smith and Lowrey are of the opinion that the mastiche

test, as modified by Cutting, has a distinct place in the clinical laboratory. Because of the ease and accuracy of examination it may well be used to determine in which cases the more complicated gold test should be made. Their experience indicates that the test does not differentiate between syphilis and acute meningitis; hence the chances are that the reactions in tubercular meningitis and tumors will not be differential. It has a place in the examination of spinal fluids, especially where large numbers of spinal fluids are examined. In all cases showing clouding with mastiche, a gold reaction should be performed as a final check.

Cleveland Medical Journal

October, XVI, No. 10

- 33 Treatment of Tuberculosis of Spine. G. I. Bauman, Cleveland.—p. 657.
- 34 Treatment of Syphilis in Army. H. N. Cole, Cleveland.—p. 662.
- 35 New Apparatus for Collection of Urine in Female Infants. H. O. Ruh, Cleveland.—p. 666.
- 36 Management and Technic of Spinal Cord Operations. M. E. Blahd, Cleveland.—p. 668.
- 37 Persian System of Water Abuse. R. E. Hoffman, Meshed, Persia.—p. 672.

Journal of Biological Chemistry, Baltimore

October, XXXII, No. 1

- 38 Creatinuria in Women. M. S. Rose, New York.—p. 1.
- 39 Metabolism of Fats. Utilization of Palmitic Acid, Glyceryl Palmitate and Ethyl Palmitate by Dog. J. F. Lyman, New Haven, Conn.—p. 7.
- 40 Id. Effect of Feeding Free Palmitic Acid, Glyceryl Palmitate, and Ethyl Palmitate on Depot Fat in White Rat. J. F. Lyman, New Haven, Conn.—p. 13.
- 41 Determination of Fecal Indole. O. Bergeim, Urbana, Ill.—p. 17.
- 42 Some Aspects of Temperature Coefficients of Life Processes. W. J. V. Osterhout, Cambridge, Mass.—p. 23.
- 43 *Biologic Analysis of Pellagra Producing Diets. Dietary Properties of Mixtures of Maize Kernel and Bean. E. V. McCollum and N. Simmonds, Madison, Wis.—p. 29.
- 44 *Uric Acid Content of Maternal and Fetal Blood. J. M. Slemons and L. J. Bogert, New Haven, Conn.—p. 63.
- 45 *Schneyer Method for Determination of Lactic Acid in Urine. M. E. Maver, Chicago.—p. 71.
- 46 *Studies of Food Utilization. Utilization of Carbohydrate on Relatively High and Low Cereal Diets. Z. Zentmire and C. C. Fowler, Ames, Iowa.—p. 77.
- 47 Methods for Approximating Relative Toxicity of Cottonseed Products. F. E. Carruth, West Raleigh, N. C.—p. 87.
- 48 *Nutritive Value of Soy Bean. A. L. Daniels and N. B. Nichols, Madison, Wis.—p. 91.
- 49 Influence of Food and Temperature on Duration of Life. J. Loeb and J. H. Northrop, New York.—p. 103.
- 50 Effect of Prolongation of Period of Growth on Total Duration of Life. J. H. Northrop, New York.—p. 123.
- 51 *Existence of Gastric Lipase. M. Hull and R. W. Keeton, Chicago.—p. 127.

43. Pellagra Producing Diets.—According to McCollum and Simmonds two practices make for safety in human nutrition in those districts where the water is low in sodium and calcium. These are, first, the consumption of milk as a regular article of diet, and second, the use of the leaves of plants as human food. Milk is always high in calcium and, as a rule, contains a far greater amount of sodium chlorid than do any of the seeds. The same is true of the leaves of plants. It is highly probable that meats do not make good the mineral deficiencies of a diet derived principally from seeds. The authors emphasize the importance of using milk as a regular constituent of the human diet and also the great benefit which would result from a more extensive use of the leaves of plants as a stable article of the diet. There is grave danger in deriving nearly the whole food supply from the seeds of plants.

44. Uric Acid in Blood.—Slemons and Bogert found that the uric acid content of the blood during uncomplicated pregnancy falls within the limits accepted as normal at other times (2 to 5 mg. per 100 c.c. of blood). Larger values were found in cases of syphilis, pyelitis and the toxemias of pregnancy. At the conclusion of labor higher values usually prevail in primiparous than in multiparous women. This may be explained by the longer duration and the more energetic character of the labor in the case of the first birth. In several cases an increased uric acid content of the blood after labor was demonstrated. Equivalent values for the uric acid in the blood of mother and fetus indicate that uric acid passes through the placenta by diffusion. As a rule, the uric

acid of the blood is notably increased in cases of eclampsia and also of nephritis during pregnancy; consequently, these clinical complications may not be distinguished by estimation of the blood uric acid.

45. **Lactic Acid in Urine.**—Maver maintains that while the method of Schneyer is of unquestionable value in indicating the excretion of substances belonging to a group capable of yielding carbon monoxid, it cannot be applied to the quantitative determination of lactic acid in the urine.

46. **Utilization of Carbohydrate on High and Low Cereal Diets.**—Experiments reported on by Zentmire and Fowler show that the utilization of total carbohydrates of a diet consisting largely of cereal is above 99 per cent. The carbohydrate is as completely utilized with one quantity as another of cereal in the diet, even when the cereal is taken in larger amounts than are found in the average dietary. Assuming that sucrose and lactose are completely digested and absorbed, the utilization of the cereal carbohydrate is still high (97.7 to 99.0 per cent.). Assuming that sucrose is completely utilized, the starch of the starch diets is utilized to the extent of over 98 per cent. Monotony and unpalatability of diet have little or no effect on the ultimate utilization.

48. **Nutritive Value of Soy Bean.**—An economic consideration of the yellow soy bean leads to the conclusion that it is one of the most valuable of the leguminous seeds. It contains a high percentage of a physiologically good protein, a considerable amount of energy yielding material in the form of fat and carbohydrate, and a fairly liberal supply of the fat-soluble food accessory, as well as of the water-soluble growth determinant. The animals fed rations containing 15.6 and 18.7 per cent. of protein obtained solely from the soy bean have grown normally and in the latter case have produced successive litters of young, which in turn have reproduced, is sufficient evidence that the protein of the soy bean fulfills all physiologic requirements. The protein of the soy bean appears to be quite as valuable as the casein of milk. In order to make the soy bean a more nearly complete food, suitable inorganic material, consisting principally of sodium chlorid and calcium compounds, needs to be added.

51. **Existence of Gastric Lipase.**—The occurrence of gastric lipase was studied by Hull and Keeton in pure juice obtained from dogs with Pawlow stomachs and those with pylorus ligated. The secretion was excited by gastrin bodies and food. It was found that the fasting and acid-free juice always contains an appreciable concentration of lipase. The lipase is quite sensitive to acid and alkali, being almost completely destroyed by a fifteen minute exposure to 0.2 per cent. hydrochloric acid. The enzyme may be recovered from the stomach showing low acid secretion by neutralizing the juice immediately; and from stomachs in high secretory activity, if the acid be reduced by the addition of protein, such as peptone. In a series of trials 1 c.c. of fasting juice gave a fat splitting of 28.2 per cent. by the Volhard method and 22.05 per cent. by the Stadel modification. The concentration of the enzyme in the gastric juice is five or six times that in the succus entericus and the blood serum. The view that the lipase is a true gastric secretory product is discussed and favored. The probable practical importance of the lipase in stomach digestion is emphasized.

Indiana State Medical Association Journal, Fort Wayne

October, X, No. 10

- 52 Coagulen (Kocher-Fonio); Successful Experiences in Eight Cases. H. K. Bonn, Indianapolis.—p. 385.
- 53 Cataract and Its Management. W. F. Hughes, Indianapolis.—p. 390.

Journal of Parasitology, Urbana, Ill.

September, IV, No. 1

- 54 Structure and Classification of North American Parasitic Worms. H. B. Ward, Urbana.—p. 1.
- 55 Sporozoon Parasites of Fishes of Woods Hole and Vicinity. On *Chloromyxum Clupeidae* of *Clupea Harengus* (Young), *Pomolobus Pseudoharengus* (Young), and *P. Aestivalis* (Young). C. W. Hahn.—p. 13.
- 56 *Endameba Buccalis*. Its Reactions and Food Taking. N. Nowlin, Lawrence, Kan.—p. 21.
- 57 Central Nervous System of Parasitic Isopod, *Grapsicephon*. W. A. Hilton, Claremont, Calif.—p. 25.

- 58 Value of Nitrobenzol as Parasiticide with Its Use in Collecting External Parasites. W. L. Chandler.—p. 27.
- 59 Morphologic Study of Bothriocephalid Cestodes from Fishes. A. R. Cooper, Urbana.—p. 33.
- 60 Systematic Position of Two Known Species of Gregarines. M. W. Kamm, Urbana.—p. 40.
- 61 First Case of Leishmaniosis Cutanea in Venezuela. J. Iturbe and E. Gonzalez.—p. 444.

56. **Endameba Buccalis.**—The material for this present paper was collected by Nowlin from a single host and a single point of infection, an upper premolar tooth. Nowlin concludes from observations that *Endameba buccalis* absorbs its food mainly, taking in by osmosis the fluids of leukocytes or other mediums on which it rests, stores these colloidal substances in vacuoles, and by secretion of its own enzymes assimilates these as needed. This method of food getting by absorption would explain the shrinkage of gums where *Endameba buccalis* is present. There is abundant evidence that they draw supplies by applying themselves to the surface of tissues and by crowding between them.

Kansas Medical Society Journal, Topeka

October, XVII, No. 10

- 62 Treatment of War Wounds and Sepsis. A. B. Jeffrey, Topeka.—p. 265.
- 63 Cholecystectomy vs. Cholecystostomy. G. M. Gray, Kansas City.—p. 274.
- 64 Action and Use of Sodium Chlorid. J. S. Sutcliff, Iola.—p. 277.
- 65 County Hospital. J. L. Morehead, Neodesha.—p. 279.

Medical Record, New York

October 20, XCII, No. 16

- 66 Army Medical Museums. R. W. Shufeldt, Washington, D. C.—p. 663.
- 67 Alcohol and Therapeutics. E. H. Williams, Los Angeles.—p. 666.
- 68 Nasal Insufflations in Diagnosis, Prognosis and Treatment of Tuberculosis. O. Paget, Freemantle, West Australia.—p. 668.
- 69 Two Cases of Multiple Keloids. J. E. Lopez-Silvero, Havana, Cuba.—p. 673.
- 70 Mastic Reaction on Cerebrospinal Fluid. E. R. Smith, Ann Arbor, Mich.—p. 675.
- 71 Wassermann Reaction and Pulmonary Tuberculosis. J. S. Ford, Loomis.—p. 678.
- 72 Operations for Harelip and Cleft Palate. W. C. Gewin, Birmingham, Ala.—p. 679.
- 73 Cosmetically Perfect, Bloodless Circumcision. H. J. Millstone, Chicago.—p. 680.
- 74 Cannula for Use with Carrel Method. E. E. Endicott, Jackson, Calif.—p. 682.

Mental Hygiene, Concord, N. H.

July, I, No. 3

- 75 Mobilizing Brains of Nation. S. Paton, Princeton, N. J.—p. 334.
- 76 *Care of Disabled Returned Soldiers. P. Bailey, New York.—p. 345.
- 77 Use of Institutions for Insane as Military Hospitals. T. W. Salmon, New York.—p. 354.
- 78 Broader Psychiatry and War. H. M. Adler, Chicago.—p. 364.
- 79 *Relation of Psychology to Military Activities. R. M. Yerkes, Boston.—p. 371.
- 80 State Hospital and War. W. A. White, Washington, D. C.—p. 377.
- 81 *Some of Nervous and Mental Conditions Arising in Present War. E. M. Auer, France.—p. 383.
- 82 *Problem of Mental Disease in Canadian Army. C. B. Farrar, Ottawa.—p. 389.
- 83 Some Experiences in German Red Cross. C. A. Neymann, Baltimore.—p. 392.
- 84 Effects of High Explosives on Central Nervous System. E. E. Southard, Boston.—p. 397.
- 85 Mental Disease, Suicides and Homicides in United States Army and Navy, 1897-1915. E. M. Furbush.—p. 406.
- 86 Neuropsychiatry and War. M. W. Brown and F. E. Williams.—p. 409.

76. **Care of Disabled Returned Soldiers.**—In addition to general medical and surgical hospitals, Bailey's plans include convalescent homes for those enfeebled rather than disabled, sanatorium for consumptives and colonies of various kinds at which outdoor work can be taken up little by little. Vocational training is an important part of the scheme, especially for those whose disability forces them to find a different occupation than the one they had before entering the army. This feature involves questions concerning the soldier's personality, and also has associated with it such perplexing questions as the rating of pensions, attitude of trade unions, state versus federal supervision, etc. The nervous casualties require a high degree of differentiation in their treatment.

The insane should be carefully segregated from those whose mental disturbances are susceptible of more prompt recovery; the hysterics should be kept by themselves, and special education centers will be found necessary for the care of the disorders of speech and hearing so frequent in this war. The final feature in Bailey's plan is the creation of federal and state boards of reemployment, which shall meet the returned soldier at all points of discharge and facilitate his return to self-support and independence in the civil community.

79. Psychology and Military Activities.—Yerkes suggests that psychologists can render service to the nation by discovering and indicating in practical ways the relations of human characteristics to special tasks.

81. Nervous Conditions Arising in Present War.—The large number of cases of mental disorders, functional and organic, makes necessary the presence of a physician trained to make thorough studies of and successfully treat mental patients. This requires a patience and skill obtained only through a thorough understanding of the conditions resulting from fatigue, worry, fright, shock, etc. In the organic cases, in which foreign bodies, such as shrapnel, have penetrated the nervous tissue, the roentgen ray has proved an invaluable asset in localization, for not infrequently, due to more extensive involvement resultant from hemorrhage and destruction, the neurologic symptoms do not correspond exactly with the site of the foreign body. For the more careful consideration of mental cases in the Base Hospitals, Auer says, huts should be assigned to a neuropsychiatric service, where the functional nervous and mental conditions can receive proper treatment in the way of complete rest, isolation, dietary measures, and such other treatment as may be required. The cases of organic injury to the nervous system should also be received in a special hut in the surgical division, where the surgeon and the neurologist can more competently care for the wounded and make a more thorough study of the findings.

82. Mental Disease in Canadian Army.—Of the total number of soldiers invalided to Canada, the proportion of nervous and mental cases has been fairly constant at 10 per cent., classified as follows: neurotic reactions, 58 per cent.; mental diseases and defect, 16 per cent.; head injuries, 14 per cent.; epilepsy and epileptoid, 8 per cent.; organic diseases of the central nervous system, 4 per cent. In the general policy of caring for the war neuroses, Farrar says, it has been demonstrated over and over again, that patients while under treatment should be shifted as little as possible from one institution to another. It is also as a rule, not well to have the patient in the vicinity of his home, and home visits are certainly contraindicated in the severer neuroses. The conscious will and purpose to get well are often difficult to establish and all opposing factors must be kept in mind.

Military Surgeon, Washington, D. C.

October, XLI, No. 4

- 87 Sanitation in War. T. H. Goodwin.—p. 377.
- 88 Bath, Disinfection Trains and Field Laundries of Austro-Hungarian Army. J. H. Ford.—p. 388.
- 89 Guide to Facilitate Establishment and Administration of Medical Group of Ports of Embarkation in Time of War or Threatened Hostilities Involving Oversea Operations. E. W. Rich.—p. 393.
- 90 Experiences and Suggestions on Automobile Ambulance Service of Modern Army in Field. S. Thorn.—p. 415.
- 91 Experiences with Russian Army of Caucasus in Northern Persia. T. L. Hazlett.—p. 445.
- 92 Place of Orthopedic Surgery in Treatment of War Casualties. J. E. Goldthwait.—p. 450.
- 93 Statistical Lessons of Crimean War. F. H. Garrison.—p. 457.

Missouri State Medical Association Journal, St. Louis

October, XIV, No. 10

- 94 Correction of Deformity Due to Complete Loss of Nose and Most of Alveolus and Hard Plate. J. F. Binnie and W. T. Stark, Kansas City.—p. 415.
- 95 Milk Borne Typhoid Outbreak in Children. S. T. Lipsitz, St. Louis.—p. 418.
- 96 Diagnosis and Treatment of Certain Subacute and Chronic Joint Conditions. F. D. Dickson, Kansas City.—p. 421.
- 97 Tubo-Ovarian Infections. H. S. McKay, St. Louis.—p. 423.
- 98 Treatment of Dacryocystitis in Infants. J. Green, Jr., St. Louis.—p. 427.

- 99 Need for More Thorough Examination into Family History and More Exhaustive Search for Disease in Applicants for Admission to Schools for Blind. J. W. Charles and H. D. Lamb, St. Louis.—p. 430.
- 100 Physiologic Therapeutics. A. C. Ames, Mountain Grove.—p. 432.
- 101 Pulmonary Tuberculosis. H. S. O'Donnell, St. Louis.—p. 434.
- 102 Fallacy of Chiropractic Claims. J. D. Seba, Bland.—p. 437.

New York Medical Journal

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- 103 Mental Condition of Female Juvenile Delinquents. J. H. W. Rhein, Philadelphia.—p. 725.
- 104 Etiologic Factor in Gastro-Enteroptosis and Its Clinical Significance. E. J. Clemons, Los Angeles.—p. 728.
- 105 Venereal Prophylaxis. H. J. Millstone, Chicago.—p. 730.
- 106 Clinical Experience with Corpus Luteum Organotherapy. W. T. Dannreuther, New York.—p. 731.
- 107 Surgical Treatment of Gastric Ulcer. W. F. Fowler, Rochester.—p. 735.
- 108 Treatment of Pulmonary Hemorrhage. D. C. Martin, New York.—p. 738.
- 109 Wight Fracture Clamp. J. S. Wight, New York.—p. 741.
- 110 Relation of Hemorrhoidal Disease to Health Balance. W. M. Beach, Pittsburgh.—p. 742.
- 111 Colon Bacillus Pyelitis. J. Kaufman, New York.—p. 743.

New York State Journal of Medicine

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- 112 Choice of Operation for Retrodisplacement. E. E. Montgomery, Philadelphia.—p. 437.
- 113 Conservative Surgery of Fallopian Tubes. H. P. Jack, Hornell.—p. 443.
- 114 Gynecologic History. G. G. Ward, Jr., New York.—p. 445.
- 115 Recent Developments in Gynecology that Every Practitioner Should Know. W. W. Chipman, Montreal, Canada.—p. 453.
- 116 After-Care in Abdominal Operations. H. W. Jones, Utica.—p. 458.
- 117 Surgical Hemostasis of Female Pelvis—Stereoroentgenographic Study. H. D. Furniss and W. H. Meyer, New York.—p. 462.
- 118 Case of Antepartum Mammary Hyperemia Due to Unrecognized Malignant Disease. G. W. Kosmak, New York.—p. 464.
- 119 Necessity for Routine Rectal Examinations in Obscure Pelvic Pain. D. H. Murray, Syracuse.—p. 466.
- 120 Some of the General Skin Diseases with Ocular Manifestations. W. B. Weidler, New York.—p. 468.
- 121 Mass Volunteering by Medical Profession. F. T. van Beuren, Jr., New York.—p. 476.

Southern Medical Journal, Birmingham, Ala.

October, X, No. 10

- 122 Treatment of Tabes. L. M. Gaines, Atlanta, Ga.—p. 777.
- 123 *Importance of Time in Treatment of Tuberculosis. W. R. Kirk, Hendersonville, N. C.—p. 781.
- 124 Wassermann Reaction. G. E. Henson, Jacksonville, Fla.—p. 784.
- 125 Advances in Public Health Work in Oklahoma During 1915. J. W. Duke, Guthrie, Okla.—p. 788.
- 126 Prenatal Uncinaria Infection. H. H. Howard, New York.—p. 793.
- 127 Small Outbreak of Typhoid Attributed to Water. M. G. Perrow, Lynchburg, Va.—p. 795.
- 128 Gynecologic Origin of Nervous Manifestations. W. F. Shallenberger, Atlanta, Ga.—p. 797.
- 129 Indications for Decompression Operation in Fracture of Base. S. R. Benedict, Birmingham.—p. 799.
- 130 *Lump in Breast. E. B. Claybrook, Cumberland, Md.—p. 802.
- 131 What European War Has Taught Us in Treatment of Wounds. W. L. Brown, El Paso, Texas.—p. 809.
- 132 Some Factors in Railway Sanitation. O. Dowling, Shreveport, La.—p. 811.
- 133 History of Origin of Red Cross. H. L. Large, Rocky Mount, N. C.—p. 814.
- 134 Adenoids and Tonsils. L. R. H. Gantt, Spartanburg, S. C.—p. 818.
- 135 Research Function of Medical College. C. C. Bass, New Orleans.—p. 823.

123 and 130. Abstracted in THE JOURNAL, Dec. 23, 1916, pp. 1966 and 1967.

Tennessee State Medical Association Journal, Nashville

October, X, No. 6

- 136 Insanities and Their Relation to Practice of Medicine. J. J. Waller, Oliver Springs.—p. 221.
- 137 Operative Treatment for Gangrene of Feet with Special Reference to Blockage of Venous Return of Two Cases. J. B. Haskins, Chattanooga.—p. 226.
- 138 *Hay Fever; New Surgical Treatment. T. P. Miller, Knoxville.—p. 231.
- 139 Practical Electrotherapeutics. J. M. King, Nashville.—p. 236.
- 140 Some Diseased Conditions of Eye, Secondary to Infection in Other Parts of Body. O. Dulaney, Dyersburg.—p. 240.
- 141 Gastric Ulcer and Its Differentiation. J. A. Witherspoon, Nashville.—p. 244.

138. Surgical Treatment for Hay Fever.—Miller says that there is a condition in all cases of hay fever of highly sen-

sitized parts of the mucous membrane supplied by the olfactory nerve. This is caused in all cases he has seen by a malformation of the nose. This malformation can either be an enlarged superior turbinate, a deviated septum or a very close nose. At any rate, there is a pressure between the superior turbinates and the septum, causing a highly inflamed and sensitized condition of the mucous membrane at the ramifications of the olfactory nerve. These are the patients who have hay fever. Miller relieves this pressure by removing the superior turbinate or by the proper application of trichloroacetic acid.

Texas State Journal of Medicine, Fort Worth

October, XIII, No. 6

- 142 Treatment of Carcinoma of Mouth. V. P. Blair, St. Louis.—p. 205.
- 143 Sphenoid Sinus Problem. E. M. Sykes, San Antonio.—p. 209.
- 144 Systematic Routine Thoroughness in Mastoid Surgery. L. H. Lanier, Texarkana.—p. 211.
- 145 Some of the Conditions Affecting Breast Fed Babies. B. E. Greer, Dallas.—p. 213.
- 146 Danger Signals for Medical Examiners. J. H. Florence, Houston.—p. 215.
- 147 Treatment of Acute Infections of Nose and Accessory Sinuses. J. H. Foster, Houston.—p. 217.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Lancet, London

October 6, II, No. 4910

- 1 *Pathology, Diagnosis and Treatment of Absolute Hysterical Deafness in Soldiers. A. F. Hurst and E. A. Peters.—p. 517.
- 2 *Reactions to Human and Bovine Tuberculin Applied by Method of Von Pirquet in Cases of Tuberculous Disease of Bones and Joints. H. J. Gauvain.—p. 519.
- 3 *New Dietetic Treatment of Diabetes. P. J. Cammidge.—p. 522.
- 4 *Local Treatment of Meningococcus Carriers with Antiseptics. P. Fildes and P. B. Wallis.—p. 527.
- 5 *Closure of War Wounds in Home Hospitals. J. Phillips.—p. 528.
- 6 Growth of Anaerobic Bacilli in Fluid Media Under Apparently Aerobic Conditions. S. R. Douglas, A. Fleming and L. Colebrook.—p. 530.
- 7 *Unusual Complication of Laparotomy for Gunshot Wound. W. H. Johnston.—p. 533.
- 8 Inoculation Agglutinins. I. W. Hall and I. Hiles.—p. 534.
- 9 Case of Vincent's Infection Involving Mouth, Eyes and Penis. F. B. Bowman.—p. 536.
- 10 Case of Malaria Contracted in England. R. L. Wilcox.—p. 536.

1. **Hysterical Deafness in Soldiers.**—Hurst and Peters are convinced from their experience that absolute deafness associated with normal vestibular reactions should be regarded as hysterical, and when simple encouragement fails, as will generally be the case if the patient is not also dumb, an "operation" should be performed after the patient has been made to feel quite confident that it will restore his hearing. This "operation" is described as having been applied in two cases of absolute hysterical deafness without mutism, and in one of them mutism was originally present, but spontaneous recovery had occurred some months earlier in which all treatment had failed. The first patient was given enough ether to make him excited, and two small cuts were then made behind his ear; a hammer was banged on a sheet of iron during the "operation," and the moment after the incision had been made the patient jumped off the table with his hearing restored. The other patient was unwilling at first to undergo an operation, but finally consented, as he was naturally impressed by the recovery of the first patient, who was in the same ward and had been deaf for a much longer period. The same "operation" was performed and complete recovery occurred in exactly the same way.

2. **Reactions to Human and Bovine Tuberculin.**—Gauvain applied the Pirquet test to eighty cases of tuberculous bones or joints. In order to avoid any risk of unconscious bias he made the inoculations and recorded their results without knowledge of bacteriologic reports as to the type of bacillus found. The tuberculins employed were Koch's "old tuberculin," prepared from the "human" type of bacilli, and his tuberculin prepared in the identical way from bacilli of bovine origin. The tuberculins were applied to suitable skin scarifications in dilutions of 1/64, 1/16, 1/4, and in full strength,

each in approximately equal bulk and controlled by inoculation of a scarification with the same quantity of sterile normal saline solution. The final result of Gauvain's investigation may be stated briefly as follows: 1. Local reactions to inoculations of both human and bovine tuberculin were invariably present in all patients from whose pus tubercle bacilli had been isolated. 2. Though reactions were invariably present, the degree of reaction varied within wide limits. 3. Weakly and cachectic patients usually reacted feebly, quite irrespective of differences in the severity of their local lesions. 4. Strong and vigorous patients exhibited wide differences in the degree of their reactions, irrespective of differences in the extent or the severity of their local lesions. 5. The quantitative Pirquet test was found to be of value in forming an estimate of the severity of the infection, and was of little prognostic value. 6. It was impossible to differentiate the type of tubercle bacillus with which the patient was attacked by the nature of the reaction to the tuberculin employed.

3. **New Dietetic Treatment of Diabetes.**—Cammidge points out that at present our only reliable means of combating the disease is management of the diet, but in order to obtain the best results and actually halt the diabetic process it is necessary that it should be carried out with knowledge and as nice discrimination as the selection and prescription of a drug. Time and care devoted to the chemical aspect of each case render the task easier, and would prevent the empirical employment of one routine method, so saving many patients from unnecessary hardships and inconveniences. It is not enough to consider only the glycosuria, or even the end-products of metabolism in the urine, the information to be obtained from analysis of the blood and feces should also be taken into account, and Cammidge thinks that the time is coming, and will come shortly, when a physician who attempts to treat a case of diabetes guided only by examination of the urine for sugar will be held as guilty of negligence as the present-day surgeon would be who failed to employ roentgenography when treating an injury of the bones or joints.

4. **Meningococcus Carriers Treated with Antiseptics.**—Owing to the measures adopted in the British Navy to limit the spread of cerebrospinal fever a large number of carriers were detected in the Portsmouth depot and isolated in a special camp. It then became necessary to attempt to sterilize the throats of these men, and, although from analogy with other diseases the local application of antiseptics appeared likely to be unprofitable, it was thought desirable to give these a trial. If the antiseptic did not destroy the cocci in the throat, it was possible that it might prevent the cross infection from one man to another. The antiseptics most thoroughly tested were chloramin-T and acriflavine. Other antiseptics were boric acid, phenol, magnesium hypochlorite, aqueous solution of formaldehyd gas, potassium permanganate, guaiacol and several others. In addition to these, Fildes and Wallis administered to a few men a placebo in the form of tablets of formaldehyd solution. Chloramin-T was applied in two different ways: (a) In an inhaling chamber: A 5 per cent. solution of chloramin-T was used in the reservoir of the nebulizer; this strength was found to give as powerful an atmosphere of chlorin as was pleasant. The men remained in the chamber for about fifteen minutes per diem. (b) In a nasopharyngeal spray: The chloramin-T (2 per cent.) thus came copiously into contact with the whole nasopharynx and often dripped from the anterior nares. This treatment was applied once a day. Acriflavine in a strength of 1 in 500 in salt solution, was applied daily with the authors' nasopharyngeal spray. The other antiseptics mentioned were all applied with a nasal spray until the drug could be felt in the nasopharynx. The strength of boric acid was 1 dram to the pint, of phenol 1 in 200, of liquor formaldehyd 1 in 200, and of potassium permanganate 1 in 1,000. Looking at the results as a whole, Fildes and Wallis conclude that one third of the men recover spontaneously, and that none of the methods of treatment tested has any conspicuous merit, nor has one any obvious advantage over another. This result is what might be expected from analogy with work on diphtheria carriers.

5. **Closure of War Wounds in Home Hospitals.**—The method which experience has led Phillips to adopt includes something of the bismuth iodoform petrolatum paste method along with the sodium hypochlorite treatment. Where pus is pocketing in the track of a through-and-through wound, or beneath or between two adjacent muscles, or where loose bone fragments or other devitalized or foreign bodies are present, an anesthetic must be given and the wound cleansed and laid freely open. The skin incision whenever possible should extend the whole length of the wound. The ideal Carrel wound is a basin which can easily be kept full to the brim with the hypochlorite solution. Every third or fourth day a platinum loopful of the discharge is taken from the wound surface wherever it looks least healthy and examined bacteriologically. Phillips makes it a rule not to attempt to close a wound until two reports of an average of less than three organisms per field have been returned.

Wound Closure: The skin around the surgically clean wound is cleansed, the edges of the wound are trimmed, the granulations are thoroughly curetted, the skin edges are undercut. Any definitely bleeding vessels are tied (oozing does not matter), the whole wound area is swabbed with methylated spirit and a little bismuth iodoform petrolatum paste is scrubbed into the raw surface with the gloved fingers. Wherever possible any raw muscle surface is closed by bringing together the edges of the deep fascia (exposed by the under cutting) with a running stitch of stout catgut. Thick silk sutures (No. 5 pedicle silk boiled and soaked for forty-eight hours in tincture of iodine) are passed through the skin and the deep layers of the wound at intervals of about $\frac{3}{4}$ inch and tied tightly so that no "dead cavity" is left. In cases in which there is tension on the part, the most useful stitch is a combination of a mattress with a simple surgical stitch. A continuous catgut stitch is used to complete the coaptation of the skin edges. The skin is cleaned and smeared over with Moynihan's cream (a mixture consisting of as much bismuth carbonate and 1:1,000 watery solution of mercuric iodide as will make a thick paste) and a simple dry gauze and wool dressing applied. The dressing is not touched for fourteen days. It is then removed, any discharge is wiped away and Moynihan's cream and another dry dressing are applied. At the second dressing a week later the stitches are removed, and never before.

Of ten cases so treated Phillips finds that seven or eight will have healed practically by first intention, one or two will have gaped a bit at one part, leaving a superficial granulating area, and the tenth—practically always one where there has been loss of tissue and consequent tension on the stitches—will be a failure, at any rate in large part, and will require to be done again, or perhaps skin grafting will be necessary.

7. **Laparotomy for Gunshot Wound.**—In Johnston's case of gunshot wound of the abdomen, with perforations of intestine, which were sutured, diffuse purulent peritonitis occurred as a complication, consequent on rupture of an abscess in the anterior abdominal wall. Treatment by the hypochlorite method was carried out, and resulted in recovery.

Medical Journal of Australia, Sydney

September 22, II, No. 12 ..

- 11 Arneith Index in Eastern Australia. E. M. Sweet.—p. 243.
- 12 Medical Work Seen in Australian Military Hospitals. W. Summons.—p. 244.
- 13 *Early Symptoms Following Infection by *Schistosomum Mansoni*. F. B. Lawton.—p. 247.
- 14 Case of Ruptured Diverticulum with Fatal General Peritonitis. W. R. Groves.—p. 251.

13. **Symptoms Following Infection by *Schistosomum Mansoni*.**—In August and September, 1916, twenty-four patients were admitted to an Australian general hospital in Cairo suffering from some or all of the following symptoms: abdominal pain, enlarged and tender liver and spleen, pyrexia, bronchitis, urticaria and diarrhea. All the patients were Australians, who had not traveled before enlistment. At first it was not clear what was the matter with these men, and blood cultures were made and other investigations were carried out with negative results, but the blood picture

afforded the key. In every case a striking eosinophilia (5-53 per cent.) was present. This led to prolonged examination of the stools for parasites, and resulted in the discovery of the lateral spined ova of *Schistosomum mansoni*. The ova were found ultimately in the stools of all. The ova were scarce at this stage of the disease, as presumably the majority of the paired adult worms had not yet found a suitable home in the veins draining the rectum. All of these patients had been in camp at Tel-el-Kebir during the three months preceding the onset of symptoms, and it was there, Lawton says, that the infection apparently was contracted.

Practitioner, London

October, XCIX, No. 4

- 15 Moral Imbecility. C. Mercier.—p. 301.
- 16 Fifty Cases of Exophthalmic Goiter Treated by Operation. A. J. Walton.—p. 309.
- 17 An Alleged Death of Male from Tight Lacing. Curious Medical Case. W. A. Brend.—p. 339.
- 18 Recent Work on Anesthetics. J. Blomfield.—p. 347.
- 19 Review of Tropical Diseases. R. T. Hewlett.—p. 352.
- 20 Writer's Cramp and Allied Affections: Their Treatment by Massage and Kinesitherapy. D. Graham.—p. 363.
- 21 Principles of Modern Methods in Urethritis. J. MacMunn.—p. 373.
- 22 Case of Postpneumonic Aphonia. W. E. Boyd.—p. 388.
- 23 Case of Tuberculous Meningitis of Unusually Long Duration. G. H. Hickling.—p. 390.
- 24 Diagnostic Puzzle. F. J. E. Godson.—p. 392.

Sei-I-Kwai Medical Journal, Tokyo

September, XXXVI, No. 9

- 25 A Disease of Pigeons Due to Partial Inanition. Y. Kon and M. Okazaki.—p. 91.

Bulletin de l'Académie de Médecine, Paris

September 18, LXXVIII, No. 36, pp. 227-297

- 26 *Surgery of the Heart. P. Delbet and E. Delorme.—p. 243.
- 27 Control and Analysis of the Alkalinity of Solutions of Chlorinated Soda Used in Surgery. W. Mestrezat.—p. 295.

26. **Surgery of the Heart.**—Delorme has compiled seventeen cases of projectiles in the heart, and states that the missile was removed in thirteen cases, with recovery in all but three. The list includes the successful removal of a projectile in the right ventricle. The operation for removal of a projectile in the heart proceeds very simply, with no sensational features. The injuries discussed might all have been avoided, probably, if a steel breastplate had been worn. The field of intervention on the heart is discussed with much detail, full summaries of a number of cases of gunshot wounds of the heart being given, and the indications according to the parts of the heart involved. He expresses surprise that, from the records to date, no attempts seem to have been made to suture the heart, but projectiles are being extracted with almost constant success.

Bulletins de la Soc. Méd. des Hôpitaux de Paris

July 20, XLI, No. 25, pp. 869-928

- 28 Decompressive Trephining. H. Dufour and R. Zivy.—p. 872.
- 29 *Purulent Pleurisy Cured without Fistula by Filiform Drainage. Chaput and Dufour.—p. 875. Chaput and Florand.—p. 877.
- 30 *Varying Response of Meningococci to Different Antiserums. Nicolle, E. Debains and C. Jouan.—p. 878; A. Netter.—p. 882.
- 31 *Fermentation of Sugar and Anaerobiosis of Diphtheria Bacilli. H. Stévenin.—p. 890.
- 32 *Tin in Treatment of Furunculosis. I. Bruhl and J. Michaux.—p. 892.
- 33 *Exophthalmic Goiter in Soldiers. P. Merklen.—p. 894.
- 34 War Wounds of Spinal Cord. G. Guillaum and J. A. Barré.—p. 896.
- 35 *Suprarenal Dyspepsia. M. Loeper, Beuzard and Wagner.—p. 903.
- 36 *Myotonic Reaction with Pleuropulmonary Tuberculosis. M. Loeper and H. Codet.—p. 907.
- 37 *The Obscure Bacteria and Their Pathologic Manifestations. Saquépée.—p. 917.
- 38 *Icterohemorrhagic Spirochetosis. Valassopoulos.—p. 920.

29. **Filiform Drainage in Pleurisy.**—Chaput calls attention to the prompt and permanent benefit from filiform drainage in the three cases of pleurisy he reports in detail. This brings to five his total cases of severe purulent pleurisy, including two with gangrene, in which, as he says, without general anesthesia or resection of a rib, the patients were promptly cured by this simple technic.

30. Different Types of Meningococci.—Nicolle and his co-workers tested 105 specimens of meningococci of different origins for their agglutination response to monovalent immune serums from the horse and to normal horse serum. The responses classed the meningococci as belonging to four types. Type A seems to correspond to Gordon's Types I and III and Ellis' Types I and II. Type B corresponds to Gordon's Types II and IV. The Type A seems to be identical with Dopter's meningococcus. The findings reported confirm the importance of using both A and B in preparing the immune serum, or else mixing the two antisera. They also suggest the necessity for determining in each epidemic which is the prevailing type and using a corresponding antiserum.

Netter's experience with serotherapy in 323 cases of meningitis since 1908 confirms the reliability of the agglutination test for classifying the type of meningococci involved in each individual case. He found the B type in his last four cases of meningitis accompanied with purpura, and also in a case of meningococcus septicemia preceding the meningitis by several weeks. In three recent cases from which the B meningococcus was cultivated, rapid recovery followed B antiserum in the two cases in which it was available, in marked contrast to the course in the other case.

31. Differentiation of Diphtheria and Pseudodiphtheria Bacilli.—Stévenin reports that in his research the fermentation of sugar and the growth without oxygen plainly differentiated the true diphtheria from the pseudodiphtheria germs. These biologic reactions seem to be constant.

32. Tin in Treatment of Furunculosis.—Bruhl and Michaux relate experiences with intramuscular injections of colloidal tin which confirm the view that in this we have another weapon at our disposal in treatment of furunculosis, but that it is not invariably successful.

33. Exophthalmic Goiter in Soldiers.—During the last six months, Merklen has encountered about ten cases of exophthalmic goiter in men sent back from the trenches on that account. Other hospitals have reported a similar increase of cases of exophthalmic goiter in men although the total number is small. It usually came on suddenly as is the rule when it is of emotional origin.

35. Suprarenal Dyspepsia.—Summarized page 947.

36. Myotonic Reaction with Tuberculosis.—Summarized page 1205.

37. Obsidional Infections.—Sacquépée gave the name obsidional or siege bacteria to a group of bacteria he found in men who have been for some time in the trenches. The most important of the affections induced by these bacteria is a febrile state with anemia but no eruption and no typhoid state. There is often jaundice and a meningeal condition without appreciable changes in the fluid. In the few necropsies that have been made the liver showed evidences of infection and the spleen was hypertrophied and the kidneys were tumefied and yellow, but the main lesions were hemorrhagic patches and small ulcerations in the bowel, predominantly in the ileum and cecum, with swollen mesenteric glands. No other specific bacteria could be found and there was deviation of complement with the obsidional bacterium discovered. These were the exclusive findings also in a fatal case of choleriform enteritis, and animals inoculated with the bacteria developed similar intestinal lesions.

38. Icterohemorrhagic Spirochetosis.—Valassopoulos discusses his experience with infective febrile jaundice at Alexandria, analyzing 300 hospital cases with 32 per cent. mortality, nearly all with necropsy. Since Alexandria and Smyrna have been sewered and the sewer rats poisoned off, the disease has ceased to be endemic at these points. He never observed a case in a child and only very rarely in women, and never a case of direct contact from man to man. The rat seems to be the indispensable intermediary. In some of the epidemics the mortality was 50 or 60 per cent. He gave extract of liver subcutaneously, and when the kidneys were seriously involved he obtained relief with wet cupping or venesection. Isolation and serotherapy promise still better results now.

Journal de Médecine de Bordeaux

September, LXXXVIII, No. 10, pp. 195-216

39 *To Facilitate Search for Helminths in the Stools. J. Carles and E. Barthélemy.—p. 195.

40 Treatment of Traumatic Dislocation of the Patella. A. Charrier and H. Fontaine.—p. 199.

41 *Sunlight in Treatment of Wounds. D. Frèche.—p. 205.

39. Enrichment Method in Examining Feces for Parasitism.—Carles and Barthélemy discuss the shortcomings of the different methods in vogue for detecting helminths, their encysted forms and ova in stools. They declare it is necessary to fluidify and homogenize the specimen of stool and bring it to the exact specific gravity most effectual for centrifuging out the parasites and their ova. They get rid of the coarser elements by passing the material through a wire sieve and a silk sieve (Hall). They take 20 gm. of feces to begin with, and dilute with physiologic salt solution containing 10 per cent. formol. The silk sieve has 90 threads to the centimeter (No. 90), except when seeking for ova; these require No. 32. The sieved fluid is then distributed in the centrifuge vials and centrifuged at 1,800 turns for one minute. The supernatant fluid is decanted and the sediment treated with a mixture of 12 gm. citric acid and 2 gm. of a 40 per cent. solution of formol and 86 gm. of water. The specific gravity of this is 1.047. Then 1 or 2 c.c. of ether is added and the tube agitated briskly to detach the sediment. Then centrifuge for thirty seconds at 1,800 revolutions. Then stir up the zone separating the ether from the fluid, using the tip of a pipet closed in the flume. This is to restore any cysts that might have been carried up by the ether. Then centrifuge again for thirty seconds as before, and decant all but the sediment. By this technic there is nothing left in the sediment except the helminths, encysted forms of protozoa, ova, and a little other debris of high specific gravity. The specimen is then ready for the microscope and gives exceptionally clean and clear microphotographs, as they illustrate by a few examples showing the lamblia and the encysted forms, with only a few vegetable cells, in one of the four microphotographs.

41. Sunlight Disappointing in Treatment of Wounds.—Frèche quotes experiences which demonstrate that the bactericidal power of sunlight is very small in a moist medium. Hence wounds do not benefit from exposure to sunlight as they are not dry and as the blood in the tissues absorbs the more useful rays. While sunlight may kill dry anthrax spores in from twenty-nine to fifty-four hours, this takes very much longer when the spores are sheltered from the air or kept moist. His experience has been less favorable with wounds treated by exposure to sunlight than with other methods of treatment. The only wounds that seemed to benefit were of the torpid type, with smooth, pale pink tissues and no tendency to granulations. But even in these cases, other physical or chemical stimulants gave equally good results.

Lyon Chirurgical

July-August, XIV, No. 4, pp. 625-792

42 *Wounds of Vessels. R. Grégoire and H. Mondor.—p. 625.

43 *Immediate Treatment of Wounds of Vessels. L. Sencert.—p. 640.

44 *War Wounds of Arteries without External Hemorrhage. H. Almartine.—p. 687.

45 Arteriovenous Aneurysms. M. Patel and L. Bérard.—p. 709. P. Bonnet.—p. 715.

46 Shell Wound Involving Jugular and Carotid Vessels. (Le syndrome du sinus pétreux supérieur.) R. Leriche.—p. 728.

47 *Course of War Wound in a Hemophiliac. N. Fiessinger and R. Montaz.—p. 738.

48 *Periarterial Sympathectomy for Posttraumatic Reflex Nervous Disturbances. R. Leriche and J. Heitz.—p. 754.

42. War Wounds of Vessels.—Grégoire and Mondat relate some typical instances of tardy hemorrhage and tardy opening of the artery after a vessel had been injured by a projectile. Among their eighty cases of severe wounds of a vessel, in twenty-four there were no signs of hemorrhage nor hematoma nor ischemia, and only eleven presented immediate and persisting hemorrhage. At their ambulance it was the routine practice to ligate the vessel above and below the injured area, on sound segments. The skin was never sutured at once unless they were sure there was nothing to cause

concern, as gangrene is always imminent after a gunshot wound of a vessel. All the men recovered except two who succumbed to tetanus or gas gangrene, and four others with fatal secondary hemorrhage or anemia.

43. Immediate Treatment of War Wounds of Vessels.—In Sencert's experience with forty-two operative cases of hematoma, intense pain and impotence of the limb almost invariably accompanied the wound of the artery, along with more or less shock. Cases of supposed fracture of the femur with complete inability to use the leg sometimes proved to be the result of severing of the popliteal vein, the bones intact. The complete impotence of the limb and the pain may be in striking contrast to the visible injury of the soft parts. The injury of the vessel sheath and its sympathetic plexus likewise explain the tendency to shock. The vessel should never be ligated if suture is possible, but every hematoma should be evacuated at once. He gives an illustrated description of the best mode of access to the trunk vessels of the axilla, base of the neck, and elsewhere. By lifting up the main artery on a stout catgut it is kinked and the blood stream arrested. This has another advantage over a ligature as by lowering the catgut the blood flows again and the lesion in the artery is thus accurately located. He has found this method of hemostasis work well on the common carotid, external iliac and other arteries. Even at the best, diffuse hematomas are dangerous; fully a third of those involving important arteries treated by ligation in the wound developed partial or total necrobiosis below.

44. War Wounds of Vessels Without External Hemorrhage.—Alamartine reports thirty-two operative cases of aneurysm or arteriovenous fistulas, and discusses the various minor symptoms.

47. War Wound in a Hemophiliac.—The young man, his brother, his mother and her brother were all bleeders. He had had three severe experiences with persisting hemorrhage at different times, but the bleeding had always stopped spontaneously about the twelfth day, regardless of the measures applied. Wounded in the hand, sheet hemorrhage kept up for the usual twelve days and then stopped, but the anemia was fulminating and extreme. The blood recuperated, however, as rapidly as the anemia had developed. The whole arsenal of measures to combat hemophilia had been applied but none seemed to do any good, except strong compression with the limb raised. The minute details of analysis of the blood at intervals show that there was no lack of fibrinogen or calcium salts. Neither horse serum nor beef serum accelerated coagulation, which demonstrates that these serums do not supply a lacking thrombozym but act as antigens, inducing an organic reaction. Fresh human serum shortened the interval before coagulation but this effect was still more marked with white corpuscles from normal human blood. When washed white corpuscles were added to the hemophiliac blood, coagulation occurred rapidly. This seemed to show that the white corpuscles supplied the element which was lacking in the hemophiliac blood. It is possible to obtain a leukocyte clot which might aid in arresting a hemophiliac hemorrhage applied directly to the bleeding spot. Draw 5 or 10 c.c. of venous blood into twice its volume of one third alcohol (*alcool au tiers*). Agitate. Centrifuge immediately and decant the hemolyzed fluid. The clot of leukocytes left can then be applied directly to the bleeding surface. This seems to be unquestionably the best local method for promoting local coagulation.

48. Periarterial Sympathectomy.—See abstract 60 below.

Paris Médical

September 15, VII, No. 37, pp. 225-240

49 *Pulmonary Syphilis. Leredde.—p. 225.

50 *Improved Technic for Herniotomy. (Procédé antéfuniculaire.) P. Soubeyran.—p. 234.

51 Gage for Bladder Sphincter Action. Uteau and Rey.—p. 239.

52 Salicylate Ionization in Case of Trigeminal Neuralgia. Olivier.—p. 239.

September 22, No. 38, pp. 241-256

53 *Systematization of Measures to Repress Venereal Disease. Gougerot.—p. 241.

54 *The Psycho-Physiologic and Moral Aspects of Reeducation and Rehabilitation of the Wounded. P. Sollier.—p. 246.

55 Costal Cartilage Graft to Close Skull Defect. Soubeyran.—p. 249.

56 *Stimulation of the Accelerator Nerves Renews Arrested Heart Action. J. P. Morat and M. Petzetakis.—p. 252.

57 Quantitative Determination of Sugar Content of the Blood. L. Banzil and L. Boyer.—p. 254.

58 Attacks of Amoebic Dysentery in Carrier after Antityphoid Vaccination. Bouyer.—p. 255.

49. Overlooked Form of Pulmonary Syphilis.—Leredde reports positive responses to serologic and clinical tests for syphilis in many cases of recurring bronchitis, emphysema and asthma in young men and women. He reports the details of twenty such cases. All had been inclined since childhood to shortness of breath on exertion, and several had emphysema. Some had attacks of asthma, and all had certain or probable inherited syphilis. There seems to be some underlying active process of sclerosis. Tests for syphilis should be made in all cases of asthma, emphysema, dyspnea on effort, and recurring bronchitis at any age.

50. Operative Treatment of Inguinal Hernia.—Soubeyran gives an illustrated description of what he calls the antefunicular procedure for strengthening the wall in correction of inguinal hernia. Its chief advantage over the Bassini is that the cord is not drawn to one side and thus subjected to possible injury, but is pushed down into the plane of the subperitoneal cellular tissue in contact with the peritoneum.

53. Venereal Diseases.—Gougerot reiterates that every means of reducing the spread of venereal disease should be intensified and applied simultaneously. He describes the model, entirely gratuitous, "annex service" to seek out and cure the contagious cases, and thus suppress the source, and he insists that every city, every important garrison and agglomeration of working people, every place large enough to have a prefect or subprefect should have this annex service. Its chief should be in close touch with the prefect, and the service should work along the five main lines: education of the public, and detection and treatment of venereal diseases—the dispensary open to men and women outside of working hours; surveillance and treatment of prostitutes with dispensary and hospital care apart from the quarters for the nonprostitutes; search for and treatment of foci of contagion. He has organized eleven annex services of this kind in his district. The chief of the annex service should be an expert in dermatology, urology and practical gynecology besides venereology. The personnel should include a bacteriologist, a dentist, and one or two men or women nurses trained specially for the service. The annex service should organize substations throughout the district not restricting its action to the towns. For this he suggests flying dispensaries, *consultations ambulantes*. The chief or his assistant takes in an automobile the necessary equipment for examination and treatment, and gets the proprietor of a large factory to lend him the use of a room at a convenient hour, or he gets some room nearby. He may thus be able to attend to several large industrial establishments in a day. Gougerot has found this plan work finely in the district in his charge. Otherwise he has to depend on the factory physician to sift out and send to the central service those needing attention. Free railway return tickets are given out by the mayor for this purpose. Gougerot discusses further the difficulties and obstacles presented by organization of the annex services, and by the objections and inertia of the existing town and hospital authorities, and how to overcome them. It will require legislation for central organization of the service, and placing the surveillance of prostitutes in the hands of the chief of the service. In conclusion Gougerot reviews the vast field of prophylaxis, urging especially financial inducements for earlier marriages, and the conferring of the rights of a legal wife on a girl that has been deflowered. He also urges the need for recreation centers for the young, and canteens, particularly in the railroad stations for soldiers passing through. Intensify, organize and unify, and above all, be quick about it, is his cry.

54. Motor Reeducation.—Sollier declares that mechanical apparatus do actual harm in treatment of functional impotence of nervous origin, actually increasing the trouble in many cases, both physiologically and psychologically. On

the other hand, all the elements are favorable for a cure when the reeducation is along the lines of work to which the patient was formerly accustomed. As movements return, the rehabilitation is both physical and moral. In the "neurologic center" in his charge, thirty months' experience has confirmed the advantages of farm and gardening work and woodworking in rehabilitating the wounded both in body and spirits.

56. Resuscitation of the Heart by Stimulating the Accelerator Nerves.—Morat and Petzetakis give some electrocardiograms showing that after the heart action in animals had been arrested for over twenty minutes, it could be started to working anew by applying a medium electric current to the accelerators or even to one alone. The experiments were made with animals under the influence of chloroform and extreme cold. One tracing shows how the electric stimulus was applied to the right sympathetic just above the first thoracic ganglion. All the cavities of the heart had stopped during diastole. Five seconds after the stimulation of the accelerators, the right auricle and almost at once the left auricle also began to contract while the diastole of the ventricle persisted. The auricular contractions, weak at first, gradually became stronger and then suddenly, at about the seventeenth second, the ventricles started up, the rhythm closely like that of the auricles. Two other electrocardiograms show the similar revival of heart action in dogs after ten minutes of arrested heart action.

Presse Médicale, Paris

September 10, XXV, No. 50, pp. 513-528

- 59 The American Red Cross. P. Desfosses. Title Page.
- 60 *Periarterial Sympathectomy. R. Leriche.—p. 513.
- 61 *Facial Paralysis. V. Pauchet and J. Labouré.—p. 515.
- 62 *Injury of Feet and Hands from Cold. J. Cottet.—p. 517.
- 63 *Mechanical Device for Dilatation with Laryngotracheal Stenosis. A. Jouty.—p. 518.
- 64 The Present Significance of the Amino-Acids. P. Desfosses.—p. 519.

September 13, No. 51, pp. 529-536

- 65 Professional Secrecy from Medicolegal Standpoint. H. Berthélemy.—p. 529.
- 66 *Flexion of Big Toe on Percussion of Achilles Tendon. M. Villaret and M. Faure-Beaulieu.—p. 531.
- 67 *The Limits of Asystoly. M. Perrin.—p. 532.
- 68 Action of the Pituitary Body on Kidney Functioning. M. Romme.—p. 533.
- 69 Treatment of Keratitis with Hypopyon. Teulières.—p. 536.

60. Peripheral Sympathectomy.—Leriche relates that in thirty-seven cases he has treated rebellious contracture or causalgia by denudation and excision of the periarterial network of sympathetic fibers. Others have applied the measure also since his first publication on the subject, summarized in these columns April 21, 1917, p. 1216. In this later series the pain was permanently abolished in some but not in all. In five cases of trophic ulceration a complete cure was realized in all. The outcome was a complete success in sixteen of the total thirty-seven cases, and when the peripheral sympathectomy was associated with massage and training of the muscles, good results were obtained in a number of the others. On the whole, peripheral sympathectomy is an interesting and useful operation in severe forms of what are known as "reflex nervous disturbances," pain, paralysis and contracture. The exact indications for it are not quite decided as yet.

61. Facial Paralysis.—Pauchet and Labouré describe the measures indicated for medical and for traumatic facial paralysis, and give an illustration of the technic for suture of the nerve in case of fracture of adjacent bones. In twelve operations on the nerves the outcome was excellent in seven. Operations on other nerves, they reiterate, seldom give as good results as anastomosis of the nerves responsible for facial paralysis after a war wound.

62. Disturbances from Chilling of Hands and Feet.—Cottet calls attention to the acroparesthesia from the action of cold which is the first symptom of what progresses to frozen feet and hands. He thinks that the importance of chilling as a factor in pathology has been too much overshadowed by the notions of infection. Cold, and especially damp cold, may be an important factor in those states of vague pains ascribed sometimes to rheumatism, sometimes to neurotrophic disturbances. The prompt and remarkable benefit under local

heat confirms this assumption. The segments of hypoaesthesia *a frigore* may be exactly like those of hysteria. They are symmetrical and sharply defined, and are accompanied by zones of hyperesthesia. The circulatory disturbance under the action of the cold interferes with the nourishment of certain nerve fibers in the region as their blood supply is shut off. The resulting diffuse and superficial neuritis classes this acroparesthesia from chilling with the trophoneurotic vasomotor syndromes.

63. Treatment of Laryngotracheal Stenosis.—Jouty gives an illustrated description of his method of dilation through a tracheolaryngostomy. A soft rubber tube in the throat is held in place by a hollow mallet shaped metal tube. A silver plate slipped over the projecting shank holds a small dressing against the opening around the projecting tube, and a nut holds this plate firm. This plate and the projecting nut are all that shows, no other dressings being needed.

66. Flexion of Big Toe on Percussion of Achilles Tendon.—Only the terminal phalanx bends, and this occurs when the sciatic nerve is diseased. The reflex cannot be elicited in normal conditions.

67. Limits of Asystoly.—Perrin warns that we must not wait for the trio, hypotension, tachycardia and oliguria, before diagnosing insufficiency of the contracting power of the heart. There are atypical forms of it, sometimes with abnormally high blood pressure, sometimes with what seems to be polyuria, but is in reality a relative oliguria compared with the amounts of urine previously voided. The pulse likewise may be abnormally slow, although in comparison with the previous pulse rate it is much accelerated. In one such case the pulse never went above 74 although the temperature ran up to 39.2 C. during the pneumonia which had affected the heart. Under digitalis and good nursing the man recovered, his pulse then declining to its habitual rate of 40. Perrin adds that the atypical forms of asystoly call for the same measures as the typical cases.

Correspondenz-Blatt für Schweizer Aerzte, Basel

September 15, XLVII, No. 37, pp. 1185-1216

- 70 Dangers of the Stem Pessary. (Gefahren des Intrauterin pessars.) H. Guggisberg.—p. 1185.
- 71 *Medicinal Silver Poisoning. (Argyria universalis.) O. Steiger.—p. 1192.
- 72 Training Teachers for Lip Reading Courses. (Absehunterricht.) Nager.—p. 1200.

71. Poisoning from Silver Salts.—Besides four cases of universal argyria following medication with silver salts, Steiger mentions some industrial cases in men or women working with silver. He discusses the literature on the subject and the various clinical pictures induced. In three of the four medicinal cases reported, the universal argyria was pronounced, and nothing seemed to modify it. The total dosage had not been as large as in other cases on record, the patients having taken only from 4 to 6.5 gm. silver nitrate in the course of from one to thirteen years. One tabetic man of 56 had taken 400 pills of 0.01 gm. each in the course of five years; the other patients were women in the forties. In the cases previously published, 20 or 30 gm. had been the amount taken before the argyria developed. In Steiger's fourth case the argyria was restricted to the conjunctiva; the silver nitrate had been applied 100 times to the eye in treatment of trachoma. He urges research on silver poisoning as better understanding of this might throw light on numerous questions as to absorption and elimination. In his cases silver was found in the stools and in some cases in the blood, but never in the urine.

Chirurgia degli Organi di Movimento, Bologna

August, I, No. 3, pp. 325-407

- 73 *Treatment at Base Hospital of War Wounds on Limbs. E. Magni.—p. 325.
- 74 *Sodium Salicylate in Prophylactic Treatment of War Wounds of Joints. G. Impallomeni.—p. 367.
- 75 *Remote Results of Treatment of Scoliosis. A. Serra and G. Valtancoli.—p. 380.
- 76 Anatomic Iconology by Orthopedic-Cinematic Surgery. G. Vanghetti.—p. 400.
- 77 *Technic for Exposing the Radial Nerve in the Upper Arm. V. Putti.—p. 403.

73. Treatment of War Wounds.—Magni refers only to cases such as reach him in the base hospital in his charge. Sixteen double-line pages of titles of articles on the traumatology of war are appended to his article. His experience with 3,618 cases of war wounds of limbs during an eighteen months' period has convinced him that it is best to leave a wounded limb unmolested as much as possible and keep it quiet. This was preached by Magati as long ago as 1616, so he calls this system of immobilization with rare change of dressings the Magati method. The wound should be cleared out at first but then the dressing may be left untouched for two weeks or more unless special indications arise. The skin irritated by prolonged contact with pus is soothed by painting with paraffin dissolved at 45 C. He did not drain often, believing that this is necessary only when there is danger that an infectious process may be shut in too soon by the superficial tissues. He never injected any drugs into the wound, never aspirated fluid or rinsed out a joint, and resected only in two cases and extracted the projectile in three cases. All the others recovered under immobilization alone, draining merely when there was a pus pocket and not replacing the drain when this was cleared out. Solid plaster casts answered the purpose better than the fenestrated. Massage in case of stiffness and adhesions is more effectual when done under active hyperemia or, better still, under passive stasis. His experience has shown further that the large vessels can be ligated at any point in their course unless there are acute or chronic inflammatory processes in veins, obstructing the venous collateral circulation. In this case gangrene is inevitable.

74. Sodium Salicylate in Prophylaxis of Sepsis in War Wounds of Joints.—Impallomeni cites authorities to show that sodium salicylate is eliminated by the synovial membranes. This suggested that it might aid in warding off sepsis in case of a war wound of a joint, as this drug is the sovereign remedy for rheumatic arthritis. The trauma from the war wound evidently aids in attracting the drug to the spot, like an infectious process, and his experience during the war, he says, has brilliantly confirmed the correctness of his premises. A number of typical cases are described and illustrated, all corroborating the value of sodium salicylate for warding off septic processes in the joint. A dose of 0.5 gm. is given by the mouth at the first dressing, when a joint has been wounded, and this treatment is continued later or, better yet, a subcutaneous or intramuscular injection or both are given. The synovia responded positively to the ferric chlorid test for salicylic acid in about four hours after ingestion of 1 gm. of sodium salicylate, and with greater intensity by the sixth hour. The interval was half an hour shorter when the drug had been given subcutaneously or intramuscularly. When the response is negative after the infectious process has been installed for some time, this testifies that the endothelium of the synovial membrane has been extensively destroyed, and this alone may call for prompt surgical intervention to arrest the evidently progressive lesion. The formula found best adapted for subcutaneous or intramuscular injection is a mixture of 1 gm. sodium salicylate; 0.01 gm. stovain; 0.04 gm. sodium chlorid and enough 25 per cent. glycerin-water to make 10 c.c. The vial containing this is heated to 100 C. (212 F.) for twenty minutes.

75. Scoliosis.—Serra and Valtancoli write from the Rizzoli Orthopedic Institute at Bologna to analyze the course and outcome of treatment in 483 cases of scoliosis classified according to the clinical and morphologic features of the cases. Over 82 per cent. of the patients were girls, but the severest forms of curvature of the spine were more prevalent in boys. The different varieties of curvature and their proportionate frequency at different ages are shown in various charts.

77. Exposure of the Radial Nerve.—Putti expatiates on the advantages of Gosset's technic for direct access to the radial nerve. The arm is placed on a table—an extension of the plane of the bed—the arm slightly abducted and rotated inward, the elbow bent at a right angle and the forearm close to the chest. The incision, about 15 cm. long, slants from above downward and inward, starting about an inch

from the axilla and ending about an inch from the bend of the elbow. This incision parallels the muscle fibers below, and the two bellies of the triceps are readily worked apart. As they are drawn back, the radial nerve is left exposed the entire length of the upper arm, without altering the anatomic relations of the field of operation.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 2, XXXVIII, No. 70, pp. 953-967

78 *Recurring Tetanus after War Wounds. G. Vernoni.—p. 955.

September 6, No. 71, pp. 969-976

79 *Present Status of Tuberculin Treatment in Prophylaxis of Tuberculosis. E. Bertarelli.—p. 969.

September 13, No. 73, pp. 993-1000

80 Roentgen Localization of Foreign Bodies. E. Pittarelli.—p. 994.

September 16, No. 74, pp. 1001-1016

81 Agglutination of Typhoid Bacilli in Puerperal Fever. A. Sofia.—p. 1001.

78. Recurring Tetanus.—In the four cases reported, the tetanus developed after a secondary operation two months or more after the primary wound and preventive injection of antiserum, or else after a course of exposures to sunlight, or without known inciting cause.

79. Prophylactic Tuberculin Treatment.—Bertarelli relates that he experimented with tuberculin on himself, and found that the deviation of complement test elicited a positive reaction in a few weeks after he had begun to give himself a weekly injection of minute amounts of old tuberculin. By the end of a year he had reached the dose of 1 c.c., and now, three years after the last injection the deviation of complement test is still strongly positive. Theoretically, a prophylactic course of tuberculin would seem justified in families exposed to special danger of infection, and he urges others with more opportunity to try it.

Policlinico, Rome

September 9, XXIV, No. 37, pp. 1121-1148

82 Diagnosis of Factitious Skin Diseases. R. Rivalta.—p. 1121.

83 Diagnosis of Factitious Lesions of the Ear. T. Manciola.—p. 1127.

84 Physical Causes for Exemption from Military Service. G. Breccia.—p. 1130.

Riforma Medica, Naples

September 8, XXXIII, No. 36, pp. 869-892

85 *Rheumatic Purpura with Certain Features Suggesting Scurvy. U. Gabbi.—p. 869.

85. Scorbutiform Purpura in the Troops on Active Service.—Gabbi comments on the remarkable healthiness of the troops exposed to the cold of the firing line among the mountains. Although so many of the men come from the warm south of Italy and the islands, they seem to thrive among the snows of the mountains. But when there is any morbidity it is usually of a hemorrhagic type. He describes here in particular a rheumatic purpura, with features suggesting scurvy, which is either a new morbid entity or an old one with so many new characteristics that it assumes a new clinical physiognomy. The details of nineteen cases are given in full with some illustrations. The men had very rarely eaten canned meat. Mild and severe cases were encountered grouped together, but the whole trouble was benign and comparatively brief, free from complications or sequels, and except in a few cases there was no bowel trouble. There was always more or less fever and enlargement of the spleen, with slight albuminuria and sometimes hemorrhagic nephritis. No benefit followed the change to food which cures scurvy. Another peculiar feature of the cases was that they developed in spring and summer and the winter was practically free from cases. Sometimes a mild case was apparently subsiding when it flared up suddenly into a severe form with symptoms suggesting scurvy. Gum lesions were present even in certain mild cases and were absent in some of the gravest cases. A long question blank was sent to the various hospitals asking for the special features of this disease that had been noted. The data thus collected show that in about 60 per cent. of the cases there was gingivitis; periarticular lesions in 75 per cent., and actual joint lesions in a very few instances, and

epistaxis in 60 per cent. The disease lasted from ten to forty days, sometimes for two or three weeks. In a few cases the disease assumed a typhoidal form, but the disease never seemed to involve the heart. The bacteriologic findings were always negative, and the clinical course suggests an ultra-microscopic virus. The fact that there never were internal hemorrhages (in meninges, pericardium, pleura or lungs) confirms the assumption that exposure to cold is an important factor. The prevalence in the spring or summer suggests some insect host. In conclusion he urges the importance of detecting and isolating the first cases. There is always a prodromal period suggesting malaria, with lassitude and vague pains. There was a chill with the onset of the fever in over 75 per cent. of the cases.

Rivista Critica di Clinica Medica, Florence

September 8, XVIII, No. 36, pp. 349-356

- 86 Unheated Serum with the Wassermann Test. C. Quadroni and F. Demattheis.—p. 349.

September 15, No. 37, pp. 357-364

- 87 *Autogenous Vaccines in Treatment of War Wounds. G. Stradiotti and G. Ollino.—p. 357.
88 Some War Neuroses. G. Barbensi.—p. 360. Continuation.

87. **Autogenous Vaccines in Treatment of War Wounds.**—Stradiotti and Ollino prepared the vaccine with the various germs found in the wound, and made a point of applying it at once or at latest at the second dressing. One or more loops of the pus were transferred to bouillon and the vaccine was sterilized by addition of chloroform to the culture medium, agitating it at intervals for two or three hours. After this it was always found sterile. In their hundreds of applications of these vaccines they never had an abscess or serious general reaction; at most there was a transient redness at the point of injection. They began with 1 c.c. of the bouillon culture, increasing the amount by 1 c.c. at each injection, at intervals of from three to six days; the larger the dose the longer the interval. The maximal dose reached in any case was 7.5 c.c., and this was borne perfectly. It is better to make fresh vaccine from time to time, and not use any one too long. The principle is rational, the procedure harmless, and the general impression of the results most favorable. The outcome was better the earlier the vaccine could be given but a beneficial influence was apparent often in cases of advanced infection if the general symptoms were not the expression of septicemic generalization of the infectious process. Even in such cases the fever frequently declined after the injection and did not go up again until several days later, when it could be again brought down by repeating the injection. The vaccine therapy is not adapted for very grave cases of inveterate suppuration in knee or thigh, such extensive lesions not being easily stimulated to defensive reactions. They have been applying this vaccine therapy for about a year, and usually are able to make the injection within forty-eight hours of the wound, but the technic used makes no provision for anaerobes. They apply the autogenous vaccines also in treatment of furunculosis and other superficial suppurating processes, and report further complete success in a small epidemic of erysipelas which was arrested by prophylactic injection of a vaccine prepared from one of the sick, thus protecting the forty other inmates in the surgical ward. These preventive doses were 1, 2 and 3 c.c., at three or four day intervals.

Brazil Medico, Rio de Janeiro

September 1, XXXI, No. 35, pp. 297-304

- 89 *Hodgkin's Disease. (Adenomycosis.) E. C. Dias.—p. 297. Commenced in No. 34, p. 287.
90 *Acute Pyelitis in Children. C. de Rezende.—p. 298. Commenced in No. 34, p. 289.

September 8, No. 36, pp. 305-312

- 91 The Oxynema Helminths. A. L. de B. Barreto.—p. 305.
92 Flagellated Parasites in Vertebrates. IV, O. da Fonseca.—p. 305.
93 Operative Treatment in Little's Disease. A. F. de Magalhães.—p. 306. To be continued.

89. **Hodgkin's Disease.**—Dias announces that his research has apparently demonstrated that the causal agent of Hodgkin's disease is a remarkably polymorphous fungus. It locates in lymph glands and can be cultivated from them, and

is pathogenic for animals. His communication was presented to the American Society of Tropical Medicine although this disease is by no means confined to the tropics, but it happens to be particularly prevalent in the state of Minas Geraes in Brazil, and special studies were made of it in the local branch there of the Instituto Oswaldo Cruz with which he is connected. This research demonstrated that the disease was the classical Hodgkin's disease which was doubted at first, the possibility of a new morbid entity having been considered and the name "adenomycosis" suggested for it. Cultivation on Sabouraud's saccharosed gelose succeeded in about 50 per cent. of the inoculations, the growth with one type of the germ resembling that of cultures from actinomycosis. The other principal type is more bacilliform in aspect and cultures. These differences are more marked at first than later, in time all the cultures resembling each other. The rat, guinea-pig, rabbit and monkeys are susceptible to the germ, and all die sooner or later when inoculated in the peritoneum, although the experimental disease may last for a month or more. Until it is possible to classify the germ correctly, he has given it the provisional name of the *Adenomyces cruzi*. He thinks that leukemia may yet be proved to be a mycosis.

90. **Acute Pyelitis in Children.**—De Rezende describes a case to illustrate a common mode of onset of acute pyelitis in children in Brazil, recurring abrupt attacks of high fever preceded by a chill and followed by sweating, suggesting acute malaria or the fever of septicemia or suppuration. The urine of the nine months' babe contained extraordinarily large amounts of albumin, clearing up the diagnosis at once. In some cases the fever is continuous or subcontinuous as in typhoid, or it may be frankly remittent, or there may be slight chronic fever. In short, whatever the type of fever, in an infant or child, and whatever its duration, examination of the urine should be a routine measure to exclude pyelitis as almost the first step. He has found the colon bacillus usually responsible, and notes that pyelitis attacks girls more than boys. These facts suggest prophylactic measures. In treatment, the aim should be to render the urine alkaline and keep this up until all symptoms have disappeared. His experience with pyelitis in children has fully confirmed Thompson and Hutchison's assertions in regard to the almost specific action of large doses of potassium citrate. This does not act on the bacilli, however, and after cessation of the alkali treatment de Rezende suggests that it might be well to follow with hexamethylenamin. The two should never be given together. For adults, he gives a solution of acid sodium phosphate, 10 gm. in 300 gm. cinnamon water. The dose is a tablespoonful in half a glass of sweetened water every four hours. The hexamethylenamin is given two hours later.

Revista de Medicina y Cirugia de la Havana

September, XXII, No. 17, pp. 449-476

- 94 Present Status of Treatment of Chronic Urethritis. L. F. Hirzel and V. P. Castello.—p. 449.

Semana Medica, Buenos Aires

July 26, XXIV, No. 30, pp. 85-116

- 95 *Treatment of Rupture of the Uterus during Delivery. E. Mazzini.—p. 85.
96 Arsenic in Treatment of Chorea. P. Aguilar and L. K. Wimmer.—p. 92.
97 *National Prophylaxis of Tuberculosis. E. R. Coni.—p. 94.
98 *Treatment of Anthrax with Normal Beef Serum. E. F. Solari.—p. 98.
99 Bill before Congress for a National Asistencia Publica. B. T. Solari.—p. 101.
100 The Psychology of Scientific Education. J. Santos Fernandez.—p. 111.

95. **Treatment of Rupture of the Uterus During Delivery.**—Mazzini reports five cases of rupture during delivery which he treated by drawing down with his hand the upper lip of the rupture inside and well past the lower lip, then keeping up the traction on the upper lip by substituting long forceps for the hand with which he was holding it. The lower portion of the uterus was then packed with gauze around the forceps, distending it well, and then the vagina. He uses two forceps or more if needed to draw the upper lip of the rupture well down all around, and leaves a drain tube.

The tamponing all around them prevents any injury of the walls. A retention catheter is then introduced into the bladder, and the projecting handles of the forceps are wrapped in gauze. He removes the tampon after seventy-two hours and also the drain tube and forceps, but avoids any exploratory measures; merely giving an antiseptic vaginal douche under weak pressure. The treatment after this is as for any parturient. This technic when introduced by Boero was supposed to be applicable only to spontaneous rupture, but Mazzini's five cases testify to its suitability for traumatic rupture whenever the cervix is open enough for the hand to be introduced to grasp the upper lip of the tear. In his experience the promptly and permanently favorable results in 80 per cent. of the cases surpass even Boero's 75 per cent. of cures in his twenty cases since he published this technic in 1910. In Mazzini's first case the uterus had ruptured at two points, and he sutured the longitudinal tear and treated the transverse tear as described above. The woman recovered without sequels, and all seemed to be normal a year later. In the one case in which fatal peritonitis developed, this was the ninth pregnancy. Six had terminated normally and this one seemed to be proceeding regularly at first and until the rupture. The placenta had to be removed by hand, as it had caught in the rupture opening. The front of the entire segment had been torn off and, notwithstanding the Boero procedure, peritonitis developed and proved fatal the sixth day. The fetus died about the time of the rupture in each case. The rupture occurred in the maternity in all but the first case.

97. Tuberculosis in Argentina.—Coni mentions that Argentina was the first country in Latin-America to include pulmonary tuberculosis among the diseases requiring compulsory notification. He reviews the history of tuberculosis in Argentina and of what has been done to arrest its spread. Fully 85.6 per cent. of the general mortality in 1913 throughout Argentina was due to tuberculosis. He sustains those who plead for preventoriums, farm colonies and similar inexpensive and accessible institutions for caring for the tuberculous instead of, at first, expending much money on mountain and seashore sanatoriums. The Buenos Aires hospitals turn away every day, it is said, up to twenty or thirty applicants with pulmonary tuberculosis for whom no beds can be found.

98. Normal Beef Serum in Treatment of Anthrax.—Solari reports that his trials of normal beef serum in treatment of anthrax have confirmed in every respect the statements of Kraus and Penna as to its efficacy. The results, he says, could not have been more satisfactory. It is evident that normal beef serum, heated twice for half an hour to 56 C., does not induce any injurious reaction when injected into man. He gave it subcutaneously in doses of from 10 to 30 c.c. in the twenty-four hours as a rule, sometimes giving more, up to a maximum of 60 c.c. The benefit was as prompt and as marked as with the prepared immune serum he had been previously using. The case history and chart from each of his six cases are reproduced.

Siglo Medico, Madrid

September 1, LXIV, No. 3325, pp. 645-664

101 Operative Treatment of Retroversion of the Uterus. V. Aza.—p. 646.

102 An Early and Rare Superficial Syphilitic Ulcerative Lesion on the Genital Organs. Sicilia.—p. 655.

September 8, No. 3326, pp. 665-684

103 Bilateral Genu Valgum. A. Morales.—p. 666.

104 Hydrochloric Acid during Courses of Alkaline Waters. M. Fernandez.—p. 667.

105 *Reeducation of the Hearing. C. Compaired.—p. 668.

106 Localization of Leishman Bodies in Liver. N. G. Barrio.—p. 670.

107 *Acute Nephritis and Renal Organotherapy. B. Gil y Ortega.—p. 671. Commenced in No. 3325, p. 650.

105. Reeducation of the Hearing.—Compaired expatiates on the advantages of the Zund-Burguet or similar apparatus for aiding in saving the hearing and improving it. He asserts that the improvement realized with this apparatus, which he has been using for six years, surpasses all that can be attained by other means, especially in the cases of deafness from otosclerosis and adhesive otitis. He seeks out the

tones, etc., for which the hearing is most defective, and practices these predominantly. The sittings are for ten to twenty minutes, twice a day, treating each ear separately. Local lesions and constitutional causes must be sought and corrected so far as possible, and it is useless to apply this treatment to the very old or the very young, the congenitally deaf, the stupid and those unwilling or incapable of concentrating their attention on the course of treatment. He insists also on the patient's living a sociable life, listening and talking, not spending his time reading or in solitude but keeping up exercises of the hearing, listening to music and to reading aloud. If no benefit has been realized in the first thirty sittings, given twice daily, for five or ten minutes, there is no use in keeping them up longer. With very sensitive persons it may be better to have only one sitting a day or at longer intervals. The treatment has never done harm in any instance; if it does not improve, at least it never aggravates the condition.

107. Acute Nephritis and Renal Organotherapy.—A robust young man in the second or third week of an attack of influenza suddenly developed pulmonary edema, and palpation revealed that the right kidney and ureter were extremely tender and the left slightly so. The symptoms of acute nephritis became more and more threatening, with a tendency to coma by the end of the week. He was then given a subcutaneous injection of 10 c.c. of serum from the renal vein of the goat, and when hope had almost been lost, seventeen hours after the injection, copious diuresis set in and the alarming symptoms subsided. The injection was repeated the next day at the same hour and the organotherapy continued after this with kidney extract. This was suspended after three days on account of the expense, and the next day there was another attack of pulmonary edema but not so severe as the first. As recovery progressed there were occasional attacks of dyspnea even after the kidney functioning seemed to have been restored to normal. Gil ascribed the dyspnea to toxic weakness of the heart, and this assumption was confirmed by the prompt efficacy of caffein citrate, each time, given by the mouth or subcutaneously.

Grèce Médicale, Athens

XIX, No. 7-8, pp. 13-16. French supplement of *Iatriki Proodos*

108 *Masked Dysentery. J. Cecikas.—p. 13. In English.

Nos. 9-14, pp. 17-28

109 Primary Malaria in Macedonia. P. Abrami.—p. 17.

110 *Serotherapy of Malaria. Sotiriades.—p. 27.

108. Masked Dysentery.—Cecikas' experience has been that agglutination is not distinct enough as a rule to distinguish between the different species of bacilli responsible for bacillary dysentery. Biologic diagnosis, however, permits correct serotherapy, and in two cases reported in detail this proved successful after years of futile other treatments. One man of 30 had a history of tropical enteritis seven years before, treated with emetin later and various courses at spas, but the enteritis was liable to return every summer. There were also attacks of tachycardia and joint trouble, and the lower part of the left abdomen was tender. No amebas and no colonies of colon bacilli developed on the Drigalski medium but nonmotile bacilli proliferated that agglutinated the Kruse bacillus, and under Kruse-Shiga serum the chronic tendency to enteritis was permanently cured. By the eighteenth day no suspicious colonies developed while the colon bacillus flourished abundantly. This primary absence of the colon bacillus he regards as significant as also its reappearance as the man regained complete health. Cecikas remarks that with all the varying diagnoses and treatment during the seven years in this case, "the patient had stuck to enteritic diet, used aperient salts and took castor oil nearly every week, this regular life and diet explaining the complete *restitutio ad integrum* which undoubtedly followed the weakening of the dysenteric bacilli by the serotherapy and their final disappearance." This assumption of the superficial nature of the alterations caused in the bowel mucosa by the prolonged presence of the germs is sustained by another case of undiagnosed bacillary dysentery with dyspnea, palpitations, and polyuria, especially at night. The primary enteritis

dated from twenty-nine years before. Under the serotherapy complete health was speedily regained. In another case the chronic dysentery was regarded as enteritis mucosa and treated without benefit, but prompt recovery followed the serum treatment. The fourth patient was a woman of 28; the dysentery had commenced insidiously three years before and the symptoms had been ascribed at one time to metritis and a gynecologic operation had been done without relief. The rectal mucosa had ulcerated.

In young children and babies the bacillary dysentery may develop in an acute form. In one out of several such cases in his practice, the infant developed menacing "enteritis" two weeks after the father had been under treatment for frank bacillary dysentery. Without waiting for bacteriologic confirmation, Cecikas gave the collapsed infant the same serotherapy, and the child soon recovered. Cultivation of the stool taken at the first visit showed the Kruse Shiga bacillus agglutinating at 1:500. There are no distinguishing features in the early stage of acute bacillary dysentery in children, but the case as a whole may suggest by the second or third day to use the serum "which finally can do no harm. It is a golden rule to proceed in intestinal troubles at the first visit to bacteriologic examination of vomit and feces."

110. Serotherapy of Malaria.—Sotiriades reports that he injected serum from one patient with malaria into a second patient who had just contracted malaria. There was no further fever for four days then came a much milder attack and the plasmodium was found in the blood as at the first attack. A second subcutaneous injection of 10 c.c. of the serum from the first patient was made and the next day, during the interval a third injection was made. The second patient had no further fever during the twelve days he was under observation. The donor had the parasites still in the blood at the time but the spleen was not enlarged and he had had no attacks of chill or fever for some months.

Russkiy Vrach, Petrograd

XVI, No. 16-17, pp. 361-384

- 111 *Palliative Operation for Rectal Cancer. S. P. Fedoroff.—p. 361.
- 112 *Differential Diagnosis of Heart Disease. S. G. Mintz.—p. 361.
- 113 The Civilization and Medicine of Ancient Assyria and Babylonia. P. V. Modestoff.—p. 367. Continuation.
- 114 The Ferments in Typhoid. A. S. Solovtsoff.—p. 371. Continuation.
- 115 Vaccination against Typhoid. P. N. Triudin.—p. 373. Conclusion. A. O. Fraifeld.—p. 377.

111. Palliative Treatment of Inoperable Rectal Cancer.—Fedoroff comments on the difficulty of keeping fecal matters and fluids out of the lower segment of the rectum when an artificial anus has been made above. With the technic he describes, however, this can surely be accomplished, and the lower segment left in peace as completely as if it had been cut across, while the procedure is simple and harmless. He makes a slanting incision in the abdominal wall, about 10 or 12 cm. long, in the left iliac region, from 1½ to 2 finger-breadths from the outer edge of the rectus muscle, and draws out through it the adjacent portion of the sigmoid flexure. Then he loosens up and cuts a strip from the aponeurosis of the external oblique muscle the whole length of the inner margin of the incision. This strip of aponeurosis is left connected with its aponeurosis bed only at the lower angle of the incision. Then this strip is passed through a button hole in the mesentery of the bowel, close to the latter. The strip is then passed around the bowel two or three times and drawn tight. The free end of the strip of aponeurosis is then sutured firmly to the opposite edge of the incision, and the bowel above is sutured to the lips of the incision. Then, according to circumstances, from two to five days later, an opening is made into the bowel above the ligature. By this means the lower portion of the rectum is shut off so that neither fluid nor solid matters can work their way into it, and the patient is spared all irritation and pain from this source.

112. Differential Diagnosis of Heart Disease.—Mintz' conclusions are based on examination of hundreds of men suspected of heart disease. He remarks in the first place that men with stomach trouble are liable to ascribe their distur-

bances to the chest or heart rather than to the stomach. In only 20 per cent. of 135 with these complaints were the stomach findings normal; in 33 per cent. there was hyperacidity, in 14 per cent. anacidity, and motor insufficiency in 18 per cent. In the majority of the men free from organic heart disease, the nervous excitement from the examination increased the pulse rate and also the blood pressure, while in those with fully compensated heart defects and in many with acute infectious disease of the heart, the pulse did not grow faster, and the blood pressure persisted normal or dropped below normal. The heart seems to have to work harder when the person reclines than when he stands. This is evidenced by the louder systolic murmur, the passage of the prediastolic murmur into the systolic, and the accentuation of the second sound of the pulmonary artery when a patient with mitral defect reclines. The accentuation of the second sound manifest in the reclining position may be one of the very earliest signs of true heart trouble. The percussion findings as to the proportions of the heart are often normal even with a valvular defect.

In consequence of the variability of the left nipple line, we must be extremely cautious in affirming an increase in the size of the heart. The distance between the left nipple and the median line ranged from 8 to 12 cm. in his cases. The distance from the left nipple to the tip of the apex may reach 3.5 cm. No parallelism between the size of the heart and these differences in the location of the left nipple could be detected as a rule. In the mild and beginning cases of mitral defect, the systolic murmur is heard exclusively over the pulmonary artery. A loud systolic murmur keeping strictly to the pulmonary artery is of accidental origin, and may be encountered with tachycardia. With tachycardia, the first sound a sharp clapping, the blood pressure is abnormally high. When the first sound is the normal tone, the blood pressure is normal in the majority of cases; with embryocardia, it is below normal. A brief systolic murmur is often noted with tachycardia. The systolic murmur of organic origin keeps much fainter, and it may disappear altogether in the reclining position. With palpitation of the heart, a murmur is sometimes heard at the apex for which a reflux jet of blood from the ventricle into the auricle may be responsible. The question as to the reserve energy of the well hypertrophied heart and the power of adaptation to increased demands, is still open to discussion. According to his personal observation, the heart even with a well compensated defect responds differently to excitation (pulse rate, blood pressure), from the sound heart. If we consider the accentuation of the second pulmonary sound with overburdening of the heart (the *Belastungsprobe* of the Germans), an index of its functional capacity, then we must arrive at the conclusion that the reserve force of the heart, even with perfect compensation, is limited and small. Accepting the above, it follows as a matter of course that men with even slight heart defects cannot be utilized for military service.

Hospitalstidende, Copenhagen

August 29, LX, No. 35, pp. 837-860

- 116 *Joint Lesions with Syringomyelia. V. Askgaard.—p. 837.
- 117 Synovial Cyst—Arthroma—in a Muscle. A. Sennels.—p. 846.

116. Joint Lesions with Syringomyelia.—Askgaard remarks that joint lesions are the rule in about 25 per cent. of all cases of syringomyelia, and describes with illustrations an exceptionally severe case in a man of 39. The wrists and hands were the seat of the destructive and deforming process but, as usual, there was little tendency to ankylosis. As spontaneous remissions sometimes occur, treatment should be conservative unless the disturbances demand resection. When this is the case, as recurrence is liable, amputation is better than resection. Ample facilities for drainage should be provided, but even large accumulations are sometimes spontaneously absorbed. This occurred in one hand in the case reported, and the other is being treated conservatively. The wrist is worn in a sling. The fingers can still be used actively but those on the other hand were left contracted. Amputation has been considered, but the fear of recurrence in the stump weighs down the scale against it.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 20

CHICAGO, ILLINOIS

NOVEMBER 17, 1917

PNEUMONIA IN EARLY INFANCY AND IN CHILDHOOD

ITS MORTALITY AND TREATMENT, WITH SPECIAL
REFERENCE TO THE USE OF ALCOHOL *

HENRY KOPLIK, M.D.

NEW YORK

Innumerable papers and discussions on pneumonia in infancy and childhood have been published within recent years. Most of these are based on insufficient data, as the number of cases subjected to a critical analysis are not many, and the recorded observations as to management and diagnosis do not emanate from one source. Hospital statistics, as a rule, are collated from the services of a number of attending physicians. The histories and diagnoses must, in such cases, vary widely as to points of view, and thus will militate against the reliability of the ultimate conclusions.

Many authors err primarily by assuming that the anatomic nature of pneumonia, whether bronchopneumonia or lobar pneumonia, can be determined definitely at the bedside. This is at times almost impossible, and though the age limitations of bronchopneumonia as compared with lobar pneumonia are well recognized, this is not so important to the practitioner as are other considerations that will be emphasized in this paper.

I have suggested that the study of a large series of cases of pneumonia occurring in infants and children, and extending over a considerable number of years, will give more accurate information as to frequency and mortality than the study of a limited number of cases over a period of one, two or even five years. The severity of the disease, the morbidity and the mortality, varies from year to year. In some years, the disease will be comparatively mild; in others, it will be severe. An average taken over a number of years will give more extensive and exact information as to changing modes of practice and the various forms of the disease one is likely to encounter. The fallacy of attaching undue importance to brilliant outcomes, in cases in which methods long obsolete are employed, as compared to the results in cases in which modern treatment is used, will also be shown by such a study. I need refer only to the fresh air treatment of today and to the digitalis and alcohol treatment of yesterday in order to emphasize what Niemeyer said of pneumonia years ago, namely, that the true course of pneumonia could be learned only from the cases of practitioners who, owing to their ineffective dosages of drugs, follow what practically amounts to *laissez-faire* treatment. Under normal

conditions, pneumonia at any age is a self-limited disease of definite duration, and, barring complications, it has a definite tendency to recovery. If patients lose in their fight against the disease, it is because of constitutional limitations of the organism attacked and the utter inability of some patients to protect themselves against complications that exhaust their vitality and lead to fatal consequences.

The age of incidence is of the greatest importance. I have divided the first year of life into three periods, from birth to 3 months, from 3 to 6 months, and from 6 to 12 months. The age consideration is certainly more practical from a clinical standpoint than the anatomic nature of the pneumonia. A mere statistical summary of cases of bronchopneumonia throws very little light on a given case, as it does not take into sufficient account the elements of constitutional weakness in a patient and the difficulties the practitioner encounters while endeavoring by his treatment to build up a successful resistance to the disease. In some infants the pneumonia or bronchopneumonia seems to spread over the whole of both lungs. In others, the disease is sufficiently limited to justify the assumption that the inherent resistance of the organism will suffice not only to combat the disease, but also to protect itself against a spread of the lesion in the lung. This is an exceedingly important aspect of the disease, and it explains why in certain cases of young infants, no matter what is done, the disease gains headway, and the patient succumbs because of this and not through inappropriate treatment. In older children, on the other hand, the structure of the lung, as Delafield has explained, tends, in a measure, to protect the patient against a spread of the lesion. As a rule, a lobar process is limited in its attack to a definite portion of the lung, in which case patients show greater constitutional resistance to the progress of the lesion, and there is a tendency to recovery no matter what treatment is employed. If the foregoing underlying principles in regard to pneumonia in infancy and childhood are understood, all cases can be more justly analyzed and the patient may be approached with the conviction that the ultimate outcome of all pneumonia depends mainly on the vitality of the patient and his powers of resistance.

CLASSIFICATION OF CASES

It is often said that the results are far better in private than in hospital practice. If this is true, then it is an indictment against our hospital system, and is a good weapon to use against it. But it is not true; indeed, it is far from the truth. I prefer the well conducted hospital ward, free from hospitalism—its light, air, sunshine, modern methods of nursing—to the dirty, dingy, stuffy tenement, or to the harassing and annoying conditions of better private practice. The

* From the pediatric service of the Mount Sinai Hospital.

results in hospitals certainly should be as good as if not better than in private practice. I think statistics will bear me out in the statement that the clinical course of pneumonia is better in hospitals than elsewhere. The careful nursing and the freedom from noise and worry certainly tend to better results. Even the public recognizes this fact.

The hospital physician says that if he could get the patient earlier he could do better. Most patients come to the hospital either in the beginning of the period of onset or when this period is well advanced. Some patients come in only a day before the crisis occurs, and a very few patients are brought in moribund. The argument of the hospital that the patients should be brought in earlier does not apply, therefore, to other than the moribund patients, and even as regards them, I am not convinced that bringing them to the hospital earlier would have saved them. With pneumonia it is not as with diphtheria, for in the latter early treatment saves. In pneumonia we have no specific, the early application of which would save. Therefore, our inadequate methods and not the place of treatment are to blame for our failures. Of course, some exceptions may be urged; but on analysis they will be found to be only exceptions. Very few children with pneumonia are exposed to the same dangers as some adults who walk around for days with the disease in progress, and then come to the hospital moribund. Most children are treated in their homes from the start. Their transfer to the hospital is only a change of place and cannot be used as a weapon for or against hospitals. The hospital statistics which I will present depict in a true and faithful manner the course of pneumonia in infancy and childhood. Though they are all hospital statistics, they are drawn from one service (my own), and the patients were all treated under a uniform system of therapy and nursing in a hospital of the modern type. They depict results that should obtain in private practice, and from my experience I am inclined to believe that they depict the true course of the disease under modern conditions.

I have divided my cases into two groups, Series A, comprising 1,351 cases occurring from 1906 to 1914, and Series B, in which are included all cases occurring during 1914 to 1915 and 1915 to 1916, namely, 391. The reason for this division will be given later.

I have first considered the mortality from the standpoint of age, and, in the case of infants, the incidence of fatality among the breast fed and the bottle fed, irrespective of the mode of treatment. Secondly, I have considered the influence of treatment, including nursing, and the conservation of the strength of the patient. In Series A there were 248 deaths, a mortality of 18.3 per cent. The mortality varied in different epidemics or years from 14.6 per cent. to 25.7 per cent. The percentage of mortality was increased according as the number of infants or children of younger age predominated. Comparing the mortality of the different ages in the total number of cases as shown in Table 1, it will be seen that the greatest mortality occurred below the age of 1 year and that the mortality decreased steadily after the fourth year. Thus, below 1 year of age, 334 cases showed a mortality of 35 per cent.; after the fourth year, the mortality ranged from 3.8 per cent. to 10.7 per cent., and between the seventh and eighth years, it was 3.8 per cent. These were the favorable years, when most cases were of the frank lobar type. Quite favorable was a group of cases after the tenth year, forty-six cases showing a mortal-

ity of 4.3 per cent. Omitting the first year, the record from the second to the tenth year and over was 1,017 cases, with a mortality of 131, or 12.8 per cent., certainly a very favorable showing.

All of the cases in infants below the age of 1 year, or at least a large majority of them, are of the bronchopneumonic type. I have made an analysis of these cases to show that at this age the mortality depends on factors against which our present modes of treatment are powerless. Among these factors are the

TABLE 1.—NUMBER OF CASES AND DEATHS ACCORDING TO AGE (SERIES A)

| Age of Patient | No. of Cases | No. of Deaths | Percentage of Mortality |
|------------------|--------------|---------------|-------------------------|
| 1 year | 334 | 117 | 35 |
| 1-2 years | 441 | 80 | 18.1 |
| 2-3 years | 204 | 28 | 13.2 |
| 3-4 years | 93 | 7 | 7.5 |
| 4-5 years | 56 | 6 | 10.7 |
| 5-6 years | 53 | 3 | 5.6 |
| 6-7 years | 59 | 4 | 6.7 |
| 7-8 years | 31 | 1 | 3.8 |
| 8-9 years | 15 | 0 | 0 |
| 9-10 years | 19 | 0 | 0 |
| 10 + years ... | 46 | 2 | 4.3 |

constitutional resistance of the individual and the occurrence of complications. Pneumonia finds the organism unprepared to resist either the spread of the disease or the onset of complications, which carry away the patient in spite of all we can do. Of the 117 deaths occurring below the age of 1 year, 63.5 per cent. occurred in the first three months of life, 47.8 per cent. between the ages of 3 and 6 months, and 25.3 per cent. from the sixth to the twelfth month of life. The greatest mortality occurred at a time (from birth to the third month) not only when the body is in a formative period, but also when the powers of resistance to disease are at a minimum, and when complications easily set in and overwhelm the patient. In considering the mortality in pneumonia, clinicians, as a rule, shun these cases, if they wish to show favorable results from the treatment of a number of cases of pneumonia, swamping, as it were, this high mortality rate below 1 year of age by bringing forward large numbers of cases of pneumonia at the more advanced ages of childhood, up to the second year. Or they group all the cases below 1 year of age, thus avoiding the disconcerting showing of a high mortality among infants below 3 or even 6 months of age. No one who studies the statistics here pre-

TABLE 2.—NUMBER OF CASES AND DEATHS UNDER 1 YEAR (SERIES A)

| 1906-1914 | | | Percentage of Mortality |
|--------------------------|--------------|---------------|-------------------------|
| Age of Patient | No. of Cases | No. of Deaths | |
| 0-3 mos. | 44 | 28 | 63.5 |
| 3-6 mos. | 69 | 33 | 47.8 |
| 6 mos.-1 yr. | 221 | 56 | 25.3 |
| Total under 1 year | 334 | | |

sented can find fault with the mortality of the pneumonia cases from the fourth to the tenth year; 279 cases show a mortality of only sixteen, or 5.7 per cent. This, of course, presupposes deaths in all cases not due to empyema or operation for empyema.

COMPLICATIONS

In speaking of complications, I shall consider those affecting infants and children below 2 years of age. I shall treat of their seriousness, and shall deal especially with those which in the end militate against the recovery of the patient.

Of 248 deaths below the age of 10 years, 192 patients died of or with complications. Most of the

cases in patients above 2 years of age show few complications, and this incidence diminishes markedly above the third year of age. Thus, there were 117 deaths below 1 year of age, among which were ninety-three fatal cases with complications. Between the ages of 1 and 2 years the complications occurred less often, fifty-eight in eighty cases, and in the second to third year, of twenty-eight fatal cases, there were twenty-two with complications. At this later period it may safely be said that the severity of the complication as regards its hastening a fatal issue is much less than during the first year. Of 117 deaths below the age of 12 months, fully ninety-three patients had complications that favored a fatal issue. At this period of infancy a complication that in later childhood might be overcome by the patient will not yield to treatment, but steadily exhausts the strength of the patient.

Of the infants below the age of 12 months affected with pneumonia, and dying with complications, we find the incidence given in Table 5.

Of the 117 cases of death occurring below 1 year of age, only nine patients came to the hospital in a moribund condition. The principal complications seemed to involve the gastro-intestinal tract. These infants were brought into the hospital in a state of

TABLE 3.—NUMBER OF DEATHS FROM PNEUMONIA WITH COMPLICATIONS ACCORDING TO AGE (SERIES A)

| Age of Patient | Total No. of Deaths According to Age | Total No. of Deaths with Complications According to Age |
|---------------------------------|--------------------------------------|---|
| 1 year | 117 | 93 |
| 1-2 years | 80 | 58 |
| 2-3 years | 28 | 22 |
| 3-4 years | 7 | 6 |
| 4-5 years | 6 | 5 |
| 5-6 years | 3 | 2 |
| 6-7 years | 4 | 3 |
| 7-8 years | 1 | 1 |
| 8-9 years | 0 | 0 |
| 9-10 years | 0 | 0 |
| 10+ years | 2 | 2 |
| Total deaths | 248 | |
| Total deaths with complications | 192 | |

marasmus, or suffering with ileocolitis. Therefore, fully half of the deaths were due to complications which lessened the chances of recovery when admitted to the hospital, and this in spite of the special nursing and care that were given them. Among the cardiac conditions were those of congenital heart lesions. In scattering cases, measles developed in the hospital, or the patients came in with measles, diphtheria, pertussis, nephritis, sepsis, abscesses of the joints and of the skin, erysipelas and tuberculosis of the abdomen. It is apparent that in the first year of life a patient with pneumonia, in order to recover, must remain free from complications, and especially must not suffer from conditions which sap the strength of the patient, and nullify all efforts of therapy. It may be said without reservation that the complications occurring in our cases were not the result of hospital conditions; that the patients were admitted to the hospital with these complications.

Meningitis.—To me the most serious complication, after that of the gastro-enteric tract, is meningitis. When accompanying a pneumonia occurring during the first year, meningitis is invariably fatal. It occurred more frequently in our statistics at this age than later in childhood. In the course of eight years, there were ten cases of meningitis at all ages verified by lumbar puncture. Five of these occurred in infants below 1 year of age. Only two cases

occurred between the ages of 2 and 10 years. The frequency of this complication is thus much diminished after infancy and early childhood. The symptoms are not masked. The diagnosis of the condition is easily made. Lumbar puncture was made in all cases. Pneumococci, streptococci, meningococci and influenza bacilli were found in the puncture fluid. In the newborn the streptococci are to be sought.

Meningism.—The most misleading complication is meningism. This complication is much more frequent and misleading in older children than one would at

TABLE 4.—TOTAL NUMBER OF CASES AND DEATHS FOR EACH YEAR, ALL AGES (SERIES A)

| | No. of Cases | No. of Deaths | Percentage of Mortality |
|-----------|--------------|---------------|-------------------------|
| 1906-1907 | 116 | 27 | 23.2 |
| 1907-1908 | 157 | 31 | 19.7 |
| 1908-1909 | 156 | 23 | 14.6 |
| 1909-1910 | 177 | 40 | 22.7 |
| 1910-1911 | 182 | 33 | 18.1 |
| 1911-1912 | 210 | 32 | 15.2 |
| 1912-1913 | 221 | 28 | 12.6 |
| 1913-1914 | 132 | 34 | 25.7 |

first thought suppose. Meningism is a condition characterized by symptoms that at times closely simulate meningitis, and, as a rule, these symptoms are present from the onset of the disease. They are unconsciousness, delirium or stupor, rigidity, Kernig's sign, Brudzinski's sign, and Macewen's sign. In young infants the condition of the fontanel, whether it is bulging or not, will guide us, but in older children it is at times impossible, without lumbar puncture, to say whether or not meningitis is present. This is especially true in the onset of an apical lobar pneumonia. I have in these cases found a sterile cerebrospinal fluid, and waited patiently for three or four days before definite lung signs developed.

In older children, as a rule, the outlook is good, though the condition of the patient may be disquieting. When these cerebral symptoms appear in younger children and infants below 2 years of age, the prognosis is grave. Thus, of sixteen patients below 2 years of age showing these symptoms, nine died, and of eight below 1 year of age, six died. Of the whole series of thirty-one cases of meningism, fifteen patients were above 2 years of age, and only three died. Above 5 years of age, none died. I would conclude, therefore, that above 5 years meningism is of no moment as clouding the eventual prognosis, but below the age of 2 years

TABLE 5.—NATURE OF COMPLICATION

| | |
|----------------------------------|----|
| Cerebral | 10 |
| Pleural (empyema) | 5 |
| Cardiac (congenital) | 3 |
| Abdominal (intestinal infection) | 31 |
| Moribund in hospital | 9 |

it is practically a fatal sign. In children above 5 years of age, if, after passing through pneumonia, cerebral symptoms appear just about the time one would expect improvement, the outlook is grave, especially if the local symptoms indicate no tendency to resolution.

THE BREAST FED AND THE ARTIFICIALLY FED INFANT

I have made feeding statistics of all infants below 1 year of age discharged from the hospital, and also of fatal cases for eight years, 399 cases in all. The discrepancy in figures between this and other tables is probably accounted for by the inclusion of a few cases from other services under my care. Of the 399 patients, 212 were either wholly or partly breast fed, or 53+ per cent., which is certainly an excellent showing for the mother effort. All of the infants below

6 months of age were nursed on the breast, during the illness, by the mother. In the hospital it is customary to have the mother come and nurse the baby as often as practicable. Of the 132 fatal cases below and at 1 year of age, sixty-seven patients were breast fed and sixty-five bottle fed. From this we are forced to conclude that for this class of infant the nature of the feeding was not of value as to the ultimate outcome of the case. It must not be assumed that, because an infant is breast fed, its chances of recovery are better than those of the artificially fed infant, except as shown in these statistics.

There are many so-called breast fed infants who are not robust, and to whom the breast being inadequate has not given the resistance that a successfully bottle fed infant has. I therefore would not say that, *a priori*, the nature of the feeding had any effect on the outcome, but that it was rather a question of the success of the feeding. Thus, a breast or bottle fed infant with good digestion, weight and absence of complications was better off as to prognosis than a bottle fed infant with bowel disturbance, or a breast fed infant to whom the breast has not been adequate, and in whom there were complications. Today a well fed bottle infant has as good a prognosis as the successfully fed breast infant, however heretical this statement may appear to some who believe that a breast will cover all sins of omission, as to the nutrition of the patient.

In the course of pneumonia an infant below 1 year of age, whose artificial feeding is skilfully handled and who, before the onset of the illness, has had no intestinal disturbance of moment, will combat the pneumonic process as well as the well nourished breast fed infant. In fact, the breast fed infant during pneumonia has much to contend with in the ministrations of an exceedingly nervous mother, whose breast milk seems to cause disturbance in the patient; whereas an adequately fed bottle infant has always a ration of uniform constitution, which disturbs the well-being less than the apparently more fortunate breast fed infant. Modern methods of artificial feeding of infants have not in any way compromised their resisting powers to the inroads of disease, nor can we say, as far as the prognosis is concerned, that the breast milk will succeed in cases in which the bottle fed infant may not hope to weather the storm. It is not the nature of the feeding, but rather its success in bringing a flawless constitution to the attack of pneumonia that determines the recovery or the fatal issue.

There is, of course, the reservation that among the poor and ignorant, the artificial feeding, especially in summer, is apt to cause serious and fatal gastro-enteric disturbance. At the same time, a study of the fatal cases shows that the breast alone cannot ward off a fatal issue. This is especially true in infants below 6 months, and more so below 3 months of age.

TREATMENT

The treatment of pneumonia in infants and in children may be divided into that of nursing, which includes the feeding, and the medicinal management of the case. The nursing reaches its primary importance in the period of infancy. I have pointed out how essential it is at this time to avoid mixed infections, if possible. In no field is this so evident as in the treatment of infants to the end of the eighteenth month. The care of the skin, eyes and mouth is of

great and far reaching importance. Careless handling of the skin by nurses is productive of skin infections, furuncles and abscesses, which are apt to get beyond medical control and cause serious consequences. The same thing is true of other parts of the body. A nurse must, therefore, appreciate fully the necessity of cleanliness and attention to detail in order to be of the greatest aid to the physician.

This is what is meant when writers speak of hospitalism and infection. There is today no real excuse for hospitalism, and its presence should be a just cause for criticism of the efficiency of nursing and of hospitals. Very often infants who have had pneumonia are discharged from institutions in the most miserable condition. There are two sides to this picture, as far as the hospital is concerned. The patient may have come to the hospital in a worse condition than when discharged, and the attending physician may have sent the patient out believing that the convalescence would be more favored by such action, or the patient may have developed an infection in the hospital. The latter condition is inexcusable, and shows clearly that an institution which, in treating a simple condition, adds thereto that of marasmus, or vaginitis, or both, is unfit to cope in a modern way with the proper means of effecting a successful convalescence.

The feeding is a nursing as well as a medical problem in the management of pneumonia. A physician may prescribe a proper feeding, but if this feeding is not prepared and given to the patient in a proper manner, or the state of the nutritional conditions properly noted, then the physician is deprived of a powerful means to favor recovery. Not only is the nursing of these little patients important, but the nurse should be surrounded by safeguards that will aid her in her work, and she must not be hampered.

The ward should be bright and airy, with plenty of working space. The dark, damp, crowded baby ward should be a thing of the past. I have dwelt on the nursing because it is rarely spoken of in treatises or articles of the character of this one, and physicians are apt to concentrate their attention on a discussion of medical procedure, omitting what should be considered the first essential in the management of these cases.

Medical Treatment.—Any one who has seen several decades of the management of pneumonia in infants and in children must come to the conclusion that it is not the remedies that determine a successful issue, but the manner in which they are applied. Formerly, certain remedies, such as chest poultices, cold compresses around the neck, expectorants, cardiac stimulents, cardiac depressants and aconite were advocated with empiric ardor. In the treatment of pneumonia, I have been guided, first, by the proper nursing and feeding of the patients, and, then, from a medical standpoint, I have tried to support the strength of the patient with drugs, endeavoring, at the same time, to recognize complications and to meet them as quickly as I could.

Antipyretics.—I have rarely, if ever, resorted to antipyretics for the control of the fever. The fever is a valuable guide in the management of pneumonia, and it cannot be controlled to any great degree—that is, depressed—without injury to the patient. It is simply an expression of reaction of the economy against the inroads of the disease. We should allay the irritability of the nervous system and thus aid

the patient to withstand the fever. It is just as well to sponge the patient with lukewarm water and not to resort to ice-cold packs, or cold baths. The ordinary application of cool water to the chest in the form of compresses is sometimes as effective as any form of hydrotherapy, provided the patient is protected from exposure when the compress is on the body, or when it is changed. If the patient is irritable, and there is a moderately severe fever curve, a warm mustard bath is effective in quieting the nervous system. After such a bath, an irritable wakeful infant will fall into a quiet sleep for hours. In short, fever

TABLE 6.—COMPARISON OF CASES TREATED WITH AND WITHOUT ALCOHOL (SERIES A)

| With Alcohol: | | | |
|--|--------------|---------------|-------------------------|
| | No. of Cases | No. of Deaths | Percentage of Mortality |
| 1906-1907 | 116 | 27 | 23.2 |
| 1907-1908 | 157 | 31 | 19.7 |
| 1908-1909 | 156 | 23 | 14.6 |
| 1909-1910 | 110 | 29 | 26.3 |
| 1910-1911 | 13 | 4 | 30.7 |
| 1911-1912 | 26 | 8 | 30.7 |
| 1912-1913 | 34 | 11 | 32.5 |
| 1913-1914 | 20 | 11 | 55.0 |
| Total number of cases treated with alcohol | | | |
| Total number of deaths in cases treated with alcohol.. | | | |
| 144 | | | |
| Without Alcohol: | | | |
| | No. of Cases | No. of Deaths | Percentage of Mortality |
| 1906-1907 | 0 | 0 | 0 |
| 1907-1908 | 0 | 0 | 0 |
| 1908-1909 | 0 | 0 | 0 |
| 1909-1910 | 67 | 11 | 16.4 |
| 1910-1911 | 169 | 29 | 23.1 |
| 1911-1912 | 184 | 24 | 13 |
| 1912-1913 | 187 | 17 | 9 |
| 1913-1914 | 112 | 23 | 20.5 |
| Total number of cases treated without alcohol | | | |
| Total number of deaths in cases treated without alcohol.. | | | |
| 104 | | | |
| Total number of cases treated with and without alcohol.. | | | |
| 1,351 | | | |
| Total number of deaths in cases treated with and without alcohol | | | |
| 248 | | | |
| Average percentage of mortality | | | |
| 18.3 | | | |

is natural to pneumonia, and we should look with concern on an infant who has a low temperature curve with a severe lung lesion. There is no reaction to the infection in these cases, and it spreads. These patients are weaklings.

Drugs.—With infants, and even older children, we must avoid all disagreeable drug medication. I fear to “upset the stomach,” as it is popularly termed, and thereby interfere with my nutritional efforts. This is of especial importance in young infants. Physicians will insist on giving calomel, ammonium carbonate, ammonium chlorid, terebene, camphor, glycyrrhiza and ipecac in large, disagreeable doses. I often ask myself, “Why?” They cause vomiting, and in some cases diarrhea, and hamper the patient to an inordinate degree. The superiority of the hypodermic method of medication is well illustrated in the management of the pneumonia of infants and young children. The stomach is left free for the assimilation of whatever food the infant may take, and the momentary pain of a hypodermic needle is more than compensated for by the freedom of the patient from dyspeptic symptoms.

Use of Alcohol.—In considering my treatment of the 1,351 cases here collated, there are two distinct periods. One period extends over the years in which alcohol in the form of whisky was freely used, and the other period comprises those cases in which no whisky was used. In this way I have been able to judge in what respect this alcoholic was of benefit to the patient. As a young physician, I saw whisky given freely to children in Bellevue Hospital, so that later as attending physician I came to favor its use for many years. In the past three years, whisky has been discarded entirely in the therapy of pneumonia. Up

to 1909 all patients received more or less whisky. Then I gradually began to discard it, fearing to drop it altogether, so that, during 1911, 1912, 1913 and 1914, there was a certain proportion of cases, always increasing, in which whisky was discarded, until I finally dropped it entirely. Discarding whisky, in the case of young children in half teaspoonful and older children in teaspoonful doses, I gave exceedingly small doses of spiritus aetheris nitrosi to infants, a drop every three hours, to older children never more than 3 or 4 drops, and finally discarding this, as some infants would not take it, until from 1913 to 1914, of 132 cases of pneumonia, whisky or alcohol was used in only twenty, so that the change by which whisky was completely discarded was not made abruptly, but extended over a period of five years.

Among 632 cases of pneumonia of all ages treated by the administration of medicinal doses of whisky, there were 144 deaths, a mortality for all ages of 22.8 per cent., including the infants below 3 months and below 1 year of age. Among 719 cases treated without whisky (alcohol), there were 104 deaths, a mortality of 14 + per cent. During the years in which whisky was used in all cases, whether severe or slight, namely, the years 1906 to 1909 inclusive, there were 429 cases with eighty-one deaths, a mortality of 18 + per cent. It may be thought, and with justice, that, in the years in which alcohol was and was not used, the high mortality with alcohol might have been due to the fact that the more severe cases received the whisky; hence the higher mortality. That is only partly true; however, during the year 1912-1913, for example, of a total of 221 cases, only thirty-four were treated with alcohol; in the year 1913-1914, of 132 cases, only twenty were treated with alcohol. Thus the number treated with alcohol was steadily decreasing. We will admit for the sake of argument and conscience that only the more severe cases in late years received whisky or alcohol; hence the higher mortality. But the whisky did not enable me to save life. Therefore I discarded it.

During the years 1915 and 1916, whisky has been discarded entirely in the treatment of pneumonia and the results have been good. During 1915 and 1916 there were 391 cases. This comprises Series B of my cases, from birth to the tenth year, and above. Of

TABLE 7.—TOTAL NUMBER OF CASES TREATED WITHOUT ALCOHOL FOR THE YEARS 1915 AND 1916 (SERIES B)

| | 0-3 Mos. | 3-6 Mos. | 6-12 Mos. | 1-2 Yrs. | 2-5 Yrs. | 5-10 Yrs. | Totals |
|------------------------------|----------|----------|-----------|----------|----------|-----------|--------|
| No. of cases ... | 3 | 24 | 53 | 100 | 81 | 74 | 335 |
| No. of deaths . | 7 | 8 | 18 | 13 | 5 | 5 | 56 |
| Total | 10 | 32 | 71 | 113 | 86 | 79 | 391 |
| Percentage of mortality | 70 | 25 | 25 | 11 | 5 | 6 | 14 |

these, fifty-six resulted fatally, a mortality of 14 per cent. There were 113 patients of and below 1 year of age with a mortality of thirty-three, or 29 per cent. From birth to the third month there were in these two years ten patients, practically all new-born, with septic complications, with a mortality of seven, or 70 per cent. In all these cases the pneumonia was a manifestation of general sepsis. From the third to the sixth month there were thirty-two cases, with a mortality of eight cases, or 25 per cent., and from the sixth month to the twelfth month inclusive, seventy-one cases, with a mortality of eighteen, or 25 + per cent. These figures compare not only favorably with the 1,351 cases previously cited, but give

no support whatever for the alcohol treatment of former years, especially if we look at the percentage mortality: from the first to the second year, 113 cases with a case mortality of thirteen, or 11 per cent.; from the second to the fifth year, eighty-six cases with a case mortality of five, or 5 per cent.; from the fifth to the tenth year, seventy-nine cases, with a case mortality of five, or 6 per cent. These statistics prove beyond any doubt not only all the data as to the high mortality in the new-born period, but the benign nature of pneumonia in later childhood under careful nursing, and hold out no encouragement for the older methods of active alcoholic administration. The use of whisky in former years was not justified by the results attained. The complete disuse of alcohol has not harmed my patients.

Cold Air; Fresh Air.—In the treatment of pneumonia the rôle of cold fresh air has been exploited as though there were something in the freezing air that would act as a specific in bringing about a favorable result. I found by careful study that both infants and young children stand cold very badly. Some patients seem to struggle against its effect, instead of accepting the cold as a relief from their sufferings. Some infants, when placed warmly bundled up in a cold room with open windows, grow cyanosed, and the whole system seems depressed. Rarely will an infant placed in the cool, open room react in a manner to make us feel that we are helping the patient. The pale infant becomes blue, the ruddy infant, pale. I have finally concluded that the middle course of giving fresh air which, if possible, is at a temperature that is not uncomfortable to the nurse, is the correct procedure. If we can place the patient in a room in which the incoming air passes over a warm radiator, it is probably the ideal condition. The air in the sick room should be fresh and crisp, but not icy cold. Cold is not specific in the treatment of pneumonia; certainly not cold air.

Hypodermic Medication.—Wherever it is possible, I set great store by the hypodermic method of medication, properly carried out by a careful nurse, avoiding skin infections. The use of camphor (which is not at all new) suspended in oil, with or without caffein, has proved the most satisfactory from a clinical standpoint. Camphor is a mild cardiac stimulant. After its injection I have found the pulse stronger and more forceful, but only for a short time. I regard it, like all the resins and balsams, as a mild expectorant, so that its use is justified in two directions. I have never seen any harm result to the kidney from proper dosage. It is difficult to lay down the exact dosage, but camphor suspended in oil may be given subcutaneously at three hour intervals, a grain for every year of the age, up to 3 or 4 grains. It may be given to the new-born in doses from one-fourth to one-half grain. Caffein is also a useful remedy. It is one of our best cardiac stimulants, but we must remember that it has been shown to be, in large doses, a poison. Therefore caution must be exercised in its use.

Digitalis has lately been brought into notice in the treatment of pneumonia. Given in adequate doses it is useful. The tincture may be used in therapeutically effective doses, but in cases in which a tachycardia develops with threatened breakdown of the heart with enlargement of the liver, the tincture is of little avail. In these cases digipuratum, given intravenously in full dosage twice in twenty-four hours, is of great efficacy. It is the only agent that will avert a cardiac collapse.

SUMMARY

It is evident that I regard the treatment of pneumonia at the present day as symptomatic, and that I believe pneumonia to be a disease in which clinical experience must go hand in hand with good judgment, in order that the patient may not be injured while making the fight for recovery. As to serums or vaccines, they have been even less successful in the final results in children than in adults. Their use is still in a developmental stage.

30 East Sixty-Second Street.

TOXIC FACTORS OF SOME OF THE
COMMON ANESTHETIC SUB-
STANCES*

EVARTS A. GRAHAM, M.D.

MASON CITY, IOWA

Much of the popular dread of an operation is based on fear of the anesthesia. The laity regards the possibility of a failure to regain consciousness as the chief hazard of most operations. This fear, of course, is traditional from the time when it was not infrequent for patients to die from a badly conducted anesthesia, while the operation was in progress. Surgeons also, even up to very recent times, felt that about the only danger from a narcosis was that of immediate death. The recognition of the condition of so-called "late chloroform poisoning" performed the very important function not only of awakening surgeons to the fact that death from chloroform may occur two or three days after its administration, but also of calling attention to a large number of toxic effects directly ascribable to the induction of general anesthesia, no matter by what anesthetic drug. Many of the unexpected, disastrous results following apparently simple operative procedures are more or less directly the result of the narcosis, even though these results may not be immediately apparent. A consideration of the possible toxic factors of the anesthetic agents, therefore, is highly important in serving to prepare the way for the avoidance of many of these disasters, and in insuring a greater margin of safety to the patient who undergoes an operation.

The phenomenon of narcosis is always accompanied by a condition of diminished oxidations. It therefore always indicates a condition of more or less severe asphyxia of the tissues, even if the frequency and depth of the respirations of the narcotized subject are normal. This has been abundantly shown by the work of Verworn,¹ Mathews,² Tashiro³ and others. Verworn has even concluded, although probably incorrectly, that the phenomenon of narcosis is the same as cellular asphyxia. In 1912⁴ I called attention to the close similarity which exists between the lesions of so-called late chloroform poisoning and those which can be induced by direct asphyxia. J. Loeb⁵ has shown that an asphyxiated tissue always becomes

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Verworn: *Narkose*, Jena, Gustav Fischer, 1912.

2. Mathews: The Action of Ether on an Anaerobic Animal Tissue, *Jour. Pharmacol. and Exper. Therap.*, 1910, **2**, 231.

3. Tashiro: A Chemical Sign of Life, University of Chicago Press, 1917.

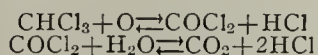
4. Graham, E. A.: The Pathogenesis of the Hemorrhagic Diseases of the New-Born, *Jour. Exper. Med.*, 1912, **15**, 307.

5. Loeb, J.: *Arch. f. d. ges. Physiol.*, 1898, **71**, 457.

acid. It is not surprising, therefore, that every surgical anesthesia induces many of the signs of an acid intoxication. As is well known, also, an existing acidosis is always aggravated by a surgical anesthesia.

The power of the various common anesthetic substances to induce severe toxic effects varies greatly. For example, ether and nitrous oxid cause these changes much less readily than does chloroform; and nitrous oxid has only slight tendency to induce them. The explanation of the increased toxicity of chloroform over ether and nitrous oxid is probably to be found in the fact that during the breakdown of chloroform in the body hydrochloric acid is formed. Neither nitrous oxid nor ether can yield a strong mineral acid in their breakdown. Therefore, chloroform, in addition to giving rise to an acidosis as a result of the narcosis asphyxia, actually yields a strong inorganic acid as well. The morphologic changes in the tissues characteristic of late chloroform poisoning, such as edema, hemorrhages, fatty changes and central necrosis of the liver, are probably really the effects of hydrochloric acid. I have given elsewhere evidence in support of this view,⁶ which evidence may be thus epitomized:

1. It is well known that, in the test tube, chloroform, in the presence of oxygen and water, is readily decomposed into hydrochloric acid. This decomposition is expressed in the following equations:



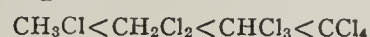
It is reasonable to suppose, therefore, that in the tissues where available oxygen and water are at hand, each molecule of chloroform might yield three molecules of hydrochloric acid, if the decomposition were complete. That such a decomposition actually does occur in the body seems to be apparent from the following facts obtained in a study of the condition of so-called late chloroform poisoning.

2. Hydrochloric acid in suitable concentrations induces experimentally a picture similar to that of delayed chloroform poisoning. In dogs intraportal injections of from 10 to 25 c.c. of from one-seventh to two-sevenths normal concentrations of hydrochloric acid results in the development of changes in the liver which closely parallel those obtained with chloroform, such as necrosis, fatty changes, hemorrhages and edema.

3. Attempts to recognize the presence of free hydrochloric acid in the surviving livers of animals, in which the condition of late chloroform poisoning had been experimentally produced, resulted in a demonstration, by means of neutral red, of free hydrogen ion, and, by means of silver nitrate, of an excess of

free chlorin ion. For various reasons, however, this finding cannot be taken as proof of the presence of free hydrochloric acid. It is merely an indication.

4. Since chloroform is the trichlorin substitution product of methane, and since the other chlorin substitution products can yield, outside of the body at least, the same number of molecules of hydrochloric acid that there are atoms of chlorin in their respective molecules, it seemed of interest to study some of these other products in relation to their respective ability to induce the lesions of chloroform poisoning. Theoretically, we should expect the series to run in this order on the basis of their respective powers to induce these changes:



Only the last three substances were used to test this point. The accompanying table shows that the toxicity, or the ability of these substances to induce the lesions in question, is roughly proportional to the number of molecules of hydrochloric acid which they can yield in their breakdown outside the body. The theory, therefore, is shown to hold.

5. Alkali, when given to dogs in suitable concentrations simultaneously with chloroform, inhibits to a marked degree the production of the typical lesions by chloroform. This fact alone, of course, lends strong support to the idea that these lesions are effects of an acid intoxication.

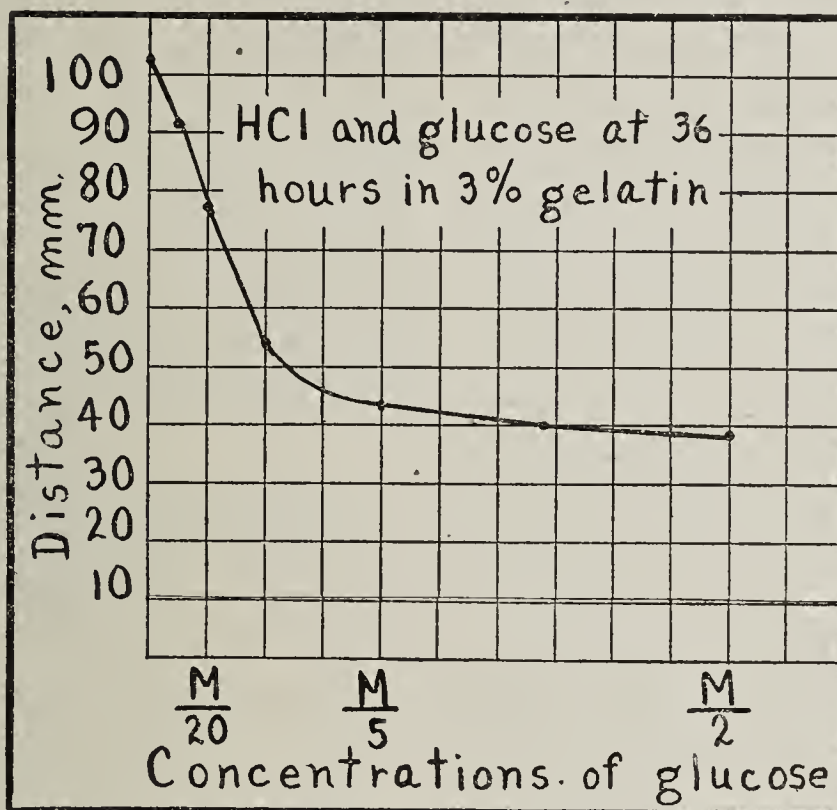
6. Iodoform (CHI_3) and bromoform (CHBr_3), which are similar in structure to chloroform (CHCl_3), likewise produce lesions which are indistinguishable from those of chloroform. In their cases, however, we should expect to be dealing with hydriodic and hydro-

bromic acids, respectively, instead of hydrochloric. As a matter of fact, positive evidence is present that after the administration of these substances these acids are actually formed in the body, for their neutral salts are found in large quantities in the urine, just as after the administration of chloroform an excess of chlorids is present in the urine.

RELATIVE TOXICITY OF SUBSTANCES

| Substance | Minimal Fatal Doses | |
|--------------------------|------------------------|---|
| | per Kilogram of Rabbit | Expressed in Grammolecular Concentrations |
| CCl_4 | Gm. 0.053 | 0.000344 |
| CHCl_3 | 0.085 | 0.000711 |
| CH_2Cl_2 | 0.147 | 0.001610 |

7. Strong evidence is also at hand to show, as would be expected, that the halogen substitution products of ethane act in a similar manner to those of methane both in producing the same type of lesions and in yielding their respective halogen acids, hydrochloric, hydrobromic and hydriodic acids, in their breakdowns

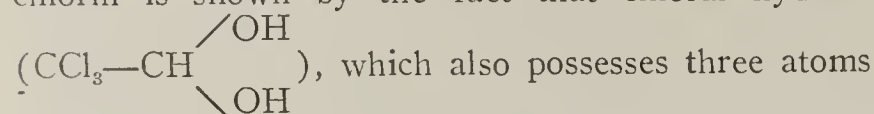


Curve showing the inhibition of diffusion of hydrochloric acid in gelatin by various concentrations of glucose. It is noticed that the smaller concentrations induce relatively the greater inhibition. The tubes were kept at a constant temperature of 26 C.

6. Graham, E. A.: Late Poisoning with Chloroform and Other Alkyl Halides in Relationship to the Halogen Acids formed by their Chemical Dissociation, Jour. Exper. Med., 1915, 22, 48.

in the body. The substances used to determine this fact were: ethyl chlorid (C_2H_5Cl), ethyl bromid (C_2H_5Br), ethyl iodid (C_2H_5I), and ethylene bromid ($C_2H_4Br_2$).

8. That the poisonous effects of chloroform are due rather to the hydrochloric acid which it yields than to the mere presence in its molecule of three atoms of chlorin is shown by the fact that chloral hydrate



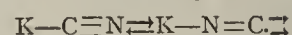
of chlorin, is incapable of producing the lesions typical of chloroform poisoning. This substance is excreted from the body as trichlor-ethyl-glycuronic acid and is therefore incapable of forming appreciable amounts of hydrochloric acid in the body.

It is an interesting and well known fact that an organ which is richly supplied with glycogen is much less susceptible to the action of various poisons. This protective action of glycogen has frequently been shown in connection with those intoxications which are associated with an acidosis. In a previous article⁷ I have shown that the remarkable resistance of young pups to the production of late chloroform poisoning is due to the high glycogen content of their livers. The question of how glycogen protects against these various poisons has never been satisfactorily answered. In an attempt to study this question, and on the basis of a brief observation by Bechhold and Ziegler,⁸ I have been able to show⁹ that glucose markedly inhibits the diffusion of acids through gels. Since, in the presence of an acid, glycogen is readily depolymerized into glucose, it is probable that, in the case of acid poisons, the protective action of glycogen is really carried out by glucose. It is therefore probable that this property which glucose possesses of inhibiting the diffusion of acids through gels is at least somewhat concerned in the protection of the cell or certain phases of the cell against acid poisons (see chart).

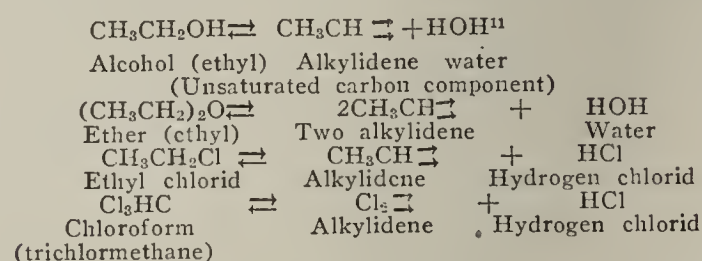
Up to this point only those toxic factors of anesthetics have been discussed which deal with the formation of acids within the body. There are many other factors which doubtless are of importance, some of which, like acetone for example, are formed secondarily and probably as a result of the inhibition of oxidations during the course of the narcosis. But besides these, we must consider certain points which are concerned with the fundamental chemistry of the substances which induce anesthesia, and which may be more or less intimately related to the whole problem of the nature of the state of anesthesia itself. I refer now to the dissociation products of these substances other than acids. Limitations of time will not allow more than a mere indication of these.

For a number of years before his death, J. U. Nef¹⁰ had been accumulating a mass of evidence to show that many carbon compounds owe their reactivity to a dissociation of such a type that a product containing unsaturated carbon is formed. The tremendous reactivity, and therefore probably the toxicity of the cyanids is probably due to the fact that cyanid with unsaturated or bivalent carbon is always present in

any cyanid solution together with that which is saturated and inactive. This may be shown as follows:



Likewise alcohol, ether, the alkylhalids, and other substances, probably dissociate in such a way as to yield bivalent carbon, thus:



It has long been considered that carbon monoxid likewise owes many of its properties to its unsaturated carbon $O=C\cdot$

Since both the cyanids and carbon monoxid produce effects on the body similar to those of the common anesthetic substances, it is very interesting that probably they all are capable outside of the body of dissociating in a similar manner to yield an unsaturated carbon residue. That this type of dissociation also occurs within the body, at least in the case of the alkylhalids, seems to be indicated in the work described above, which shows that hydrochloric acid is formed within the body during the breakdown of chloroform, hydrobromic acid during the breakdown of bromoform, etc. It is therefore highly probable that, in a manner analogous to the case of the cyanids and carbon monoxid, the toxic properties of many of the anesthetic substances are partly due to the unsaturated carbon residue.

SUMMARY

The common anesthetic substances yield toxic products indirectly by the formation of various asphyxial acids and by favoring the formation and accumulation of many toxic products of metabolism other than acids.

Certain anesthetic substances, notably those which belong to the group of alkylhalids, in addition, are capable of yielding strong mineral acids in the tissues as dissociation products. For example, chloroform is broken down in such a way as to yield hydrochloric acid in the body.

The common anesthetic substances are capable of dissociating in a manner which yields bivalent, or unsaturated, carbon. The toxicity of the cyanids and carbon monoxid probably depends largely on their property of dissociating in a similar manner. It is therefore probable that some of the effects of the anesthetic substances are due to their unsaturated residues.

ABSTRACT OF DISCUSSION

DR. C. HENRY DAVIS, Chicago: I have been particularly interested in the study of chloroform, ether and nitrous oxid-oxygen as regards their relative toxicity during pregnancy and labor. Using a specially constructed chamber, these anesthetics were administered to groups of pregnant and non-pregnant guinea-pigs under very similar conditions and the results correlated with clinical observations. Two of the four guinea-pigs subjected to six hours of chloroform anesthesia died in convulsions and showed the typical central necrosis of the liver, such as has been described. Young guinea-

7. Graham, E. A.: The Resistance of Pups to Late Chloroform Poisoning in Its Relation to Liver Glycogen, *Jour. Exper. Med.*, 1915, **21**, 185.

8. Bechhold and Ziegler: Die Beeinflussbarkeit der Diffusion in Gallerten, *Ztschr. f. phys. Chemie*, 1906, **56**, 105.

9. Graham, E. A.: To be published.

10. Nef, J. U.: Dissociationsvorgänge bei den Alkyläthern der Salpetersäure, der Schwefelsäure und der Halogenwasserstoffsäuren, *Ann. d. Chem.*, 1889, **309**, 126.

11. The sign \rightleftharpoons in these formulas is equivalent to "is in equilibrium with." The sign \cdot signifies "free" bonds or valences; in other words the carbon atom to which they are attached is what Nef termed "bivalent carbon."

pigs, born after the mothers had one hour of chloroform-oxygen anesthesia, had very fatty livers. Oxygen may lessen the danger of chloroform to the mothers, since the respiration is always much slower and more shallow than when ether or nitrous oxid-oxygen is administered.

Ether and nitrous oxid-oxygen never produce tissue changes such as we have shown in chloroform poisoning. They do interfere with cell metabolism, and when given over long periods produce changes which are of the type found after simple asphyxiation. Dr. Graham has given us a very clear and logical explanation for this difference in toxicity of the various anesthetics.

CHRONIC DIARRHEAS DUE TO ENTERO-COLONIC CONDITIONS*

JULIUS FRIEDENWALD, M.D.

Professor of Gastro-Enterology, University of Maryland School of Medicine and the College of Physicians and Surgeons

BALTIMORE

It is a rather difficult task to arrange a satisfactory classification of the different varieties of chronic diarrheas due to enterocolonic conditions. This is largely due to the fact that with improved methods of investigation the etiology of hitherto undetermined forms is gradually being made clear, necessitating frequent changes in classification. Since the term "diarrhea" is used only for a symptom denoting the passage of liquid feces, it not only embodies those forms due to disease of the gastro-intestinal tract, but it is also indicative of those varieties due to conditions arising outside of this tract, such as one commonly observes in toxic states, as is seen, for instance, in nephritis or in the disturbances of internal secretion.

I have followed the accompanying classification in the study of my cases, although I recognize fully its incompleteness:

1. Simple catarrhal enterocolitis.
2. Ulcerative colitis:
 - (a) Amebic.
 - (b) Bacillary.
 - (c) Tuberculous.
 - (d) Syphilitic.
 - (e) Carcinomatous.
3. Mucous colitis.
4. Simple colonic infections.
5. Intestinal stasis.
6. Chronic appendicitis.
7. Disturbances of the glands of internal secretion:
 - (a) Pancreas.
 - (b) Suprarenal.
 - (c) Thyroid.
8. Diarrheas of toxic and undetermined origin.

It is sometimes important to differentiate a diarrhea originating from disease of the large bowel from that of the small bowel. This is especially important when surgical interference is contemplated.

In catarrh of the small bowel, the diarrhea is less intense and the pains are colicky in character. The feces are more acid, and contain unchanged bile and undigested food particles.

Mucus is frequently absent, or is present in small amount, and then admixed with the stool. In those instances in which the diarrhea originates in the large bowel, the pain is usually associated with marked tenesmus, and is less frequent than in catarrh of the

small bowel. The tenderness on pressure is usually felt along the course of the colon, and not in the umbilical region. Gastric disturbances are usually absent in this affection, and the stools rarely contain undigested food. They are ordinarily alkaline and contain mucus and altered bile.

In this study of my cases of chronic diarrheas I have selected 100 cases, and these have been most carefully investigated. Thirteen cases represent those forms due to achylia gastrica, which cannot be considered here, while thirty-one represent the variety known as catarrhal colitis.

SIMPLE CATARRHAL ENTEROCOLITIS

In all of these cases there was a persistent diarrhea extending over several years, with frequent acute attacks associated with pain and tenderness over the colon; in every instance there was considerable mucus in the stools, together with blood at times. I am firmly of the opinion that the presence of mucus alone in the stools is not sufficient to warrant a diagnosis of catarrhal enterocolitis without the presence of the other symptoms already mentioned. In this disorder the characteristic appearance is usually presented by proctoscopic examination.

It was interesting to note the nature of the gastric secretion in these cases of chronic catarrhal colitis. In eighteen, the gastric secretion was quite normal; there was a hyperacidity in six, and seven presented an achylia gastrica. It is important in all cases of diarrhea associated with an achylia gastrica to determine whether or not the bowel is likewise affected, since in these instances treatment of the gastric disease alone is not sufficient to effect a cure. In the study of our cases of catarrhal colitis, the Schmidt test diet has been of considerable value. On this diet the stool is observed to be liquid or semisolid; rather large, and somewhat brown or light in color, containing more or less mucus in large or small flakes. It has a very fermented odor and contains many gas bubbles. To the naked eye there are no undigested meat fibers, and no excess of fat is present. Microscopically nothing of consequence is noted. The specimen is usually alkaline, and the sublimate test presents a normal coloration. When the stool is placed in the incubator, more or less gas is generated, indicating slight decomposition or putrefaction. Examination for dissolved protein is lightly or markedly positive.

The treatment of the various forms of catarrhal colitis is usually satisfactory. Diet plays an important rôle in this direction. In addition, most of these patients do best when treated with irrigations. Of these, solutions of potassium permanganate, boric acid, gelatin or instillations of protargol are most valuable. The internal administration of large doses of tannigen or bismuth subcarbonate is helpful.

AMEBIC DYSENTERY

Of the ulcerative forms of colitis, the amebic occurred in eight cases in this series. Since this is not an infrequent form of dysentery, the ameba should be looked for in all cases of chronic dysentery. These organisms are best observed in the scrapings obtained from the ulcerations through the proctoscope. The treatment with quinin irrigations and the administration of emetin need scarcely be mentioned here.

According to Nixon, the use of chaparro amargosa is valuable as a substitute for emetin in this disease. Cases that have resisted the emetin treatment have

* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

been controlled, according to him, by means of this drug. The plant is a small thorny bush indigenous to Texas and in Mexico. Nixon employs the drug as an infusion in doses of from 6 to 8 ounces.

BACILLARY DYSENTERY

There was present in our series but one case of bacillary dysentery. The diagnosis of this condition is usually difficult. The *Bacillus dysenteriae* may occasionally be found in the stools, and when obtained will agglutinate with the blood serum. Whenever amebas cannot be discovered in the stools, this condition must be suspected, and attempts should be made to isolate the organism. According to Shiga this disorder is only a subsequent disease in which it is impossible often to isolate the dysenteric bacillus. In this condition the feces are found mixed with mucus and the débris from the ulcerated areas. Most frequently, however, the mucus is simply hanging to the feces, not being intimately mixed with it. The result of treatment of these cases is not always gratifying. In addition to diet and rest, the best results are obtained by means of irrigations. Of the remedies to be utilized for this purpose, silver nitrate solution (1:500 or 1:1,000), potassium permanganate and tannin are probably the best. Internal medication is usually of little value. Of the remedies that may be employed, bismuth is of some value. In many of these cases, occasional mild purges are sometimes helpful. Of these, castor oil or liquid petrolatum oil is the best.

TUBERCULOUS ULCERATIONS

Tuberculous ulcerations occurred in four instances in our series. These are exceedingly frequent complications of chronic pulmonary tuberculosis and especially frequent as a late manifestation of this disease. This condition is not always associated with a persistent diarrhea, and alternating constipation and diarrhea is not infrequent. Diarrhea is more pronounced when the lesions are in the lower bowel. Pain is the most frequent symptom, occurring usually in the lower abdomen, and it is often most severe before the passage of a stool or after taking food. The stools may be very frequent, and at times may contain small quantities of blood. It is unusual, however, to note the passage of large quantities of blood. Mucus in variable quantities is often admixed with the feces. The finding of tubercle bacilli in the stools is of little diagnostic value, for these organisms are frequently present in patients affected with pulmonary tuberculosis having these organisms in the sputum. Of great interest are those cases of localized tuberculosis occurring about the ileocecal region.

In this condition a definite mass is found frequently resembling a malignant growth. In these cases, in addition to the paroxysmal pains, diarrhea alternating with constipation is observed. In two cases of this variety an operation was performed by Dr. Finney for me with most gratifying results. The treatment of the diarrhea observed in intestinal tuberculosis is exceedingly difficult. Diet and rest play a most important rôle in this direction. Physiologic sodium chlorid irrigations may at times be beneficial, but sooner or later it becomes necessary to administer opium by mouth or by bowel.

SYPHILITIC ULCERATIONS

Syphilitic ulcerations of the small intestines are rarely observed. The most common lesion of this dis-

ease is in the rectum. This occurred in two of the cases in my series. When the affection involves the small intestine, the symptoms are those of an ordinary intestinal ulceration, that is, persistent and painful diarrhea remaining unrelieved by the ordinary treatment. When involving the rectum, the picture is so characteristic as to render the diagnosis exceedingly simple. The indurated edges of the elevated ulcer with the smooth base, together with gradually increasing stenosis, is ordinarily sufficiently characteristic to permit of a definite diagnosis.

CARCINOMATOUS ULCERATIONS

This condition occurred in two cases of my series. Carcinoma of the intestine more frequently occurs in the colon and in the rectum, though the disease may occur in the duodenum, jejunum and ileum. Symptoms of obstruction are among the early signs of this affection. These are manifested by attacks of colic associated with constipation. As the disease advances, the contracted area sometimes ulcerates, and constipation may give rise to a marked diarrhea with mucus and blood in the stools. Of interest in this connection is carcinoma of the pancreas, which is frequently accompanied by a special train of symptoms pointing directly to the affection. In the earlier stages of this disease, the symptoms referable to disorder of the gastro-intestinal tract are manifested. These are especially loss of appetite, nausea and vomiting. There is usually constipation, which is rapidly transformed into diarrhea. The diarrhea becomes more and more intense, and at times fatty stools are observed. After a longer or shorter period of time jaundice appears, which gradually becomes more and more pronounced. The urine at times contains sugar; the liver enlarges and becomes nodulated, and further evidences of malignancy are noted by the cachexia. This affection is of such frequent occurrence that whenever a persistent diarrhea is observed in persons over 40 years of age which cannot be accounted for by the usual causes, carcinoma of the pancreas should be borne in mind.

MUCOUS COLITIS

Mucous colitis is such a well known affection that but little new can be said concerning it. There are three theories regarding the etiology of this affection: first, that it is entirely a nervous affection and that the mucus formed is purely a nervous hypersecretion; second, that it is due to a catarrh of the bowel, and thus has invariably an anatomic basis, and third, that the disease is due both to a nervous irritation and to a catarrhal condition.

Mucous colitis is always associated with evidences of disturbance of the autonomic nervous system, and there are present the signs of a vagotonia. While constipation is usually a prominent symptom, diarrhea is occasionally observed in this disease. This affection occurred in nine cases of our series. In addition to the usual treatment of this disorder, I should like to direct attention to the use of autogenous vaccines, which may be of great benefit in some instances.

COLONIC INFECTION

Among the infections of the bowel that may give rise to persistent diarrhea (not including the amebic and bacillary forms already referred to) there are various other micro-organisms and parasites that may play an important rôle in this connection. Of these may be mentioned certain intestinal worms, including

tapeworms, whipworms, flukeworms, strongyloides and various flagellate parasites. The diagnosis of any of these conditions can be readily made by a careful examination of the stools. These infections occurred in six cases of my series.

INTESTINAL STASIS

There are three well marked varieties of intestinal stasis that may give rise to persistent diarrhea. In the first form, the stasis is due to a dilated cecum in connection often with a dilated colon, which is frequently prolapsed and which retains its contents for an unusually long period of time. On account of the retention, fermentation is produced, which is followed by diarrhea. In the second form, on account of the prolonged retention, the fecal masses are channeled, through which the stools pass in a diarrheal form. In the third form, the diarrhea is due to a spastic condition of the bowel giving rise to a frequent expulsion of small round scybala.

The lower bowel is constantly filled with these masses, which produce an irritability of the bowel and frequent desire for defecation. In all of these forms, roentgen-ray and proctoscopic examinations will quickly clear up the diagnosis. Intestinal stasis as a cause of diarrhea occurred in eight cases of my series.

CHRONIC APPENDICITIS

Although diarrhea is rarely observed as a symptom of chronic appendicitis, I am convinced that appendicitis occasionally gives rise to this symptom notwithstanding the fact that these forms of diarrheas are usually attributed to other disturbances, such as colitis or disease of the cecum. This condition occurs most frequently when the inflamed appendix is plastered against the bowel. In one of my cases the nature of the trouble was revealed by the roentgen ray. There were no symptoms definitely relating to the appendicitis, except the diarrhea. In the other case, the patient developed an acute attack of appendicitis. The appendix was removed, and there were no further symptoms. There were three cases of this affection in my series.

DISTURBANCES OF THE GLANDS OF INTERNAL SECRETION

The diarrhea accompanying the disorders of internal secretion need be considered here only so far as these may provoke changes in the intestinal mucosa, on account of which fermentation and diarrhea may be produced.

In the thyroid forms it is probable that an increased peristalsis is at hand in most instances. It is also very likely that many cases of so-called nervous diarrheas on careful examination will be found to belong to this class. In the pancreatic forms, large fatty stools, usually soft but occasionally diarrheal, aid us in reaching a correct diagnosis. In the suprarenal forms, the diarrhea is due to a disturbance of the internal secretion of this gland producing a hyperperistalsis. The intestinal secretions are not ordinarily disturbed in this affection. Five cases of diarrhea due to disturbances of the internal secretions were noted in my series.

DIARRHEAS OF TOXIC AND UNDETERMINED ORIGIN

There still remains a class of diarrheas, the origin of which has not yet been fully determined in all instances. In this class are included those forms in which the irritation is transmitted through the circu-

lation. I refer especially to the diarrheas of nephritis, gout, cirrhosis of the liver, and to the various circulatory disorders, as well as to certain other diseases, such as spew and pellagra. In some of these instances a catarrhal condition is present, while in others no special lesion is produced and the changes that are observed in the intestinal canal are purely secondary lesions. Diarrhea of nephritic origin is probably due, in the larger proportion of cases, to the excretion into the bowel of irritating toxins, as is shown by the fact that the severity of the diarrhea varies with the exacerbations of the nephritic disease. In patients affected with chronic nephritis extending over a long period of time, uremic ulcers have been observed in both the small and the large bowel. In this series there were eight cases of diarrhea of toxic origin.

I have attempted briefly to describe some of the most important forms of diarrhea due to enterocolonic conditions. The diagnosis of some of these forms is exceedingly simple, while in the larger proportion of cases it is most difficult. It is highly important in all instances to make a thorough study of all features, utilizing all diagnostic measures to ascertain the underlying cause. Only in this way can therapeutic measures be instituted which may prove of the greatest avail.

RECTAL AND SIGMOID CONDITIONS IN CHRONIC DIARRHEA *

JOHN L. JELKS, M.D.

Fellow of the American College of Surgeons

MEMPHIS, TENN.

The conditions found in the rectum and sigmoid flexure in cases of chronic diarrhea differ very markedly, and they may be due to numerous causative factors.

1. They may be caused by a primary infectious agent, which may be an amebic, a bacillary or a flagellate infection, or some other infectious element which may persist over a long period of time.

2. The conditions may be due to the primary and some secondary etiologic factors, as when during the course of a proctocolitis, the primary cause of which was a bacillary or flagellate infection, the patient becomes infected with the pathogenic ameba. The case may be one primarily of amebic infection, which, though it has continued over weeks or months, or even years, may not have produced alarming symptoms, until some secondary infection ensues, which may convert a seemingly indifferent situation into one of alarm, with possibly fatal results.

3. They may be due to the primary pathology, which was produced by the primary etiologic element or infection, though the latter may have been controlled, or may have disappeared entirely; hence, we have observed very extensive rectocolonic ulcerations due primarily to the ameba infection and secondarily to a streptococcic invasion, and though we had controlled the ameba infection, as we believed, the mucous membrane slough has been so extensive that the ulceration persisted for a long time, and the natural result was that the diarrheal symptoms also persisted.

4. A chronic diarrhea has oftentimes been observed to persist after all primary etiologic factors and all

* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

primary pathology have disappeared. This, I believe, occurs most often as a result of a late pathologic condition, such as adenomas, syphilis, and newly formed membranes.

5. There are also contributory physical and systemic diseases and conditions in which a persistence of the diarrheal symptoms are found. In some of these the rectum may present only a red and glazed appearance, or may appear quite normal macroscopically. At this point I might mention, for the purpose of discussion, some cases of so-called mucous colitis, which have followed certain operations, or which have persisted long after an intestinal infection has been controlled, and all ulcers in the rectum and sigmoid have healed, but if the abdomen is reopened, there may be found, as I have observed in some cases, a pericolic veil-like process extending over greater or less areas of the sigmoid colon. These veils are very delicate in structure, and are not closely attached to or adherent to the wall of the intestine. To these also may be due the kinks that I have found in some such cases of mucous colitis. With this class of cases I might also associate the persistent and almost uncontrollable diarrheas of cirrhosis of the liver, and those of diabetes and acidosis.

It has appeared to me a rather remarkable fact that in all the voluminous writings on the subject (chronic diarrhea) I have found very few references to even the gross pathology. Owing to the sudden and continued illness of an able pathologist who had promised assistance, I have been forced to omit minute pathology, which I believe is of importance and would have been of rare interest.

The conditions found in the rectum and sigmoid in chronic diarrhea are dependent on other factors than the chronicity of symptoms, for the diarrhea may persist long after the pathologic condition in the rectum and colon, which were the primary causes of the diarrhea, has disappeared.

The primary etiologic factor is usually some acute infectious agent; thus, the bacillary infections may continue for a period and the severity of the resulting inflammation may produce erosions and ulcerations, which do not always heal promptly, even though the infectious agent has been destroyed or neutralized. When this is the case, however, we may be confident there is a mixed infection, and in these conditions the streptococcus has played a damaging contributory rôle. In this type of cases, we observe erosions of the epithelial layer, or more or less extensive casts of false membrane may be exfoliated with apparently the entire epithelial layer, or the mucous membrane over great areas may be sloughed off at one time. It must be easily understood, therefore, that recovery from the conditions just described would be necessarily slow, and that for this reason the symptoms would continue to persist. If the infection was primarily amebic, we should expect to find and really do find a more thickened rectal and sigmoid wall, and, too, the rectal valves will have become thickened and unyielding on account of the long continued inflammation, ulceration and fibrosis. The mucous membrane is thick and congested. The intestine does not appear so edematous as is the case in the acute primary processes. The mucosa is covered with a mucopurulent or sanguino-mucopurulent coating, underneath which the mucosa is more extensively damaged than would appear, until the coating is washed or rubbed off, when the real extent of gross pathology becomes apparent.

Conditions which serve to stamp a case as a very chronic one are the alternate hypertrophic and atrophic areas, and in some cases I have noticed so much fibrous infiltration of the intestinal wall that stenosis and valvular obstipation have resulted.

On the introduction of the proctoscope, I have observed that the rectum, and less often the sigmoid colon, is covered with a mucopurulent coating, and when this is wiped away, the mucous membrane appears eroded in spots, or more or less discrete ulcers with oftentimes ragged edges will be seen. Oozing appears quite general over these areas, or in other instances the rectal mucosa may seem to be intact, with the exception of a few circinate lines. In some very chronic cases that I have examined, no definite pathology could be found in either the rectum or the sigmoid, except the alternately atrophic and hypertrophic areas of the mucosa previously mentioned, but this was usually in or during a period of abatement of symptoms, when the infectious agent, which was the ameba, was in the encysted state and not creating much disturbance.

The distinctive features I have observed between the amebic rectum and sigmoid colon and the pellagrous or bacillary conditions of the intestines are that in the former the mucous membrane, as previously stated, appears thicker and more edematous and the ulcerations have proved more destructive to the deeper layers, whereas, in both the bacillary and the pellagrous infections the erosions appear more superficial, there is less edema, except in the very acute conditions, and the oozing is from every surface, as if the vasoconstrictors were paralyzed and the blood was oozing from every capillary. Now, while this is the rule, there are marked exceptions; in fact, in some cases the pathology in the rectum and sigmoid was very extensive, as extensive as I have observed in any amebic case.

The conditions found in some cases must necessarily be remittent or intermittent in their severity, otherwise these patients would rapidly become exsanguinated or septic or both, as in fact some do, but apparently with no other treatment than rest, the elimination of carbohydrate diets and the substitution therefor of a diet of milk and eggs, which diet does not supply in the intestinal laboratory a good culture medium, the hemorrhage ceases, the diarrheal symptoms abate, and even constipation may supervene. The intestinal mucosa then assumes a pink or red and glazed appearance, and may for a time thereafter appear quite normal, until the next seasonal recurrence, when the same unhappy course ensues.

If the rectum and sigmoid are examined from time to time between these recurrent attacks of pellagrous diarrhea, the conditions will be seen to vary between these two extremes just described, or the intestine may be congested and coated with mucus, and, after this mucus is wiped away, pin-scratch or circinate lines or discrete erosions may be seen. The intestine may appear blanched, owing to the low condition of the hemoglobin and the inanition, yet, with the recurrence of symptoms the blush and the ooze reappear on both the mucous and serous surfaces. Not only is this the case with the rectum and the sigmoid flexure, but this is the condition we find throughout the colon, including the appendix, and to a certain degree this blush is observed throughout the intestinal tract. I have never observed ulcerations above the cecum in these cases, but the appendix quite often suffers and occasionally

perforates. When the intestine is ulcerated the rectum and the sigmoid have always appeared to suffer the greatest degree of pathology.

A condition follows, or is associated, in a limited number of these chronic intestinal infections, amebic and pellagrous or bacillary, which may give rise to a more or less persistent diarrheal disturbance. I refer to adenomas and syphilitic condylomas. The diarrhea will usually persist as long as these growths remain; especially is this true when adenomas are present in numbers, and their removal affords prompt relief. In some of my amebic cases I have observed these adenomas in great numbers, and in one pellagrous case in which I recently performed an appendicocostomy one of the very large adenomas sloughed and came away.

Some of these tumors have been reported malignant by able pathologists; yet, after their removal with the curet or cautery they have never recurred. Their most frequent location has appeared to be either on or at the base of the rectal valves; however, I have observed them studding both the rectum and sigmoid colon in great numbers.

I have observed in many instances a mucous diarrhea persist for months and years after a primary infection and pathology had disappeared from the rectum and the sigmoid, but a pericolicitis had developed, which resulted in the formation of pericolic veils and kinks. The rectum and the sigmoid may appear quite normal in these cases, and no complaint of pain or disturbance is made that could be referred to the lower intestine. These pericolic veils, I believe, are more often found in the South, where infections of the intestine are more common and especially pellagra.

I do not wish to be misunderstood or misquoted in regard to this subject, for I do not refer to such conditions as the bloodless fold of Treves, which I believe are of a different origin and are productive of stasis, while these veils are more often associated with so-called mucous colitis. These constitute a late pathology; hence, in the majority of these cases the rectum and the sigmoid appear normal.

ABSTRACT OF DISCUSSION*

ON PAPERS OF DRS. GANT, FRIEDENWALD AND JELKS

DR. CHARLES D. SPIVAK, Denver: We have neglected physical therapeutics. It took a century, probably, before we found out that air is a good therapeutic agent. We all agree that rest is a therapeutic agent. So is work. All our functions are alternating between rest and work, and yet we do not know how to use rest and work as therapeutic agents. In acute cases of diarrhea hardly any one thinks of prescribing a diet at the first visit. In a case of acute vomiting, no sane person would insist on feeding his patient. The physician would rather order no nourishment, in spite of the great concern, perhaps, of the relatives that the patient has been starving for ten or fifteen hours. When we come to chronic cases of diarrhea or vomiting every writer speaks of a "suitable diet," and nobody knows exactly what a suitable diet is. A sufferer from lung disease uses a physical agent, namely fresh air. The modification of the quality and quantity of the air makes it a therapeutic agent. In chronic diarrheas, the stomach and intestines are irritated. The introduction of food adds insult to injury. It is rational to employ the physical therapeutic agent, rest. Modify the quantity of rest. Leave the intestines and stomach alone for a day, for two, for three, for ten if necessary. I have not yet seen a case of diarrhea, when not complicated by severe pathologic condi-

tions, that would not yield to absolute rest, and absolute rest cannot be secured except the stomach and intestines are not functioning in their digestive capacity. The principle of rest applies to any other organ of the body when irritated, bruised or broken. There is no need to fear having patients abstain from food for one day or ten days. The treatment of appendicitis and peritonitis has taught us that we can keep our patients without food for weeks. The more recent treatment of diabetes by starvation is another plea for the efficacy of rest or abstinence from food as a therapeutic agent of great value.

DR. CHITTENDEN HILL, Boston: The duty of the large intestine is the absorption of water from the waste. In the colon absorption is accomplished by reversed peristalsis, the water being thrown back into the caput coli where it is absorbed. Material on reaching the descending colon, normally, should be nearly as dry as in the rectum, but should not be so hard and inspissated that the mucosa of the rectum or sigmoid is injured. For obvious reasons civilized man has attempted to establish an artificial habit with respect to the function of defecation, so that one movement of the bowels daily has come to be regarded as normal. A more frequent occurrence is always an occasion for worry and is considered a diarrhea by most people.

The newer physiology of the intestinal tract teaches us that there are several periods throughout the day when peristaltic waves are excited, as by eating or drinking, that would result in defecation had we not almost from childhood disregarded these natural stimuli. In other words, were it not for the dictates of convenience, mankind would more closely resemble the higher animals in respect to emptying the bowels and not become resigned to a fixed routine of infrequent defecation.

DR. NATHAN ROSEWATER, Cleveland: Dr. Friedenwald's scientific classification points to a more rational therapy. I agree with Dr. Spivak that rest is essential. After using my abdominal plaster bandage for twenty years, I would not treat chronic diarrhea without supporting the abdominal wall with this bandage, whereby irritations and atonicity from ptosis are avoided. The surgeon uses splints to immobilize. So can we to advantage. By using hydrochloric acid over long periods in achylia the neuroglandular function of the stomach can be rested a long time with benefit and may finally refunctionate. Plenty of carbohydrate food gives the necessary alkali desired by Einhorn, so that in spite of added hydrochloric acid as an essential activator the blood content is undisturbed.

DR. FRANK C. YEOMANS, New York: Amebic dysentery in this latitude is very insidious and much milder than in the tropics. We very rarely see an abscess of the liver, gangrene or perforation of the bowel. A single course of emetin acts as does a single course of quinin in malaria. Resistant cystic forms may develop later on, and the symptoms recur unless several courses of treatment are given at intervals. After secondary infection of the amebic ulcers has occurred, emetin alone will no longer be efficient. Then we have to resort to irrigations either through the rectum, or an enterostomy, or else autogenous vaccines and other forms of treatment.

One other form of bowel tuberculosis to be emphasized is the hyperplastic. Tuberculoma cannot be distinguished clinically from a malignant growth. Preoperative diagnosis of the nature of this tumor is not essential, for we have a growth which is practically malignant and has to be removed surgically.

Dr. Friedenwald did not mention a serious form of colitis which is difficult to treat, namely, so-called hemorrhagic colitis. The chief symptom is frequent stools, consisting mainly of blood; the blood seems to ooze from the mucosa everywhere. The exact etiology is not known, but the pathology has been studied. I cured three patients with fluid-extract of krameria, alternating with argyrol, 25 per cent.

DR. J. RAWSON PENNINGTON, Chicago: We have heard today that diarrhea may be caused by pyorrhea, achylia, stasis, proctitis, overeating, etc. If this is true, and I believe it is, then diarrhea is a symptomatic or a secondary disease, and the treatment should consist in locating the primary cause

* The first paper in this symposium on "The Surgical Treatment of Chronic Enterocolonic Diarrhea," by Dr. Samuel C. Gant, New York, appeared in THE JOURNAL last week, page 1603.

and removing or correcting it, which is necessary to cure the trouble. But when a patient with diarrhea has all the conditions above mentioned, and more too, perhaps, how are we to differentiate and determine the one that is causing the diarrhea? This is the most important question of all. That settled, we will then know whether or not to starve the patient, advise marriage, do a colectomy or a sigmoidostomy, advise the wearing of an abdominal support or give bismuth, etc. But to follow or advise one or the other of these procedures before making a diagnosis is certainly not to be commended.

DR. ALFRED J. ZOBEL, San Francisco: The giving of frequent irrigations in colitis sometimes keeps up the diarrhea. Great caution must be used. The strength of the solution, and just what is used, is of vital importance. Even the use of a solution containing 1 grain of potassium permanganate to a quart (one of the drugs mentioned today as being of value in intestinal irrigation), when introduced through the sigmoidoscope so that we know it is in the sigmoid and not in the rectum at all, will soon cause griping pains in the abdomen, and the patient will desire to have a rapid evacuation of the bowels. I therefore say again, that in conditions in which we use irrigation, we may err by continuing the irrigations too long, and by using too strong solutions.

With Dr. Friedenwald I must also take issue, as he made the statement that it was easy to diagnose syphilitic ulcers of the rectum. I cannot do it, and all with whom I have spoken say that they cannot diagnose this condition easily. As a matter of fact I have found that it is very difficult to differentiate between beginning carcinoma and a syphilitic condition of the rectum.

DR. HORACE W. SOPER, St. Louis: Dr. Jelks mentioned the fact that infection may be limited to the rectum. I recall two cases in which the infection was limited to the rectum where irrigation had washed the infectious material higher and caused general colitis. In this connection the work done by Dr. Rosenberg with the powder insufflation method is interesting. The dry powder method used with the proctoscope will clear up these cases very rapidly. In experimenting with a large number of powders I have found that calomel is the best, inasmuch as it is the most antiseptic of all powders. It is absolutely nonirritating even to the mucosa of the anal canal. Calomel is especially efficacious in the treatment of hemorrhagic forms of proctitis and sigmoiditis.

In response to a question by Dr. R. W. Jackson of Fall River with regard to what precaution is used to prevent absorption of the calomel if it is used in large quantities, or frequently, thus causing calomel poisoning, I answered that calomel, even if used in large quantities in the rectum or sigmoid, is not absorbed. I have used very large quantities, as much as 3 to 4 drams at a time. I believe the reason for this nonabsorption is that the calomel is not broken up as it is in the stomach or small intestine, but that it acts merely as a local antiseptic powder in the lower bowel.

DR. HARRIS WEINSTEIN, New York: With regard to the symptoms of carcinoma of the intestine, we are accustomed to consider constipation as the first symptom, but this is not always the case. It is often not a question of constipation, but of retained stool in a section of intestine and then continuous diarrhea on account of the irritation brought about by putrefaction. I have seen any number of cases develop in this way—primarily diarrhea with three to four stools a day, the patient complaining only of distention and foul-smelling stools, but, with the exception of a possible achylia, no gastric symptoms. Appetite and digestion may be excellent. A month or two after the appearance of these symptoms a large mass may be detected in the intestine. Then only obstructive symptoms appear, due not alone to the tumor, but also to spasm caused by irritation of the mucosa adjoining the mass.

Diarrhea in chronic appendicitis is rather rare, but we do meet with cases in which there is diarrhea. Some of these cases terminate in acute gangrenous appendicitis. In pancreatogenous diarrhea the stool is so characteristic that it cannot be mistaken for any other condition.

DR. J. W. WEINSTEIN, New York: Although my predecessor, Dr. Weinstein, repudiates the starvation treatment, I shall give it the highest endorsement. The statement that patients will not stand for it is not in keeping with my experience. I have tried it for as long as three weeks and the people will submit to it. Of course, we must sometimes modify the treatment, as Dr. Spivak said. The surgeon makes a rectal fistula and gives rest to the colon. We can do that in a milder way. Just give the patient water instead of food, and in some patients the juice of three or four oranges a day. Recently I had a patient who had a large ulceration through the rectum. I explained to him that his bowel must be given a rest; that one way was by a surgical operation, namely, by severing the terminal ileum from the cecum, implanting it temporarily in the abdominal wall, this to be followed later by a second operation, or another way was by means of starvation. He submitted to the starvation method and I can report a favorable result in this case.

DR. DWIGHT L. MURRAY, Syracuse, N. Y.: We must always remember that only about 25 or 30 per cent. of the bowel elimination is the result of food, the debris of food, and that the balance of it is brought down from the stomach and deposited as ash or worn-out material.

DR. SAMUEL G. GANT, New York: When appendicostomy fails to relieve or cure chronic diarrhea usually the irrigations are too small or the bowel is always washed out with the patient in the same position, which prevents the fluid from reaching lesions on different sides of the bowel. The benefit derived from bowel flushing is due as much to the mechanical action of the fluid in ridding the intestine of toxins and irritating debris as to the contained chemical. I have obtained the best results with 2 per cent. ichthyol irrigations.

DR. JULIUS FRIEDENWALD, Baltimore: It is impossible in so short a period of time as was allotted to me to discuss all of the questions concerning the treatment of chronic diarrheas. In my paper I especially wished to call attention to the importance of etiology. It is very important, if the treatment is to be successful, to clear up the diagnosis; and it is therefore extremely important to study every case carefully, and as far as possible reach a conclusion as to the etiology.

In regard to the treatment of special conditions, I heartily agree with many of the speakers regarding the efficacy of rest in most forms of chronic diarrheas. As to absolute starvation, I have had no experience with this special form of treatment, though we all know the importance of diet in the treatment of chronic diarrheas, and of allowing just as little food as possible. The use of the abdominal support is very valuable, especially when there is the slightest degree of enteroptosis.

DR. JULIUS FRIEDENWALD, Baltimore: Regarding the use of emetin, I feel with Dr. Yeomans that it is necessary to repeat the treatment frequently; that one course is not sufficient, and one is forced to repeat the treatment every few weeks or months so as to secure permanent benefit.

DR. JOHN L. JELKS, Memphis, Tenn.: In attacks in which the diarrhea and toxicity are due to regurgitation into the ileum from the colon, physical rest of the intestine is important, of course. But there is not much rest if the intestine is infected and irritated by bacteria or by some other infectious agent; but if there is a hole in the intestine, by turning clean, or salt, or some aseptic water into it and washing out the irritating stimulus, I believe the more important rest is then made possible.

As to chapparo amargoso, that is very difficult to obtain in this country. I have had no experience with it. It takes a lot of it to conduct a few treatments, and it comes from Mexico.

As to emetin, do not be too sure the emetin kills the amebas. Be less sure the emetin acts as a destroyer of the amebas; be overly sure to cure the ulcerations resulting therefrom, the walls of which contain amebas. Moreover, there are fixed amebas, some cases of which no emetin will cure.

Bismuth in teaspoonful doses every three hours in courses in these chronic cases is appropriate. Formaldehyd-boric solution I know destroys every ameba it comes in contact

with. Iodin solutions are exceedingly beneficial in many cases. Do not use the irrigations too long or too strong. Sterile water solutions at times are better than strong solutions.

Syphilitic cases must always have salvarsan, if possible, before serious surgery is practiced. Vaccines, especially autogenous, are beneficial and indicated in many cases.

GASTRIC CONDITIONS IN SPASTIC CONSTIPATION *

WILLIAM G. MORGAN, M.D.

WASHINGTON, D. C.

A study of the gastric condition in purely spastic constipation, if indeed there is such a condition, should cover a critical survey of many hundred cases in order that the deductions drawn may be of practical value. For this reason I offer, with full apology, my series of only forty-four cases, which have occurred in my practice during 1917.

Now, turning to a consideration of the objective symptoms, we find that hypertonia of the viscus was present in a large majority of the cases of this series.

STUDY OF THE GASTRIC CONDITIONS IN SPASTIC CONSTIPATION

| | No. | | No. |
|----------------------|-------------|----------------|-----|
| Pain | Present 15 | Absent | 29 |
| Tenderness | Present 25 | Absent | 19 |
| Eruclatation | Present 24 | Absent | 13 |
| Regurgitation | Present 27 | Absent | 17 |
| Vomiting | Present 10 | Absent | 34 |
| Fulness | Present 32 | Absent | 12 |
| Pyrosis | Present 24 | Absent | 20 |
| Appetite | Present 39 | Absent | 5 |
| Nausea | Present 13 | Absent | 31 |
| Mucus | Excess 34 | Normal | 10 |
| Benzidin | Positive 18 | Negative | 26 |
| Size | Normal 42 | Negative | 2 |
| Position | Normal 36 | Negative | 8 |
| Motility | Normal 37 | Hyper | 7 |
| Mobility | Normal 44 | | |
| Shape | Normal 44 | | |
| Tonus (hypo 2).... | Hyper 26 | Normal | 16 |
| Evacuation | Normal 43 | Slow | 1 |
| Acidity (hypo 2).... | Hyper 17 | Normal | 17 |

On fluoroscopic examination, twenty-six revealed spastic contraction of the stomach; whereas two were atonic and normal in this respect.

| CASE | PAIN | TENDERNESS | ERUCTATION | REGURGITATION | APPETITE | NAUSEA | VOMITING | SENSE OF FULLNESS | PTOSIS | HYPERTONIC | HYPOTONIC | NORMAL | MUCUS | BENZIDIN | SIZE | POSITION | MOTILITY | MOBILITY | SHAPE | CONTR. | EVACUATION | TONUS |
|------|------|------------|------------|---------------|----------|--------|----------|-------------------|--------|------------|-----------|--------|-------|----------|------|----------|----------|----------|-------|--------|------------|-------|
| 1 | + | + | + | + | + | + | + | + | + | 72 | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 2 | + | + | + | + | + | + | + | + | + | 27 | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 3 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 4 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 5 | + | + | + | + | + | + | + | + | + | 76 | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 6 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 7 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 8 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 9 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 10 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 11 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 12 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 13 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 14 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 15 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 16 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 17 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 18 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 19 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 20 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 21 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 22 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 23 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 24 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 25 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 26 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 27 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 28 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 29 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 30 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 31 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 32 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 33 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 34 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 35 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 36 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 37 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 38 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 39 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 40 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 41 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 42 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 43 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |
| 44 | + | + | + | + | + | + | + | + | + | | | | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | NOR | HYPER |

A study of the gastric conditions in spastic constipation.

Obviously it was proper to include only those cases in which a careful roentgen-ray study has been made. Furthermore, I have excluded those cases in which other pathologic conditions, such as chronic appendicitis, chronic cholecystitis or peptic ulcer, were found. In other words, I believe that all the cases reported are chronic spastic constipation.

Of this series twenty-four had pyrosis coming on before meals, while twenty-nine experienced no pyrosis. Twenty-seven complained of acid regurgitation from one-half to two hours after eating, and seventeen did not have it. In thirty-nine cases the appetite was normal or increased, and in five the appetite was absent. Ten of these patients complained of vomiting and thirteen of nausea.

The time of evacuation was normal in forty-three and retarded in one case. The stomach was normal in shape and mobility in all the forty-four cases under consideration; and all but two were of normal size; these two were dilated. In thirty-six cases the stomach was in the normal position, and eight cases showed more or less ptosis. In seven cases hypermotility was present, and in thirty-seven normal motility.

Studying the gastric secretions, we noted that seventeen cases showed moderate hyperacidity with hypersecretion, ten showed subacidity, and seventeen, normal values.

Abnormal amounts of mucus were recorded in thirty-four of the forty-four cases. This coincides with many observations in the past, that whenever we find the stomach the seat of spasmodic contractions, if continuing any length of time, we find a chronic con-

* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

gestion of the mucosa with an increased production of mucus. It is in this class of cases we get the bloody smear on the duodenal thread, which is so different from the characteristic short, definite stain, mostly confined to one side of the thread, found in peptic ulcer. To bear out, somewhat, my assertion in this regard, there was a positive benzidin reaction in eighteen of the forty-four cases, showing an engorged mucosa, which is easily disturbed by the stomach tube.

1624 I Street.

ABSTRACT OF DISCUSSION

DR. I. H. LEVY, Syracuse, N. Y.: It is rather unfortunate that the words physician and physic come from the same root. The laity expect the physician to dispense physic and the physician cannot entirely get away from this idea. Constipation may occur with any gastric condition, and, on the other hand, may produce almost any stomach symptom, and it is often difficult to decide which is cause and which effect. Constipation is frequently associated with those gastric conditions which result from the taking of insufficient food. These patients, owing to their stomach symptoms, eliminate one article of food after another until they eat so little that obstinate constipation results. The constipation aggravates the gastric symptoms and the resulting weakness the constipation. This produces a vicious circle.

There is another form of constipation found with these cases, described by Hertz as dyschezia. In our roentgen studies we find the barium reaches the ampulla within twenty-four hours, but remains there for days. The abdominal muscles either lack the power to expel the feces, or the tightly contracted sphincter retains them. I prefer to use the more recently suggested classification of rightsided and left-sided constipation, instead of atonic and spastic. Left-sided constipation may exist without causing any symptoms. Right-sided constipation, on the other hand, owing to the absorption of poisonous products from the cecum, may give rise to marked symptoms of autointoxication. In a certain percentage of these cases there is also an open ileocecal valve, and the feces may regurgitate into the ileum. The worst cases of autointoxication I encounter are of this type.

DR. LOUIS M. GOMPERTZ, New Haven, Conn.: Three capsules each containing 10 grains of lampblack were given to thirty persons at different times during the day and the number of hours required for the appearance of the black in the stools was noticed. All of these persons were accustomed to having a movement of the bowels each morning. The result of this experiment showed that it required from twelve to fifteen hours before the lamp black could be identified in the feces. After this was done I took 100 cases of habitual constipation, just running through my records, without any attempt at selection, and noted the results of the gastric analyses. Eighty-seven of these cases showed hyperacidity while the remaining ones showed a subacidity or a normal gastric content. It has been pointed out by Schmidt and Strassburger that hyperacidity is an important factor in chronic constipation. It was explained by them that the hyperacidity causes a very perfect absorption of the food-stuffs in the intestines by diminishing the number and retarding the growth of intestinal bacteria, and on account of this a very small residue is left, and then there exists the condition known as spastic constipation. Since this investigation was brought about I have paid particular attention to the gastric conditions in chronic constipation and I have observed that in cases of spastic constipation the symptoms almost always point to hyperacidity in the gastric contents. Whenever the contents are examined, hyperacidity is often present, and I believe it to be an important factor in predisposing a patient to chronic constipation.

DR. MAX EINHORN, New York: In cases of spastic constipation we must rely wholly on symptoms from the beginning, so we must know what we are talking about. Spastic constipation is a variety of constipation which is characterized by too infrequent evacuation of the bowels, and pains during the defecation. Occasionally these fecal masses

come out containing mucus and sometimes even a trace of blood. In the ordinary form of chronic, atonic constipation we do not find these symptoms. There is never pain combined with defecation, never mucus, or rather exceptionally do patients complain of that, and never any blood.

Dr. Morgan said that in almost all of these cases he found a normal position of the abdominal organs; in only two, I believe he said, was there any abnormality to be found. In my own cases, as far as I could see, where spastic constipation was present (the definition of this term to be applied as I expressed it) it was principally associated with marked enteroptosis. Again, I have observed that in these conditions hyperchlorhydria is not as often found as in the ordinary forms of constipation.

It is one thing to say that in cases of constipation we find these conditions present and quite another thing to say that these gastric anomalies produce the constipation. I tried to show in a certain variety of conditions of the stomach, hyperchlorhydria and achylia, that constipation in such cases may be caused by anomalies of the stomach. In that way I believed we would leave the constipation as it was and not pay attention to it, but simply give the patient a remedy appropriate to correct the gastric anomaly, and see what happened. It was found that in some of these cases the constipation improved by itself, and that is the reason why I felt that constipation in those cases was caused by a gastric anomaly.

DR. DWIGHT H. MURRAY, Syracuse, N. Y.: I have some ideas about constipation and doubtless when I am through speaking you may think I have gone back to the dark ages, and perhaps the notions are foolish. With regard to the causes of constipation, I feel that I must disagree with what has been said about etiology. The primary causes of constipation, so far as I am able to ascertain from my practice, are three, namely (and these I published in 1911): carelessness, ignorance and laziness. You may smile, but let us consider the child from the cradle up. The mother does not understand the necessity of regular attention to this matter by the child. The child grows up without any knowledge of it; the child would rather play than go to the toilet. When he goes to school, he often leaves home without having had a bowel movement. Many children will put it off until the bowel eliminates itself in the underclothing. This thing continues until the child has grown up, and the symptoms (causes) we are talking about are the results, in my opinion, of a constipation that has been brought on by ignorance or carelessness.

I have patients who say that the mother, father, aunts, grandmother, all were constipated and that they have hereditary constipation. There is no such thing. Every normal man is born free and equal so far as muscular activity is concerned. I am not speaking of obstipation, but of constipation. I find that in every single instance when I mention these things to my patients they admit that they are careless.

A business man, for example, on account of engagements in his office neglects his morning bowel movement. A frequent repetition of this brings on chronic constipation and autointoxication. Such patients cannot produce the normal gastric and intestinal juices, and cannot furnish proper nourishment for any of the tissues, and later we begin to have rectal trouble as a result of constipation. Perhaps there is an ulcer in the rectum and then the vicious circle begins; we have the rectal pathology keeping up the constipation and it keeps up the rectal trouble. I believe we must be consistent and differentiate between the results of constipation and its causes.

DR. CHARLES D. SPIVAK, Denver: Dr. Morgan's chart appeals to me greatly. We have not given enough attention to the recording of symptoms. We are gradually coming to understand that all the laboratory methods are not of as great importance as taking down and noting the symptoms that the patients themselves tell us. It may sound unscientific, but we have to learn our lesson from the surgeons who have found that a good history taken from the lips of the patient throws more light on the case than the laboratory can ever expect to shed, and that the initial symptoms, especially,

are the things that give the most light. A simple question as to whether the pain came first and then the vomiting, or the vomiting first and then the pain, may change the diagnosis.

Something has been said with reference to the taking of food. The taking of less food is considered a factor in constipation. This is absolutely wrong. When we say "taking food" we mean food in quantities sufficient for that particular man or woman. What may be enough for me is not enough for some one else. I have found that the quantity of food has nothing to do with these cases; that is, that the taking of a large amount of food does not necessarily preclude constipation. I have seen people who eat a great deal and are constipated, and I have also seen women who are not eating enough and they are also constipated. Both are abnormal. People take more food than they should, and when the quantity of their food is reduced their constipation as a rule ceases. There surely must be a mechanism by which this superfluous quantity of food put daily into the stomach starts the inhibitory function of the bowels. As soon as the food is reduced to the normal the natural inclination of evacuating the bowels starts.

DR. NATHAN ROSEWATER, Cleveland: Dr. Morgan's instructive paper demonstrates that there is no uniform acidity whether movements are regular or not. In my paper on enteroptosis, in 1900, I cited cases of superacidity or subacidity resulting alike in cures following abdominal plaster bandaging, whereas only symptomatic relief followed treatment by neutralization, thus convincing me that many superacidities and subacidities resulted from enteroptosis. I have often observed constipation and head cold occur the next day after loss of sleep from a night call. Tracing these sequences to loss of sleep, resulting in insufficient peristalsis. I always avoid them by taking a laxative before going to bed. Insufficiently resting the nervous system tends toward peristaltic insufficiency; conversely, sufficient rest and sleep maintain the efficiency of the regulating mechanism.

With Dr. Spivak I must differ about humoring those who have no appetite for breakfast. Surely the stomach is empty; nervous muscular and glandular systems have rested much longer than for the other meals. These patients mostly awaken with "that tired feeling" of all their muscles, external and internal. Their muscles of mastication and deglutition, and also the stomach musculature *feel* tired. I insist they must and can eat a good breakfast.

DR. DAVID BERCINSKY, New Haven, Conn.: From what I have heard here this morning I have received the impression that it is not necessary to bring any special proof to bear out one's statements. I will therefore say a few words in reference to the opinion of the previous speaker that constipation is a result of ignorance and negligence and that the speaker was surprised when he heard patients say that constipation was hereditary in their families. I do believe that there is a form of constipation which is entirely dependent on heredity; that it is not always ignorance or lack of care behind it. At least, I have had cases which convinced me of this.

Now, if we do inherit anatomy, why is it not possible that we may inherit abnormal physiology just as well as normal physiology. Inasmuch as constipation or normal evacuation of the bowels depends on the nervous rhythm of the intestinal peristalsis, this peristaltic rhythm may be individual and characteristic in certain families as a hereditary trait.

DR. WILLIAM G. MORGAN, Washington, D. C.: I did not consider or think I had the right to consider the etiology and treatment in this paper. If I had not unwittingly further contracted the scope and limit of this paper by confining it to spastic constipation, and had considered the gastric conditions in chronic constipation, the small diagram shown would probably have been quite different; and, as one of the gentlemen who discussed the paper pointed out, hyperacidity would have stood well at the head, and as Dr. Einhorn also pointed out, visceroptosis would probably have had a prominent position.

I agree with Dr. Murphy on the three causes for simple constipation. I think that is borne out by any one who takes the trouble to investigate the previous habits in these conditions, and it is in this type that the Christian Scientists

claim to cure and do cure, and it is this one disease more than any other which brings to them such an enormous following, and in which they assert the patients often have been to fifty good practitioners but still have their constipation unrelieved. Dr. Einhorn a great many years ago pointed out the best treatment in this class of cases when he said: "Do not think so much of your bowels. It does not make much difference if they do not move for two of three days." Don't let your patients think that their constipation, or chronic constipation, is a thing of serious import. A little regulation of diet, and a total absence of medicine and enemas, and allaying the fear of enlarged joints, or brain disease, or epilepsy, or old age as a result, and a large percentage of these patients will get well of their constipation and will be almost as grateful to you as they are to Christian Scientists.

THE RECTANGULAR FLAP INCISION FOR OPERATIONS WITHIN THE UPPER ABDOMEN*

WILLY MEYER, M.D.

Attending Surgeon, German and Postgraduate Hospitals
NEW YORK

The last decades have witnessed an increasing tendency of operative surgery to emancipation from the time-honored rule of placing the skin incision parallel to the longitudinal axis of the body.

Trendelenburg's transverse incision for operations within the bladder (1882) was one of the forerunners in this direction.¹ Later followed Pfannenstiel's² suprasymphiseal transverse incision of skin and fascia with median division of the deeper tissues for operations on the uterus and its adnexa (1898). In 1910, Sprengel³ of Brunswick demonstrated the advantages of the transverse direction of the incision in abdominal operations. He emphasized that the broad aponeurotic expansions of the three flat abdominal muscles which join and interlace with those of the opposite side in the median line, forming the linea alba, represent the tendinous termination of these muscles. If the latter contract, the many fine, little, tendonlike fascicles and fibers of these aponeuroses are put on the stretch and pressed together. Consequently, a transverse abdominal incision, which divides the aponeuroses in the direction of their fibers, had the physiologic tendency to *approach* the wound borders, while a cut perpendicular to the direction of their fibers, that is, a vertical cut in the direction of the longitudinal body axis, had the physiologic tendency to make the wound borders *gape*. However carefully stitched up, the tendency of the borders of a longitudinal wound during healing, particularly at times of sneezing or coughing, was to separate. Hence the observation, occasionally made, of a reopening of such a longitudinal abdominal incision, if the catgut used for layer sutures had become absorbed or burst, or retaining silkworm-gut sutures of skin and fascia have been removed too early. Hence, also, the placing of fascia retention sutures in the shape of the figure of 8 and otherwise, left in place for two weeks.

Within the last few years more interest has turned to this question also on this side of the Atlantic. A number of articles have appeared dwelling on this

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Meyer, Willy: Arch. f. klin. Chir. (Langenbeck's), 1885, **31**, 494.

2. Pfannenstiel, Joachim: Klin. Vortr. (Volkmann's), 1900, N. F., No. 268.

3. Sprengel, Otto: Arch. f. klin. Chir. (Langenbeck's), 1910, **92**, 536.

subject; Farr,⁴ Moschcowitz,⁵ and Meyer⁶ have called attention to the decided advantage of the transverse incision. On suturing the wound with catgut in layers, a reopening will hardly ever occur.

Furthermore, even in the event of suppuration following contamination of a transverse wound of the abdominal parietes, it will be seen that the deepest



Fig. 1.—Rectangular flap incision with a downward sweep of the right half of the cut within and parallel with the fibers of the right rectus muscle. Case of suspected duodenal ulcer. Appendix only found diseased and adherent in the pelvis.

continuous suture line embracing peritoneum plus transverse fascia and posterior sheath of the rectus muscle will hold. The abdominal cavity remains safely closed. Only in one instance have I seen an exception, and that was in a patient who, after an operation on his stomach, developed what seemed to be a typical tetanus, in all probability due to catgut infection. Here, with the boardlike hardening of the abdominal wall, the entire wound, inclusive of the peritoneum, reopened; reclosure with strong silk sutures, through-and-through, proved a difficult task.



Fig. 2.—Same incision as described in Figure 1, used in a case of sarcoma of the cecum with abdominal and retroperitoneal metastases above and below the umbilical line.

Necrosis of the fascia, not infrequently seen after the perrectal incision, in the case of infection within

the abdomen, occurs rarely when the transverse incision is used.

However, a surgeon, making use of the transverse abdominal incision in his daily routine work, cannot help noticing a number of drawbacks or rather defects of this incision. For instance, if the cecal region needs exploration and the patient has a long stretched abdomen, it will often not be easy to pull the parts up into the transverse wound above the umbilicus. Here a turn downward of the right extremity of the incision *within* the rectus muscle, with the possibility of lengthening this part of the incision downward to any desired extent, has proved a good combination in my hands. (Figs. 1 and 2.) For this reason, it is wise not to divide completely the right rectus muscle in the transverse direction. One can then always add the turn and downward sweep, should this indication become apparent in the course of the operation. This rectangular flap incision, with the short leg running downward, has given excellent results in three different cases. It can, of course, be employed equally effectively to the left of the median line, as I had occasion to observe.

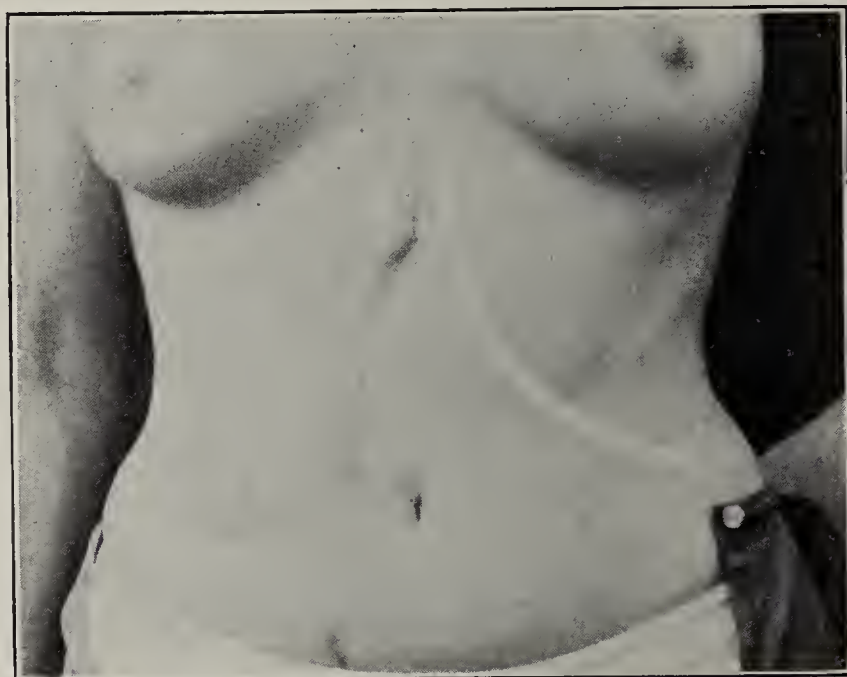


Fig. 3.—Steeply rising borders of the costal arches; they are marked with strips of adhesive plaster.

Further, when employing the transverse abdominal incision for work in the upper abdomen, particularly in gallbladder surgery, the surgeon will notice off and on that the exposure is unsatisfactory. The cause usually is a steep incline of the costal arches (Fig. 3). An additional incision in the median line down to, but not including the peritoneum, will then have to be added to make the upper border of the wound yield; or a horseshoe incision with straight shanks which divides the recti muscles obliquely instead of horizontally (Fig. 4) must be made from the start. It will also be seen, when using the transverse incision in gallbladder surgery, that not infrequently the liver border cannot be turned up well, the step so helpful in some operations of this type.

I have, therefore, particularly since 1915, more frequently made use of the rectangular flap incision also for operations within the upper abdomen, more specifically for operations within the upper right abdomen, namely, explorations of and operations on the gallbladder and bile system. Thus far, only one case has presented itself in which the indication for employing the incision on the left side of the median line could be found.

4. Farr, R. E.: Journal-Lancet, November, 1912; Am. Jour. Surg., September, 1915.

5. Moschcowitz, A. V.: Tr. New York Surg. Soc., Ann. Surg., 1915, p. 495; Am. Surg. Assn., 1916, p. 213.

6. Meyer, Willy: Ann. Surg., November, 1915.

It is on the basis of this experience that I wish to make a few brief remarks.

There are two different types of this approach: In the one, *all* the layers of the abdominal wall are divided through the same line of incision. In other words, all the tissues that make up the abdominal wall, inclusive of the posterior rectus sheath, transversalis fascia and peritoneum, are turned up in the shape of a rectangular flap (Fig. 5). It is self-evident that thereby the innervation of the abdominal muscles is not interfered with, as only fascias are cut and the muscle substance is divided transversely in the direction of the course of the nerves.

This is the method proposed by Koenig⁷ and Kehr.⁸

In the other type of incision only a rectangular *skin-muscle* flap is raised, which includes skin and subcutaneous fat plus the anterior sheath of the rectus muscle and a portion of its belly in the line of the skin incision, while the transversalis muscle and transversalis fascia with the posterior sheath of the rectus muscle—which is made up in this portion of the abdomen, in part at least, by the united aponeuroses of the transversalis muscle and posterior lamella of the aponeurosis of the oblique—plus peritoneum are incised in the oblique direction parallel and in front of the costal arch (Wechselschnitt). The intercostal nerves which feed the muscle substance of the rectus are always clearly exposed and here, too, absolutely preserved. (Fig. 6.) This is the method proposed by Perthes.⁹

1. *Koenig-Kehr Incision*.—When forming the typical rectangular flap by the Koenig-Kehr incision, the surgeon can most advantageously start the incision within or next to the median line (right or left), close to the xiphoid process, and then divide all the tissues of the abdominal wall nearly down to the level of the umbilicus. From this place, when the rectangular turn is rounded off, the skin with subcutaneous fat is divided in a horizontal direction to about the anterior axillary line. Before the outer part of the rectus

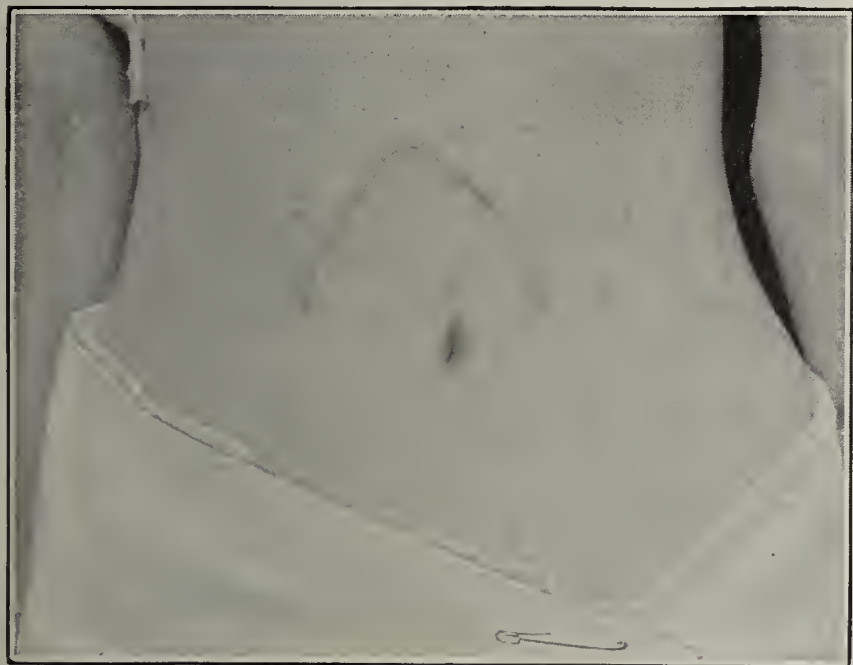


Fig. 4.—Horseshoe incision. Both recti muscles were divided obliquely, parallel with the steep costal arches in a case of gastro-enterostomy with pyloric exclusion for duodenal ulcer.

muscle is divided, its substance can be first fastened to the anterior rectus sheath by the two rows of catgut sutures as employed in the typical transverse incision

by Perthes (Fig. 7); the muscle is then divided between them (Fig. 8). If the surgeon prefers, these sutures can be omitted. Then the posterior sheath of the rectus with the peritoneum are divided in the same transverse line.

The access obtained by this incision is an excellent one. Should intra-abdominal conditions require the



Fig. 5.—Koenig-Kehr incision. All the tissues that make up the abdominal wall are divided in a rectangular line. Sharp retractor pulls on the parietal peritoneum.

insertion of drains, these are made to emerge at either the upper or the lower angle, as may be deemed best in the individual case. The suture of the wound is somewhat difficult, but entirely feasible.

2. *Perthes' Incision*.¹⁰—There is the same arrangement of the rectangular skin incision (Fig. 9), and of the longitudinal part of the cut as in Type 1 (Koenig-Kehr incision), but only down to, not through the posterior sheath of the rectus and peritoneum.¹¹ This part of the incision requires some care. In women who have gone through a number of pregnancies, the posterior surface of the rectus muscle often forms a firm unit with the thin aponeurotic structures and the peritoneum, all blended into one, rather atrophic, layer. Before the surgeon is aware of it, the peritoneal cavity is opened in the longitudinal, oftener in the transverse part of the incision, or in both, an irritating occurrence, since the hole has to be stitched up, and sometimes it will render impossible the intended division of the deeper layers in an oblique direction.¹² To avoid this accident it is advisable not to start *too* close to the median line and to divide the muscle fibers bluntly, with the handle of the knife. At the lower end of the longitudinal muscle division, just above the umbilicus, the second finger—better the second and third fingers—of the operator's pronated left hand are gently pushed between the muscle substance and its posterior sheath, until a resistance is felt at the outer turn of the rectus sheath (Fig. 10). With the two fingers in position, the two horizontal rows of surrounding catgut sutures are put in place (Fig. 10), the operator's fingers protecting the peritoneal cavity from

10. During the reading of the paper, the various steps of the operation were discussed with a motion picture.

11. If the costal arches rise steeply, the incision begins close to the xiphoid process and runs at first parallel with the costal arch. As soon as the place about 0.75 to 1 cm. distant from the median line has been reached, the knife turns downward as shown in Figure 9 (see Fig. 3). This additional incision upward can also be made in the course of the operation, should conditions require more room to do the work.

12. In two patients, one, a very fat man, and the other, a woman who had passed through many pregnancies, I found a ventral hernia, the posterior rectus sheath presenting quite a tear. With some care, this fascial hole could be nicely closed by means of a continuous suture, and then the operation continued.

7. Koenig, Fritz: *Centralbl. f. Chir.*, 1912, No. 16, p. 529.

8. Kehr, Hans: *Arch. f. klin. Chir.*, 97, 74.

9. Perthes, G.: *Zentralbl. f. Chir.*, 1912, No. 37, p. 1252.

being injured by the needle. The sutures are tied by the assistant, rather tightly. Between them the muscle is cut through (Fig. 11). Usually there is no bleed-

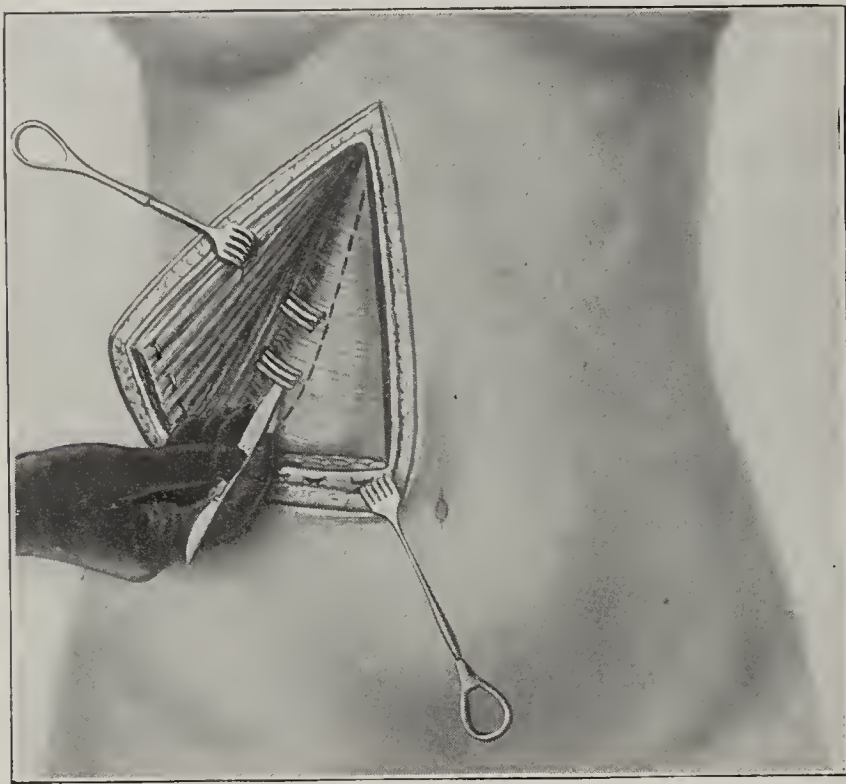


Fig. 6.—First step of Perthes' incision. Rectangular skin muscle flap raised, and costal arch exposed. Two intercostal nerves with their concomitant blood vessels that feed the rectus muscle are clearly in view. Right in front of their exit from the posterior sheath of the rectus, an oblique incision is made parallel with the costal arch.

ing at all, thanks to the efficient work of the transverse retention sutures, which not only prevent the retraction of the rectus fibers, but act as a prophylactic hemostatic. For that purpose, the assistant on tying these sutures has to pull on them firmly before knotting. Should the epigastric artery still bleed, it is wise in every instance first to secure and tie the few remaining bleeding points, which is best accomplished with a clamp with a rounded tip (von Bergmann's). Now a sharp retractor raises the skin muscle flap, while, with a gauze mop, the operator separates the muscle from the underlying aponeurotic structures toward the costal arch. Soon the two inter-

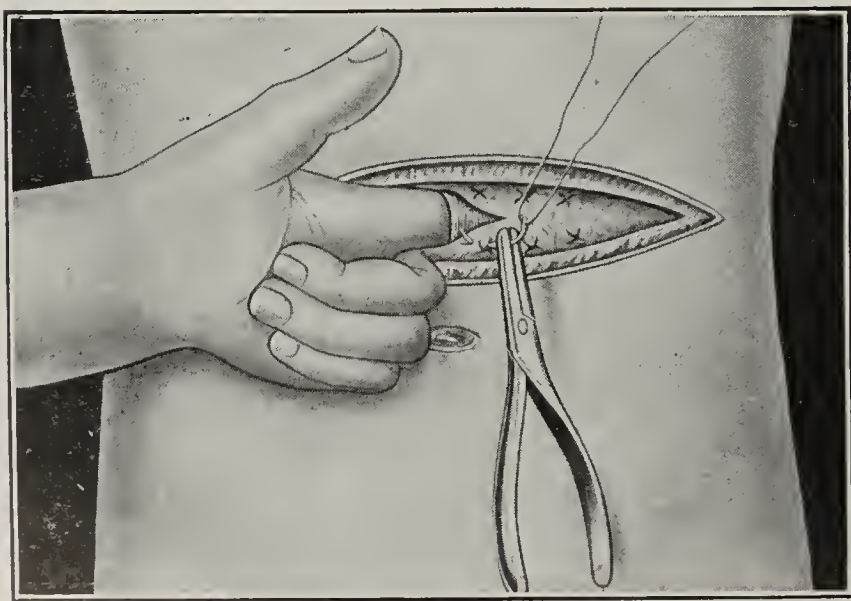


Fig. 7.—Transverse abdominal incision. Left forefinger introduced through a peritoneal buttonhole and three catgut sutures placed above and below with a round curved needle in a horizontal line about 1 cm. apart.

costal nerves with their concomitant blood vessels come into view. About one third inch (1 cm.) in front of these and parallel with the costal arch, the abdominal cavity is incised (Fig. 6).

Advantages.—The principal advantages of this abdominal incision are:

(a) Wide access is gained to the upper abdominal cavity, much better than by the longitudinal or transverse incision (Fig. 12).

(b) There is the same preservation of the muscle innervation as in Type 1, a factor which gains in importance in strong muscular male patients.

(c) The incision through the posterior sheath of the rectus and the peritoneum, down to its lower angle, is nowhere in the same line with the skin incision. It is situated on a higher level and runs in a different direction than the transverse cut dividing the anterior sheath of the rectus and the muscle, a point which greatly adds to the firmness of the resulting abdominal scar, and thereby guards against the occurrence of a ventral hernia, even in suppurative cases.

(d) The oblique cut through the transverse fascia and peritoneum usually meets the very border of the liver, or, in cases of ptosis, its convexity, same as the Courvoisier incision, which practically runs in the same direction as the oblique cut in the Perthes incision; however, it divides *all* the layers of the abdominal wall in one and the same line, including the nerves. The liver can be turned upward or pulled out in front of the abdominal wall, as the case may

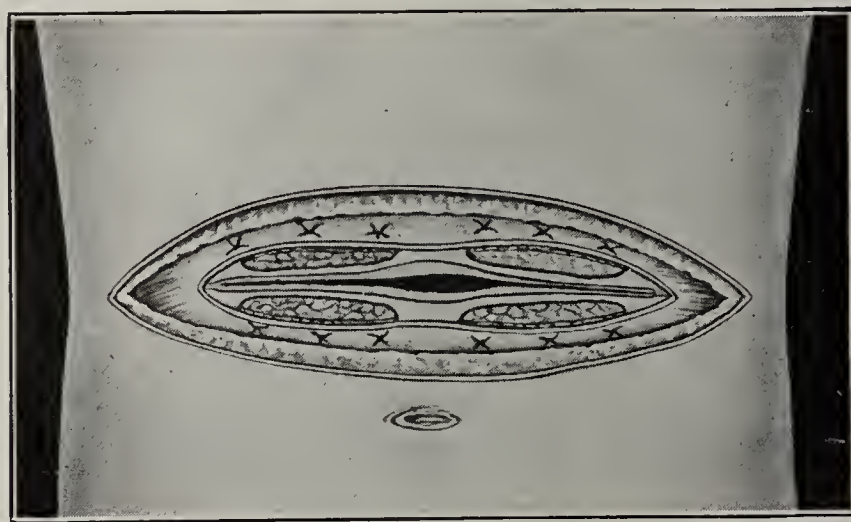


Fig. 8.—Division of the rectus muscle. Both muscles are severed in the transverse abdominal incision, between the two rows of transversely placed catgut sutures which fasten the muscle substance to the anterior rectus sheath and act at the same time as efficient hemostatics for the divided epigastric artery and its branches.

require and the fixation of the liver will permit (Fig. 12).

(e) The small intestines do not crowd into the wound; usually only the omentum and the colon (hepatic flexure), or the omentum, the colon and the pyloric end of the stomach with the duodenum come into view. The small intestines remain protected; less packing is required.

(f) On the left side of the median line, the additional cuts made through the seventh costal cartilage near the sternum and from the seventh to the tenth individual rib cartilages near their junction with the bony substance, as needed for the osteoplastic raising of the costal arch (Marwedel) in stomach operations near the cardia, are rendered easier than in Type 1. The costal arch is to be approached in this osteoplastic operation *underneath* the belly of the rectus muscle and *above* the transverse fascia. Here it can be easily and thoroughly exposed (Fig. 13).

Through this abdominal wound, made on the right side, a careful inspection and palpation of the entire length of the stomach, pylorus, duodenum, liver and gallbladder and pancreas are, of course, possible; that

is to say, all the organs of the upper abdomen which usually interest the surgeon. Any other desired palpation within the abdomen can also be carried out. In the great majority of the cases, also in patients with steep costal arches, the appendix can be nicely reached and removed, and additional operations on the stomach, for example, gastro-enterostomy, pyloric resection, etc., can be done at the same time.

Should still more room be needed, the horizontal part of the skin wound is somewhat lengthened outwardly, and the three abdominal muscles bluntly separated in the direction of their fibers, as in McBurney's intermuscular incision for appendicitis. If this intermuscular wound is properly held apart, the opening in the posterior sheath of the rectus muscle and peritoneum can be materially increased. I should also think, although I have so far never tried it, that in case of necessity there is no objection to lengthening the longitudinal part of the incision downward, or carrying the horizontal part of it across the median line to the opposite side (Fig. 14), although it seems to me that such a procedure would not be particularly good surgery.



Fig. 9.—Perthes' incision. Line of skin division.

The contents of the small pelvis can, of course, be thoroughly palpated through this incision, but operations on its organs will require a separate incision.

CLOSURE OF THE WOUND AND AFTER-TREATMENT

In closing up, it seems best to bring out the material used for drainage at the upper angle of the wound (Fig. 15). If the hepatic or common duct needs drainage, the normal downward direction of the bile current will induce the operator to make the exit for the drainage tube at the lower (outer) angle.

The suture of the oblique wound of the posterior sheath of the rectus and peritoneum—which tissues are frequently rather thin—to secure best results should commence at the angle which does not harbor the drainage. When this continuous, not interlocking, catgut suture is placed, the patient who, during the intra-abdominal work, has usually been but lightly under the anesthetic, should again be more deeply narcotized up to complete relaxation, and then the upper part of the body raised either by a sandbag or by means of an arrangement of the operating table. If the patient strains, these tissues may tear, although they are strong and resistant, and yield excellent material for safe and reliable union. Should this happen, the tear will nevertheless usually run from

the oblique wound in a transverse direction toward the median line, and can be well closed by a few interrupted stitches, after the longitudinal cut has been closed up to the tear, the operator having started the suture from both ends (Fig. 16).

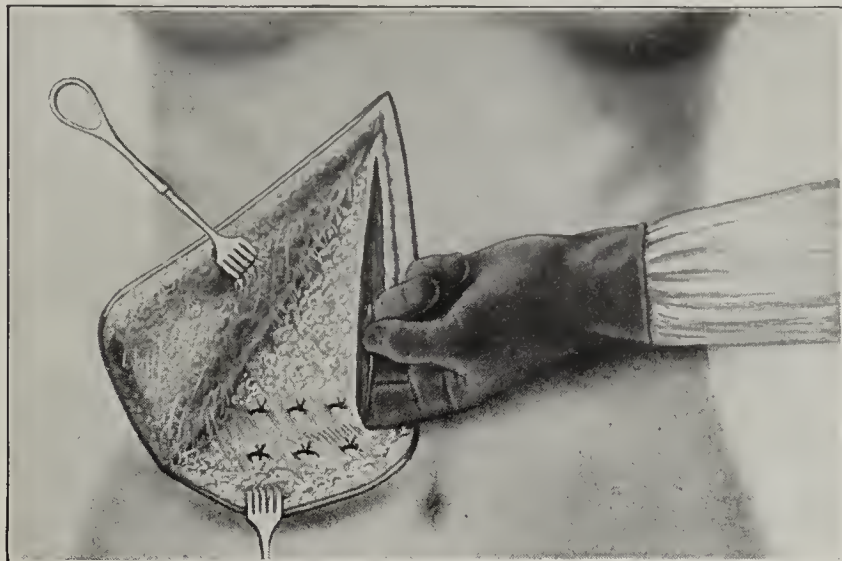


Fig. 10.—Rectus muscle divided bluntly near the median line and in the direction with its fibers. Near the umbilicus, two fingers of the operator's pronated left hand are gently pushed between the substance of the rectus muscle and posterior sheath. Double row of catgut sutures in place, about 1 cm. apart, each completely embracing and compressing a portion of the muscle.

In my last cases, I have sutured the oblique wound in front of the costal arch from above downward, irrespective of the drain exit, because the material to be stitched is more voluminous above than below (*transversalis muscle*, plus fascia and peritoneum), and thus less liable to tear, even if the patient should strain. By close attention, irregularity of the two sides and injury to the abdominal contents in closing the outer angle of the wound can be avoided.

The abdominal cavity having thus been closed, two rubber tissue cigaret drains are placed on top of the transverse fascia—a step of importance because this space must be drained. They emerge at the lower angle of the wound (Fig. 15). Then, the anterior rectus sheath is stitched up (Fig. 15). A clamp, originally placed at the curve of the wound in the anterior sheath of the rectus, will prove of great help



Fig. 11.—Muscle being cut through transversely between the two rows of transverse sutures.

in suturing this fascia neatly. One interrupted stitch is first placed at this spot with its ends left long.

In the longitudinal part of the fascial wound it is sufficient for the needle to catch the wound border internally with some additional muscle tissue exter-

nally. When the single suture at the curve is reached, the longitudinal suture is knotted with one of its ends. Another continuous suture is then started.

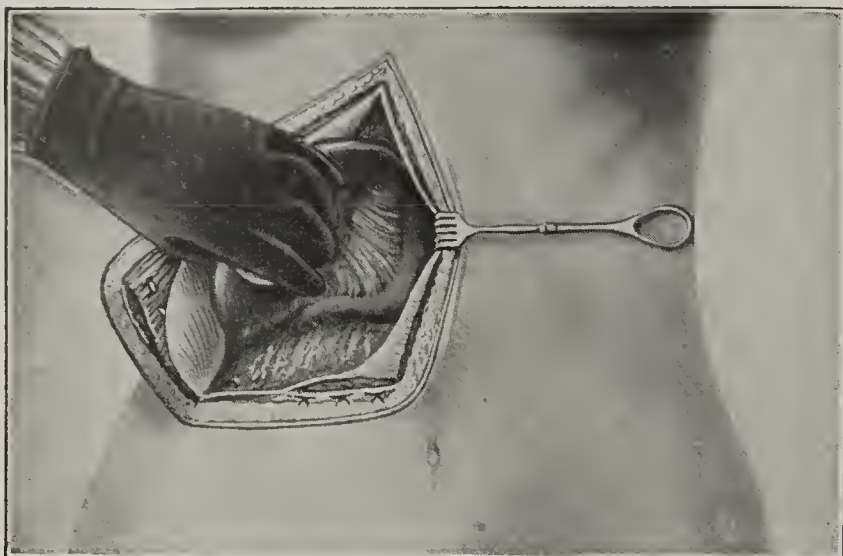


Fig. 12.—Second (oblique) incision finished. Wide access to the liver, gallbladder and bile-ducts and other parts of upper abdomen.

In the transverse portion of the incision, needle and thread take the transversely placed two rows of fascia-muscle sutures in their grasp (Fig. 15). The skin flap is secured by a few silkworm-gut sutures, and the wound is closed by means of a running suture of fine catgut or silk (Fig. 17). After the patient has reached the bed he is placed in a pronounced right-sided Syms' position for the first twenty-four to thirty hours. This position favors drainage and the rapid attachment of the skin-muscle flap to the deeper layers. I have been using this posture for many years in all cases of cholecystectomy, drainage of the bile ducts, perforative appendicitis, etc., requiring drainage, to my greatest satisfaction and benefit to the patient.

PERSONAL EXPERIENCE

Thus far I have made use of the two types of rectangular incision in a rather limited number of cases.

The through-and-through cut (Koenig-Kehr) I

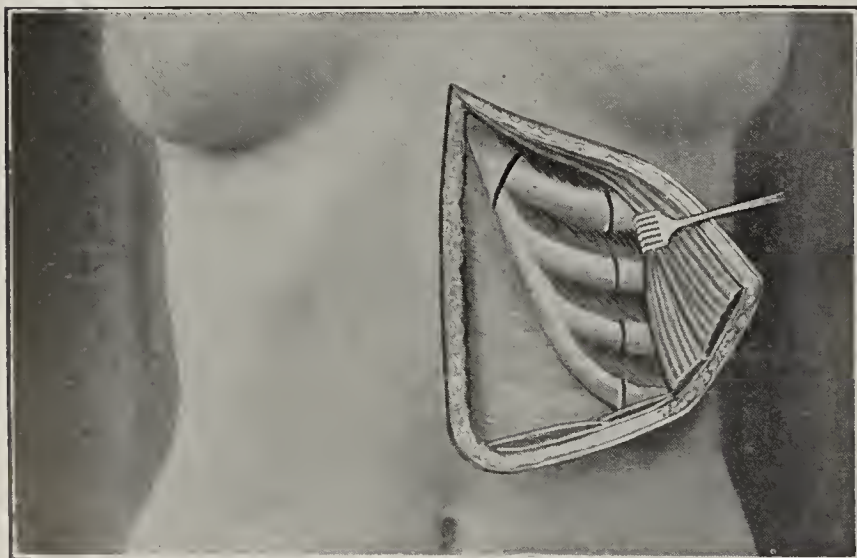


Fig. 13.—Easy approach in Perthes' incision to the left costal arch for making the division of rib cartilages for the osteoplastic lifting of the arch in operations at or near the cardia (diagrammatic).

have tried but three times; once, a number of years ago in a case of cholecystectomy; the second time, in a patient with suspected duodenal ulcer, when an

unintended division of the peritoneum, in the line of the transverse cut, frustrated the contemplated Perthes incision, in which case only a diseased appendix was found and removed; the third time, in a case of cholecystectomy in a multipara, in whom, when the muscle was being bluntly separated from its posterior sheath, the abdominal cavity was unintentionally opened in the perpendicular as well as the horizontal part of the incision.

The typical Perthes incision which was designed for operations on gallbladder and bile ducts has been tried by me in twenty-one patients,¹³ in the majority of whom cholecystectomy was done; in one case, additional choledocholithotomy, with subsequent hepatic drainage, had to be carried out; in two instances, it was employed as a useful entrance for exploration with added appendectomy; once, a subhepatic abscess consecutive to a duodenal ulcer was found.

Perthes himself, at the time of his publication, had tried it in sixteen patients; he praises its advantages.

The number of patients thus far operated on is not large. Still, the number has been sufficient to convince me of the real value of the rectangular flap incision. The Perthes incision, in particular, with the excellent access it affords and the easy closure of



Fig. 14.—Lengthening one leg in the rectangular incision beyond the curve, either way, in case of emergency. (Method not tried; questionable surgery).

the wound, represents a valuable addition to our resources. The strong muscles of an athlete can be thoroughly preserved by it. Not the slightest weakness of the abdominal wall results. There is less tendency to hernia, even in suppurative cases.¹⁴

In view of the possibility of thorough inspection and wide access to all organs within the upper abdomen, and also our ability usually to remove the appendix easily through Perthes' incision, it seems to me the better policy in many cases of exploration to reverse the usual advance, that is, to cut down oftener on the gallbladder through this incision, palpate *and inspect* systematically the respective organs, and remove the appendix from this wound, rather than proceed in the opposite direction. The palpating hand pushed up through an appendicular incision can,

13. Since this paper was read, one additional operation has been carried out, making in all 22 cases in which the Perthes incision was employed.

14. In one patient, in whom cholecystitis was suspected in addition to a duodenal ulcer, a subhepatic abscess (streptococcus infection) was encountered. The gallbladder rested on the posterior parietal peritoneum and did not require removal. Here the space beneath the skin-muscle flap was temporarily drained with gauze tamponade and several rubber tubes. Although in the course of the following purulent discharge from this wound, the transversely sutured portion of anterior rectus fascia with muscle substance became necrosed and was pushed off in the shape of a sequestrum, an abdominal hernia did not follow. This observation is in agreeable contrast to the experience which occurs now and then, that necrosis of the anterior rectus fascia with some muscle substance, following the perrectal longitudinal incision for infected intra-abdominal troubles, induces the formation of a ventral hernia.

of course, *feel gallstones*, but it cannot detect, as the operator can by direct visual examination through the rectangular incision, distended bile ducts, adhesions of gallbladder and ducts with neighboring organs, or view the actual condition of duodenum, pylorus, etc.

In other words, by employing the appendix incision the surgeon can only palpate the condition of the organs of the upper abdomen; whereas in the rectangular Perthes incision he can palpate *and inspect*, insuring at the same time a perfect reconstruction of the abdominal wall.

Of course, the rectangular flap incision has not lately been exclusively made use of by me for all operations within the upper abdomen. Quite often the usual longitudinal perrectal approach was selected on either side of the median line, particularly in the female sex and in cases of acute infection demanding quick and immediate interference. Still oftener the typical transverse incision was favored. However, the more I have seen of the advantages of the Perthes incision, the more I feel inclined to try and let exploratory incisions and selected stomach affections also be benefited by it. It will be seen that work near the cardia especially can be made easier by this incision, inasmuch as the osteoplastic resection of the costal

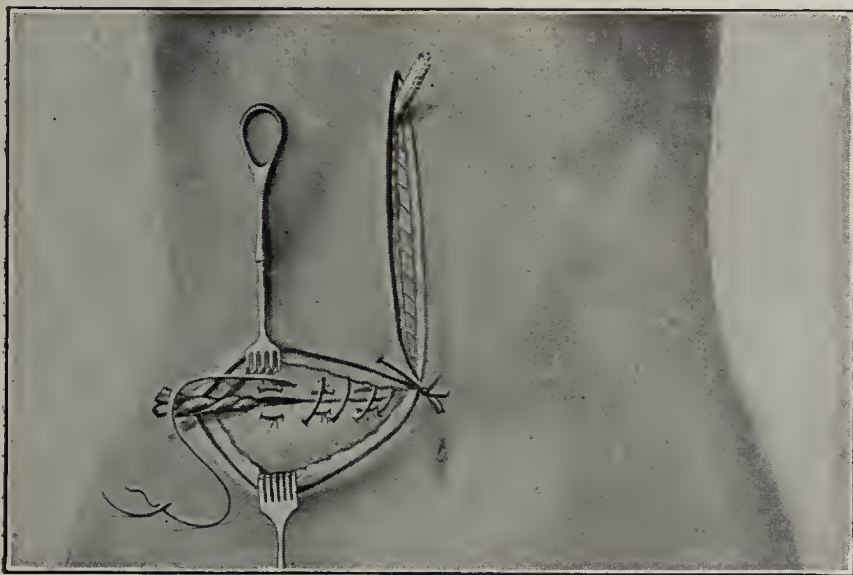


Fig. 15.—Rectangular incision being closed. Rubber tissue drain in bed of gallbladder, covered by the two sutured peritoneal flaps retained from the same, emerges at the upper angle of the wound. (A cigaret drain reaching down close to the ligated cystic duct is added in every case.) Longitudinal part of incision is closed, the transverse one in process of suturing. The thread embraces the transverse sutures. The fixating suture of the angle has been indicated by the artist. It should catch the fascia, not the skin as shown in the illustration, and the skin muscle flap should still be reflected. When suturing the skin, this corner stitch will be found of the same benefit as when closing fascia.

arch, as mentioned in the foregoing, appears to be a logical addition.

Nevertheless, let us remember that these rectangular flap incisions are only an addition to our operative resources. No one incision represents a panacea. We must adapt the incision to the individual case, and not the case to the incision.

The surgeon will act wisely if he becomes thoroughly acquainted with all types of abdominal incisions that have been found to be of value and present advantages for certain conditions.

700 Madison Avenue.

ABSTRACT OF DISCUSSION

DR. ROBERT E. FARR, Minneapolis: For the past six years I have not made a vertical incision above the navel. Two or three points I wish to take up in particular:

1. In relation to the retraction of the rectus muscle after incision is made, there is no reason for putting in the sutures

except for the purpose of hemostasis. Measurements made in 150 of my cases show an average of 1 cm. of muscle projecting past the fascia, without a single exception. If this muscle does not project from above, it will project from

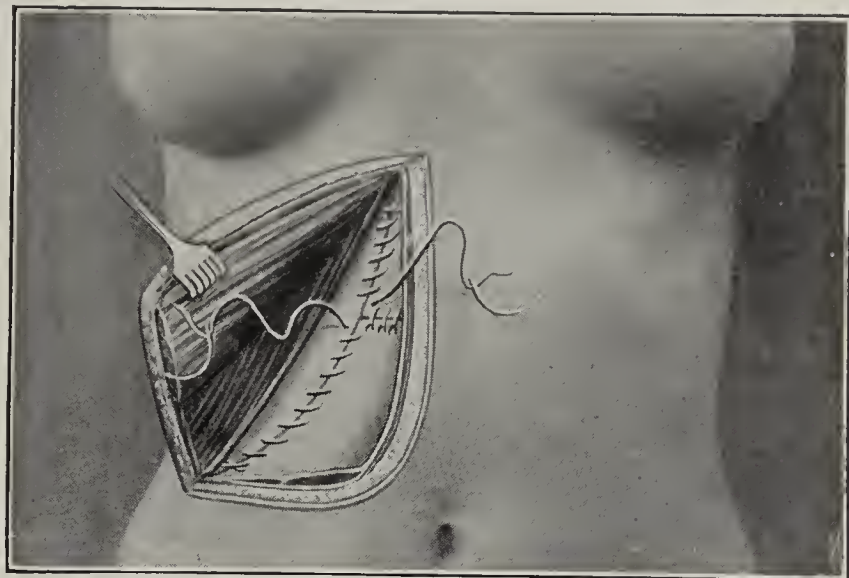


Fig. 16.—Transverse tear in the upper half of the oblique incision. It can be nicely repaired by first closing the main incision, suturing from either end with two needles toward the tear.

below; our measurements have shown no variation in this respect. A coaptation of the posterior and the anterior fascia always brings the red meat together.

2. Unquestionably there is more hemorrhage in these cases than when vertical incision is made, but to my mind this is an indication that they will heal better, just as there is better healing in the tissues of the face because of their great vascularity.

3. The researches of Quain of Bismarck, N. D., at the University of Minnesota, showed that when the pararectus incision was made, cutting off one, two or three of the thoracic nerves, abdominal adhesions resulted between the visceral and parietal peritoneum. In the control cases, in which the nerve supply was conserved, no such adhesions were found. This seems to me to be a very important piece of research.

4. In the matter of drainage I differ from Dr. Meyer in that I place the drainage well back, far to the right. To bring out the drain where Dr. Meyer does, the incision must be made further to the left. I like the transverse incision which extends a little past the midline and is then joined by a vertical incision. In two of my cases, in which both the vertical and transverse incisions were made, hernia occurred in the vertical, while the transverse held. Sprengel, also, has reported two such cases.

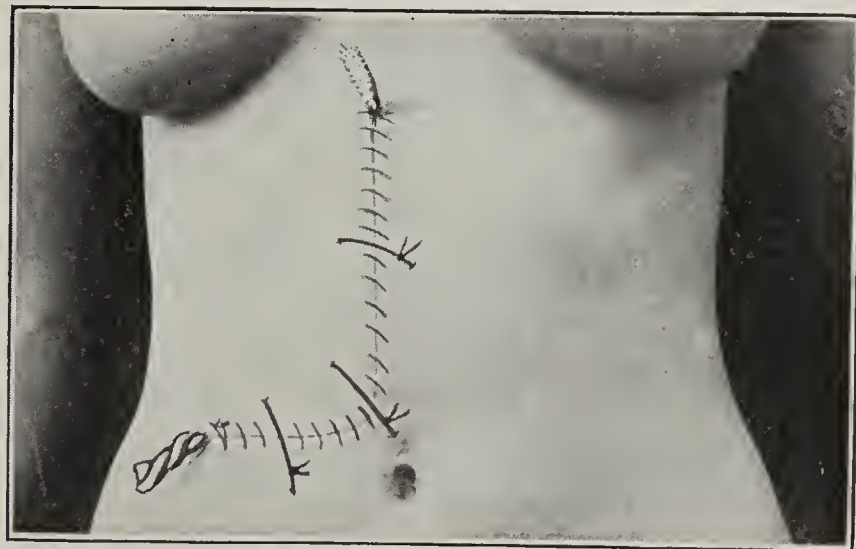


Fig. 17.—Silkworm-gut is used for retention of corner of the skin flap. The same is placed in the middle of the long and short leg of the cut.

DR. FRED B. LUND, Boston: I have been trying the transverse incision and have found that one cannot get the liver out so well as with the oblique incision. It is so easy to sew

up the transverse incision that at first you think you will not do anything else as long as you live. The long oblique incision, however, brings out the liver better. A combination of the two comes nearest to the ideal in a certain number of cases.

DR. WILLY MEYER, New York: I consider this rectangular flap incision to be entirely different from the transverse incision. In gallbladder surgery in particular I would prefer the rectangular flap incision. The retention sutures through fascia and muscle I consider an advantage. This incision can just as well be used in the left side. Particularly in operations near the cardia one will find it giving splendid access. I have employed it so far in one case only and could well work close to the cardia. Access can be further improved by an osteoplastic operation on the costal

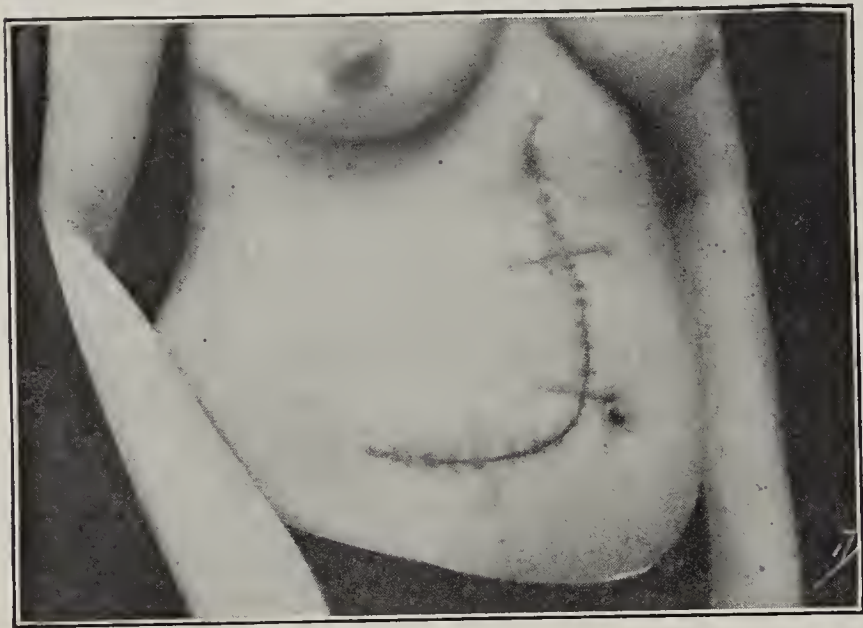


Fig. 18.—Final result. The short transverse scars mark the place of the two upper silk worm-gut skin sutures which had grasped the anterior sheath of the rectus muscle and were left in place for ten days. Securing the fascia in this manner usually is unnecessary, because the two cuts that make up Perthes' incision run at different levels and in different directions, the skin-muscle flap covering like a cap the entrance into the peritoneal cavity.

arch. Of course we will not adhere to any one incision, neither the transverse, nor the longitudinal, nor to the rectangular flap; I think we should practice them all.

INTRAVENOUS FOREIGN PROTEIN IN THE TREATMENT OF PSORIASIS *

FRANCIS J. SCULLY, M.D.

Research Fellow, Cook County Hospital

CHICAGO

In the treatment of chronic skin diseases which often resist the usual therapeutic measures, any new method of therapy that causes a more rapid and effectual disappearance of the lesions is worthy of investigation. This is particularly true of psoriasis, which is widely prevalent, and many times resists our best efforts to clear up the lesions. On account of its obscure etiology most forms of treatment have been used empirically, which probably accounts for the great variety and diversity of the methods employed.

Chrysarobin, first used by Keith in 1877, is probably the best known remedy, but possesses many disadvantages and does not always relieve the chronic cases. In treating these obstinate cases, strong preparations of chrysarobin have been used; but on account of the dermatitis produced, they could not be applied for long periods of time, necessitating an interrupted and

long drawn out course of treatment. Chrysarobin also has the disadvantage of staining the clothing, linen and skin with which it comes in contact. Therefore, any method which will obviate or shorten its use will be of particular value.

Since the exact action of chrysarobin is not understood, it has been difficult to determine what measures will augment its curative effect. The research of Schamberg, Ringer, Raiziss and Kolmer¹ has shown that it has a marked affinity for the proteins of the lesions, especially the scales, but apparently has no germicidal activity. In connection with this study, they also noted that there is a nitrogen retention in psoriasis; however, a restricted protein diet has been tried with only limited success.

In the last four years, intravenous injections of autogenous serum have been employed. At first, this was advocated by Gottheil and Satenstein², Fox³ and Hilario⁴ as being a very reliable and efficacious method in the obstinate and resistant cases, though later reports by Fox,⁵ and Trimble and Rothwell⁶ indicate that it is successful only as an adjunct to former methods of treatment. Along the same line, Perry⁷ has used subcutaneous injections of horse serum with about equal success.

Recently Engman and McGarry⁸ used intravenous injections of typhoid vaccine with favorable results. They recommended it for further trial, and it was decided to investigate this form of foreign protein therapy in the dermatologic wards of the Cook County Hospital.

TREATMENT BY INTRAVENOUS INJECTIONS OF FOREIGN PROTEIN

Eight cases of chronic psoriasis were selected which were resistant, or were responding slowly, to other therapeutic measures. Previous to the use of the vaccine three patients had been using applications of chrysarobin, one ichthyol, and another arsenic internally, each one without marked improvement. These patients all had generalized lesions of the guttate or nummular types, and in four patients the face and scalp were also involved. The duration of the present attack varied from one to seventeen months. All the patients had had previous attacks, which in four cases had entirely cleared up under treatment, while in the others the condition had subsided somewhat, with lesions remaining up to the beginning of the present attack. These patients remained in the hospital during the entire course of treatment. In the mild cases occurring in dispensary patients, this treatment was not employed, as it was not considered advisable to use the vaccine in patients who would not be under observation during the reaction following the injection.

1. Schamberg, J. F.; Ringer, A. I.; Raiziss, G. W., and Kolmer, J. A.: Summary of Research Studies in Psoriasis, *THE JOURNAL A. M. A.*, Aug. 29, 1914, p. 729; Research Studies in Psoriasis, *Jour. Cutan. Dis.*, 1913, **31**, 698, 802. Schamberg, J. F.; Kolmer, J. A., and Raiziss, G. W.: Germicidal Activity of Chrysarobin, *ibid.*, 1915, **33**, 1; Biochemical Properties of Chrysarobin, *ibid.*, 1915, **33**, 98.
2. Gottheil, W. S., and Satenstein, D. L.: Autoserum Injections in Certain Obstinate Dermatoses, *Med. Rec.*, New York, 1914, **75**, 620; The Autoserum Treatment in Dermatology, *THE JOURNAL A. M. A.*, Oct. 3, 1914, p. 1190.
3. Fox, Howard: Autogenous Serum in Treatment of Psoriasis, *THE JOURNAL A. M. A.*, Dec. 19, 1914, p. 2190.
4. Hilario, J.: A Contribution to the Autoserotherapy of Certain Diseases of the Skin, *Jour. Cutan. Dis.*, 1914, **32**, 780.
5. Fox, Howard: Human Serum and Blood in the Treatment of Psoriasis and Other Skin Diseases, *Jour. Cutan. Dis.*, 1915, **33**, 616.
6. Trimble, W. B., and Rothwell, J. J.: Treatment of Psoriasis with Autogenous Serum, *Jour. Cutan. Dis.*, 1915, **33**, 621.
7. Perry, A. P.: The Treatment of Psoriasis with Horse Serum, *Boston Med. and Surg. Jour.*, 1916, **174**, 274.
8. Engman, M. F., and McGarry, R. A.: The Treatment of Certain Diseases of the Skin by the Intravenous Injection of a Foreign Protein, *THE JOURNAL A. M. A.*, Dec. 9, 1916, p. 1741.

* From the Department of Dermatology, Cook County Hospital.

The foreign protein employed in these cases was typhoid vaccine prepared from an active culture, grown twenty-four hours on agar slants, washed off with saline solution, killed by heating at 70 C. for two hours, and preserved by the addition of 0.5 per cent. phenol (carbolic acid). It was diluted so that each cubic centimeter contained 100,000,000.

From three to five injections were given at intervals of from three to four days. The average dose was from 75,000,000 to 100,000,000, the same dose being used for the succeeding injections as for the initial injection. Following the third injection, 2 per cent. chrysarobin ointment was applied daily to the lesions on the body, and 5 per cent. ammoniated mercury ointment to the face and scalp. No internal medication was given.

The reaction following the vaccine was similar to that observed in acute articular rheumatism,⁹ except that the rise of temperature and the leukocytosis were not so marked. The succeeding injections were followed by a less marked reaction than the preceding injection. The maximum rise of temperature was to 103 F., and the maximum leukocytosis was 17,600. Headache was noted in two cases, and nausea and vomiting in one case. No other ill effects were observed.

Following the first one or two injections, the lesions became less inflammatory and less indurated, although there was no noticeable retrogression in the extent of the lesions. However, no new lesions appeared. Scaling was also diminished. In two patients who had previously been using chrysarobin, the lesions cleared up rapidly after the injections of the vaccine. In the other patients the condition presented little change until after the application of chrysarobin, following which the lesions disappeared completely in from eight to sixteen days.

The dermatitis resulting from prolonged use of chrysarobin cleared up promptly after one injection of the vaccine. One patient who had been using chrysarobin previously had developed a marked dermatitis. Following the first injection of the vaccine, the itching and erythema disappeared within twenty-four hours. Another patient who had received three injections of vaccine and was using chrysarobin ointment developed a mild dermatitis on the seventh day after the last injection. Following a fourth injection, the dermatitis subsided rapidly.

COMMENT

In general, the results of the vaccine were favorable, considering that only chronic and obstinate cases were treated. The mild cases respond readily, as a rule, to applications of chrysarobin, but in the chronic cases more vigorous treatment is necessary, and it is in these cases that the use of the vaccine finds a place.

When used alone, the vaccine does not clear up the lesions, though it diminishes the induration and inflammatory reaction. However, when used in conjunction with chrysarobin the lesions seem to yield more rapidly than under chrysarobin alone. That the vaccine has some influence and the good results are not due to the chrysarobin alone is illustrated by the three patients who had been using this remedy previous to the vaccine. No noticeable improvement was observed with the chrysarobin until after one or two injections of vaccine, when the lesions cleared up rapidly.

The treatment is simply symptomatic, clearing up the existing lesions, and offers no permanent relief. Recurrences are as likely to follow as when any other form of therapy is employed.

The use of intravenous vaccines has the advantage of easy administration, but has the disadvantage of a more or less marked reaction following the injection, necessitating that the patient remain in bed for from eight to ten hours. The autoserum injections, on the other hand, can be given in the office or the dispensary, but their preparation requires time and care, with a consequent danger of infection.

The dermatitis which results from prolonged use of chrysarobin is easily cleared up. The skin sensitiveness is diminished, and ordinary medication is more effectual and can be pushed without exciting an inflammatory reaction. When a dermatitis is already present, it disappears shortly after the injection, and



Fig. 1.—Guttate and nummular lesions distributed over the back and buttocks in a case of psoriasis.

local treatment is not interrupted. Spiethoff,¹⁰ using injections of autogenous and foreign serum, points out that those dermatoses which in the course of treatment develop an especial susceptibility to chemical substances are amenable to this form of therapy. Luitlen¹¹ has shown by animal experiments that inflammatory skin reactions are favorably influenced by parenteral injections of autogenous and foreign serum, as also by colloidal substances, in that the skin sensibility is altered toward the irritants applied to it.

The changes which occur following the intravenous injection of vaccine and which result in the retrogression of the lesions are not fully understood. Whether it is due to a mobilization of ferments, as observed by

9. Scully, F. J.: The Reaction After Intravenous Injections of Foreign Protein, *THE JOURNAL A. M. A.*, July 7, 1917, p. 20.

10. Spiethoff, A. B.: Die Herabsetzung der Empfindlichkeit der Haut und des Gesamtorganismus durch Injektionen von Eigenserum, Eigenblut und Natrium nucleicum, *Dermat. Wehnschr.*, 1913, 57, 1227.

11. Luitlen, Friedrich: Veränderungen der Hautreaktion bei Injektion von Serum und kolloidalen Substanzen, *Wien. klin. Wehnschr.*, 1913, 26, 653.

Jobling and Petersen,¹² with changes in the metabolism, or to a dispersion of the colloids¹³ with biochemical changes in the serum, is still a subject of inquiry. Engman and McGarry⁸ point out that hyperpyrexia may be a factor, as they observed the retrogression of

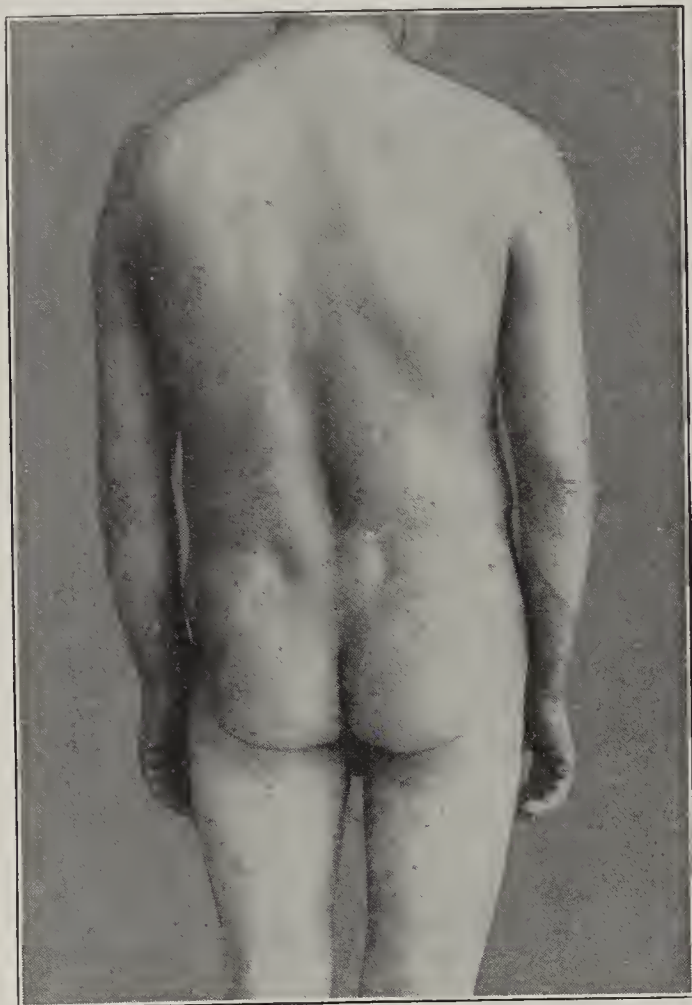


Fig. 2.—Same patient after three weeks' treatment with chrysarobin ointment topically and protein vaccine intravenously. Lesions have cleared up and only slight pigmentation remains.

the lesions of psoriasis in intercurrent infections, as pneumonia and typhoid fever.

If psoriasis were of an infectious origin, the effect of the vaccine might be explained on the same basis as in acute articular rheumatism and typhoid fever, according to the views advanced by Jobling¹⁴ and by Teague and McWilliams.¹⁵ However, careful research by Schamberg, Ringer, Raiziss and Kolmer¹ failed to determine any organism as the causative agent.

It may be, as assumed by Spiethoff,¹⁰ Gottheil and Satenstein,² and others who have used the autoserum therapy, that the psoriatic foci are rendered more susceptible to medication, or that the skin is rendered less susceptible to local treatment allowing prolonged and stronger medication without producing a dermatitis. This seems probable from the clinical phenomena and results which were obtained.

CONCLUSIONS

1. Intravenous vaccines alone do not clear up the lesions of psoriasis, though they do lessen the induration and inflammatory reaction.
2. When used in conjunction with weak chrysarobin ointment, the lesions clear up rapidly.

12. Jobling, J. W., and Petersen, William: Bacteriotherapy in Typhoid Fever, *THE JOURNAL A. M. A.*, Aug. 7, 1915, p. 515.

13. Jobling, F. W., and Petersen, William: The Nonspecific Factors in the Treatment of Disease, *THE JOURNAL A. M. A.*, June 3, 1916, p. 1753.

14. Jobling, J. W.: The Influence of Nonspecific Substances on Infections, *Arch. Int. Med.*, June, 1917, p. 1042.

15. Teague, Oscar, and McWilliams, H.: Bacteriolytic Power of Normal Human Sera and of Typhoid Patients' Sera for Typhoid Bacilli, *Jour. Immunol.*, 1917, 2, 193.

3. Favorable results were obtained in chronic generalized cases resistant to other forms of treatment.

4. Chrysarobin dermatitis is prevented by the vaccine, and when present yields promptly.

5. The action of the vaccine is not fully understood, but it seems to lessen the sensitiveness of the skin to local medication, allowing uninterrupted treatment.

LARGE VESICAL CALCULUS

J. P. BROWNE, M.D., PLAINFIELD, ILL.

Miss A., a rather thin, anemic girl, aged 16 years, consulted me last July as she was troubled with constipation. She gave a rather obscure history of pain in the bladder and lower abdominal region, especially when urinating or having a bowel movement.

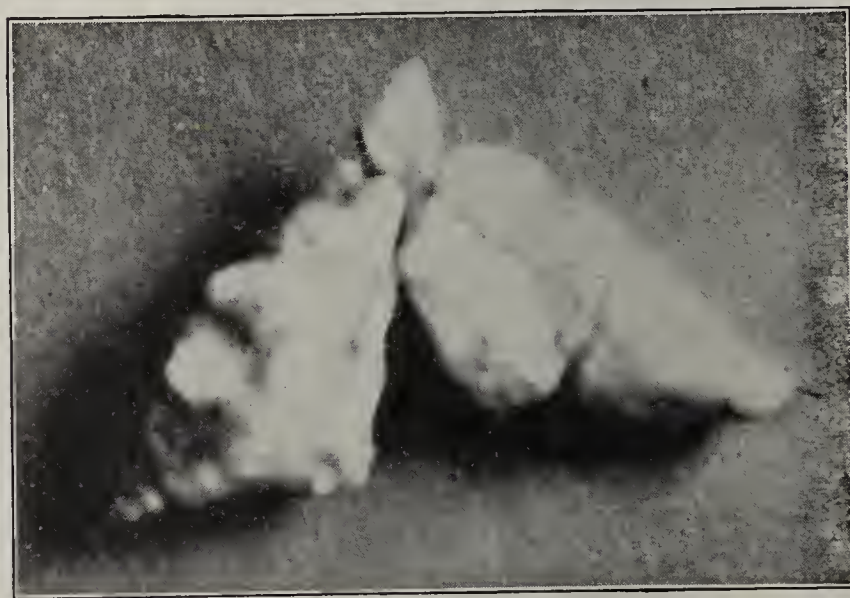
The patient stated that she thought there might be calculi in the bladder and that she had attempted to remove a small stone from the urethra with a hairpin.

A sound, when passed into the bladder, immediately struck a stone apparently at the bladder entrance to the urethra. An operation for removal of the stone was immediately advised, and the patient was removed to Silver Cross Hospital, Joliet, Ill.

A cystoscopic examination revealed the presence of a large stone with a foreign body embedded in it. Suprapubic incision for removal of the mass was determined on and immediately performed. An immense calculus 4 inches in length and 3 inches around several different circumferences was removed. The calculus had grown around a hairpin as a nucleus. The hairpin was lying in the bladder in a widely extended obtuse angle, and was covered with the deposit to within about a quarter of an inch of each end. The mass tapered from the center toward each point.

The bladder was thoroughly irrigated, the wound closed, and a retention catheter inserted. Daily irrigations were instituted, and an uneventful recovery followed.

The accompanying illustration shows the exact size of the calculus, although portions of it crumbled during removal. The length of time that the hairpin had been in the bladder could not be determined, but the enormous size of the cal-



Vesical calculus formed around a hairpin as a nucleus.

culus would indicate that it must have been there for months, perhaps years.

Selective Gymnastics.—The director of hygiene of the Dayton, Ohio, schools has recommended to the school authorities a plan for gymnastic instruction of the school pupils on a selective plan. The children will be divided into groups after careful physical examination, and each group given such exercises as are adapted to their strength, requirements, etc.

Military Medicine and Surgery

THE WORK OF THE AMERICAN RED CROSS MISSION TO RUSSIA*

FRANK BILLINGS, M.D.

Chief of the American Red Cross Mission to Russia

CHICAGO

The mission that I had the honor to lead into Russia was composed of twenty-one commissioners; I have never been associated with a finer body of men. Those from Chicago, Major Wilbur E. Post, Major Harold H. Swift, and Major Raymond Robins, made me feel proud of Chicago. Each of those men was on tiptoe, as indeed was every other member of the mission. There are some members of that mission who need mention; but when I do mention some of their names it does not mean that the work of others on the mission was less notable. As it happened, because of conditions in Russia and because of the character of the men, Raymond Robins did a notable work and is continuing to do notable work there. If Chicago does not know Raymond Robins yet, I want to say that Chicago should cherish and honor Raymond Robins because if ever man did, he loves his fellow men.

All the men from the East did notable work, and some of us left this country without much sacrifice; but this was not true of all. One man whom I invited to go was with me in Russia twenty years ago. I knew that the one being on earth that made life worth living to him was an invalid, and that perhaps he could not go; but when his wife heard that he was invited to go she said to him and to his friends that she would be made absolutely happy if he would go, because she felt her illness of years had kept him from doing the things for his country that she desired him to do. And when they bade each other good-by, it was with the feeling that they would never see each other again. He left with the mission, and in August that patriotic woman died. Can you think of any more sublime patriotism than that expressed by this noble woman and by her husband, Dr. W. S. Thayer, who went with me to Russia? Dr. Thayer remains with the other members of the mission left in charge of the Red Cross work there, the chief of the medical department.

We were four months away from Chicago, and

were two months in Russia. That is but a short time. It would, therefore, be presumptuous on the part of any one who would say that he brought a final word of Russia to you. Even those who have lived in Russia for years do not understand Russia; but because of the nature of our mission, and because of the problems put up to it by the War Council of the Red Cross and by Mr. Root, we made a broad survey of conditions in Russia, including an investigation into conditions that involved the revolutionary government, the sanitary department of her army, the public war relief organizations of Russia, food for the army, and many other problems related to the civilian population. This necessarily brought knowledge to the members of our mission that we otherwise would not have obtained, and it is because of this that I presume to tell you something of Russia tonight.



Fig. 1.—Lieut.-Col. Frank Billings, chairman of the mission.

POLITICAL CONDITIONS IN RUSSIA

To make you understand something of what we saw in Russia, I should like to give a perspective of that great nation. Those who have not been in Russia think of Russia as a big country, as it is; but you do not know how vast it is. One thinks of Siberia as a place that is barren, cold, inhospitable, and not fit for the habitation of man, and a place which Russia under the old régime has used as a prison house for its civilian and political prisoners. That is not true. Russia, including Siberia, is vast, and when one travels through it the distance from one point to another seems interminable. The Trans-Siberian Railroad extends 5,500 miles from Vladivostok to Petrograd. The territory in extent, as it existed before the war, is over 6,000 miles from east to west, and over 2,000 miles from Archangel to Odessa. This vast country is populated by only 180,000,000 people. I say only 180,000,000 because there is room for 500,000,000 and more. Siberia alone, with over 5,000,000 square miles, has only about 6,000,000 people, and these are mainly scattered along the Trans-Siberian Railroad, which traverses one of the most beautiful countries that man may look on. It is like traveling through our beautiful Western States. There are magnificent forests, vast in extent, beautiful lakes here and there, with a wonderfully fertile soil, as evidenced by the growing crops when we passed through it. We saw herds of cattle, of sheep and of swine everywhere.

As one met the people at the stations, soldiers and civilians, they were as fine looking a lot of manhood and womanhood as one could wish to see anywhere.

* Address delivered before Physicians Club of Chicago, Nov. 1, 1917.

Think of that vast country, with a vast population, as compared with ours, ruled for centuries by an autocratic power! When there was a czar more humane than others, a bureaucratic cabinet made him relatively



Fig. 2.—Major William S. Thayer, Baltimore.

as cruel as any other, and not only held this great people in bondage, but kept them illiterate for a purpose; kept them in serfdom for many years; did not let them think or act for themselves; and when we arrived in Russia these people, autocratically governed, had been at war for three long years with the most cruel nation the world has ever known. She had fought not the good fight that her allies expected of her, but nevertheless she had fought; and think of the long line that she attempted either to defend or from which to send an offensive over 1,200 miles of battlefield. She had placed millions of soldiers into the army. From the beginning there have been mobilized 16,000,000, and of this number 6,000,000 may be accounted for; 2,000,000 or more are prisoners in Germany and in Austria. A large proportion of the remaining 4,000,000 were killed; others are incapacitated for further service in the army either by wounds, by a crippled condition, or by invalidism. That leaves at the present time about 10,000,000 soldiers under arms. Of that number, about 3,000,000 are at the front covering 1,200 miles, and the remainder are in barracks all the way from the front to Siberia and down to the Crimea, so that everywhere in Russia at the present time one meets soldiers.

In the midst of this war, during which there have been made disastrous advances and masterly retreats, her soldiers have been well fed and well clothed, but not always well munitioned or well armed. Many of

them went to the front in the earlier years of the war without a musket, understanding then that they would become armed when they captured guns from the enemy or would secure them when their fellow soldiers fell. I have heard the officers say that these men fought the Germans with their bare hands during the first years of the war. They were good soldiers, and then in the midst of this terrible war, with the mismanagement of the old régime, with traitors in her cabinet, came a revolution almost in a night. One hundred and eighty millions of people, who had been held under autocratic sway, were told they were free to do what they pleased. Can you wonder that those people were more or less confused? They had known something of democracy, but not much. What they knew of democracy under autocratic rule they learned of themselves, for they established, away back in 1865, the zemstvo unions in their provinces. To the local zemstvos, delegates were elected by the peasants, and the central zemstvos in Moscow was represented by delegates elected by the local zemstvos. Through the zemstvos they established schools, cared for their sick and destitute, and learned better agricultural methods. When they advanced too far in that democratic movement and were improving too rapidly, the autocratic government stepped in and appointed a member of the cabinet in Petrograd and a member of the government in every province to modify and shape their activities.

THE PROVINCIAL GOVERNMENT

While they knew something of democracy gained from the zemstvos, it was colored with socialism, injected from the outside. Therefore, after the revolution there was established in Russia what may be called an experimental laboratory of socialism in the form of a provincial government. A cabinet was

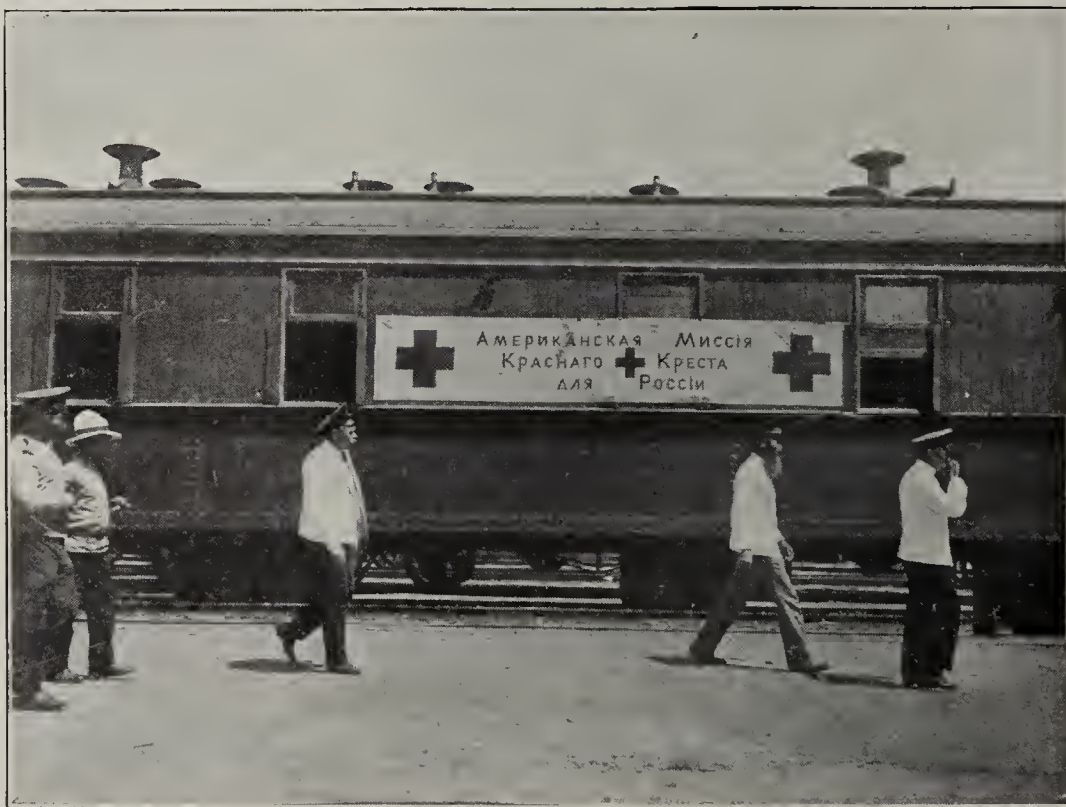


Fig. 3.—Car on mission's special train showing painted canvas legend on side of car, "American Red Cross Mission to Russia."

formed through the Duma, the fourth Duma. The Duma was the first legislative body that the people of Russia had ever enjoyed, and it formed a new cabinet because the extreme socialists, the Maximalists or Bolsheviks, and the Workmen's and Soldiers' Council,

the representatives of the strongest socialists of Russia, did not care to take the responsibility of the first cabinet. Therefore, the Duma formed the first provisional cabinet. In that cabinet were some of the biggest men of Russia. Prince Lvov was the

who was minister of justice at first, the minister of foreign affairs, and Mr. Terestchenko, who had been in the first cabinet, also in the new one. The people accepted the cabinet of this provisional government, which had been created without legal status. The

second cabinet lasted only a little while, and so it has gone on until there have been six cabinets formed since the revolution. The last one was formed about the middle of September. Mr. Kerensky has been in each cabinet, and after the third cabinet he rose to the position of premier, and Mr. Terestchenko has occupied the next important place, that of foreign minister. I have taken time to say this, for if you do not understand the political conditions as they exist in Russia today, you cannot understand the spirit and the character of the people of that country, who not only recognize but support a government formed as I have attempted to describe.

The army under this revolutionary system became disorganized because of the abolition of the death penalty and of discipline, and because of the appointment within its own ranks of committees of soldiers who dictated to the officers what should be done. What could follow but disaster? In spite of all disorder, they have held the trenches; they made an

unwise advance in Galicia last summer. At the Riga front some units fought well and others not at all. Disorganized and inefficient as they have been, still they have held twenty-two German corps at bay all summer, and they still hold them. Amid this disorder, sanitation was neglected. When sanitation is neglected infectious diseases and infestation with vermin



Fig. 4.—Bread line in Moscow.

premier, Mr. Milyoukoff the foreign secretary, Mr. Rouchkoff the minister of war, and Mr. Kerensky the minister of justice, all men of fine character. The other cabinet ministers were of less importance. Immediately after the cabinet was formed, the Duma legislated itself out of existence. The socialists demanded and obtained the abolition of the death penalty and of all discipline in the army.

The minister of agriculture declared an agrarian policy which has been one of the most harmful things done in revolutionary Russia. He declared that the imperial lands, the lands of great estates, and even the lands held by eight or more million peasants should revert to the state and be divided among the people of Russia. They demanded that the war, if continued, should be fought without annexations and without indemnities. They ordered the minister of war to recognize committees in the army who should supersede the officers and decide military tactics and other conditions of the army, including its domestic functions. The men of character in the cabinet refused, and so the first cabinet lasted but a few weeks. That left Russia without any legal body to form a new cabinet, and in revolutionary Russia they soon came to a satisfactory method of doing this. The political parties, including this vast body of socialists, the greatest number in Petrograd, agreed to the formation of a coalition cabinet in which the socialists dominated. Neither of these three great men I have named could accept a place in the cabinet, and so the next one was formed of men of lesser importance, but with Mr. Kerensky,



Fig. 5.—Crowd of Russian soldiers at one of the stations, showing a Russian troop train.

increase, with the result that there were more sick soldiers than Russia had had since the war began. But in spite of these things the line holds.

But what of the disorder in the rear as a result which must necessarily come? Even under the old

régime there was mismanagement of her civil government. The productive industries, which began to decline during the old régime, after the revolution diminished more than ever. Strikes occurred after

beginning was, as I have said, an experimental laboratory of socialism. The socialists the world over looked on that socialistic government as one that would be copied everywhere; that it would

be eminently successful, and that Russia would be a very democratic government because based on socialistic ideas. This government has been in existence about seven months, and in that time those who were strong socialists in the early cabinets, those who believe in socialism as the bulwark of democracy, have learned a lesson. The result is that the cabinet of today in Russia is the strongest she has had since the revolution. Mr. Kerensky is a man only 34 years of age, a lawyer, who had never had any experience in administration or organization. He was a very extreme socialist, had been in every cabinet, and had been premier in four of the cabinets. It was through him that discipline in the army and the death penalty were abolished. Responsibility has brought a change in the man. He has restored the death penalty. I saw in one of the newspapers yesterday that the death penalty had not been restored. It has been restored because this was done



Fig. 6.—Group of Chicago members of the commission at the mission headquarters in Petrograd. From left to right: Lieut.-Col. Frank Billings, Mr. Samuel Harper, Majors H. H. Swift and Wilbur E. Post.

the revolution because the peasants and soldiers believed that liberty meant the right to be idle, just as our liberated slaves did after our war. The flour mills gave a diminished output; transportation was more or less crippled because the industries were diminished in productiveness and because of labor strikes. All of these factors led to a diminution in the value of the ruble.

Mr. Root left a letter at Vladivostok in which he stated to our mission that the food problem in Russia was the crux of the situation; that if food scarcity continued in the large cities like Petrograd, Moscow, Kiev, and in certain provinces, riots would recur as they did in 1916-1917. With riots in the rear, great disorder would occur at the front; the soldiers would evacuate the trenches, and that would mean that a greater number of American lives may be sacrificed in France.

It did not take much investigation to show that if our mission did help in the food problem it would not be as a Red Cross mission, but as a diplomatic body.

REASONS FOR A HOPEFUL OUTLOOK

I have told you some of the worst things of Russia. Let me tell you why I have come back very optimistic about Russia with this background, with this sort of perspective of that great nation. The provisional government of Russia, composed of men chiefly socialists, in the

while we were in Russia, and men who have refused to obey have been shot. He is gradually reestablishing discipline. Americans ask, Why does he not establish it at once and by force if necessary? Remem-



Fig. 7.—The Winter Palace in Petrograd, containing a Red Cross hospital of 500 beds, government offices, etc.

ber that the government was started by socialists, who were in the majority, and any attempt to suddenly bring back order in the army would have meant counterrevolutions. Disorder can be overcome only

by the education of the people through bitter experience, and they are receiving that education. They have learned that socialism is not and cannot be the fundamental foundation of a democratic liberty. Mr. Kerensky has learned it so thoroughly that he has repudiated socialism, and the Bolsheviki have repudiated him.



Fig. 8.—Madam Brosko-Broskovskaia, grandmother of the Russian Revolution, seated with a company of Russian officers and soldiers.

KERENSKY

Mr. Kerensky is an honest man. He looks at one squarely; he talks to one frankly. He is quick and alert physically, and just as alert mentally. He is patriotic. When I saw Mr. Milyoukoff last, three days before we came away, I asked, "Is Mr. Kerensky honest?" He replied, "Yes." "Is he patriotic?" "Yes. He is so intensely patriotic that he would die tomorrow if by so doing he could save his country."

The members of the cabinet, the people of Russia of all classes, have learned the lesson by bitter experience, that liberty has its price. That the price is law, order, discipline, and submission to leadership.

I saw enough of these men of the cabinet, talked to them about what they were doing, to make me believe they are honest, patriotic, and that they will finally bring the people of Russia into a condition of order with the proper understanding of what democratic liberty means.

THE WAR RELIEF ORGANIZATIONS

What else did we see that is heartening? The war relief organizations of Russia are the most wonderful I have ever seen anywhere. The sanitary department is headed by a physician who is one of the most celebrated bacteriologists and hygienists of Russia. He is a man of fine character, and the men on the staff are of the same fine type. They have done very efficient work in this war under the old régime and under the revolution. Remember that Russia, like America, secured many things from Germany before

the war. They received as many packages of drugs and chemicals marked "Made in Germany" as we did, and when the war came they were without them. You and I had looked on the Russians as incapable of making those things, and yet they have gone ahead and manufactured them. The sanitary department, which conducts a factory in Petrograd for making drugs, surgical supplies, artificial limbs, crutches and other necessary supplies for the medical department of the army, is splendidly administered. They do not have the materials sometimes with which to make things, but when they have them they make them well. The sanitary department of the army at the front does good work, with the Red Cross and zemstvo union in field and ambulance work and in base hospitals. The front is one place where the three great war relief organizations cooperate; back of the front the cooperation ceases. The sanitary department of the army has plenty of medical men, but does need help in certain supplies. Motor ambulances and possibly an American ambulance personnel, including sanitarians, are much needed by the army.

The Russian Red Cross during the old régime was supported chiefly by the royal family. At the time of the revolution that income ceased, and since that time it has received governmental aid. It is a big organization. It tried to attach the mission to it because we were sent by the American Red Cross; but as we were sent to the Russian people and to no single organization, we told them we would cooperate with the Russian people as represented in the Red Cross, the zemstvo union and the sanitary department of the army. The Red Cross is doing great work. It has enormous factories and enormous supplies; more than we have. Its supply house in Petrograd is an enormous structure comprising many buildings. Dr.



Fig. 9.—Group from the mission en route homeward through Siberia, including two Cossack guides. From left to right members of the mission are: Major W. E. Post, Chicago; Lieut.-Col. Frank Billings, Chicago; Majors H. C. Sherman, Columbia; H. H. Swift, Chicago; G. W. Whipple, Harvard, and C. E. A. Winslow, Yale.

Orden, head of the supply department, told us that there were 50,000,000 meters of surgical gauze on hand; that they had 5,000,000 suits of underclothing in stock. They lack some of the things that America may furnish. One of the finest sights in our experi-

ence we saw at Petrograd when we visited the Red Cross Hospital of 500 beds in the winter palace, the best use to which the winter palace was ever put. The winter palace is also notable at this time as the residence of the grandmother of the revolution, Madam Brosko-Broskovskeia. Under the old régime a political prisoner in Siberia, she now enjoys luxurious quarters in the palace while the ex-czar takes her place in Siberia. At Moscow the Red Cross had supply houses with hospitals equally as good.

THE ZEMSTVO UNION

But it is the great zemstvo union of which I want to say the most. The zemstvo union, as I mentioned a moment ago, with its branches in the provinces, has broadened its activities during this war. The old régime did not furnish the soldiers with sufficient clothing, boots, shoes, arms, or with munitions, so that the men were seriously handicapped. The zemstvo unions represented by millions of people, with the peasants as its fundamental basis, went to work and in 1915 and 1916 they tanned 500,000 raw hides to make boots and shoes for the soldiers at the front. They spun wool, and they made clothing for their soldiers. They furnished ambulances and field and base hospitals. They helped to furnish the evacuation hospitals together with the Red Cross and sanitary department of the army. During the war they have furnished 500,000 beds for the soldiers. Can you get that number? 500,000 beds! In Chicago we felt quite elated when we furnished four base hospital units of 2,000 beds all together. The Russian people have done an enormous amount of work, and have done it well. We had a committee visit the front. It found that the work was well done; but since the revolution there has been more or less embarrassment because of the lack of discipline among the soldiers, who refused to be inoculated with antitetanic toxin and also refused to be vaccinated as a preventive measure against cholera, typhoid and paratyphoid. The committee reported that the men were disregardful of sanitary measures at the front, but in spite of these things, the medical officers carry on their work and by persuasion have been able to do what they could not command

the force to do. The three public war relief organizations operate 100 sanitary trains to and from the front. These are the evacuation trains that take the wounded and sick soldiers from the base hospitals to the rear. Russia is divided into seven evacuation districts, and of these the district of which Moscow is the center is the largest. In the Moscow district there are 200,000 beds, of which 20,000 are in Moscow. A meeting is held every day, and they know the number of soldiers coming from the front. When the wounded soldiers reach Moscow they are bathed and have their hair cut and their clothing is disinfected in a most modern way. Those who are sick and severely wounded are kept in Moscow hospitals, and those who have a lesser

degree of wounds or illnesses are evacuated to the rear within two or three days. During the war the Moscow district has taken care of sick and wounded soldiers to the number of 2,700,000. Other districts have taken care of the remainder, a total approximately of 4,000,000 wounded and sick soldiers.

THE CHARACTER OF THE RUSSIAN PEOPLE

The real substantial hope in Russia is the character of her people. In spite of the fact that the Russian people as a whole are illiterate, they possess characteristics that are so admirable, that it sets them apart from all other people that we have ever known. They are orderly, good natured, good hearted and industrious. They are the most wonderful technicians the world has ever known. The untutored peasant spins, weaves, tans leather, makes boots and shoes, and makes munitions. He will make a house with an

ax and some wood. In spite of a long war, in spite of the revolutionary conditions, in spite of the absence of all police power and in spite of the erroneous ideas of liberty, there has been less disorder since July 4, 1917, the date of the last Petrograd riots, than there is in America today. When one travels, as some of us did, from Siberia to Moscow, and Petrograd to Archangel, to Odessa, to the front, and to various other places, we could not help but be impressed with the good order of these people. Sometimes soldiers would come into occupied compartments on the train, but they would not create any disturbance other than



Fig. 10.—Members of the American Red Cross Mission to Russia at Nikko, Japan.

to impose their presence on one, as a harmless expression of their understanding of democratic liberty. I saw—and I know I speak for the other members of the mission—less disorder in Russia in two months among its civilian population than I may see in Chicago in any week in the year.

There is food scarcity in Petrograd, Moscow and in a few provinces. This scarcity in certain places is due to faulty distribution of food. Siberia, Southern Russia and Bessarabia have an abundance of food. Faulty distribution of food is due to lack of efficient river and railroad transportation. There was a like food scarcity in Petrograd and Moscow in 1916-1917 during the old régime. There is a lack of food and a lack of clothing, boots and shoes and many things the Russian citizens need. This is illustrated by the fact that each one must have a card and stand in line to secure supplies. The Russian accepts this quietly and good naturedly, never making a protest, never trying to get ahead of his neighbor and, if necessary, lying on the sidewalk all night that he may obtain the needed articles early the next day. He is perfectly satisfied if he finally gets the food and other things that his card calls for. Can you imagine a group of Americans lying on the sidewalk with cards to secure food, not trying to get ahead of their neighbors and not protesting to those in authority about it?

When we arrived at Vladivostok we were given the same train that the Root mission had used to come out of Russia. It is one of the imperial trains, with a combination diner and observation car—the same car in which the late czar, by a stroke of the pen, became Nicholas Romanoff. It is a beautiful train, but not so comfortable as many of our Pullman trains. We had plenty of food on the train, so that we went into Russia in a luxurious way. When we reached the larger towns and stopped for half an hour, the soldiers would read the Red Cross placards with legends in Russian on the windows, and received us with great enthusiasm. The Russians are great orators; so we would have two or three short speeches at every station, and always had to make replies to them.

When we reached Irkutsk, the capital of Siberia, there were a dozen or more freight trains loaded with soldiers mustered in from that region, going to the front. We ran in between them. We saw them bidding good-by to their wives and sweethearts, buying black bread and raw cucumbers, eating and singing. They greeted us enthusiastically, and made speeches. As we moved out of that station they came out of the freight cars and cheered us heartily. I said to myself: Fancy a Russian mission going to Washington and halting at some town en route and having a lot of our soldiers in freight cars halted in the same station. How many of our boys would cheer them? That is the spirit of the Russian soldier; that is the spirit of the Russian people.

THE COSSACKS

In addition to the spirit manifested by the people of Russia, one of the most important factors stimulating one's optimism of Russia's future activities in the war is the fact that, taken as a whole, the Cossacks are patriotic, democratic, submit to discipline and are excellent fighters. It is difficult to make an estimate of the number of Cossacks in the Russian army. It was named as from one to three millions and the minimum is certainly one and one-half million men.

CHEVALIERS OF ST. GEORGE

In addition to the Cossacks there is a society known as the Chevaliers of St. George. This numbers eight hundred thousand men. The members of the society have been decorated with the order of St. George for some act of bravery or other service to the country since the war began. The members of the mission met many groups of the Chevaliers of St. George and found them desirous of the reestablishment of law and order and of discipline in the army. They asserted many times that they would fight to the last. Always on the battle front there have been units of soldiers, sometimes large, sometimes small, who have fought well, while others failed in the offensive. These loyal units are usually composed of Cossacks and of the Chevaliers of St. George. We may count, therefore, on not less than two to three millions of loyal troops in Russia who will submit to discipline and who will fight.

TALK OF PEACE

In Russia today you hear no word, excepting from pacifists, excepting from the paid agents of Germany, and there are many of them, of a separate peace. It is believed by the present leaders in Russia that Russia will have an organized army by spring, and they say that she will never lay down her arms to an autocratic Germany. The trouble is that Russia is isolated. In Russia we were as much isolated in one sense of the word as if we had been on an uninhabited island. There is no news of America in Russia except what comes through German sources. In the Russian newspapers it is sometimes printed that America is in this war for sordid gain. In one paper I saw it stated that America was the vassal of England, and that England wanted to dominate the world. That is the sort of news they get about America. There is no news of the fine young men of our country who have registered, no news of conscription, no news of our numerous training camps, no news of the vast sums of money to carry on this war, and even no statement of the wonderful documents that have been issued by our great President. Can you wonder, therefore, that the Russians, who do not receive kindly attention or any information from our country that is authentic, feel themselves isolated as if they had to fight their battles alone? If you could have seen the expression on the faces of the officers of the relief organizations when we took the lists of our supplies to them, it would have thrilled all of you. They looked at the lists of supplies and said with a smile, "What is the price of this?" "How much more can we get of this or that," and "What is the price?" When we told them there was no expense, that this was a gift of the American people through its Red Cross to the people of Russia, the tears came into their eyes. It was the first time, in all probability, small as it was, that any nation has ever given Russia anything. Our allies do not understand Russia. They have not helped her as they should. They have not helped her in the materials she needs. She needs financial aid. They have not helped her in that spirit in which a great democracy should help a sister republic in its infancy.

AMERICA'S DUTY TO RUSSIA

Russia feels kindly toward America. She looks on us as her best friend. For what the Root commission has done, for what Mr. Stevens of the railroad commission has done, and for what we have done through

our humble mission there, Russia feels grateful. She feels she has our friendship and she asks for more, but not greedily and not for very much. For certain things she desires to pay. This is America's opportunity. If America will help Russia at this time not only with money, but with the means whereby she can start a Russian propaganda to obtain news from America as the other allies are doing, great good will be accomplished. I am happy to say to you that we have already started that propaganda through the generosity of Col. W. B. Thompson, vice chairman of the mission. It was put before our President, and he has accepted it and has further agreed that it will be supported until Russia has adequate information of what is going on in America, and that America is her friend.

I want to repeat: I have come back full of optimism about Russia. She is doing a great work. She has a large army that must be properly cared for. She has a lot of fine men; even though they are socialists they are intensely patriotic, and are learning to be rational through the responsibility that has come to them as members of the government. We owe to them our help to form a stable democracy, and we can do it. If we do that, we shall save American lives in France; if we do that, we shall finally cement the friendship of Russia, which is already ours.

122 South Michigan Avenue.

DEVICES FOR THE SANITATION OF TRENCHES

SIMON BARUCH, M.D.
NEW YORK

Any enhancement of the comfort, hygienic condition and safety of our defenders merits speedy attention. For this reason I venture to suggest some devices that presented themselves to me while reading the description of trench sanitation by Dr. C. C. McCulloch.¹

McCulloch writes: "It naturally adds much to the efficiency of this system if the urine can be handled separately, particularly in incinerator methods. This is done in some cases by separate urine buckets, in others . . . by urine soakage pits."

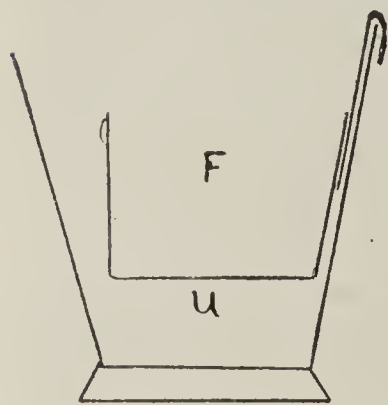


Fig. 1.—Emergency bucket, used in early trench construction: F, feces; U, urine.

PLAN 1.—A method of separating the liquid from the solid excreta is illustrated in Figure 1 as applicable to the bucket now in use according to McCulloch's illustrations.

A separate bucket for the solids is suspended by a strong flange from the posterior upper rim of the large bucket now in use. It will be noted that the anterior rim of the feces bucket is flattened to increase the space for urinating. The urine flows downward and is thus separated completely.

The entire apparatus may be carried to the disposal pit, as indicated in McCulloch's Figure 3. The solids may be dumped into the pit and the fluid poured anywhere that the sanitary officer may direct.

PLAN 2.—A better apparatus may be made (Fig. 2) of a strong metal bucket the size of that now in use, with metal seat and hinged lid.

Mr. Penfrase of the J. L. Mott Iron Works suggests that a pressed steel bucket would be more economical, because lighter and more durable than galvanized iron.

The advantage of this metal arrangement is obvious. Even the cost, if this deserves to be considered when

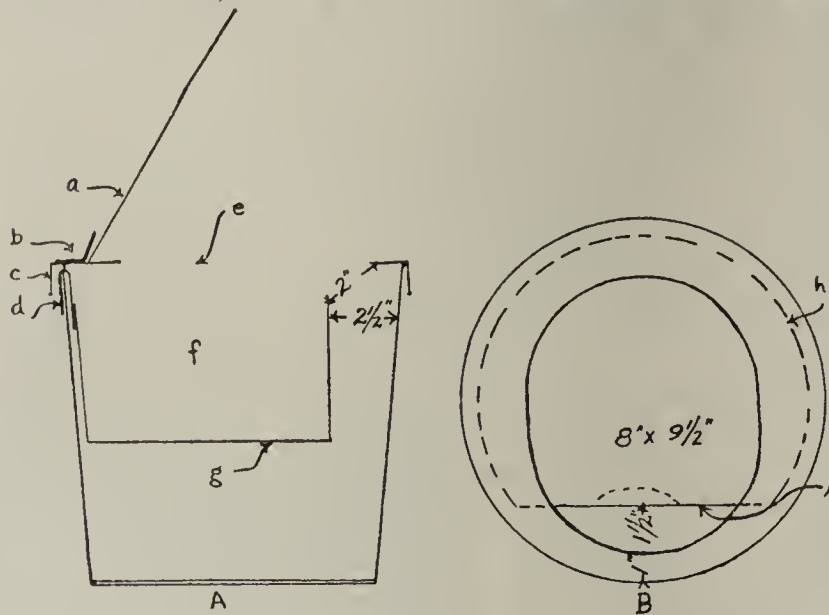


Fig. 2.—Metal bucket: A, section; B, top section; a, hinged cover; b, stop to make cover self closing; c, detachable cover; d, support holding feces bucket; e, opening, 8 by 9½ inches; f, feces bucket, with a capacity of 1½ gallons; g, urinal, with a capacity of 2 gallons; h, cover of bucket; i, front of feces bucket.

the welfare of our boys is to be promoted, must be less. Transportation and sanitary conditions also are improved by avoiding wood. This applies to the succeeding devices.

The foregoing buckets may readily be conveyed to the trenches when they are first constructed. When, however, the trenches are fairly well established, the following devices present advantages that appear to me obvious.

PLAN 3.—Noting in McCulloch's diagram (Fig. 1) showing arrangements for food, water and the handling of excreta that under "conservancy" the buckets are placed in close proximity to the urine pits, it occurs to me that Figure 3A presents an ideal plan. It shows a septum with sufficient space for urinating, leaving the entire posterior compartment for the solids. The urinal portion terminates in a tube sufficiently long to fit loosely in a wooden, earthenware or galvanized iron box or in one of the cones illustrated in Figure 4 of McCulloch's article rising from the urine pit.

The bucket and covers now in use may be continued with the exception of the added urinal septum, which is easily soldered on or riveted to the anterior part of the bucket. In this plan, the urine soakage pit must obviously be made larger.

So far I have suggested the continuation of the buckets now in use. I venture to add the following for the careful study of our military hygienists:

PLAN 4.—When the bucket is carried to the disposal pit, the wooden fly proof cover may be left in the trenches, if the feces are covered by a cardboard shaped to the bucket. This would prevent odor and access to flies. A rack for holding a supply of these light covers is provided on the frame support.

A still greater improvement would be to place a waterproof paper container within the feces bucket. This would obviate the disagreeable and unwholesome

1. McCulloch, C. C.: Sanitation in the Trenches, THE JOURNAL. A. M. A., July 14, 1917, p. 81; July 21, 1917, p. 183.

scraping and cleansing of the bucket after the mass has been dumped into the disposal pit, and save its wearing.

Before removal, the solid excreta are covered with the cardboard cover, and other refuse of light character is thrown on it to fill the bucket. The bucket, now holding at least threefold more material than in the method illustrated in McCulloch's Figure 3, may be conveyed just as readily to the disposal pit and there dumped for incineration, etc.

Care must be taken not to break off the tube at the lower end of the urinal compartment. It should be made strong, rectangular, and should fit loosely into the urine soakage pit entrance.

PLAN 5.—For trenches that are being occupied for long periods, as now in Flanders, the following arrangement offers obvious advantages:

As indicated in Figure 3B, the urinal portion is made separate, and is secured to the corner supports of the frame anteriorly. The feces bucket is flattened to have its anterior wall correspond to the shape of the posterior wall of the urinal. For additional security and prevention of spilling between the two walls, a

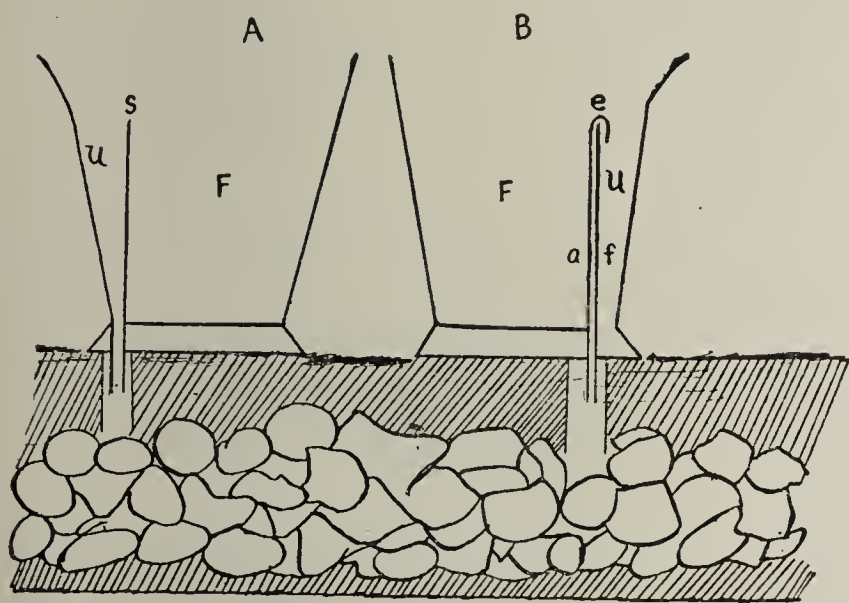


Fig. 3.—Permanent bucket, used in established trench construction: F, feces bucket; U, urinal; s, septum forming a urine conduit anteriorly; in B, separate urinal is secured to frame, and feces bucket is united to it by a flange; e, anterior part of feces bucket hooked on posterior portions of stationary urinal; a, anterior wall of feces bucket; f, posterior wall of separate stationary urinal.

flange is cut in the anterior wall of the septum to fit firmly but loosely over the posterior cut out wall of the urinal. The latter is so arranged that it terminates in a strong tube. In this plan the feces bucket alone is removed, the feces being covered with a paper or metal lid. If the bucket has been lined with paper, the arrangement is obviously ideal.

In Plans 4 and 5 the feces bucket has its capacity increased about 33 per cent., which means less frequent emptying, and consequently less exposure to the enemy's fire, less labor, and more comfort for all concerned. The base under the bucket, shown in Figure 2 of McCulloch's article, is omitted in my device, in order to facilitate transportation in large quantities by sliding the bucket into the preceding one, forming nests.

The man behind the gun is made more efficient and more safe, the chief considerations.

Health a Community Asset.—Health is not the property of the individual who enjoys it, but of the community; disease menaces not only the sufferer, but all with whom he may come in contact.—BERTHA OTT, *Public Health News* (N. J.).

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

SILVER PROTEIN COMPOUNDS

Silver protein compounds possess the antiseptic action of silver nitrate to some degree. They do not precipitate proteins and are relatively or entirely nonirritant. They are frequently used as substitutes for silver nitrate, especially for the prophylaxis and treatment of the sensitive mucous membranes, particularly in gonorrhea, conjunctivitis and other infections of the urethra and of the eye, ear, nose and throat.

To prepare solutions of silver protein compounds the substance is sprinkled on distilled water and allowed to dissolve; in this way the formation of lumps, which dissolve slowly, is avoided.

SILVER PROTEIN-SQUIBB.—A compound of silver and gelatin, containing 19 to 23 per cent. of silver in organic combination.

Actions and Uses.—See general article on Silver Compounds, under Silver Protein Compounds.

Dosage.—Silver protein-Squibb is used in solutions containing 1 to 25 per cent., or more. It is also used in the form of bougies or suppositories.

Manufactured by E. R. Squibb and Sons, New York. No U. S. patent or trademark.

Silver protein-Squibb is produced by the interaction of silver oxide and gelatin in the presence of an alkali at a temperature of 80 to 100 C. When combination has occurred, the solution is concentrated in vacuo and the product scaled.

Silver protein-Squibb occurs in the form of black, lustrous, odorless, non-hygroscopic scales. It is very soluble in distilled water; insoluble in oils and alcohol.

No precipitate is produced when sodium chloride solution is added to an aqueous solution of silver protein-Squibb. An aqueous solution of silver protein-Squibb does not coagulate albumin; it is decomposed with precipitation by addition of free acids; ferric chloride decolorizes the solution.

Place about 0.5 Gm. silver protein-Squibb, weighed accurately, in a Kjeldahl flask together with 10 Gm. potassium sulphate and 10 Cc. of strong sulphuric acid and heat until the contents are colorless or only faintly yellow and allow to cool. Dilute the contents of the flask to about 100 Cc. with water, add ferric ammonium sulphate test solution as indicator and titrate with tenth-normal potassium sulphocyanate volumetric solution. The silver content corresponds to not less than 19 per cent. nor more than 23 per cent. of metallic silver (1 Cc. tenth-normal potassium sulphocyanate is equivalent to 0.010788 Gm. Ag).

ARSENPHENOL-AMINE HYDROCHLORIDE.—Arsenphenol-Aminae Hydrochloridum.— $\text{HCl} \cdot \text{NH}_2 \cdot \text{OH} \cdot \text{C}_6\text{H}_3\text{As} : \text{As} \cdot \text{C}_6\text{H}_3 \cdot \text{OH} \cdot \text{NH}_2 \cdot \text{HCl} + 2\text{H}_2\text{O}$.—The hydrochloride of 3-diamino-4-dihydroxy-1-arsenobenzene, corresponding to 31.57 per cent. arsenic (As).

Actions, Uses and Dosage.—The same as those of salvarsan (see New and Nonofficial Remedies, 1917, p. 45).

Arsenobenzol (Dermatological Research Laboratories).—A brand of arsenphenol-amine hydrochloride.

Manufactured by the Dermatological Research Laboratories, Philadelphia Polyclinic, Philadelphia, Pa. (General Drug Company, New York City). No U. S. patent or trademark.

Arsenobenzol (Dermatological Research Laboratories), 0.6 Gm. Ampules.—Each hermetically sealed ampule contains 0.6 Gm.

ACETYLSALICYLIC ACID (See N. N. R., 1917, p. 265).

Acetylsalicylic Acid-Milliken.—A non-proprietary brand complying with the standards for acetylsalicylic acid. Sold only in the form of capsules and tablets (see below).

Acetylsalicylic Acid-Milliken Capsules, 5 Gr.—Each capsule contains acetylsalicylic acid-Milliken 5 grains.

Acetylsalicylic Acid-Milliken Tablets, 5 Gr.—Each tablet contains acetylsalicylic acid-Milliken 5 grains.

Manufactured by Jno. T. Milliken & Co., St. Louis.

Acetylsalicylic Acid (Aspirin), Monsanto.—A non-proprietary brand complying with the standards for acetylsalicylic acid.

Manufactured by Monsanto Chemical Works, St. Louis.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . "Medic, Chicago"

Subscription price Five dollars per annum in advance

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SATURDAY, NOVEMBER 17, 1917

THE ALLEGED FORMATION OF CONNECTIVE TISSUE FIBERS FROM FIBRIN

In the progress of scientific theories it is not uncommon to find opinion swinging alternately back and forth between two seemingly conflicting views, until a sufficient accumulation of facts finally permits an incontrovertible judgment to be formed. Something of this sort seems to be going on in relation to a debated feature of wound healing. The generally prevailing view, as was pointed out some time ago in *THE JOURNAL*,¹ has been that the fibrin, in wounds healing by first intention, forms a temporary tissue which holds the wound surfaces in place and stops up the wound, thus preventing infection. Later the fibrin disappears, not by liquefaction, but through an actual consumption by the new tissue cells, which show a positive chemotropism to the fibrin mass and are thus attracted into the fibrin clot in large numbers. The permanent tissues that go to fill the wound space are then formed by these cells through an intracellular action.

Baitsell² of Yale University has observed that a fibrin clot formed from plasma, under conditions in which the now familiar "tissue cultures" are carried out, may be transformed into a fibrous tissue which resembles connective tissue. Sometimes the plasma clot surrounding the embedded living tissue became almost completely transformed, by a fusion and consolidation of the fibrin elements, into the new fibrous tissue. Similarly, in experimental wounds on frogs there was a coagulation tissue formed by the clotting of the blood and lymph, and in this a typical fibrin net was present. Later this fibrin net was directly transformed into a new fibrous tissue containing bundles of wavy fibers as noted above. In fact, this process was found to be identical with that which had been previously found to take place in the fibrin clots in living cultures of adult frog tissues.

Lambert,³ while admitting that in their physical character the newly formed fibrils resemble the collagen fibrils of true connective tissue, believes that the resemblance is a superficial one and that it is not of importance in a differential study. The question of the participation of connective tissue cells in the genesis of such fibrils in healing wounds is at issue. In new experiments in which living tissue has been completely excluded, Baitsell⁴ has now shown the formation of a fibrous tissue from a plasma clot in direct response to the influence of purely mechanical factors of various kinds. The experiments have eliminated all possibility of the new fibrous tissue's being formed by cellular action. The structure of the new fibrous tissue as shown by a histologic study of the prepared material closely resembles that of regular connective tissue.

The fact, says Baitsell, that the new fibrous tissue is similarly formed in wounds, that is, by a direct transformation of the fibrin clot, where it functions as a regular connective tissue for a time at least, gives clear evidence that the transformation of the plasma clot is not an artefact, which occurs merely in tissue cultures and in clots that have been subjected to various external influences, but is a reaction which evidently plays an important part in wound healing in the frog. We have no conclusive evidence at present that the transformation of the plasma clot into the new fibrous tissue is more than a radical morphologic change. It is difficult to see how a chemical transformation of the protein fibrin net into a collagenous connective tissue could be brought about, and consequently there is the possibility that the new fibrous tissue serves only temporarily as a connective tissue and is later replaced by a permanent tissue formed by a cellular action of some sort. On *a priori* grounds, however, there would appear to be no good reason for supposing that a tissue such as the new fibrous tissue, which is typical in its structure and which functions normally in wounds, would ever be replaced by another tissue.

The observation that the extent of this transformation of a fibrin-containing clot can be controlled by such purely mechanical factors as tension or pressure, so that filaments or rods of fibrin change to wavy fibrillae which unite to form heavy fibrous bundles, is not explained by the theory of the intracellular origin of connective tissue fibers. The chemist might be of assistance here in explaining the seeming contradiction of forming one kind of albuminous structure out of a totally different one. Baitsell is convinced that morphologically, at least, the fibrin net can by fusion and consolidation be converted into a fibrous tissue which in its morphologic structure, to say the least, is apparently identical with normal connective tissue of the

1. A Debated Feature of Wound Healing, editorial, *THE JOURNAL A. M. A.*, March 17, 1917, p. 854.

2. Baitsell, G. A.: The Origin and Structure of a Fibrous Tissue Which Appears in Living Cultures of Adult Frog Tissues, *Jour. Exper. Med.*, 1915, **21**, 455; The Origin and Structure of a Fibrous Tissue Formed in Wound Healing, *ibid.*, 1916, **23**, 739.

3. Lambert, R. A.: On the Question of the Transformation of Fibrin into Fibrous Tissue in Tissue Culture Preparations, *Proc. Soc. Exper. Biol. and Med.*, 1916, **14**, 5.

4. Baitsell, G. A.: A Study of the Clotting of the Plasma of Frog's Blood and the Transformation of the Clot into a Fibrous Tissue, *Am. Jour. Physiol.*, 1917, **44**, 109.

frog. He even suggests that in response to various mechanical factors a reaction of this kind may play an important part in the formation of the connective and supporting tissues in the development of the individual. Reserving final decision, we shall await the further contributions to this important subject with interest.

THE SOLDIERS' AND SAILORS' INSURANCE LAW

What will become of the kiddies and their mother if I am killed? What will become of them and me if I am permanently disabled? As between my country and my dependent family, where does my duty lie at this stage of the present emergency? These are questions that have bothered many of the medical men and others who have responded to the call to the colors, and the absence of a satisfactory answer has prevented a considerable number from responding. The soldiers' and sailors' insurance act, passed by Congress, Oct. 6, 1917, and the regulations promulgated, October 15, under authority of that act, concerning governmental insurance, will encourage those who have already entered the service, and will doubtless impel many to enter who have been in doubt as to the line of duty.

The act guarantees to every medical officer (or in event of his death then to his wife, children and dependent mother, if there be any), certain stated compensation, during the disability of the officer, or during the dependency of the widow, children or widowed mother, as the case may be. During such disability the disabled officer will be entitled also to medical, surgical and hospital services, with necessary supplies, at government expense. And should his disability be such as to prevent him from following his profession, provision will be made for his education and training at the cost of the government in some available means of livelihood, so far as may be practicable, with the express provision that individual success in adapting oneself to such a means of livelihood shall not result in a reduction in the amount of the money compensation or in the medical care to which the disabled officer is entitled.

The protection described in the preceding paragraph belongs to every medical officer and to the dependents named, as a matter of right; but if he desires to be further fortified against disaster, he may accomplish that result through the system of governmental insurance that the act establishes. Nominally such insurance is at the expense of the insured; but as the rates of insurance are computed merely on a peace basis, the government assuming all of the added risk arising out of the war, and as the government assumes all of the expenses incident to administration of the insurance system, the insured will obtain protection at a low rate. As all policies are convertible at the close of the war, without medical examination, into insurance policies

of ordinary standard types, premiums paid for protection during the war will not be lost. Ordinarily application for insurance must be made within 120 days after entering the service; but men in the service, April 6, 1917, are by the terms of the act automatically insured up to and including Feb. 12, 1918, by which date they must have applied for such insurance as they desire, in the usual manner. Application can be made, however, before the latter date, in which event the insured will have the benefit of such insurance as he may select in lieu of the standard ad interim insurance named in the act.

The existence of such compensation as the law provides in all cases of death and disability, and the possibility of greatly adding by voluntary insurance to the protection thus afforded, should materially increase the number of physicians offering themselves for military duty, and should inspire all with a keener appreciation of the fact that the government has, after all, a sympathetic understanding of the needs of its fighting forces, and may be depended on to supply such needs.

PITUITARY FUNCTIONS

Broadly speaking, there are two ways in which the possible function of glands or organs of the body can profitably be studied. One of these consists in examining the physiologic properties of extracts of the tissue under consideration from the standpoint of discovering some "active principle" or potent constituent with which its normal performance may be linked. In the case of the thyroid, for example, this plan has been partially successful. The administration of thyroid-parathyroid products can produce results in certain abnormal conditions of the organism, such as cretinism, that lead to definite convictions regarding at least some of the functions of the thyroid apparatus. However, it must be frankly admitted that the evidence regarding even the vague details of precisely what the thyroid extract therapy accomplishes in such instances is at present nothing more than a matter of conjecture. The study of the suprarenals seems to have been more successful from the standpoint of studying the potency of its constituents and its secretion into the blood. Epinephrin has established a place in physiology, pharmacology and therapy. The ablation of the suprarenal glands which produce it is followed by death. Nevertheless the recent investigations of Stewart and Rogoff¹ of Cleveland must awaken considerable doubt as to whether epinephrin itself is essential for the continuance of life.

The second method of investigation referred to consists in partial or complete removal of an organ under investigation, and observation of the effects of this procedure. This scheme has given decisive answers in

1. Is Epinephrin Indispensable for the Organism? editorial, *THE JOURNAL A. M. A.*, July 7, 1917, p. 40.

the case of a number of structures in the body. The indispensability of the parathyroid, pancreas or suprarenals, in contrast with the spleen or salivary glands, has thus been demonstrated. By extirpation experiments, much light has also been thrown on the relation of the sex glands to the development of secondary sexual characters. Yet the apparent negative results of many ablation experiments, as found in the study of the thyroid proper and the thymus,² for example, tend to awaken the belief that compensatory functioning in other parts may often obscure the real contribution of specific glands to the body's physiology after their extirpation or some damage to them.

Although no single method of study has been entirely satisfactory in elucidating the complete story of glandular function, the operative removal of isolated structures has thrown a flood of light into many obscure places in physiology. Pathologic anatomy, the outcome of Nature's experiments in disease, has often supplemented the extirpation experiment or pointed the way to its meaning. All of this is brilliantly exemplified in the modern study of the pituitary body. Although some of the details of the results of experimental interference have been in dispute, the major features are at length confirmed. Following the lead of Paulesco, professor of physiology at Bucharest, who introduced the most successful method of accomplishing experimental surgical interference with the pituitary body, and of Harvey Cushing and his fellow workers in this country, Blair Bell³ has added testimony that should help to complete the story in some of its most important aspects.

Before referring to the results of this English worker, it may be well to remind the reader that the pituitary body consists of two clearly differentiated parts which have separate modes of origin. The anterior lobe is distinctly glandular in character; the posterior lobe is developed from the nervous tissue with which it is more directly connected. There is no longer any doubt that complete loss of the pituitary body is speedily followed by death which cannot be attributed to mere shock; it is therefore an organ that is essential to life. All the investigators are now further agreed that neither partial nor complete removal of the posterior lobe causes any symptoms. The genital organs, the development of which seemed to be correlated in some way with the integrity of the pituitary, remain normal after ablation of the pars posterior, and young animals continue to develop after such an operation. Hence the secretion of the pars nervosa is, to quote Blair Bell, neither beneficial nor essential to life. Bell finds that partial removal of both anterior and posterior lobes likewise causes no symptoms, provided only a small portion of the pars

anterior be removed. On the other hand, the removal of very large portions of the pars anterior is incompatible with life. Bell regards it as convincingly demonstrated now that it is the loss of this portion of the organ that proves fatal when total extirpation of the pituitary is practiced.

Cushing and his colleagues have discovered that when the anterior lobe is partially removed in young animals a condition of persistent infantilism with absence of sexual development is likely to occur. Bell has likewise noted genital atrophy under such conditions. The manifestations of *dystrophia adiposogenitalis*, which Cushing has described in animals after interference with the anterior lobe, could be produced by Bell in only one way, namely, by interference with or separation of the infundibular stalk. This apparently brings about a disturbance of the blood supply to the gland. As a result there is an insufficiency of the anterior lobe. The cells of this part become shrunken, atrophic and discrete—a state of affairs which, as Bell says, is always found in the human subject afflicted with the syndrome of *dystrophia adiposogenitalis*.

It has been held by histologic students of the pituitary that a secretion from the posterior lobe which is in close juxtaposition to the nervous tissues passes directly into the third ventricle. But Bell points out that the only real secretory cells of the posterior lobe—the cells of the pars intermedia—are derived from the same source as those of the pars anterior. Removal of the posterior pars proper does not remove true secretory cells. Separation of the stalk interferes with the blood supply of all these cells. It is henceforth necessary, says Bell, to look on the functions of the pituitary as a whole, and to consider this structure as one organ and not two. The fortuitous juxtaposition of the epithelial cells and the pars nervosa, he adds, has probably no relation to the vital functions with which the pituitary is concerned. Even if secretion from the pars nervosa does pass into the cerebrospinal fluid, as has been asserted, Bell believes there is not the slightest evidence to show that this is essential, beneficial or even the normal method by which the internal secretion is taken up by the animal economy. The blood stream is the real path for the distribution of the pituitary hormone.

Tumors in the neighborhood of the sella turcica may be imitated experimentally by the introduction of inert immobile masses. When they produce irritation, glycosuria and emaciation may result, as in the human subject. When the tumors interfere with the blood supply so as to initiate degenerative changes in the cells of the anterior lobe, they may give rise to the syndrome *dystrophia adiposogenitalis*. These facts now experimentally established represent a great step in advance in the elucidation of the obscure functions of a very small yet highly significant portion of tissue.

2. The Thymus and Rickets, Current Comment, THE JOURNAL A. M. A., this issue, p. 1700.

3. Bell, W. B.: Experimental Operations on the Pituitary, Quart. Jour. Physiol., 1917, 11, 77.

URIC ACID INFARCTS IN THE NEW-BORN

The ready applicability of modern microchemical methods to the study of various types of nitrogenous compounds other than protein that circulate in the blood has at length made it possible to throw new light on a number of long debated questions regarding metabolism.¹ This now appears to be true in the case of the uric acid infarcts in the form of ammonium urates that are often found in the kidneys of the new-born during the first few days of life. That these infants excrete uric acid in unusual concentration and augmented amounts in the urine has long been known. This relatively and absolutely high output of uric acid has been correlated with associated conditions in the uric acid content of the blood by Sedgwick and Kingsbury² at the University of Minnesota. These investigators, as well as Slemons and Bogert³ at the Yale Medical School, have found that the uric acid content of the blood at the conclusion of labor falls within the limits accepted as normal at other times. The figures obtained from maternal and placental circulation are identical for the uric acid in the blood of the mother and fetus. This indicates that it passes through the placenta by diffusion. In this respect, therefore, Slemons and Bogert remark, uric acid resembles other nitrogenous waste products, ammonia, urea, creatin and creatinin, which are found in equivalent amounts in both circulations. This conclusion also has the support of the findings in pathologic cases. Eclamptic mothers in whose blood the quantity of uric acid is two or three times that of the normal give birth to infants in whose blood the uric acid is correspondingly increased. Soon after birth, however, the condition changes. The content of uric acid in the blood the first three or four days after birth is higher than that of the blood of the same new-born at birth. Subsequently there is a marked decrease in this value at the end of from eight to eleven days from the value obtained (in each case with the same infant) from three to eight days earlier.

Sedgwick and Kingsbury point out that the parallelism between the high uric acid content of the blood of the new-born and the high excretion of this substance during the first three or four days of life is indirect evidence supporting the findings of Wells and Corper⁴ and others (in opposition to the results of Schittenhelm and Schmidt⁵) that human fetal tissues possess no uricolytic power; for it would be difficult to imagine so great a production of uric acid if the tissues themselves possessed the power to destroy it. One naturally inquires respecting the genesis of this

increment of uric acid. There is no occasion to assume a synthesis *de novo*, which would be contrary to all current ideas regarding the origin of uric acid. What are its purin antecedents in the new-born?

It is an attractive speculation to associate the increased presence of uric acid with a destruction of leukocytes naturally rich in purin-yielding nucleoproteins. At this period, when uric acid excretion is at its highest, rapid morphologic changes are stated to occur in the blood of the new-born. Sedgwick and Kingsbury speak of the disappearance of the nuclei of many of the red cells, the change in proportion from a predominating number of polymorphonuclear neutrophilic cells to a corresponding predominance of lymphocytes, and the striking decrease in the leukocyte count of the peripheral blood.

The existence of an undue amount of circulating uric acid soon after birth thus seems to be established. The more problematic features of the question are expressed by the Minneapolis investigators as follows: Whether the decomposition of nucleoprotein material, which must be looked on as the cause of this uric acid increase in the blood, is related to the striking changes in the blood cells, particularly in the changes in the partition of the white corpuscles taking place at this time, or to nucleoprotein destruction in other parts of the body, as yet unknown, or to both, must be left to the future to decide. These results fit in well, however, as the connecting link in the theoretical chain of early leukocytosis—fall in leukocytes—flood of uric acid in the blood—high uric acid excretion—uric acid infarcts.

Current Comment

OXALIC ACID IN FOODS

Oxalic acid is widely distributed both in the free state and in combination with bases throughout the plant kingdom. As a result, oxalic acid is introduced into the body as a constituent of vegetable foods. The quantities thus involved are in general exceedingly small and are, so far as is known, physiologically harmless. The acid doubtless occurs in many instances as calcium oxalate in the alimentary tract and escapes absorption. Only in a few plants does the content of oxalic acid reach more significant proportions. Recently attention was called, however, to unexpected fatalities occasioned by eating the leaves of rhubarb in place of spinach. Although the chance for such experiences is doubtless extremely limited on account of the food habits of civilized peoples, it is nevertheless desirable to know something more detailed about the distribution of oxalic acid so that every possibility of harm may be averted. In these days when new foods and unusual sources of nutriment are being urged on housewives by enthusiasts eager to promote the conservation propaganda, one may conceive not only of the chance of employing a product with an unexpectedly high content of oxalic acid, but also of a

1. Folin, Otto: Recent Biochemical Investigations on Blood and Urine, *THE JOURNAL A. M. A.*, Oct. 13, 1917, p. 1209.

2. Sedgwick, J. P., and Kingsbury, F. B.: The Uric Acid Content of the Blood in the New-Born, *Am. Jour. Dis. Child.*, August, 1917, p. 98.

3. Slemons, J. M., and Bogert, L. Jean: The Uric Acid Content of Maternal and Fetal Blood, *Jour. Biol. Chem.*, 1917, **32**, 63.

4. Wells, H. G., and Corper, H. J.: *Jour. Biol. Chem.*, 1909, **6**, 321.

5. Schittenhelm, A., and Schmidt, G.: *Ztschr. f. exper. Path. u. Therap.*, 1907, **4**, 424.

possible augmented content of the toxic substance by the chance use at the same time of several products containing small amounts. Recent analyses by Arbenz¹ which have become available in this country give the following statistics, in terms of oxalic acid per kilogram of air dry spice or ready-to-eat vegetable, respectively: black tea 14.3, cocoa 4.8, pepper 4.5, rhubarb 3.2, spinach 2.9, sorrel 2.7, dry figs 1.2, roasted coffee 0.8, roasted chicory 0.7, raspberries 0.5, beans 0.45, potatoes 0.4, beets 0.3, currants 0.3, pears 0.2, bilberries 0.2, oranges 0.1, asparagus 0.09, cherries (with seeds), tomatoes and wine grapes 0.08, rutabagas 0.07, cauliflower 0.06, onions 0.05, Brussels sprouts 0.04, endive and melons 0.03, mushrooms, peaches, flour, lemons, celery, plums and apples, a trace; corn meal, rice and chestnuts, none. An added value of these figures lies in the fact that since oxalates in the urine are in part derived from the dietary oxalic acid which is resistant to oxidation in the body, in cases of oxaluria, physicians are accustomed to prohibit those foods which contain most oxalic acid and which are eaten in sufficient abundance to make the total amount thus ingested worth considering. Ordinarily the proscribed dietary articles include tea, coffee, cocoa, spinach, rhubarb, sorrel, pepper, beetroot and beans.² It should be borne in mind, however, that not all of the excreted oxalate is necessarily associated with a food source. Some of it may have a micro-biotic origin in the alimentary tract; and its possible genesis through imperfect metabolism of certain organic acids is still debated.

THE THYMUS AND RICKETS

It is practically useless to turn to the textbooks for helpful information regarding the functions of the thymus. At best one will find a series of unverified conjectures, debated assumptions, or a frank statement of our ignorance of the real purpose of this organ. The natural association of the thymus with early life has led to the conjecture that the gland plays a part in growth; for it becomes smaller and smaller as the rate of growth declines. The latest though by no means the final evidence indicates that former statements implicating a retardation of growth after removal of the thymus cannot be substantiated by experiment. Halnan and Marshall,³ for example, found that extirpation of the gland from young animals had no effect on their growth, even when the testes were removed simultaneously. Furthermore, in observations on castrated animals they could find no evidence of any compensatory mechanism between the testes and the thymus. In recent years another possibility of decided practical importance has been given some attention through the assertions of continental investigators.⁴ They have reported changes after experimental thymusectomy that correspond somewhat

closely to those observed in rickets; and thus the question of the relation of the thymus to bony growth and its pathologic manifestations is again brought into prominence. In an investigation conducted at the Physiology Department of Glasgow University under the new national health insurance medical research scheme, Renton and Robertson⁵ have come to a seemingly convincing conclusion in this matter. They have removed the whole thymus successfully in a series of animals which survived long enough to permit adequate observations on their growth in comparison with suitable control animals. Renton and Robertson conclude that thymusectomy of itself does not appear to cause any symptoms. Spontaneous rickets in subjects not operated on gives rise to essentially the same symptoms as the European writers have attributed to removal of the organ; that is, thymusectomy does not make young animals more susceptible to spontaneous rickets, and if they develop it, they do so at the same time and in the same manner as control subjects. The British investigators sum up their findings by the decision that removal of the thymus cannot be held responsible for the onset of rickets or similar bony changes. The alleged pathologic manifestations that have been credited to loss of the thymus have in reality presumably been due to the development of spontaneous rickets in young animals. Thus another promise of discovering a function for this organ has been shattered.

THE RELATIVE VALUE OF FRUIT JUICES

Fruit juices are rapidly finding their way into the daily life of the American people. A few years ago they were limited to the delicacies of the home or to syrups of the soda fountains. Today orange juice and grape juice in particular have found a widespread and growing popularity as agreeable beverages. It is scarcely an exaggeration to say, as does one of the large manufacturing companies in advertising its product, that grape juice has become the national drink. The temperance wave that has swept over this country, taken in conjunction with a vigorous and highly effective advertising campaign on the part of various producers, has helped to secure favor for a refreshing and wholesome beverage. The shortage of sugar at present and the prospect of a necessary restriction in the output of syrups and similar "essentials" of the "soft-drink" industry are likely to increase still further the use of palatable fruit juices. In addition to organic acids which lend a tart flavor to them, these beverages, provided directly by nature, contain a considerable portion of sugars which lend a food value to the product. Thus a glassful of grape juice measuring 7 ounces (210 c.c.) will furnish about 200 calories in the form of sugar; and orange juice is about half as rich in food value. Recently the juice of the loganberry has begun to claim recognition in this category. Analyses⁶ made at the Oregon State Agricultural College at Corvallis indicate that this fluid likewise con-

1. Arbenz, E.: The Quantitative Determination of Oxalic Acid in Foods and Condiments, *Chem. Abstracts*, 1917, **11**, 2374.

2. See, for example, Tibbles, W.: *Dietetics, or Food in Health and Disease*, Philadelphia, 1914, p. 76.

3. Halnan, E. T., and Marshall, F. W. A.: On the Relation Between the Thymus and the Generative Organs, and the Influence of these Organs on Growth, *Proc. Roy. Soc. London (B)*, 1914, **88**, 68.

4. Klose and Vogt: *Klinik und Biologie der Thymusdrüse*, 1910. Matti: *Ergebn. d. inn. Med. u. Kinderh.*, 1913, **10**.

5. Renton, J. M., and Robertson, Madge E.: Thymusectomy and Its Relationship to Rickets, *Jour. Path. and Bacteriol.*, 1916, **21**, 1.

6. Daughters, M. R.: The Composition of Loganberry Juice and Pulp, *Jour. Indust. and Engin. Chem.*, 1917, **9**, 1043.

tains from 6 to 8 per cent. of sugar in the acid juice. This lends to it a fuel value of approximately 300 calories to the liter, presumably in the form of available carbohydrates.

HOOKWORM IN THE MINES OF CHINA

The danger of hookworm infection in mines is well known. Hookworm disease is prevalent in many of the mines of California, China, France, Hungary, Sicily, South America and Spain. Germany, it is said, has spent over \$2,500,000 in direct outlay to control hookworm infection in a few of its mines. The disease has been brought under reasonable control in the mines of Belgium and Wales. The investigations of the International Health Board of the Rockefeller Foundation have brought to light a rather unexpected source of perennial reinfection of mines that applies to China in a way scarcely realized in the other countries mentioned. As stated recently in *THE JOURNAL*,¹ the hookworm problem in China presents unique features because of the widespread employment of human excrement as a fertilizer. The disease is thus easily spread into the agricultural districts. It happens that more than a hundred thousand miners, largely recruited from farmers who have worked barefoot in the moist, larva-infected soil, are employed in the mines of Hunan Province alone. The cooperation of the International Health Board has been solicited to provide measures for the control of a difficult situation brought about by this unusual combination of circumstances.

HEAT LOSS AND WATER ECONOMY IN THE BODY

In 1614, Sanctorius wrote, "He only who knows how much and when the body does more or less insensibly perspire will be able to discern when or what is to be added or taken away either for the recovery or preservation of health."² Yet the story of this factor of insensible perspiration, the amount of water lost from the body in vaporization, has been most inadequately written. The part played by water in the body is ordinarily overlooked by the clinician except so far as it is expressed in the volume of the urine or in the genesis of an edematous condition. The water which acts as a solvent for the body's waste may thus, perchance, be taken into consideration; but of the water lost from the organism through the respiratory passage and the skin and its rôle in the dissipation of heat from the body, little is known and less is mentioned. The pathway for the loss of heat naturally varies with the temperature of the surrounding air. At a low temperature there is little evaporation of water. Heat is lost in other ways. At an environmental temperature as high as that of the body or exceeding it, there can be no loss of heat by conduction and radiation, so that water evaporation must remove the whole of it. The study of a large number of persons in respiration calorimeters, in this country in particular, has

furnished data for estimating some of the factors just referred to.³ Under an average environmental condition with medium humidity, normal men from 20 to 50 years old excrete on an average 29 gm. (1 ounce) of water an hour—about 700 gm. a day—through the skin and the air passages. In this manner approximately one quarter of the total heat produced is eliminated. Few normal men exhibit variations of more than one-tenth from this figure. According to Soderstrom and Du Bois,³ the output of water as insensible perspiration is very little affected in disease. When the heat production is increased, the body responds and dissipates the usual percentage of calories in the vaporization of water. When it is necessary to get rid of unusual amounts of heat, the percentage lost in vaporization is increased. Edema seems to have no effect on the water output through the skin; and cardiac and nephritic patients on the whole give figures close to the normal. Just as there is little realization of the extent of the "invisible" water output, so there is too often a failure to appreciate and a tendency to neglect the water content of the intake in the form of seemingly solid food. An illustrative instance has been cited by Soderstrom and Du Bois in the following meal, which might well be given to a nephritic patient: a small dish of farina, a boiled potato, a portion of tomato and lettuce salad, a small dish of junket, and an apple. This ration contains something more than 23 ounces (690 gm.) of water, a quantity sufficient to carry away the heat that leaves in "insensible perspiration" in the ordinary person.

3. The literature is reviewed by Soderstrom, G. F., and Du Bois, E. F.: Clinical Calorimetry, Twenty-Fifth Paper, The Water Elimination Through Skin and Respiratory Passages in Health and Disease, *Arch. Int. Med.*, May, 1917, p. 931, from which some of the facts quoted are taken.

Health of Food Handlers.—During the examination of the food handlers of New York City, made through the cooperation of the health department and the American Museum of Safety, which included the examination of 44,042 individuals examined at the Occupational Clinic and 33,000 by private physicians, Dr. Louis I. Harris and Mr. Dublin of the Metropolitan Life Insurance Company made an intensive examination of 1,748 food handlers considered typical of the entire number. These included waiters, waitresses, cooks, male and female, other kitchen employees and bakers. In the entire group there were ten cases of active tuberculosis, twelve of suspected and three of arrested tuberculosis. Forty-one persons gave evidence of active or suspected syphilis, of which thirty-seven were among waiters. This group furnished forty-six persons with flatfeet and an equal number with varicose veins. Among the 211 waitresses examined, 65.8 per cent. showed anemia; 62 per cent. had varicose veins, and 17.1 per cent. were reported as suffering from some form of menstrual disorder. Four waitresses were found to have syphilis. The predominating defect among cooks was organic heart disease, there being thirty-two who showed cardiac disease. Of the cooks, 161 had marked disturbance of the digestive functions. Among bakers no tuberculosis or active syphilis was found, but there were thirty-eight cases of chronic bronchial conditions; thirty had organic heart disease and thirty-three, anemia. The study is valuable as demonstrating the importance of the examination of food handlers both from the standpoint of protection of the health of the community and for the opportunity it offers for the study of occupational groups. Another point brought out in the course of this study is the lack of uniformity of standards and methods of classification used by the various workers in the field of industrial hygiene.

1. Problems in the Campaign Against the Hookworm, editorial, *THE JOURNAL A. M. A.*, Nov. 10, 1917, p. 1611.

2. Sanctorius: *De medicina statica aphorismi*, Venice, 1614, Aphorism III, translated by Lusk, Graham: *The Elements of the Science of Nutrition*, Philadelphia, 1917, p. 18.

Medical Mobilization and the War

MEDICAL OFFICERS IN ACTIVE SERVICE

At the present time there are approximately 12,500 medical men in active service. This includes Medical Corps officers (a little less than 550), medical officers of the National Guard Army, and officers of the Medical Reserve Corps. Up to date approximately 17,900 physicians have been recommended for commission in the Medical Reserve Corps.

AMERICAN WOMEN'S WAR HOSPITALS UNIT

The American Women's Hospitals, of which Dr. Rosalie Slaughter Morton is chairman, was organized by the War Service Committee of the Medical Women's National Association of the United States. Women physicians to the number of 1,200 have registered with the committee, for home and foreign service. Already a number of physicians have been sent abroad to work under the authority of the American National Red Cross with which the American Women's Hospitals works in close cooperation.

MEDICAL OFFICERS' TRAINING CAMP AT FORT BENJAMIN HARRISON TO BE DISCONTINUED

The Medical Officers' Training Camp at Fort Benjamin Harrison is being discontinued and the medical officers transferred from the training camp to other stations. Those who have not yet completed their instruction go to the training camp at Camp Greenleaf, Fort Oglethorpe. Orders have been issued from the Surgeon-General's Office, assigning Colonel Ashburn and several of the other instructors to the Surgeon-General's Office and distributing the remaining instructors among the other training camps. The ambulance and field hospital units undergoing training at the training camp are now testing their ability for sustained marching.

Ambulance Companies Nos. 15 and 17, with one field hospital unit and headquarters, all of which are motorized, were ordered to start on November 9 on a seven-day hike to Georgia. Company No. 17 and the headquarters unit will go to Camp Greenleaf, while the other unit will go to Camp Oglethorpe. At the same time, two ambulance companies and two field hospitals, the sixth and fourteenth in each case, provided with mule motive power, received similar instructions.

SALVAGING CLOTHES FROM BATTLE-FIELDS AND CAMPS

The English War Office has set up at Dewsbury a department for the purpose of repairing, restoring and utilizing old uniforms and fabrics recovered from the army and navy. All discarded clothing and fabrics of every sort from the battle-fields and camps and from the navy are collected, put into bags and shipped to Dewsbury, where the material is sorted into that which can be cleaned, repaired and made usable, and that which must be discarded as rags and put through processes by which it can be made useful as new material. As many as ninety truckloads of this material have been received at this station in a single day. About 350 women are employed as sorters, who pick out the garments that are in condition to be repaired and used again. All articles capable of being restored are sent to a local firm of dyers and cleaners, by whom they are cleaned. Then they are repaired and reissued to the troops or for the use of German prisoners of war. With a high standard of efficiency and a large turnover, the cost for each article, including large repairs, amounts to about 28 cents. In this way, it is said in the report regarding this matter from U. S. Vice Consul Hamilton C. Claiborne, Bradford (*Commerce Reports*, November 5) that \$300,000 worth of uniforms have been salvaged up to the present. In ten months, a total value of material received and disposed of at Dewsbury was over \$3,000,000, and the net profit shown on such material at all the stations amounts to a very large sum. Details are given in the report of the amount of material received, the various channels in which it is disposed of, and the uses to which it is put.

CALIFORNIA'S VENEREAL DISEASE PROGRAM

Last summer there was held in San Francisco a conference on prevention of venereal diseases in California, in the interest of soldiers, sailors, and civilians. The program then outlined has been embodied in regulations recently by the state board of health.

The regulations for the prevention of syphilis and gonorrhea require those in attendance on a case of either of these diseases, or a suspected case, to report the case immediately to the local health officer, who in turn will report it to the state board of health. Such reports are to be made by patient's office number or initial only, but the number or initial used must refer definitely to the physician's record of the case. Physicians are expected to furnish, when reporting such cases, any available data that may be useful regarding the sources of infection and must teach the patient how to prevent the spread of the disease, its seriousness, the necessity for prolonged treatment, and must furnish the patient with approved literature on the subject.

Every city, county, and other health officer is directed to use every available means to ascertain the existence of syphilis and gonorrhea within his jurisdiction. He is required to investigate immediately all reported or suspected cases of syphilis in the infective stage, and of gonorrhea, and may inspect, examine, isolate, and disinfect persons, places and things. He is directed to make examinations of persons reasonably suspected of having syphilis in the infective stage or gonorrhea. All prostitutes are to be regarded as coming within the suspected class, but the health officer is forbidden from issuing to such women certificates of freedom from venereal disease. The health officer may require the submission of specimens from cases or suspected cases of syphilis or gonorrhea, for the purpose of examination at a state or municipal laboratory, and it is the duty of the attending physician to furnish such specimens when called on to do so.

Local health officers are directed to isolate reasonably suspected persons whenever isolation is necessary to protect the public health. In establishing isolation the health officer must define the limits of the area within which the isolated person and his immediate attendant shall remain. Isolation is not to be terminated until the patient has become noninfective, unless permission is given by the state board of health or the secretary of that board. Cases of gonococcus infection are to be regarded as infective until at least two successive smears taken not less than forty-eight hours apart fail to show gonococci. Cases of syphilis are to be regarded as infective until all lesions of the skin and mucous membrane are completely healed.

Health officers are directed to use every proper means of repressing prostitution, and are to report to the Bureau of Venereal Diseases any unusual prevalence of syphilis or gonorrhea and any unusual local conditions tending to favor the spread of these diseases.

CLINICS AND HOSPITALS

In preparing a list of approved venereal disease clinics and hospitals, the state board of health is aiming to raise the standards of some of the existing dispensaries and hospitals, to encourage the formation of additional public dispensaries where needed, and to assist persons needing institutional treatment to ascertain which institutions have adequate staffs, equipment and standards. Minimum standards are prescribed for dispensaries and for hospitals.

A dispensary, to be approved for the treatment of syphilis, must treat patients suffering from that disease in a separate department or in the department of dermatology, but there is no analogous restriction with respect to dispensaries for the treatment of gonorrhea. In either case, however, the dispensary must be open at least three times a week, day or evening, and the staff must be adequate both in number and in training. Rooms must be well arranged, and every dispensary must have at its disposal beds for isolation and treatment. Laboratory facilities and equipment, with instruments and apparatus, must be provided. In cases of syphilis, microscopic examinations of the suspected initial lesions must be made; Wassermann tests must be performed in the dispensary laboratory or other approved laboratory, and suitable tests and observations shall be made of all patients for a period of not less than two years after the conclusion of adequate treatment. Salvarsan or an accepted equivalent must be administered to all patients suffering from syphilis, unless there are contraindications.

In an approved dispensary for gonorrhea, systematic examination must be made of the discharges, and facilities for urethroscopic and cystoscopic examinations must be pro-

vided and be regularly employed by the attending clinicians. Patients must not be discharged as cured until after repeated negative clinical and microscopic examinations. Adequate facilities must be provided for ascpis and antiseptis.

In dispensaries of both kinds adequate records must be kept and an annual report must be made. The clinicians in attendance must themselves devote the amount of time necessary for intelligently informing new patients of the seriousness of their diseases, the necessity for treatment until cured, and the precautions to be taken to prevent the spread of the infection to others, and in addition the dispensary must furnish approved literature on the subjects. A dispensary will not be approved unless a social service department is maintained and adequate measures adopted to procure the regular attendance of patients. If it becomes necessary for any reason to discharge a patient still uncured, the patient must be referred to an approved clinic or to a reputable physician.

In general the standards for hospitals for syphilis and gonorrhea are similar to those for dispensaries, but it is specifically provided that patients having venereal diseases must be accepted under the same conditions as other patients.

NEWS OF THE TRAINING CAMPS

At Fort Oglethorpe

Lieutenant McDonald of the Signal Corps has been detailed by the War Department to make a series of moving pictures of the work being done at Camp Greenleaf toward training civilian doctors for military work. If there are any physicians left in this country who imagine that all they have to do in order to serve in the Medical Corps is to change their civilian clothes for a uniform and begin "pushing pills" to the sick soldier, please advise them to see these pictures if they are ever exhibited in their communities. Let them see the workings of an ambulance company, field hospital, regimental or sanitary unit, and then wonder whether they could take charge and run one as smoothly as the trained man. Surprising as it may be to them, doctors are in charge of these outfits, have to run them, and are responsible for all properties connected with them, as well as the training of the enlisted personnel. Moreover, these doctors were untrained civilian surgeons or physicians four months ago.

Majors Van Wart and Owensby have been making a mental survey of the camp for the past three weeks.

Major L. Owen has been relieved from duty at Camp Greenleaf and assigned to the Surgeon-General's Office. The camp has suffered a distinct loss, for Major Owen was one of our most popular and efficient instructors.

Lieutenant-Colonel Talbott, M. C., has been assigned to Greenleaf as camp inspector. Colonel Talbott has had many years' experience in this line of work, and from the amount of interest he has inspired in the student body, we feel safe in predicting "more laurels for his crown."

Major William Pepper, M. R. C., formerly dean of the Medical Department of the University of Pennsylvania, has been made adjutant.

Major Alexander Abbott, M. R. C., has been placed in charge of the school of hygiene recently established at the camp.

Major Walter Weisser has been assigned as provisional director of field hospitals.

Major Bell, formerly connected with the Royal Army Corps, has given a series of lectures on his work in France. Major Bell's ability as a speaker and his unusual opportunities for observing the medical work done in France made his lectures the most interesting in the course.

The Camp Greenleaf Military Society was organized last Friday night. Col. Henry Page, M. C., the commandant, was elected honorary president, and Major Alexander Abbott, president. The aims, objects, etc., of this society are worthy of a more lengthy notice than can be given in this letter—so more about it another time.

Everything is being made ready for taking over the work of the M. O. T. C. at Forts Riley and Benjamin Harrison. The buildings of the R. O. T. C. will be turned over on November 27, which will give accommodations for an additional 5,000 men.

Lieutenant-Colonel Carswell has been relieved from duty with the field hospitals and ordered to San Antonio, Texas. Before leaving, Colonel Carswell was presented with a beautiful wrist-watch by the officers in his command, as a token of

their appreciation of his untiring efforts in making the field hospitals one of the best outfits in the country.

Major M. Ashford, M. C., is convalescent from an attack of the grip, and has resumed command of the ambulance companies.

At Fort Benjamin Harrison

CLOSING OF THE CAMP

What is left of the members of the medical officers' training camp at this post will continue their training at Fort Oglethorpe, Ga., as the date for closing the camp here is at hand. The thousands of medical officers who have gone through the training at Fort Benjamin Harrison since the first of June are scattered far and wide. Most of them are still in this country, assigned to base hospitals, field hospitals and regiments. Not a few are in France or at embarkation points.

It is gratifying to the pride of the medical profession for the War Department to admit that the medical branch of the service is prepared to the highest point of efficiency of all. True, it was not necessary to teach us the most obvious part of our work—that of medicine and surgery—as none could receive commissions without first undergoing examination or furnishing evidence of a thorough medical education. However, it has been necessary to begin at the bottom in the education along military lines. Very few had any knowledge whatever of the military side of the life which it bids fair to believe will be theirs for three or four years. This they had to learn, and it has been accomplished in a remarkably short space of time.

GAS DEFENSE

The last of the military lessons, and perhaps one of the most interesting that has been introduced, is that latest flower of Kultur, the gas squad, the Legion of Frightfulness, its insignia a skunk with tail rampant, bar sinister, and the motto "Ad Nauseam."

Three instructors, a trio of frightfulness, descended as a gas cyclone from Fort Sill, Okla. With them arrived an assignment of the gas masks adopted by the United States Army for protection against the poisonous and other gases being used in the present war.

Poison gas was first used in modern warfare, April 22, 1915, by the Germans against a sector of fresh Canadian and French forces, with the double purpose of destroying the morale of the fresh contingents and causing casualties. This was followed by a fresh trial, defensive, against the French attack on the 26th, which was likewise successful. Its use soon became general. This was cloud gas, and as its efficacy depended definitely on



Insignia of the Legion of Frightfulness.

atmospheric conditions, gas shells soon were substituted, and now constitute 30 per cent. of the shells used.

The objects in the use of gas are: (1) putting men out of action (casualties); (2) hampering men in artillery, delaying maneuvers; (3) preventing supports and supplies from being brought up, and (4) inspiring general terror.

The gas is used in the form of cloud gas and gas shells in the following varieties:

1. Lacrimatory—direct primary effect on the eyes.
2. Asphyxiating—direct corrosive and irritating action on the respiratory tree.
3. Paralyzant—causing central nerve paralysis.
4. Miscellaneous—nauseating and blistering compounds.
5. Accidental—nitrous fumes and carbon monoxid from explosion of mines and high explosives.
6. Mixed.

To combat gas attacks, gas masks and warning are employed. The masks are box respirators of a regulation type. They consist of a canister containing layers of cotton, filters, charcoal, a neutralizing agent—soda lime—and an expiratory shutter valve. Masks are provided with mouth-pieces, nose-clip and goggles, fastened into rubber tissue, to protect against tear gases. Warnings come from various sources—aeroplanes and outposts, the whistling sound of the gas itself, which can be heard for 200 yards, smell, the

appearance of a cloud of any color, and the loss of the taste of tobacco.

As there is short time allowed to don the mask when in action, drills to speed up its adjustment must be given.

GAS DRILL

There are three preliminary commands: 1. "Mask at carry." Here the satchel is swung over the left hip, with the sling passing over the right shoulder. 2. "Gas alert." The satchel is advanced to the front of the body, with both arms through the sling, and flap open. 3. "Gas" by numbers (adjustment of mask): 1. The right hand is thrust into the satchel and the mask seized firmly, the tube fitting into the palm of the hand, with the fingers grasping the eye-piece. 2. The mask is brought smartly from the satchel, with the fingers grasping the edge of the face-piece, and is brought close to the chin, which is thrust forward. 3. The mask is brought upward, the chin dug into it, and at the same time the elastic bands are placed over the back of the head. 4. The metal breathing tube is seized in the right hand, and the rubber mouth-piece is placed in the mouth. 5. The nose-clip is attached well down over the nostrils. (This is necessary to prevent nose-breathing, as all of the air taken into the lungs must come through the canister containing the antidotes.)

This drill is continued to a point of efficiency whereby it is possible to adjust the masks from "Masks at carry" to the finishing touch of fastening on the nose-clip, in six seconds.

For the purpose of this drill the innocent Docs are ruthlessly lined up, preparedly gassed by lectures, and then forced to don their masks. One look, and there is a mad rush for cameras, to perpetuate their first appearance in the gas masks. That night 300 letters go home, telling of the marvelous experiences and hair-breadth escapes from the gas clouds—shell gas and lecture gas.

As a lesson in anatomy, the gas drill is excellent, and many learn for the first time, while adjusting the nose-clip, the exact position of their noses. The masks also demonstrate that drooling is not exclusively an attribute of infancy, and that bibs may be used to advantage even by medical officers. The constant irritation to the mouth of the tight-fitting mouth-piece fastened to the end of the breathing tube causes an excessive flow of saliva, which escapes through a drip tube out on the chest. It is not an uncommon experience at the beginning of this work, and until one is accustomed to the mouth-piece, for the flow of saliva to be so great as to soak through the clothing.

The first sensation of uneasiness over, and the novelty past, all found to their surprise that the mask, although grotesque in appearance and somewhat clumsy, could be worn without discomfort, and that it permitted perfect freedom in breathing.

This course of instruction, patterned after the British organization, occupies a week, divided between lectures, drills and demonstrations with actual gases at the gas house. It is intended to cover the subject thoroughly and to show the method of protection against poison gases, describe and demonstrate the kind of gases used, and, in the Medical Corps, to give information regarding the symptoms and treatment of those unfortunate victims of this terrible phase of modern warfare.

News Notes from Fort Riley

Preparations for winter are now in progress. Barracks are being banked with earth or supplied with frame or stone underpinning. Stoves have been installed in all barracks and mess halls. Following the blizzards and cold snap of last week, we have had nearly a week of ideal Indian summer weather. Warm, mild sunshiny days and cool, pleasant nights make ideal weather for field maneuvers and bivouacs.

The remnants of Companies 5, 6, 7, 8 and 9 have been consolidated into one company and transferred to No. 6 barracks. This combination is known locally as the "scrambled eggs company," although its own members prefer the title of "Rainbow Company."

No. 7 Mess Hall has been converted into an officers' reading room and library. It is furnished with stoves, tables and chairs, and forms an ideal place for study, reading and letter writing. Medical journals, popular magazines and books are plentifully supplied. This room is generally patronized, and fills a long felt want in the camp.

On Thursday and Friday of last week, companies were taken in a practice march and bivouac to Hay Camp Springs, each man carrying his full equipment with the exception of his bedding roll. The boys supplemented the regulation field

reserve ration with rabbit stew, thus furnishing a practical illustration of living on the country.

Field tactics in the morning and regimental maneuvers in the afternoon have given Companies 8 and 9 abundant practice in equitation, on some days giving an opportunity for six or seven hours a day on horseback. Each student officer, in turn, acts as a regimental surgeon, brigade and division surgeon, and is required to issue his orders and carry out his plans. Instruction and practice in locating regimental aid stations, ambulance dressing stations and field hospitals have been greatly enjoyed, the terrain of the Fort Riley reservation affording unusual opportunities for such work.

Major K. W. Kinnard, M. C., U. S. Army, has been ordered to the medical officers' training camp from Camp Sherman, Chillicothe, Ohio, to act as director of field hospitals.

Major George G. Davis, M. R. C., of Chicago, has been relieved as director of field hospitals and assigned to the command of Evacuation Hospital No. 1.

BIVOUAC PRACTICE

One of the things much looked forward to by those men who really enjoy outdoors is the practice march and bivouac. The company, each man equipped with his shelter half, rope and pins, haversack and canteen and carrying the standard reserve ration, is marched out to Hay Camp Springs, which is a delightful place for a bivouac. The pup tents are pitched on each side of the company street, and then the tents, as well as the officers' personal belongings, are carefully inspected by the officer in charge of the party. To accustom the officers to the use of the Lyster bag, no water is permitted to be used until it has been properly chlorinated in the bags, although the water at the springs is of the best. The reserve ration alone is permitted, and no extra food or delicacy of any kind may be taken. Each officer cooks for himself; and the bacon, crisply fried in the meat can, never tastes better than when on such an expedition. The bread comes in two packages, and is in the form of a cracker. Without butter these crackers would be unpalatable indeed; but after being dipped into hot water (heated in the cup going with the canteen) and then mixed thoroughly with the melted bacon fat, they form quite a savory dish. Coffee is made, and completes the menu. While bacon, hardtack and coffee with sugar but without milk may sound to the uninitiated an insufficient meal, it is far from being such. The caloric value is amply sufficient for a heavy man doing heavy work.

To make oneself comfortable in a pup tent requires, first, that one be thoroughly tired, and second, that one be not too badly coddled by the refinements of civilization. The average officer sleeps well, albeit, if the night is cold, it may be an effort to keep warm. Blessed is he whose tentmate does not snore; for with two men in a space as small as that encompassed by a shelter tent, the relation of one to the other is much like that of a pair of spoons in a case. For breakfast, more reserve ration, for luncheon ditto. Cleaning the dishes is not an extensive process, but one that would put the average housewife to her wit's end. Yet with some time and much rubbing, it can be done and done satisfactorily too.

The allowance of equipment taken on the wagons is 50 pounds, which includes absolutely everything. To make sure no one "hunches," the rolls are weighed.

Company 8 in its bivouac had a rabbit hunt. Forming a circle, they managed to scare up and kill some score or so of rabbits, which were promptly transformed into savory stew. The next day's march home finds each officer with a new idea as to just what a bivouac means and how it feels to be on the reserve ration.

NEWS OF THE CANTONMENTS

Twenty-Eighth Division, Camp Hancock, Augusta, Ga.

Representatives from the Surgeon-General's Office recently visited the camp to inquire into the shortage of equipment.

Major Dillinger recently returned from a short leave of absence. He is assistant division surgeon. He has been active in Pittsburgh politics, and was recently a candidate for councilman.

A course of intensive training for the medical officers was begun here, November 1. Among the lecturers are Lieutenant-Colonels Keller and Crookston, Majors Frescoln, Heffelbower, Crampton, Schaeffer, Dillinger, Swayne, Hogan and Schwartz, Captain Stone and Lieutenants Wood, Smith, Laws, Snyder, Seeley, Hollister and others. The course will include the modern advances in military surgery, trench sanitation, French and antigas warfare.

Thirty-First Division, Camp Wheeler, Macon, Ga.**BASE HOSPITAL NOTES**

There are at present under treatment in the hospital 1,322 patients, although three wards are still incomplete. Three fourths of the patients have measles, and unless there is an abatement of the epidemic, it will be necessary to occupy the hospital tents pitched for use in case of need. Six tents, each with a capacity of twenty-five patients, are in place, and will be used for convalescent measles patients only should the emergency arise. Heretofore it has been possible to care for all patients under roofs, though all porches and the machine shop have been utilized to that end.

Notwithstanding the crowded condition of the wards, the patients are content, and there are few complaints. When these are made they are at once investigated thoroughly, and relief given as indicated.

The mortality rate speaks for itself, and shows conclusively that even under great difficulties sick and wounded men can be handled satisfactorily. As sequelae there have been nineteen cases of pneumonia, with two deaths.

It should be gratifying to the profession to know that practically every one, from the commanding officer to the lowest private, has risen to the occasion of this emergency; but it is no more than is to be expected. Conditions arise in war which must be overcome, and they are overcome.

The enlisted personnel has been increased by eighty men arriving from Camp Lee. It is believed that there are now enough.

The nurses' quarters are nearing completion, and will be ready for occupancy in a few days, as will the isolation and neuropsychiatric wards. It will probably be necessary to use the latter two for measles patients for the time being.

The mess officer and kitchen personnel are accomplishing the almost impossible task of feeding 1,700 people with a mess hall and equipment intended for 500.

PERSONAL

Captain Pratt has begun his course of instruction in gas defense, which is extremely interesting.

Major Harrold, M. C., acted as one of the judges in the athletic competition at the Georgia state fair.

The Georgia branch of the Daughters of the American Revolution intends to present an ambulance to the Thirty-First Division, for service in France.

Major Pearce Bailey, chief of the neurologic division of the medical service, visited that division last week.

Captain Mitchel, Sanitary Corps, is now on duty with the division as sanitary engineer.

ONE HUNDRED AND SIXTH SANITARY TRAIN

Recently a short problem was worked out west of the Marion road, 2 miles north of the base hospital site. The tag-patients were detailed from the Florida and Alabama field hospital companies. Work of the regimental detachment was carried out by the hospital corps detachment of the One Hundred and Twenty-Second Infantry, commanded by Major Lindrome. The dressing station was established and the wounded evacuated to the ambulance company dressing station from the regimental collecting point by Ambulance Company No. 121, Capt. Robert F. Ashworth commanding. From the dressing station the wounded were evacuated by the motor ambulances to a theoretical field hospital established at Section 19. Considerable improvement was noted in development of coordinated effort over the problem of last week.

The ambulances of Ambulance Company 124 (mule-drawn) are in process of receiving their initial coat of olive-drab paint, showing in striking contrast to the familiar dark painted bodies.

Additional details of thirty-five men were made for special duty at the base hospital the past week in order to meet the increased demands of the heavy work incumbent on the base hospital. Though further depleting the enlisted personnel available for routine drill and instruction purpose within the train, it is evident that the training received in the actual care of the sick will be of great value in the future work of the train.

Major Cornelius F. Holton, commanding Field Hospital 123 (Georgia), by direction of the division surgeon has pitched the complete ward-tent equipment on the base hospital grounds for use should the emergency require.

Lieut. Daniel P. Campbell has returned from his short leave of absence a happy benedict. Mrs. Campbell has taken up her residence in Macon.

It is with deep regret that we note our first casualty in the train in the death of Private Aubrey Moore of Ambulance Company No. 123, a young man of sterling quality, with great promise of soldierly development. In attending the sick in one of our detailed detachments at the base hospital, he contracted lobar pneumonia. Even as on the field of battle, "he died in line of duty."

The sick rate of the sanitary train reflects credit on the officers and men of the train, being the lowest of any organization in the division.

Again the hopes of the train commander, Major Keenan of Massachusetts, have been raised in the anticipation of the carrying out of the promise of a dinner of "possum and 'taters." As reported two weeks ago, the prospective dinner was stolen from his cage. However, Friday morning a fine fat subject of the possum tribe arrived from some unknown source, and at the present writing we are sure, at least, that said possum is deceased and ready for the oven. Massachusetts still has hope of being convinced that this famous dinner combination is what is claimed for it.

The weekly social of the officers and ladies of the train, with their guests, was held as usual in the recreation hall. The Florida field hospital orchestra furnished the music for dancing. The usual buffet luncheon was served.

The completion of the framing of the tents for cool weather has insured more comfortable quarters. The acquisition of considerable more clothing now renders comparative comfort, especially at night.

Major Job C. Patterson, director of field hospitals, visited last Sunday at the neighboring settlement of Columbus. We have no definite information, but we suspect that a young man's thoughts may turn "lightly to love" even though spring is several months away.

Thirty-Fourth Division, Camp Cody, Deming, N. M.

Enlisted men of the division already present number about 23,000. During the past two weeks the number has been rapidly increasing. The camp is a collection of human beings of wonderfully good quality, and life in it induces a daily growing respect for the man power of America. These men, from our middle western plains, are a bulwark of defense on which the nation may confidently rely.

The spirit of the camp is excellent. It is well expressed in an address delivered by Brigadier-General Mauldin in command of the division on the occasion of the opening of the School for Medical Officers. He said:

We face an enemy capable and determined, and the task before us will require the best that each man in our Army has in him. But the Army has already accomplished things that seemed impossible. In this war the Medical Department faces the greatest demand that has ever yet been made on the medical profession. The response has been good. Men have made great sacrifices in order to serve the nation, and these sacrifices are appreciated. Our medical officers are ready to work all the time with all their capacity. More than that is required. We must work together. Cooperation with each other and with the rest of the Army is essential if we are to meet the new and unconsidered duties by which we shall be confronted in the war, and win. But we know that each man will give his utmost effort to the United States, and that he will coordinate his efforts with those made by his fellows. We know that each man will be filled with the determination to win, and we shall win.

During the week ending October 22, 2,555 men were examined by each of the medical boards. Of these there were rejected on account of disease by the tuberculosis board (2,342 examined), 10; by the cardiovascular board, 9; by the ophthalmologists, 12; by the board examining the mentally defective, 5. The results of the work of the tuberculosis board are of interest in that they indicate the probable percentage of incidence of pulmonary tuberculosis among the supposedly healthy members of the communities in our north middle states. Cases discovered by this board are incipient. The advanced ones have already been thrown out by the physicians who examined the men on enlistment. This percentage has been 0.5 per cent., and it is probable that during the autumn months this percentage of individuals in any of these communities is developing active pulmonary tuberculosis. Special effort is made to detect these early cases. Organization commanders are requested to send for examination all men in their command who have cough and expectoration, or who show lassitude and inability to perform full duty. New cases are promptly discovered, and the probability of recovery of those thus early detected is great.

VENEREAL DISEASE

The number of cases of venereal disease contracted in or about the camp is gratifyingly small. Since the division

came to Camp Cody, Aug. 25, 1917, only eleven new cases of gonorrhea and one case of chancroid have developed. When it is considered that the total number of men in the camp is over 22,000, this affords a gratifying evidence of the efficiency of the measures of prevention that have been instituted. This is a percentage of 0.0036 per month. Many of these patients had not taken the required prophylaxis. They thus come under the operation of G. O. 31, 1912. They are deprived of pay while off duty, and they will be tried by court martial for neglect of duty and failure to obey orders. In contrast with this small percentage of cases contracted here, it is very interesting to note that 440 cases were imported. The anxiety that has been expressed concerning the dangerous moral environment of our troops in camps would be better directed toward the home environment, since the number of cases contracted at home is to the number of cases contracted at camp as 38:1.

The treatment of these cases is a matter of great importance in the Army, since there depends on it the effectiveness of many U. S. soldiers. That which is required in this camp is stated in the following memorandum:

MEMORANDUM ALL SURGEONS, THIRTY-FOURTH DIVISION

The division surgeon desires that the following recommendations be followed as closely as equipment will permit in the treatment of venereal diseases at regimental infirmaries:

GONORRHEA

1. Patients must be instructed in personal cleanliness. They will be advised to wash their hands after each urination and will be cautioned against the danger of infection being carried to the eyes by unclean hands.

2. It is necessary in the thorough treatment of gonorrhea that the penis be cleansed before each injection, with a nonirritating soap and water. Frequently the foreskin is not retracted and the penis is not thoroughly cleansed. The practice of sealing the urethra by means of a small pledget of cotton, which is held in place by retracting the foreskin over the head of the penis, should be avoided. This tends to prevent drainage, and reinfection frequently takes place. The best method of protecting the clothing is to put a piece of clean cotton over the end of the penis to extend about one-third way back and which can be held in place by means of a rubber band.

3. After the above cleansing process, the patient will be advised to urinate before each injection. As gonorrhea is an acute infection of the mucosa of the urethra only, it is necessary that whatever treatment is carried out be nonirritating and one that will not increase the inflammation. When too strong injections are given, posterior urethritis is frequent, and injury to the mucosa occurs which results in chronic gonorrhea or gleet. It is advisable to begin with an injection that is not stronger than one fourth of 1 per cent. protargol. This can be increased, depending on the patients' tolerance and the amount of discharge. Injections should be given every two to six hours by the surgeon, or under his supervision. Care should be taken that the syringe does not traumatize the mucosa and thus open up new avenues of infection. The urethra should not be overdistended, but should be comfortably filled so that the patient has no difficulty in holding the drug at least ten minutes.

The surgeon must insist that all patients drink a large quantity of water, which can be made bland by the use of small doses of sodium bicarbonate. Hexamethylenamin and other urinary antiseptics are very useful, but must not be used in large enough doses to produce irritation of the sphincter and posterior urethra. The injection of large quantities of water causes the urethra to be continually flushed from within out, which is the desired effect. Erections at night should be avoided. Advise your patients to sleep with a little less than the usual amount of covering. It is not desirable that they be chilly or cold, but too much warmth frequently induces erections. When necessary, bromids or other nerve sedatives should be used to control erections.

4. Glass syringes are frequently broken when boiled. They can be disinfected and the gonococcus killed by immersion in a phenol (carbolic acid) solution. Care should be taken that they are thoroughly washed before being used.

5. Much better results can be obtained when using silver salts if the surgeon will have the solution freshly prepared.

6. Frequent examination of the urethral discharge is necessary. This can be accomplished by referring the patient to the base hospital with a note asking that a smear be made. The proper time to obtain such a specimen is before the morning urination.

7. Gleet or chronic gonorrhea is the result of infection into the submucosa of the urethra. It is necessary in this group of cases, after the gonococcus has disappeared, to sound the patient regularly. This will be done by the chief of the genito-urinary clinic at the base hospital, and such patients can be directed to see this officer at the Friday conference and at such other times as the officer may direct.

8. Chronic cases that do not respond to the usual treatment as carried out at the infirmary should be referred to the officer in charge of the genito-urinary clinic, base hospital, for diagnosis and suggestions relative to treatment.

9. Patients requiring endoscopic or cystoscopic examinations will be referred to the base hospital.

CHANCROID

1. All suspicious sores will be referred to the base hospital for diagnosis before treatment is begun. Dressings and medicines of all

kinds should not be used before the officer in charge of the laboratory has had an opportunity to obtain some serum for dark field examination. Chancroid is best treated by soaking the penis in some mild antiseptic solution which should be comfortably hot. A saturated solution of argyrol, or the pure crystals of argyrol, applied to such a lesion will usually bring about quick recovery. The inguinal adenitis can usually be controlled by applications of blue ointment. Vaccines are of some use in very chronic cases. The surgeon must be on the lookout for a double infection, as frequently a lesion begins as a chancroid, and later a syphilitic infection develops. When suppuration of the inguinal glands occurs, patients should be immediately referred to the base hospital for treatment.

CHANCRE

1. As mentioned above, every suspicious sore should be examined by the officer in charge of the laboratory, base hospital, so that if syphilis is present, treatment can be started at once. It is necessary to have sterile distilled water for intravenous treatment. Patients requiring salvarsan or neosalvarsan or the intramuscular injection of mercury will be referred to the base hospital. These patients need not remain in the hospital, and can be returned to duty the same day. The Wassermann test is not positive in early syphilis, so that it should not be depended on for a diagnosis. The test should be used in every suspicious case except the early primary lesion. In these cases, as mentioned above, the serum examination for spirochetes is positive in every case of syphilis. A negative Wassermann test does not mean that syphilis is absent. It is necessary that the surgeon study the case together with the laboratory findings before making his diagnosis. Provocative medication is frequently necessary. Mercury can best be used by the inunction method. When this method is used, it is necessary that the surgeon personally supervise the rubbing so that he knows at all times the amount of mercury the patient is absorbing. A good plan to follow is that the men be required to sleep in their undershirts and that the mercury be rubbed into the torso. They should bathe but once a week, at which time the undershirts can be changed. Five treatments per week are sufficient. A course of treatment should take six hours, and consist of thirty rubs.

2. Cases that should be referred to the base hospital: acute epididymitis; posterior urethritis; prostatitis; seminal vesiculitis; suppurating buboes that require drainage; cases for intravenous medication; cases for Wassermann test; in addition, the above mentioned cases for diagnosis and special treatment.

A copy of this memorandum will be posted in a conspicuous place in the room in which venereal treatment is given.

By order of Lieutenant-Colonel.

Some other lines of sanitary work in progress are important. Food is being carefully inspected. All that comes into camp must conform to certain standards. Meat passes the local inspector of the BAI before delivery to the quartermaster, and between the quartermaster and the companies it must pass that of the camp inspector. Milk must measure up to the standards set by the BAI. It must not score less than 75 per cent., and dairies are inspected once in thirty days. Bacteriologic examinations of milk are made, and those dairies whose produce fails to be approved are denied permission to sell to the camp, nor are ice cream factories, bakeries, etc., using this milk permitted to sell to the camp. Canned goods are inspected before issued. Those cans that are leaky and those showing the presence of gas are rejected. The laboratory at the base hospital is now equipped to conduct these examinations for the camp.

The examination of all those concerned in the preparation or handling of food to discover carriers of typhoid or paratyphoid has resulted in the detection of one paratyphoid carrier, who was promptly relieved from duty in the kitchen.

Incoming troops are examined on the train for contagious disease. At the end of their long trips, those trains pull into our sidings, and our newcomers are given a welcome by the band; but before they come within hearing of the martial music, Major Kenney, M. C. N. G., and his staff are already inspecting them, and some unfortunates go from the train directly to the contagious wards of the base hospital. All the others must go to the detention camp of the depot brigade, where during two weeks they carry on in isolation the work of training, before they are admitted into full membership and good standing in our healthy community. Everywhere throughout the camp cases of contagious disease that appear are promptly removed to the hospital, and the contacts, that is, those living in the same tent or in immediate association with them, go to the contact camp out in the unmitigated desert, there to enjoy a noninterrupted view of the far away mountains during whatever leisure is permitted them by the system of intensive training which makes its presence felt even there. The contact camp was commanded by a line officer, there being about 300 men in it; but as this arrangement proved unsatisfactory it is now in charge of Ambulance Company No. 134, commanded by Lieut. F. H. Roost. The Medical Department has taken it over entirely.

Thirty-Fifth Division, Camp Doniphan, Fort Sill, Okla.

A quadrilateral, the monotony of its low and once white-washed stone walls broken only by the regularly spaced chinks through which one time blazed the fire of the trooper's rifle—such is old Fort Sill.

WORK OF THE DIVISION SURGEON

The sanitary and medical care of the camp is in charge of Lieut.-Col. W. T. Davidson of the Regular Army, under whose efficient and experienced leadership the camp has fared exceptionally well so far. He is ably assisted in this work by Major Carl Philipps, M. R. C., sanitary inspector, and Capt. W. L. Gist, M. R. C., adjutant. One of the difficult problems that the division surgeon had to solve was represented in the water supply. Owing to an unprecedented inadequate rainfall, which has continued now for a period of almost eighteen months, the impounded waters of Medicine Lake, which supply the camp, had become exceedingly offensive from an overgrowth of algae. This condition has now been quite satisfactorily overcome by adequate methods of treatment, to which the present cold weather has given considerable assistance.

The immunization of the troops against typhoid, paratyphoid and smallpox has practically been completed. In addition to these preventive measures, all cooks and those who handle or prepare food are being subjected to special examination to determine their freedom from typhoid germs. So far no carriers have been found.

A special course of instruction in matters pertaining to camp hygiene and sanitation, as well as the special features in the examination of recruits, has been arranged for and is well attended and appreciated. Special examining boards for tuberculosis, cardiovascular, and nervous and mental diseases are also active in weeding out the unfit.

The venereal disease problem also, here as elsewhere, forms one of the important considerations. Since October 1 there have been 322 venereal disease patients under treatment in this division; this makes approximately 1.3 per cent., a figure not excessive when compared with civil life statistics, especially when one considers that under the draft many men already infected are brought into camp.

The general disease incidence for the camp has been low thus far, reaching not quite 2 per cent. Contagious diseases have been relatively infrequent. Since the establishing of the camp in August there have been all told but two cases of cerebrospinal meningitis, nine of diphtheria and fourteen of pneumonia in the division. A case of anthrax with recovery may be mentioned among the more unusual infections that have come under observation. An outbreak of measles in one of the companies was promptly controlled by rigid isolation, and no new cases have been noted.

It is the opinion generally here among medical men that the absence of alcohol has added greatly to the efficiency of the men and to a lessened morbidity.

BASE HOSPITAL NOTES

Pending completion of the base hospital, the sick are being taken care of at the post hospital of Fort Sill. The opening of a number of wards of the new base hospital has made the care of the patients less difficult, however. When all of the buildings are completed there will be hospital accommodations for more than 1,200 patients, a little more than 3 per cent. of the total command. Past experience of the Army Medical Department has shown that this is about the average of sick in large commands.

Major P. B. Connolly of the Regular Army is in command at the base hospital, and the chief branches of the service under him are in the hands of the following Medical Reserve Corps officers: Major A. W. Barksdale, surgery; Major S. Strauss, medicine; Major A. C. Magruder, eye, ear, nose and throat, and Major G. C. Ruhland, laboratories.

Eighty-Third Division, Camp Sherman, Chillicothe, Ohio

Camp Sherman is situated on a broad plain of alluvial deposit on the west bank of the Scioto River. It is 2 miles north-northwest of Chillicothe, which is 50 miles south of Columbus and 98 miles northeast of Cincinnati.

The cantonment is rectangular, half a mile wide and about 2 miles long, and lies in a bend of the river, which for 15 or 20 miles follows a serpentine course. It is in one of these curves that the camp is placed. The barracks and officers' quarters are completed, and most of them are heated.

DISEASE INCIDENCE

There have been about forty cases of pneumonia, but no epidemic. In the second increment of the draft a patient with acute tonsillitis arrived, and before isolation was effective there were thirteen cases; the next day there were eighteen cases and on the third day eleven cases; from then on the epidemic subsided to nine cases, then three, and after the sixth day no other cases appeared. The rapid development of these cases and the prompt subsidence of the epidemic prove the infectious nature of the process and warrant immediate and vigorous action when such cases appear in groups of men. There were eight cases of Vincent's angina, but they yielded promptly to local treatment. One case of epidemic meningitis showed the immediate effects of the injection of Flexner's serum, 400 c.c. of which were injected, partly by the intravenous and partly by the intraspinal route. All contacts were isolated and throat cultures were negative. In the city of Chillicothe there have been sixteen cases of smallpox, but none in the camp. Every draft or enlisted man before his physical examination is completed is vaccinated. The inoculations against typhoid and paratyphoid A and B have been followed by the usual reactions, but there were none of unusual severity.

PERSONAL

First Lieutenant Brainard from the Infantry School of Arms, Fort Sill, Okla., is in charge of the instruction in methods of gas defense and the treatment of gas casualties.

The Ross County Academy of Medicine, October 10, gave a delightful entertainment for the medical officers of the camp. It was well attended, and the president, Dr. F. T. Marr, made a cordial address of welcome which was responded to by Lieut.-Col. Wallace De Witt, the division surgeon. The county societies and the local medical societies as well as the druggists have arranged a plan of cooperation for the improvement of the sanitary conditions of the city and county which should prove of the greatest value and yield excellent results.

The campaign for the Second Liberty Loan obtained the total subscription of over \$2,000,000 from the division.

The medical and sanitary problems are in the care of the division surgeon, Lieut.-Col. Wallace De Witt, M. C., U. S. Army, who has been four years at Fort Ethan Allen, Vt., and for two summers in charge of the training camps at Plattsburg, N. Y. Major John A. Burket, M. C., is in charge of the sanitation. Capt. Robert H. Halsey, M. R. C., is assistant division surgeon.

The base hospital, with a capacity of 1,000 beds, is under the command of Major Edward G. Huber, M. C. Major Christian R. Holmes of Cincinnati is chief of the otolaryngologic service. Major Casey A. Wood, M. R. C., of Chicago is chief of the ophthalmologic section. Major James A. Harvey, M. R. C., is chief of the surgical service. Major Dudley DeV. Roberts, M. R. C., is chief of the medical service. Captain Stanley M. Rinehart, M. R. C., is special examiner in tuberculosis. Capts. Henry L. Stick, M. R. C., Elmore E. Adel, M. R. C., and Charles W. Hoyt, M. R. C., are among those doing special work.

First Lieut. Benjamin H. Sherrard, Dental Corps, is directing the work of the dentists, of whom there are about forty-five in the cantonment.

The sanitary train is under the direction of Major Henry S. Satterlee, M. R. C. Major John R. McDowell, M. R. C., commands the ambulance companies. The field hospitals are well organized and almost completely equipped.

That the general health of the camp is excellent is shown by the noneffective rate, which is 14 per thousand.

Eighty-Sixth Division, Camp Custer, Battle Creek, Mich.

Preparations are being made through all regimental sanitary detachments to systematize the work of examining the remaining draft increment that is due to arrive almost any day. This will represent 55 per cent. of the original draft. With the experience gained through the examinations of those already here, there is no doubt that the large number expected will be run through with rapidity and precision. It is expected that there will be fewer discharges on account of physical disability than among the first examined, owing to the fact that the examining boards in the draft districts will be more thoroughly trained through the experience they have already had. The division surgeon has outlined plans which, when carried out, should make it possible for every medical officer to gain some experience in this form of examination and some practical knowledge of the paper work

necessary in making out reports for acceptance and for discharge. Changes which are contemplated following an outlined course of instructions as suggested by Colonel Munson, U. S. M. C., will cause a general mix-up of all medical officers for the purpose of instructing them in the necessary detailed work of every medical organization in the division. Field hospital and ambulance company officers and enlisted men will be changed to regimental detachments, regimental detachment officers and enlisted men to field hospitals and ambulance companies, thus making it possible for every medical officer to become familiar with the work of the various organizations, making for greater efficiency in every department. Courses of lectures by line officers and experts in military hygiene, sanitation and the various medical and surgical specialties will be given and must be attended by all medical officers. This is not done with the view of making specialists of medical officers, yet it is very necessary that the medical personnel be thoroughly trained in all branches represented by these courses of instruction.

The Calhoun Medical Society of Battle Creek met Tuesday evening, November 6. Major Roy Bishop Canfield read a paper entitled "Consideration of Some Types of Sepsis and Their Results." Major Ernest Edward Irons read a paper entitled "Chronic Muscular and Articular Rheumatism: Treatment as Based on Etiology." These papers were discussed both by the civilian physicians and the members of the Medical Department, who were present in large numbers.

SANITARY TRAIN

The weather conditions have improved so that outdoor work has been progressing rapidly. Long hikes with maneuvers are daily occurrences. The men relish the change, as lecture work and indoor drills were becoming very tiresome.

Ambulance Company No. 340 gave a large banquet to the officers of the company Tuesday evening, November 6. Invited guests were Major E. C. Jackson, director of ambulance companies; Major Lewis Wine Bremerman, director of field hospitals, and Capt. C. J. MacGuire of Ambulance Company No. 337. Home talent was utilized, and a very enjoyable evening was the result.

Athletes are numerous in the sanitary train. The ambulance companies have developed an extraordinarily fine football team. They have been coached by Capt. H. H. Varner, commanding Ambulance Company No. 340, late coach of the University of Virginia. The team has been unbeaten this season, and has challenged any football team from any sanitary train in training at the present time.

BASE HOSPITAL

The base hospital is nearing completion, and in a short time will be in a position to carry out all its work in a normal manner. Major Wood, commanding, is to be congratulated on the manner of conducting the work there to date, handicapped as he has been by cramped quarters, inclement weather, incomplete heating arrangements, and other difficulties. All patients have been given fine care, and there has been no complaint from any quarter.

Eighty-Ninth Division, Camp Funston, Fort Riley, Kan.

This camp was originally planned for one infantry division and one depot brigade. Now, however, there are really three divisions: the eighty-ninth, white; the ninety-second, colored, and the depot brigade, while the division surgeon's office, therefore, is practically handling the work of an army corps. Nevertheless, the work of examining the men of the National Army has been done quickly and smoothly. It has been so systematized that one examining board has frequently examined over a thousand men in a day, including the administering of smallpox vaccine and the initial dose of the typhoid and paratyphoid prophylaxis.

A training officer, Medical Department, has been appointed for the Eighty-Ninth Division, and a schedule of instruction for the officers and men of the Medical Department has been instituted. Special subjects pertaining to work of the line are given in nightly lyceum lectures, by special officers of the departments concerned. The medical subjects necessary for the instruction of the enlisted personnel are taught by medical officers of the various organizations to which these men belong.

Col. Frank W. Weed, M. C., is sanitary inspector of the Eighty-Ninth Division. Major J. M. White, M. R. C., of St. Paul, is sanitary inspector of the Ninety-Second Division. Capt. R. B. Irons, M. R. C., of San Diego, Calif., is instructor in gas defense for the Eighty-Ninth Division.

The base hospital of Camp Funston is located at Fort Riley, 4 miles away. Patients, and clothing to be fumigated, are taken there and returned by ambulances over the new government macadamized road. A simple system of paper work has been instituted for these transfers, and no confusion results. At present, out of the whole command, there are approximately 30 cases of measles, 25 cases of cerebrospinal meningitis, 35 of mumps, 2 of scarlet fever and 50 of lobar pneumonia. No serious accidents have occurred, the worst being the loss of three fingers by a private who was fashioning a wooden rifle with an ax.

VENEREAL DISEASE

In civil life we have all heard of the great frequency of venereal diseases among soldiers of the Regular Army. In view of this teaching, it may be of interest to note our experiences in the examination of the National Army men just out of civil life on their arrival in camp. For the white troops the incidence of all venereal diseases has ranged between 5 and 6 per cent.; for the colored troops, over 20 per cent. These are all cases contracted prior to enlistment. At the time of present writing, no case has been reported that has been contracted since entering the military service in the Eighty-Ninth Division, which should furnish food for thought.

TYPHOID VACCINATION

A number of officers and men had received their typhoid prophylaxis prior to the order which made paratyphoid vaccination likewise compulsory. These men have subsequently had to take the three doses of paratyphoid A and B vaccine, whereas the men of the National Army have received only the three doses of U. S. triple vaccine, which consists of the paratyphoid and typhoid vaccines combined. It has been an experience common to the medical men of the camp that the reaction from the inoculation of paratyphoid vaccine, alone, has been much more severe than that of the triple vaccine or of the typhoid vaccine, alone. So far, no explanation has been attempted.

"SOB LETTERS"

An unpleasant phase of a medical officer's life is the "sob letters." Dozens of these, in tenor all alike, came through here every week. Anxious mothers, overzealous wives, and even mere acquaintances flood us with affidavits and letters about the physical condition of some of the men brought here by the draft. Some of these letters are extremely sad, others are absurdly funny, but all alike are given full consideration, which means a reexamination of the person referred to, by the already overworked surgeon. These letters rarely amount to anything, as the men unfit for service have already been weeded out as nearly as is humanly possible by the surgeons of the organizations to which they are attached, or by the Camp Board of Special Examiners.

PERSONAL

Capt. Bruce Ffoulkes, M. R. C., has been made director of field hospital companies, and Lieut. John D. Bartlett, M. R. C., has been made director of ambulance companies, of the Three Hundred and Fourteenth Sanitary Train, Eighty-Ninth Division. Lieut.-Col. Harry L. Boyer, M. C., has been appointed division surgeon of the Ninety-Second Division, and Captain Nicholls, M. R. C., formerly of the Presbyterian Hospital in Chicago, has been made his assistant. Lieut. Louis G. Harney, M. R. C., of wide industrial medical experience with the American Steel Foundries of East St. Louis, is assistant to the division surgeon of the Eighty-Ninth Division. Lieut. Judd H. Kirkham, M. R. C., of Langdon, N. D., is attending surgeon of the headquarters, Eighty-Ninth Division. Lieut. Albert G. Bower, M. R. C., formerly of the Department of Bacteriology, University of Chicago, is medical training officer of the Eighty-Ninth Division.

DISEASE CONDITIONS AMONG TROOPS IN THE UNITED STATES

Extracts from Telegraphic Reports Received in the Office
of the Surgeon-General for the Week Ending

Nov. 2, 1917

| | |
|---|----------------|
| 1. Total strength of troops | 1,001,632 |
| Admission rate per 1,000 (disease only) | annual 955.2 |
| Non-effective rate (all causes) | 25.6 |
| 2. National Guard, strength | 373,180 |
| Admission rate per 1,000 all camps (disease only) | annual 1,108.8 |
| Non-effective rate all camps (all causes) | 24.5 |

Camps showing admission rate for disease higher than average: Camps Kearney, Wheeler, Cody, Bowie, Sevier, Beauregard and Shelby.

Camps showing noneffective rate higher than average: Camps Wheeler, Bowie, Logan, MacArthur, Shelby, Beauregard, Sevier, Cody, Hancock and Kearney.

3. National Army, strength 426,578
Admission rate per 1,000 all camps (disease only) annual.. 929.8
Non-effective rate all camps (all causes) 20.1

Camps showing admission rate for disease higher than average: Camps Pike, Jackson, Dix, Dodge, Travis, Funston, Gordon and Lewis.
Camps showing noneffective rate all causes higher than average: Camps Pike, Dodge, Funston, Lewis and Dix.

4. Venereal Disease—
Admission rate Regulars 90.4
Admission rate National Guard (camps) 93.6
Admission rate National Army 135.6

Camps National Guard having rate above average: Camps Sheridan, Wheeler, Kearney, Logan, Sevier, MacArthur and Bowie.

Camps National Army having rate above average: Jackson, Pike, Custer, Dix, Lee, Travis and Meade.

5. Number of cases of pneumonia 228
Highest number in any one camp Funston 22
Number of cases of meningitis 18
Highest number in any one camp Funston 9

| | Regulars, U. S. Army, in U. S. only, 1916 | | Regulars in U. S. week ending Nov. 2, 1917 | | Nat'l Guard, All Camps, week ending Nov. 2, 1917 | | Nat'l Army, All Camps, week ending Nov. 2, 1917 | |
|---|--|------|---|------|---|------|--|------|
| | Cases | Rate | Cases | Rate | Cases | Rate | Cases | Rate |
| Admissions, dis- eases only, an- nual rate per 1000 | 613 | | 831.8 | | 1108.8 | | 929.8 | |
| Pneumonia..... | 2.59 | 24 | 17.2 | 92 | 14.0 | 78 | 9.7 | |
| Dysentery..... | 3.97 | 5 | 1.2 | 2 | 0.3 | 2 | 0.2 | |
| Malaria..... | 12.52 | 7 | 1.8 | 49 | 7.4 | 43 | 5.3 | |
| Venereal..... | 91.00 | 351 | 90.4 | 615 | 93.6 | 1085 | 135.6 | |
| Paratyphoid..... | 0.31 | 0 | 0 | 0 | 0 | 1 | 0.1 | |
| Typhoid..... | 0.21 | 0 | 0 | 2 | 0.3 | 5 | 0.6 | |
| Measles..... | 20.29 | 145 | 37.3 | 950 | 150.8 | 786 | 98.2 | |
| Meningitis..... | 0.29 | 3 | 0.7 | 3 | 0.4 | 22 | 2.7 | |
| Scarlet fever..... | 0.59 | 17 | 4.3 | 15 | 2.8 | 6 | 0.7 | |

6. SPECIAL DISEASES REPORTED DURING THE WEEK ENDING
NOV. 2, 1917

| Division | Pneumonia | Dysentery | Malaria | Venereal | Paratyphoid | Typhoid | Measles | Meningitis | Scarlet Fever | Strength of Command |
|----------------------|-----------|-----------|---------|----------|-------------|---------|---------|------------|---------------|---------------------|
| 27th, Wadsworth.. | ... | ... | 1 | 46 | ... | ... | ... | 1 | ... | 30,014 |
| 28th, Hancock.... | 1 | ... | ... | 39 | ... | ... | ... | ... | ... | 28,669 |
| 29th, McClellan... | 3 | ... | ... | 31 | ... | ... | 18 | 1 | ... | 25,390 |
| 30th, Sevier..... | 19 | ... | 2 | 46 | ... | ... | 258 | 1 | ... | 23,058 |
| 31st, Wheeler..... | 15 | 1 | 12 | 62 | ... | ... | 248 | ... | ... | 21,102 |
| 32d, MacArthur.. | ... | ... | ... | 51 | ... | 1 | 16 | ... | ... | 26,016 |
| 33d, Logan..... | 5 | ... | 23 | 57 | ... | ... | 3 | ... | ... | 23,267 |
| 34th, Cody..... | 2 | ... | ... | 43 | ... | ... | 70 | ... | 9 | 25,150 |
| 35th, Doniphan... | 4 | ... | 2 | 20 | ... | ... | 13 | ... | 1 | 25,512 |
| 36th, Bowie..... | 11 | ... | 3 | 47 | ... | 1 | 244 | ... | ... | 24,514 |
| 37th, Sheridan... | ... | ... | ... | 73 | ... | ... | 16 | ... | ... | 24,171 |
| 38th, Shelby..... | 20 | 1 | 4 | 36 | ... | ... | 50 | ... | ... | 22,368 |
| 39th, Beauregard.. | 3 | ... | 2 | 4 | ... | ... | 24 | ... | ... | 6,471 |
| 40th, Kearney.... | 8 | ... | ... | 15 | ... | ... | 21 | ... | ... | 18,333 |
| 41st, A. L. Mills... | 1 | ... | ... | 45 | ... | ... | 9 | ... | ... | 10,690 |
| 76th, Devens..... | 3 | ... | ... | 38 | ... | ... | 1 | ... | ... | 30,073 |
| 77th, Upton..... | 1 | ... | ... | 19 | ... | ... | 1 | ... | ... | 27,762 |
| 78th, Dix..... | ... | 1 | ... | 102 | ... | 5 | ... | ... | ... | 19,877 |
| 79th, Meade..... | ... | ... | ... | 8 | ... | ... | ... | ... | ... | 24,802 |
| 80th, Lee..... | 3 | ... | 1 | 183 | ... | ... | ... | 2 | ... | 34,824 |
| 81st, Jackson.... | 3 | ... | 3 | 191 | ... | ... | 141 | ... | ... | 17,139 |
| 82d, Gordon..... | ... | ... | ... | 45 | ... | ... | 31 | 2 | ... | 20,065 |
| 83d, Sherman.... | 4 | ... | 1 | 41 | ... | ... | ... | ... | ... | 33,757 |
| 84th, Taylor..... | 7 | ... | 1 | 4 | ... | ... | 48 | 1 | ... | 26,489 |
| 85th, Custer..... | ... | ... | ... | 10 | ... | ... | 11 | 3 | 3 | 15,898 |
| 86th, Grant..... | 2 | ... | ... | 13 | ... | ... | ... | 2 | ... | 27,764 |
| 87th, Pike..... | 13 | 1 | 11 | 177 | ... | ... | 529 | 2 | ... | 21,234 |
| 88th, Dodge..... | 6 | ... | ... | 53 | ... | ... | 4 | ... | 1 | 20,388 |
| 89th, Funston.... | 22 | ... | 2 | 37 | ... | ... | 17 | 9 | 2 | 31,992 |
| 90th, Travis..... | 10 | ... | 24 | 96 | 1 | ... | ... | ... | ... | 28,665 |
| 91st, Lewis..... | 4 | ... | ... | 68 | ... | ... | 3 | 1 | ... | 35,038 |

7. Deaths by causes—

| | |
|--------------------------------|----|
| Pneumonia, lobar | 22 |
| Cerebrospinal meningitis | 9 |
| Pulmonary tuberculosis | 2 |
| Diabetes mellitus | 1 |
| Acute colitis | 1 |
| Endocarditis | 1 |
| Appendicitis | 1 |
| Measles | 1 |
| Cerebral abscess | 1 |
| Rupture right ventricle | 1 |
| Dementia praecox | 1 |
| Suicide | 5 |
| Traumatism | 4 |
| Traumatism by firearms | 2 |
| Traumatism by railroad | 2 |
| Traumatism by automobile | 1 |
| Wood alcohol poisoning | 1 |

ORDERS TO OFFICERS OF THE
MEDICAL CORPS

To report to Board for examination for promotion: Col. HENRY D. SNYDER, Washington, D. C.; Majors WILLIAM K. BARTLETT, Takoma Park, D. C.; WILLIAM A. DUNCAN, Washington, D. C.; and PAUL L. FREEMAN, Fort Myer, Va.

Major HERBERT C. GIBNER, now on duty in the Hawaiian Department to report to board convened by the commanding general, Hawaiian Department, for examination for promotion.

Col. ALBERT E. TRUBY, now on duty in the Panama Canal Department, to report to board convened by commanding general, Panama Department, for examination for promotion.

To report to board convened by commanding general, American Expeditionary Force, France, for promotion, Col. JAMES R. CHURCH; Lieut.-Cols. CHARLES L. FOSTER, JAMES D. HEYSINGER and JOSEPH F. SILER; Majors LUCIUS L. HOPWOOD, HENRY J. NICHOLS, OMAR W. PINKSTON, GUY V. RUKKE, ROBERT M. CULLER, CLEMENS W. McMILLAN, ARTHUR N. TASKER, and H. VAN KIRK.

To report to board convened by commanding general, Western Department, for promotion, Col. ELMER A. DEAN, San Francisco, Calif.; Lieut.-Col. WILLIAM H. TEFFT, Fort Douglas, Utah; and Major WILLIAM R. DAVIS, Fort Rosecrans, Calif.

To report to board convened by commanding general, Central Department, for promotion, Cols. PERCY M. ASHBURN, Fort Benjamin Harrison, Ind., and HENRY S. GREENLEAF, Fort Snelling, Minn.; Lieut.-Cols. HENRY F. PIPES, and GIDEON McD. VAN POOLE, Fort Benjamin Harrison; Majors HENRY C. PILLSBURY and FRANK W. WEED, Fort Riley, Kan., HOWARD H. BAILY, Camp Grant, Rockford Ill., WILLIAM A. WICKLING, St. Louis, Mo., and WILLIAM S. SHIELDS, Chicago, Ill.

To report to board convened by commanding general Eastern Department, for promotion, Col. FRANCIS M. C. USHER, Fort Slocum, N. Y.; Lieut.-Cols. ORVILLE G. BROWN, Camp Mills, Garden City, L. I., N. Y., JOHN R. BOSLEY, Fort Ontario, N. Y., SAMUEL M. DeLOFFRE, Plattsburg Barracks, N. Y., GEORGE F. JUENEMANN, Gettysburg, Pa., and HENRY D. THOMASON, Fort Ontario, N. Y.; Majors LOUIS H. HANSON, Syracuse, N. Y.; HARRY G. HUMPHREYS, Fort Hancock, N. J.; FREDERICK S. MACY, Fort Jay, N. Y., FERDINAND SCHMITTER, Camp Lee, Petersburg, Va.; WILLIAM C. DAVIS, Camp Dix, Wrightstown, N. J., CHARLES L. GANDY, Allentown, Pa., PAUL W. GIBSON, N. Y. C., EDGAR C. JONES, Newport News, Va., and WILLIAM W. VAUGHAN, Allentown, Pa.

To report to board convened by commanding general, Southern Department, for promotion, Lieut.-Cols. WILLIAM P. BANTA, Nogales, Ariz., ROBERT L. CARSWELL, Fort Sam Houston, Tex., and ROBERT C. LOVING, San Antonio, Tex.; Majors CLARENCE L. COLE, Fort Sam Houston, Tex., and EIDE F. THODE, Fort Clark, Tex.

To report to board convened by commanding general, Southeastern Department for promotion: Lieut.-Cols. CRAIG R. SNYDER, Camp McClellan, Anniston, Ala., and ARTHUR M. WHALEY, Camp Sevier, Greenville, S. C.; Majors CHARLES E. FREEMAN, Camp Pike, Little Rock, Ark., and LEARTUS J. OWEN, Camp Greenleaf, Fort Oglethorpe, Ga.; Lieut.-Col. LOUIS C. DUNCAN, Fort McPherson, Ga., Majors CHARLES W. HAVERKAMPF, Fort Oglethorpe, Ga., and EDWARDS C. REGISTER, Hot Springs, Ark.

To report to board of commanding general, Northeastern Department, for promotion, from Camp Devens, Ayer, Mass., Northeastern Department, Major GLENN I. JONES.

Colonel WILLIAM OWEN, to attend meeting of Southern Medical Association, Memphis, Tennessee, Nov. 12 to 16, 1917.

Colonel WILLIAM F. LEWIS, now on duty at San Antonio, Texas, to proceed to the following named places, for the purpose of making special sanitary inspections, and on completion of duty, to return to station: Waco, Texas, The Aviation Camp and Camp McArthur; Fort Worth, Texas, The Aviation Camp and Camp Bowie; Dallas, Texas, The Aviation Camp; Wichita Falls, Texas, The Aviation Camp; Fort Sill, Okla., The Aviation Camp and Camp Doniphan; Houston, Texas, the Aviation Camp and Camp Logan.

Colonel EDWARD L. MUNSON, to Roanoke, Va., to address Medical Society of Virginia on recruiting and training of medical officers.

Lieut.-Col. CHARLES F. MORSE, relieved from duty at Fort Benjamin Harrison, Ind., and to proceed to Washington, D. C., and report to the Surgeon-General of the Army for duty in his office.

Major EDGAR KING to Goshen, Va., to inspect property under consideration to be used as a general hospital, and on completion of duty to return to station.

Colonel ALLEN M. SMITH, now on duty at Fort Logan, Colo., to Grand Junction, Colo., to report on the suitability and availability of the former United States Teller Institute for use as a general hospital, and on completion of duty to return to station.

Major GLENN I. JONES, now on duty at Camp Devens, Ayer, Mass., to Washington, D. C., and report in person to the Surgeon-General for conference, and on the completion of duty, to return to station.

Major THOMAS D. WOODSON, to the following-named places to determine their suitability for general hospital purposes and inspecting sites for other general hospital purposes: Stockbridge, Mass.; Worcester, Mass.; Boston, Mass., and on completion of the duty at Boston, Mass., to proceed to the following-named places for the purpose of inspecting sites offered for general hospital purposes, and upon completion of this duty to return to his proper station: Willets Point, New York; Camp Mills, Garden City, L. I., N. Y.; Iselin, New Jersey.

Lieut.-Col. WILLIAM H. MONCRIEF, to *New York City*, for temporary duty at the Rockefeller Institute and on completion of duty to return to station.

Major ROBERT H. DUENNER, to be relieved from duty in the Hawaiian Dept. and directed to *proceed to the United States*, and on arrival to *Fort Riley, Kan.*, to organize and command Hospital Train No. 25.

Major STEPHEN H. SMITH, relieved from duty at Schofield Barracks, Hawaii, and to *Fort Oglethorpe, Ga.*, to organize and command Hospital Train No. 23.

Lieut.-Col. WILLIAM C. BORDEN, U. S. Army, Retired, to *Rockefeller Institute* for a course of instruction, and on completion of duty to return to station, Walter Reed General Hospital, Takoma Park, D. C.

Major SAMUEL J. TURNBULL relieved at Fort Benjamin Harrison, Ind., and to *Fort Riley, Kan.*, and report in person to the commandant, to organize and command Hospital Train No. 24.

Lieut.-Col. THEODORE LAMSON, relieved from duty with Field Hospital No. 3, *Fort Oglethorpe, Ga.*, and to *commandant Camp Greenleaf*, for temporary duty.

Major WILLIAM B. MEISTER relieved from duty at the Presidio of San Francisco, Calif., and to *Fort Oglethorpe, Ga.*, to organize and command Hospital Train No. 28.

Major THOMAS L. FERANBAUGH relieved from duty at Laredo, Texas, and to *Fort Worth, Texas*, Camp Bowie, to command base hospital.

Major GEORGE E. PARISEAU, relieved from duty as commanding officer of the base hospital at Camp Bowie, and to *Fort Oglethorpe*, for duty with Field Hospital No. 3.

Colonel IRVING W. RAND, relieved from duty at the Philippine Dept., Tientsin, China, and to *San Francisco, Calif.*, and report in person to the commanding general, Western Department, for duty.

Colonel HENRY A. SHAW, to *Petersburg, Va.*, Camp Lee, for duty in connection with psychologic examinations, and on completion of duty to return to station.

Major ROBERT M. HARDAWAY, relieved at Fort Bliss, and to *Fort Oglethorpe, Ga.*, to organize and command Hospital Train No. 22.

Major WILLIAM R. DEAR, relieved from Philippine Department and to *Fort Oglethorpe, Ga.*, to organize and command Hospital Train No. 27.

Major WILLIAM D. HERBERT, relieved from Philippine Dept. and to *Fort Oglethorpe, Ga.*, to organize and command Hospital Train No. 26.

Lieut.-Col. CHARLES F. MORSE, now at the medical officers' training camp, Fort Benjamin Harrison, Ind., under orders to report to the Surgeon-General's office, to proceed to the following-named camps for the purpose of inspecting the base hospital thereat, and on completion of this duty to comply with previous orders directing him to proceed to Washington, D. C., *Camp Sherman*, Chillicothe, Ohio; *Camp Custer*, Battle Creek, Mich.

Lieut. FRANK L. COLE, relieved from Allentown, Pa., and to *Army Medical School*, for instruction in orthopedic surgery.

ORDERS TO OFFICERS OF THE MEDICAL RESERVE CORPS

Alabama

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Lieut. LEROY H. WOODRUFF, Anniston.

To *Camp Kelly*, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. ROSCOE C. STEWART, Wylam.

To *Camp Lee*, Petersburg, Va., for duty, from Army Medical School, Lieut. HARRY P. SHURGERMAN, Birmingham.

To *Camp Logan*, Houston, Texas, for temporary duty in the base hospital, from Fort Oglethorpe, Lieut. JAMES D. PERDUE, Furman.

To *Fort Oglethorpe*, for a course of instruction, Lieut. MILES A. WATKINS, Birmingham.

To *Newport News, Va.*, Port of Embarkation, for duty, Capt. MACK ROGERS, Birmingham.

To *Philadelphia*, University Hospital, for a course of instruction on fractures, and on completion of this course to proceed to Camp McClellan, Anniston, Ala., for temporary duty in the base hospital, Lieut. WILLIAM W. BURNS, Selma.

To his home and to the inactive list of the Medical Reserve Corps on account of being physically disqualified for active service, Lieut. JACOB D. STAPLES, Camp Hugh.

Arizona

To *New York City*, for orthopedic instruction, Capt. CHARLES T. STURGEON, Globe.

Arkansas

To *Army Medical School*, Washington, D. C., for a course of instruction, Lieut. JOHN F. LIEBERMAN, Pine Bluff.

To *Camp Devens*, Ayer, Mass., for duty, from Army Medical School, Capt. HARRY H. TOWLER, Fayetteville.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, from School of Plastic and Oral Surgery, Washington University, St. Louis, Lieut. SIDNEY J. WOLFERMANN, Fort Smith.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Lieut. MARTIN V. B. WADDLE, Success.

To *Camp Kelly*, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. FLOYD CLARDY, Jonesboro.

To *Camp Sherman*, Chillicothe, Ohio, for duty, from Army Medical School, Lieut. JAMES V. FALISI, Little Rock.

To *Fort Riley, Kan.*, for duty with Hospital Train No. 24, Lieut. GEORGE W. EUBANKS, Wabash.

To *St. Louis*, Washington University, for a course of intensive training in head surgery, from Fort Riley, Lieut. JAMES W. BUTTE, Helena.

Recommending that his resignation from the Medical Reserve Corps be accepted for the good of the service, from Camp Pike, Lieut. SEABORN J. FULLER, Little Rock.

California

To *Army Medical School*, Washington, D. C., for a course of instruction, Lieuts. FRANK H. CHASE, Linda Vista; Charles C. Dickinson, McCloud.

To *Camp Cody*, Deming, N. M., for duty from Fort Riley, Kan., Lieut. HERBERT R. STOLZ, Stanford University.

To *Camp Kearny*, Linda Vista, California, for duty, from Camp Kearny, on the tuberculosis examining board as Contract Surgeon, Lieut. JOHN E. FAHY, Los Angeles.

To *Camp Kelly*, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. MALCOLM Y. MARSHALL, Bakersfield.

To *Canal Zone*, to report in person to the commanding general, Panama Department, for duty, from Fort Benjamin Harrison, Ind., Lieut. FRANK H. CHASE, Los Angeles.

To *Chicago*, Neurological School, Presbyterian Hospital, for intensive training in brain surgery, from Orthopedic School, Boston, Capt. REXWALD BROWN, Santa Barbara.

To *Fort McDowell, Calif.*, for duty, Lieuts. HIRAM E. MILLER, San Francisco; ELMO R. ZUMWALT, San Francisco.

To *Fort Oglethorpe, Ga.*, for a course of instruction, Lieut. CARL W. ROBBINS, San Diego.

To *Newport News, Va.*, Camp Stuart, for duty, from Fort Benjamin Harrison, Lieut. SMITH S. JOHNSON, San Francisco.

To report by wire to the commanding general, Western Department, for assignment to duty, Capt. ARTHUR J. WILKINSON, San Diego.

To report by wire to the commanding general, Western Department, for assignment to duty, Lieut. WALTER I. SUNBURNT, Sacramento.

To *San Francisco*, and report in person to the commanding general, Western Department, for duty, Lieut. CLARENCE L. BITTNER, Sacramento.

To the inactive list of the Medical Reserve Corps on account of being physically disqualified for active service, from Neurological School, Chicago, Capt. REXWALD BROWN, Santa Barbara.

Canal Zone

To *Mineola, L. I., N. Y.*, for duty at the Concentration Camp and Supply Depot, Field No. 2, from Hazelhurst Field, Capt. EDWARD P. BEVERLEY, Balboa.

To *Washington, D. C.*, and report in person to the Surgeon-General of the Army for temporary duty in his office, from Panama, C. Z., Lieuts. ARTHUR M. ALDEN, Culebra; GEORGE C. DUNHAM, Empire; from Fort Grant, C. Z., CLARENCE P. BAXTER, Fort Grant.

Colorado

To *Camp Doniphan*, Fort Sill, Okla., Thirty-Fifth Division, for duty, Lieut. ELWYN R. CLARKE, Fort Morgan.

To *Camp Kearny*, Linda Vista, Calif., for duty at the remount depot, from Fort Riley, Kan., Capt. ALBERT W. METCALF, JR., Henderson.

To *Camp Travis*, Fort Sam Houston, Texas, for duty as a member of a board of medical officers for the special examination of a command for tuberculosis, Lieuts. BENJAMIN W. CARLSON, Denver.

To *St. Louis*, Washington University, for a course of intensive training in head surgery, from Fort Riley, Lieut. FRED H. CARPENTER, Denver.

His resignation to be accepted on account of being physically disqualified for active service, Lieut. THOMAS J. WEST, Denver.

Connecticut

To *Army Medical School*, Washington, D. C., for a course of instruction, Lieut. CORNELIUS S. CONKLIN, Ansonio.

To *Camp Devens*, Ayer, Mass., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Lieut. LEONARD J. LOEWE, Higganum.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Lieuts. ALEXANDER B. TIMM, New Haven; OWEN O'NEILL, Willimantic.

To *Camp Kelly*, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. FRANCIS J. O'BRIEN, Middletown.

Delaware

To *Camp Dix*, Wrightstown, N. J., Seventy-Eighth Division, for duty from Fort Oglethorpe, Lieut. JOSEPH BRINGHURST, Harrington.

District of Columbia

To *Army Medical School*, Washington, D. C., for a course of instruction, Lieuts. ROY T. HASKELL, Washington; for duty as assistant professor of ophthalmology and in addition to his other duties be designated as ophthalmologist to the U. S. Soldiers' Home Hospital, SAMUEL C. HENNING, Washington.

To *Camp Wheeler*, Macon, Ga., for duty with the Eighth Field Artillery, from Camp Robinson, Lieut. HOWARD W. BARKER, Washington.

To *Fort Oglethorpe*, for a course of instruction, from Allentown, Pa., Lieut. WILLIAM F. O'DONNELL, Washington.

To *Havana, Cuba*, for duty, Capt. EURICO CASTELLI, Washington.

To *St. Louis*, Washington University, for a course of instruction, Lieut. JOSEPH D. STOUT, Washington.

To be relieved from the duties assigned him by Paragraph 172, Special Orders, No. 184, Aug. 9, 1917, Lieut. WILLIAM H. HUNTINGTON, Washington.

Florida

To *Camp American University*, Washington, D. C., for duty with the Thirtieth Engineers from Allentown, Pa., Lieut. PAUL L. GOSS, Mulberry.

To *Camp Dix*, Wrightstown, for temporary duty in the base hospital, from Syracuse, N. Y., Capt. HARRY A. PEYTON, Jacksonville.

To *Camp Joseph E. Johnston*, Jacksonville, Fla., for duty, from Fort Oglethorpe, Lieut. HUGH ST. G. GEIGER, Kissimmee.

To *Camp Kelly*, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieuts. ADAM C. WALKUP, McIntosh; LEONARD G. LARNER, Tampa.

To *Camp MacArthur*, Waco, Texas, Thirty-Second Division, from Fort Oglethorpe, Lieut. EVERARD BLACKSHEAR, Citra.

To *Camp Sevier*, Greenville, S. C., for temporary duty in the base hospital, Capt. LYSTON H. D. PIERCE, Tampa.

To *Mineola, L. I., N. Y.*, for duty with Field No. 2, Lieut. CLAUDE V. GAUTIER, Passagrelle.

To *Tenafly, N. J.*, for duty as registrar, with Venereal Hospital, from Fort Oglethorpe, Lieut. JOHNSON N. MCCARTNEY, Melrose.

To *Washington, D. C.*, for duty with Repair Shop Unit No. 302, for duty, Allentown, Pa., Lieut. WILLIS J. VINSON, Tarpon Springs.

Honorably discharged from the Medical Reserve Corps, on account of having accepted a commission in the U. S. Navy, from Fort Barrancas, Fla., Lieut. MARION E. QUINA, Pensacola.

To the inactive list of the Medical Reserve Corps on account of being physically disqualified for active service, from Allentown, Pa., Lieut. OVEDIA F. GREEN, Mayo.

Georgia

To *Army Medical School*, Washington, D. C., for a course of instruction, Lieut. JOSEPH W. SMITH, JR., Atlanta.

To *Camp Beauregard*, Alexandria, La., for temporary duty in the base hospital, from Fort Oglethorpe, Lieut. CECIL STOCKARD, Atlanta.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, from Camp Robinson, Sparta, Wis., Lieut. CHARLES K. HOLMES, Gaines.

To *Camp Joseph E. Johnston*, Jacksonville, Fla., for duty, from Fort Oglethorpe, Lieut. JOSEPH H. MULL, Rome.

To *Camp McClellan*, Anniston, Ala., Twenty-Ninth Division, from Fort Oglethorpe, Lieut. IRA C. H. GARST, Carrollton.

To *Camp Sevier*, Greenville, S. C., for duty, from Fort Oglethorpe, Lieut. CLAUDE G. SCRUGGS, Valdosta.

To *Camp Stuart*, Newport News, Va., for duty, from Allentown, Pa., Lieut. MARK E. PERKINS, Millen.

To *Camp Greenleaf*, Spartanburg, S. C., Twenty-Seventh Division, from Camp Greenleaf, Lieut. LUCIUS P. FARMER, Spread.

To *Camp Wheeler*, Macon, Ga., Thirty-First Division, for duty, Lieut. FRED B. RAWLINGS, Sandersville.

To *Chickamauga Park, Ga.*, for duty with the Eleventh Infantry, from Camp Wheeler, Ga., Lieut. EGBERT M. TOWNSEND, Tilton.

To *Fort Oglethorpe*, for a course of instruction, Lieut. DANIEL N. MATHESON, Atlanta.

To *Fort Oglethorpe*, for a course of instruction from Duval County Hospital, Jacksonville, Fla., Lieut. JAMES M. BRYANT, Savannah.

To *Philadelphia*, University Hospital, for a course of instruction in fractures, and on completion of this course to proceed to Anniston, Ala., Camp McClellan, for temporary duty in the base hospital, from Camp Meade, Lieut. A. NATHAN DYKES, Columbus.

Hawaii

To *Rockefeller Institute*, for a course of instruction, and on completion of this course, directed to proceed to his proper station, Major FREDERICK FOUCER, Honolulu.

To *San Francisco*, for duty, from Hawaiian Department, Capt. JOHN B. LUDY, Honolulu.

Idaho

To *Camp Lewis*, American Lake, Washington, Ninety-First Division, Lieut. FREDERICK W. DIDIER, Harrison.

To *Fort Omaha, Neb.*, U. S. Army Balloon School, for duty, from Camp Lee, Petersburg, Va., Capt. FRANCIS H. POOLE, Pocatello.

Illinois

To *Army Medical School*, Washington, D. C., for a course of instruction, Lieuts. ALFRED E. JONES, JOSEPH H. ST. JOHN, BEVERIDGE H. MOORE, Chicago.

To *Austin, Texas*, Military School of Aeronautics, for duty, from Fort Benjamin Harrison, Lieut. GEORGE O. CULLI, Ina.

To *Boston*, Harvard University, for a course of instruction in orthopedic work, Lieut. HARRY J. FORTIN, Chicago.

To *Camp American University*, Washington, D. C., for duty, from Allentown, Pa., Lieut. JOSEPH C. KIMBALL, Joliet.

To *Camp Custer*, Battle Creek, Mich., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. EDWIN S. GILLESPIE, Wenona.

To *Camp Grant*, Rockford, Ill., for duty in the remount department, Capt. GEORGE E. BURDICK, Chicago; Lieut. MAX ROSENSTIEL, Chicago.

To *Camp Greenleaf, Ga.*, for a course of instruction, Capt. WALTER VERITY, Chicago; Lieuts. LOUIS H. HAYES, Alton; FRANK T.

DUFFY, Chicago; JOHN W. DUNN, Dieterich; JOHN G. HENSON, Wyoming.

To *Camp Lee*, Petersburg, Va., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Oglethorpe, Lieut. LUCIUS F. WRIGHT, Dunning.

To *Camp Logan*, Houston, Texas, for duty, from Allentown, Pa., Lieut. VERNE HAYS, Canton.

To *Camp Shelby*, Hattiesburg, Miss., for duty, Lieut. CHARLES S. KIBLER, Chicago.

To *Camp Sherman*, Chillicothe, Ohio, for duty from Army Medical School, Lieut. LEONARD W. WEAVER, Chicago.

To *Chanute Field*, Rantoul, Ill., for duty from Fort Benjamin Harrison, Capt. LORIN G. COLLINS, Chicago; Lieuts. RALPH G. CRESSMAN, Oglesby; OSCAR YARNELL, Decatur.

To *Chicago*, County Hospital, for a course of instruction in military roentgenology, Lieut. ARTHUR E. ROGERS, Bloomington.

To *Chicago*, Neurological School, Presbyterian Hospital, for intensive training in brain surgery, and on completion of this course to return to his proper station, from Fort Benjamin Harrison, Lieut. ORLANDO F. SCOTT, Chicago.

To *Fairfield, Ohio*, for duty on the Wilbur Wright Field, from Fort Benjamin Harrison, Lieuts. CLAIR L. STEALY, Freeport; JOEL E. TOOTHAKER, Ladd.

To *Fort Benjamin Harrison, Ind.*, for duty with Hospital Train No. 2, Lieuts. EUGENE A. MOULTON, Chicago; for duty with Hospital Train No. 3, ROBERT R. KIRKPATRICK, Chicago; for duty with Hospital Train No. 4, THEODORE E. MILLER, Chicago.

To *Fort McPherson, Ga.*, for duty in the base hospital, Capt. WILLIAM W. HOYT, Chicago.

To *Newport News, Va.*, Three Hundred and Third Stevedore Regiment, for duty, from Allentown, Pa., Lieut. EARL K. LANGFORD, Chicago.

To *New York City*, Cornell Medical College, for a course of instruction in military roentgenology, from Fort Benjamin Harrison, Capt. BERNARD M. CONLEY, Wilmette; Lieuts. GUY M. McLEAN, Chicago; CHARLES J. DAVIS, Deerfield. To Post-Graduate Hospital, for a course of instruction in urology and dermatology, Lieut. GEORGE E. O'GRADY, Chicago.

To *Panama Canal Department*, for assignment to duty, from Fort Benjamin Harrison, Lieut. OSCAR W. MICHAEL, Muncie.

To *Selfridge Field*, Mount Clemens, Mich., for duty, from Fort Benjamin Harrison, Lieut. HARRY E. BROWN, Peoria.

To *St. Louis*, School of Head Surgery, Washington University, for a three weeks' course of instruction, from Fort Benjamin Harrison, Lieut. EDWIN W. HIRSCH, Chicago; from Fort Riley, HUDSON McB. GILLIS, Woodriver.

Honorably discharged from the Medical Reserve Corps, Lieut. CLARENCE J. MINER, Galesburg.

Indiana

To *Austin, Texas*, Military School of Aeronautics, for duty, from Fort Benjamin Harrison, Lieut. BYRON J. PETERS, Kokomo.

To *Camp American University*, Washington, D. C., for duty, from Allentown, Pa., Lieut. LLOYD A. ELLIOT, Elkhart.

To *Camp Beauregard*, Alexandria, La., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. CHARLES F. VOIGHT, New Albany.

To *Camp Custer*, Battle Creek, Mich., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieuts. HARRY H. WARD, Coalmont; JULIUS J. GROSVENOR, Richmond.

To *Camp Grant*, Rockford, Ill., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis from Fort Benjamin Harrison, Lieut. NOAH W. CLARK, Rossville.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Lieut. JOHN W. BALLARD, Logansport.

To *Camp Mills*, Garden City, L. I., N. Y., for duty in the base hospital, from Fort Oglethorpe, Lieut. FRANK A. BRAYTON, Indianapolis.

To *Camp Pike*, Little Rock, Ark., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Capt. ALLEN HAMILTON, Fort Wayne.

To *Camp Stuart*, Newport News, Va., for duty, from Allentown, Pa., Lieut. JAMES G. KIDD, Roann.

To *Fairfield, Ohio*, for duty on the Wilbur Wright Field, from Fort Benjamin Harrison, Lieut. CARLOS C. ROZELLE, La Grange.

To *Fort Benjamin Harrison*, for a special course of instruction in tuberculosis examination, Lieut. DORSEY D. METCALF, Fort Wayne.

To *Fort McHenry*, Md., U. S. Army General Hospital No. 2, for temporary duty, from Fort Oglethorpe, Lieut. JAMES M. SHIELDS, Seymour.

To *Fort Oglethorpe*, for duty as an instructor, from Fort Benjamin Harrison, Major FREDERICK A. TUCKER, Noblesville.

To *Fort Riley, Kan.*, for duty as an instructor, from Fort Benjamin Harrison, Lieut. MAURICE H. KREBS, Huntington.

To *Mineola, L. I., N. Y.*, for duty, from Fort Benjamin Harrison, Lieuts. WALDO C. FARNHAM, DONALD D. JOHNSTON, Fort Wayne.

To *New York City*, Cornell Medical College, for a course of instruction in military roentgenology, from Fort Benjamin Harrison, Lieuts.

AARON M. WINKELPLECK, Alfordsville; THOMAS W. MORGAN, Spartanburg.

To *Pittsburgh*, for a course of instruction on fractures, and on completion of this course to proceed to Fort Benjamin Harrison for temporary duty, from Fort Benjamin Harrison, Capt. JOHN A. MARTIN, Indianapolis.

To *Rockefeller Institute*, for a course of instruction, and on completion of this course to report to Roosevelt Hospital for a further course of instruction, from Army Medical School, Lieut. BROWN S. McCLINTIC, Peru.

To *St. Louis*, Washington University, for a course of intensive training in head surgery, from Fort Benjamin Harrison, Capt. GEORGE B. BREEDLOVE, Martinsville; Lieut. FRED G. EBERHARD, South Whitley.

To *Walter Reed General Hospital*, Takoma Park, Washington, D. C., for duty, from Gettysburg, Pa., Lieut. ARYINE E. MOZINGO, Tipton.

To *Washington, D. C.*, for duty with Repair Shop Unit No. 303, from Fort Benjamin Harrison, Lieuts. HENLY H. HUBBARD, Boswell; HOMER E. LINE, Chili.

To *his home* and honorably discharged from the Medical Reserve Corps on account of being physically disqualified for active service, from Camp Grant, Capt. EDDIE DEB. THIXTUM, Indianapolis; honorably discharged from the Medical Reserve Corps, from Fairfield, Ohio, Lieut. EARL D. JEWETT, St. Paul.

Iowa

To *Army Medical School*, Washington, D. C., for a course of instruction, Lieut. JOHN E. KILEY, Valley Junction.

To *Camp Custer*, Battle Creek, Mich., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. HENRY I. McPHERRIN, Perry.

To *Camp Dix*, Wrightstown, for temporary duty in the base hospital, Capt. ALDEN H. HOOVER, Des Moines.

To *Camp Dodge*, Des Moines, for duty in connection with orthopedic work, Capt. FRANCIS LA PIANA, Des Moines; for duty, Lieut. CLYDE L. VAN PATTEN, Anamosa.

To *Camp Grant*, Rockford, Ill., for duty in the base hospital, Lieut. ELMER J. LAMBERT, Ottumwa.

To *Camp Kelly*, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. FREDERICK E. KELLER, Huxley.

To *Camp Lewis*, American Lake, Washington, for duty in the base hospital, Capt. MARCUS C. TERRY, Brighton.

To *Fort Riley, Kan.*, for duty with Hospital Train No. 25, Lieut. JOHN F. LOOSBROCK, Fort Des Moines.

To *New York City and Philadelphia*, for duty in connection with physical examining units, Aviation Section, Signal Corps, and on completion to return to his proper station, Major EUGENE R. LEWIS, Dubuque.

Kansas

To *Army Medical School*, Washington, D. C., for a course of instruction, Lieuts. EDMUND A. LODGE, Erie; RAYMOND O. DART, Kansas City; BENJAMIN F. FRAZER, Osawatomie.

To *Camp Funston*, Fort Riley, for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Lieut. CLARK W. ZUGG, Great Bend.

To *Camp Meade*, Annapolis Junction, Md., for duty as a member of a board of medical officers for the special examination of tuberculosis, from Camp Greene, Lieut. JACOB H. HALDEMAN, Paola.

To *St. Louis*, School of Head Surgery, Washington University, for three weeks' course of instruction, from Fort Riley, Lieuts. CLARENCE C. HARVEY, Emporia; JESSE D. COOK, Topeka.

Kentucky

To *Camp Funston*, Fort Riley, Kan., Eighty-Ninth Division, Lieutenant LESLIE, Lockport.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Lieut. HENRY C. T. RICHMOND, Louisville.

To *Camp Kelly*, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. OTTO E. JOHNSON, Lebanon Junction.

To *Camp Pike*, Little Rock, Ark., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. FRANK B. DEWITT, Rockport.

To *Hoboken, N. J.*, for assignment to duty, from Fort Benjamin Harrison, Lieut. ALBERT E. HOLMES, Louisville.

To *Honolulu, Hawaii*, to the Commanding General, Hawaiian Department, for duty, from Camp Funston, Lieut. THOMAS R. GRIFFIN, Somerset.

To *Panama Canal Department*, for assignment to duty, from Fort Benjamin Harrison, Lieut. CHARLES C. PHILLIPS, Owensboro.

To *Washington, D. C.*, St. Elizabeth's Hospital, for intensive training in his specialty, from Fort Oglethorpe, Capt. MALCOLM H. YEAMAN, Henderson.

To *his home* and honorably discharged from the Medical Reserve Corps on account of being physically disqualified for active service, from Camp Lee, Capt. DAVID P. CROCKETT, Hardy; Lieut. MIL-LARD D. HOSKINS, Varilla; to *his home*, from Fort Oglethorpe, Lieut. EDWARD STUMBO; to the inactive list of the Medical Reserve Corps, from Fort Riley, Lieut. FINIS LONDON, Woodburn.

Louisiana

To *Camp Kelly*, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. WILLIAM R. STRANGE, New Orleans.

Honorably discharged from the Medical Reserve Corps, from Fort Riley, Lieut. PRENTISS E. PARKER, Bourg.

Maine

To *Camp Lee*, Petersburg, Va., for duty, examining troops in nervous and mental diseases, from Allentown, Pa., Lieut. DUDLEY C. KALLOCH, Portland.

To *Camp Sherman*, Chillicothe, Ohio, for temporary duty in the base hospital, from Camp Shelby, Capt. WARREN E. KERSCHNER, Bath; from Fort Snelling, EDWARD S. ABBOT, Bridgton.

To *Hoboken, N. J.*, for assignment to duty, from Fort Levett, Maine, Capt. FRED T. KOYLE, Fort Levett.

Maryland

To *Camp Jackson*, Columbia, S. C., for duty, from Fort Oglethorpe, Lieut. MILNOR BORTNER, White Hall.

To *Camp Joseph E. Johnston*, Jacksonville, Fla., for duty in the quartermaster's training camp, from Fort Oglethorpe, Lieut. JOHN M. ELDERDICE, Salisbury.

To *Camp Mills*, Garden City, L. I., N. Y., 41st Division, from Fort Oglethorpe, Lieut. SAMUEL J. PRICE, Queenstown, Md.

To *Camp Taylor*, Louisville, Ky., for duty, from Army Medical School, Lieut. SAMUEL A. WHITE, Baltimore.

To *Camp Wheeler*, Macon, Ga., 31st Division from Fort Oglethorpe, Lieut. RICHARD E. YELLETT, Fallston.

To *Hoboken, N. J.*, for assignment to duty, from Fort Oglethorpe, Lieut. JOHN R. DOWNES, Preston.

To *his home* and honorably discharged from the Medical Reserve Corps, on account of being physically disqualified for active service, from Fort Oglethorpe, Lieuts. HARRY DIEBEL, Baltimore; from Camp Mills, JOSEPH W. LONG, Walkersville.

Massachusetts

To *Army Medical School*, Washington, D. C., for the required course of instruction, Lieut. ADOLPH G. SCHNACK, Cambridge Mass.

To *Belleville, Ill.*, Scott Field, for duty, from Fort Benjamin Harrison, Lieut. DOLOR I. BEAUPRE, Holyoke.

To *Boston, Mass.*, for a course of instruction in military roentgenology, Lieut. JOHN W. LEDBURY, Uxbridge; for a course of instruction in orthopedic work, Lieut. JOHN B. WEBSTER, Boston.

To *Camp Custer*, Battle Creek, Mich., for duty, from Army Medical School, Lieut. ROSS GOLDEN, Boston.

To *Camp Devens*, Ayer, Mass., for duty in the base hospital, from Fort Benjamin Harrison, Lieut. CHANNING FROTHINGHAM, JR., Boston.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Lieuts. WILLIAM J. DILLON, Springfield; WILLARD P. STAPLETON, Worcester; from Camp Devens, VINCENT J. DIMEUTO, Boston.

To *Camp Kelly*, San Antonio, for duty, from Fort Oglethorpe, Lieut. WILLIAM F. MacKNIGHT, Fall River.

To *Camp Lewis*, American Lake, for duty in the base hospital and for cardiovascular examinations in the camp, Lieut. WILLIAM J. KERR, Boston.

To *Hoboken, N. J.*, for assignment to duty, from Fort Benjamin Harrison, Lieuts. WERNER HILTPOLD, Easthampton; WILLIAM F. LEMAIRE, Lynn; WILLARD W. LEMAIRE, Worcester.

To *Fort Oglethorpe*, for duty as an instructor from Fort Benjamin Harrison, Lieut. WILLIAM R. OHLER, Brookline.

To *Fort Riley*, Kansas, for duty as an instructor, from Fort Benjamin Harrison, Capt. JOHN D. PETERS, Great Barrington; for duty with the 92nd Division, from Fort Benjamin Harrison, EDWARD B. SIMMONS, Worcester.

To *New York City*, Rockefeller Institute, for instruction in the therapy of pneumonia, Lieut. WARREN T. VAUGHAN, Boston.

To *Philadelphia, Pa.*, for a course of instruction in orthopedic surgery, Lieut. MARTIN H. SPELLMAN, Whitman.

To *St. Louis*, Washington University, for a course of intensive training in head surgery, from Fort Benjamin Harrison, Lieut. CHARLES F. CANEDY, Greenfield.

Honorably discharged from the Medical Reserve Corps, for the good of the service, from Camp Doniphan, Lieut. JOHN H. ANDERSON, Brockton.

Michigan

To *Army Medical School*, for the required course of instruction, Lieut. DON C. BARTHOLOMEW, Detroit.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Capt. EMILE C. HOULE, Neganee; Lieuts. ROY L. LAIRD, Ann Arbor; MORRELL M. JONES, Detroit; JOSEPH G. KNAPP, Wyandotte; from School of Plastic and Oral Surgery, Washington University, St. Louis, ALBERT S. BARR, Greenville.

To *Camp Lee*, Petersburg, Va., for duty, from Army Medical School, Lieut. HAROLD E. CLARK, Detroit.

To *Camp Pike*, Little Rock, Ark., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. RAY L. FELLERS, Detroit.

To *Fort Oglethorpe*, for duty as an instructor, from Fort Benjamin Harrison, Major SAMUEL C. GURNEY, Detroit; Capt. GEORGE S. FODEN, Highland Park.

To *Fort Riley, Kan.*, 92d Division, for duty from Fort Benjamin Harrison, Major DAVID B. DOWNING, Detroit.

To *Langley Field*, Hampton, Va., for duty, from Fort Benjamin Harrison, Lieuts. CLAYTON G. WOODBULL, Decker; WILLIAM S. CONNERY, Detroit.

To *New York City*, Bellevue Hospital, for a course of instruction on fractures and upon completion of this course to proceed to his home and return to the inactive list of the Medical Reserve Corps, from

Rockefeller Institute, Lieut. JOHN T. HODGEN, Grand Rapids; to Cornell Medical College for a course of instruction in military roentgenology, Lieut. THEODORE KOLVOORD, Battle Creek.

To Philadelphia, Pa., for orthopedic instruction, from Army Medical School, Lieut. WILLIS K. WEST, Painesdale.

To Rockefeller Institute, for a course of instruction and upon completion of this course to report to Roosevelt Hospital for a further course of instruction, from Army Medical School, Lieut. ROBERT A. HALE, Ann Arbor.

To Selfridge Field, Mt. Clemens, Mich., for duty, from Fort Benjamin Harrison, Capt. HOWARD W. STUCH, Allegan.

To St. Louis, Washington University, for a course of intensive training in head surgery, from Fort Benjamin Harrison, Capt. WILLIAM C. McCUTCHEON, Cassopolis.

Honorably discharged from the Medical Reserve Corps on account of being physically disqualified for active service, from Camp Greenleaf, Lieut. GEORGE R. ADKIN, Grand Rapids.

Minnesota

To Camp Grant, Rockford, Ill., 86th Division, for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Lieut. WILLIAM C. JENSEN, St. Paul.

To Camp Kelly, San Antonio, Tex., for duty, from Fort Oglethorpe, Lieut. SOLOMON F. RUDOLF, Albert Lea.

To Camp Pike, Little Rock, Ark., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. THOMAS G. CLEMENT, Vernon Center.

To Fort Logan H. Roots, Ark., for duty, Lieut. LEON A. WILLIAMS, Slayton.

To Fort Oglethorpe, for a course of instruction, Lieuts. AUVIGNE M. RANDALL, Ashby; KENNETH W. WILDER, Minneapolis.

To Fort Riley, Kan., for duty, Lieuts. HENRY E. DOUGLAS, Hutchinson; PIO BLANCO, Rochester.

To New York City, Cornell Medical College, for a course of instruction in military roentgenology, from Fort Benjamin Harrison; to Rockefeller Institute for instruction in therapy of pneumonia, Lieut. WALTER E. GREMLER, Minneapolis.

To St. Louis, Mo., School of Head Surgery, Washington University, for a three week's course of instruction, from Fort Riley, Capt. OLIVER E. STEWART, Bricelyn, Lieut. FLOYD W. BURNS, St. Paul.

Mississippi

To Camp Kelly, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. JOHN E. McDILL, Shaw.

To Camp Pike, Little Rock, Ark., for duty, from Camp Dix, Lieut. HARDIE R. DAVIS, North Carrollton.

To Camp Shelby, Hattiesburg, Miss., 38th Division from Camp Greenleaf, Fort Oglethorpe, Capt. AUGUSTUS M. HARRELSON, Newton.

To Chickamauga Park, Ga., Reorganization Camp for duty with the 6th Infantry, from Fort Oglethorpe, Lieut. JESSE D. WESTMORELAND, Taylor.

To Fort Oglethorpe, for a course of instruction, Lieut. GEORGE D. MASON, Clara.

To Jackson, Miss., for the purpose of examining applicants for appointment in the Medical Reserve Corps, and upon completion of this duty, to return to his proper station at Meridian, Miss., Lieut. INMAN W. COOPERS, Meridian.

To St. Louis, Washington University, for a course of intensive training in head surgery, from Fort Oglethorpe, Lieut. HEWITT JOHNSTON, Biloxi.

To Washington, D. C., for duty with Repair Shop Unit No. 303, from Fort Oglethorpe, Lieut. CHARLES E. LEHMBERG, Artesia.

Honorably discharged from the Medical Reserve Corps, from Camp Meade, Lieut. THOMAS W. REAGAN, Union.

Honorably discharged from the Medical Reserve Corps of the Army, from Fort Des Moines, Ia., Lieut. ROBERT L. JOHNSON, Algoma.

To his home and returned to the inactive list of the Medical Reserve Corps, from Fort Oglethorpe, Lieut. GEORGE J. MANCILL, Indianola.

Missouri

To Camp American University, Washington, D. C., for duty, from Allentown, Pa., Lieut. WILFORD A. FAIR, Pleasant Hill.

To Camp Cody, Deming, N. M., for duty, from Fort Riley, Kan., Capt. LINDAY S. MILNE, Kansas City.

To Camp Custer, Battle Creek, Mich., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. JAMES B. BIGGS, Bowling Green.

To Camp Funston, Kan., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Capt. KURT STUMBER, St. Charles.

To Camp Grant, Rockford, Ill., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis from Fort Benjamin Harrison, Lieut. JACOB J. KENNEDY, Frankford.

To Camp Greenleaf, Fort Oglethorpe, for a course of instruction, from School of Plastic and Oral Surgery, Washington University, St. Louis, Mo., Capt. CHARLES A. VOSBURGH, St. Louis; for a course of instruction, Lieuts. HALBERT R. HILL, Bachelor; JOSEPH F. BREDECK, St. Louis.

To Camp Kelly, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. JOHN D. ROBINSON, Belgrade.

To Camp Meade, Annapolis Junction, Md., for duty as members of a board of medical officers for the special examination of the command for tuberculosis, from Camp Green, Lieut. DELANE S. CALHOUN, St. Louis.

To Camp Wheeler, Macon, Ga., for temporary duty in the base hospital, from Fort Oglethorpe, Lieut. MARTIN H. POST, St. Louis.

To Fort Logan H. Roots, Ark., for duty, Capt. WILLIAM T. J. BAILEY, Caseville.

To Fort Oglethorpe, for a course of instruction, Lieut. LUTHER H. WALLON, Summerville.

To Fort Riley, for duty with Hospital Train No. 25, Lieut. MORGAN L. CLINT, Meadville.

To New Orleans, La., Charity Hospital for a course of instruction on fractures and on completion of this course to proceed to Fort Bliss, Texas, for temporary duty, from Fort Bliss, Capt. HAROLD P. KUHN, Kansas.

To New York City, Bellevue Hospital for a course of instruction on fractures and on completion of this course to proceed to Fort Snelling, Minn., for temporary duty in the base hospital, from Fort Snelling, Capt. ROBERT BURNS, JR., St. Louis.

To New York City, Cornell Medical College, for a course of instruction in military roentgenology, from Fort Riley, Kan., Lieut. EVERETT R. DEWEESE, Kansas City; to Rockefeller Institute for a course of instruction in the treatment of pneumonia, and on completion of this course to his proper station, from Camp MacArthur, Lieut. HERBERT S. LANGSDORF, St. Louis.

To Philadelphia, Pa., Eddyston, Pa., New York City, Hoboken, N. J., Hastings-on-Hudson, N. Y., Bridgeport, Conn., New Haven, Conn., Hartford, Conn., Boston, Mass., Lowell, Mass., St. Albans, Vt., Albany, N. Y., Utica, N. Y., Ilion, N. Y., Watertown, N. Y., St. Louis, Mo., East Alton, Ill., Cincinnati, Ohio, for the purpose of making special inspections of the sanitary conditions in munition plants and upon completion of this duty will return to his proper station, Lieut. FRANK L. MORSE, St. Louis.

To St. Louis, Mo., Aviation Section, Signal Corps, as a member of the physical examining unit, Lieut. JOSEPH J. REILLY, St. Louis. To Washington University, for a course of intensive training in head surgery, from Fort Riley, Lieuts. JOHN R. ELLIOT, Clarksdale; Edwin C. FUNSCH, ROY JOHNSON, St. Louis.

Montana

To Camp Dodge, Ia., for duty at the remount station, Lieut. LEO C. LECLAR, Twin Bridges.

To St. Louis, Mo., School of Head Surgery, Washington University, for a three weeks' course of instruction, from Fort Riley, Lieuts. KARL A. SNYDER, Great Falls; ROBERT L. OWENS, Hamilton.

Nebraska

To Camp Beauregard, Alexandria, La., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis from Fort Oglethorpe, Lieut. TORRENCE C. MOYER, Lincoln.

To Camp Funston, Fort Riley, Kan., 59th Division for duty, from Fort Riley, Lieut. CHARLES P. BRENN, Western.

To Camp Greenleaf, Fort Oglethorpe, for a course of instruction, Lieut. FREDERICK J. WURTELE, North Platte.

To Camp Meade, Annapolis Junction, Md., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Camp Greene, Lieut. WILLIAM N. ANDERSON, Omaha.

To Fort Leavenworth, Kan., for duty, Capt. ELLIS H. WHITEHEAD, Osmond.

To Fort Riley, Kan., for duty in the base hospital, Lieut. WILLIAM C. BARTLETT, Alma.

Nevada

To Camp Gordon, Atlanta Ga., for duty, from Army Medical School, Lieut. JAMES P. CRAWFORD, Mina.

New Hampshire

To Camp Greenleaf, Fort Oglethorpe, for a course of instruction, Lieut. GEORGE F. DWINELL, Manchester.

To Fort Oglethorpe, for duty as an instructor from Fort Benjamin Harrison, Lieut. JOHN A. DREW, Kumney.

To St. Louis, Washington University, for a course of intensive training in head surgery, from Fort Benjamin Harrison, Lieuts. JOHN J. OSTERHOUT, Keene; JOHN B. WARDEN, Whitfield.

New Jersey

To Camp Devens, Ayer, Mass., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Walter Reed General Hospital, Lieut. GRANT THORBURN, Newark.

To Camp Dix, Wrightstown, N. J., for duty, from Fort Ontario, Capt. WIDMER E. DOREMUS, Newark; Lieut. WALTER A. HICKMAN, Princeton.

To Camp Joseph E. Johnston, Jacksonville, Fla., for duty, from Fort Oglethorpe, Lieut. JOHN L. MEEKER, Newark.

To Camp Kelly, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. CLARENCE LEF. VREELAND, Pompton Lakes.

To Camp Lee, Petersburg, Va., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis from Fort Oglethorpe, Lieut. HOWARD S. SMITH, Newark.

To Camp Mills, for duty to examine the troops who have not already been examined for tuberculosis and cardiovascular abnormalities, and on completion of this duty to return to his proper station, from Camp Upton, Lieut. GEORGE B. EMORY, Newark.

To Camp Pike, Little Rock, Ark., for duty as a member of a board for the special examination of the command for tuberculosis, from Camp Stuart, Newport News, Va., Lieut. WILLIAM H. HAINES, Audubon.

To *Camp Upton*, Yaphank, L. I., N. Y., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Walter Reed General Hospital, Takoma Park, Lieut. GEORGE B. EMORY, Newark.

To *Fort Myer*, Va., for duty, Capt. ROBERT E. SOULE, Newark.

To *Fort Oglethorpe*, for a course of instruction, Capt. GEORGE B. GALE, Newark; Lieut. JOHN L. LUND, Perth Amboy.

To *New York City*, Bellevue Hospital, for a course of instruction on fractures and on completion of this course to proceed to Wrightstown, N. J., for temporary duty in the base hospital, Lieut. LOUIS E. POOLE, West Hoboken.

To *Tenafly*, N. J., for duty as adjutant with venereal hospital, from Fort Oglethorpe, Capt. BLASE COLE, Newton.

To *Walter Reed General Hospital*, Takoma Park, D. C., for a special course of instruction in tuberculosis examinations, Capt. MAURICE ASHER, Newark; Lieuts. GRANT THORBURN, Newark; SAMUEL R. FAIRCHILD, Penn Grove.

To *Washington*, D. C., for duty with Repair Shop Unit No. 302, for duty, from Allentown, Pa., Lieut. CLAUDE W. THOMAS, Woodstown.

To his home and to the inactive list of the Medical Reserve Corps on account of being physically disqualified for active service, from Camp Meade, Lieut. L. LAWRENCE H. ROGERS, Trenton.

New York

To *Army Medical School*, Washington, D. C., for a course of instruction, Lieuts. HARRY B. HANSEN, WILLIAM P. SMALE, New York City; from Gettysburg, Pa.; Lieut. JOSEPH PRICE, New York City; for orthopedic work, JACOB UNDANG, Brooklyn.

To *Boston*, Mass., and report in person to the Commanding General Northeastern Dept., for duty, from Fort Michie, Lieut. RUEL B. KARIOBE, New York City; to Boston City Hospital, for a course of instruction on fractures and on completion of this course to proceed to Camp Cody, Deming, N. M., for temporary duty in the base hospital, from Camp Bartlett, Lieut. HENRY E. McGARVEY, Bronxville.

To *Camp Beauregard*, Alexandria, La., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Oglethorpe, Capt. JAMES C. HARKENS, New York City.

To *Camp Custer*, Battle Creek, Mich., for duty, from Psychopathic Hospital, Ann Arbor, Mich., Capt. GEORGE F. MILLS, Oneida.

To *Camp Devens*, Ayer, Mass., for duty, from Camp Sherman, Lieuts. CHARLES E. CONGDON, Buffalo; for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Walter Reed General Hospital, Lieut. ADELBERT C. ABBOTT, Syracuse.

To *Camp Greene*, Charlotte, N. C., for duty, to be relieved of his present duties, Lieut. HERMANN ELWYN, New York City.

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, Capt. JAMES F. NAGLE, New York City; Lieuts. VINCENT J. T. O'NEILL, Highland Falls; ROWLAND P. BLYTHE, CHARLES G. DARLINGTON, GEORGE A. KOENIG, WALTER M. KRAUS, CHARLES H. NAMMACK, MILTON W. PLATT, BERNARD L. ROBINS, CORNELIUS J. TYSNO, JOHN H. WYCKOFF, New York City; WARREN C. FARGO, Warsaw.

To *Camp Jackson*, Columbia, S. C., for duty in the base hospital, from Camp Mills, Capt. FRANKLIN B. VAN WART, Brooklyn.

To *Camp Joseph E. Johnston*, Jacksonville, Fla., for duty, from Fort Oglethorpe, Lieuts. HENRY McI. MOORE, New York City; MACY L. LERNER, Rochester.

To *Camp Kelly*, San Antonio, Texas, for duty, from Fort Oglethorpe, Capt. RAYMOND F. LONGACRE, New York City; Lieut. BEEKMAN J. DELATOUR, New York City.

To *Camp Lee*, Petersburg, Va., for consultation with the division surgeon and base hospital surgeon in connection with matters pertaining to nervous and mental diseases, and upon completion of this duty to his proper station, from Camp Greene, Major PEARCE BAILEY, New York City; for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Oglethorpe, Lieut. SIDNEY TRATTNER, New York City.

To *Camp Logan*, Houston, Texas, for duty in the base hospital, Lieut. LOUIS D. MINSK, New York City.

To *Camp Meade*, Annapolis Junction, for duty, from Fort Ontario, Capt. WILSON C. WOOD, Madison Barracks, N. Y.; for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Camp Greene, Capt. GEZA KREMER, New York City; Lieut. THOMAS F. ELLIS, New York City.

To *Camp Mills*, for duty to examine the troops who have not already been examined for tuberculosis and cardiovascular abnormalities, and upon completion of this duty to return to his proper station, from Camp Upton, Lieuts. HENRY C. DREW, Brooklyn; EDWIN F. SAMSON, New York City; for examination, Lieut. ALBERT C. MARGULIES, New York City.

To *Camp Pike*, Little Rock, Ark., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. ROBERT R. McCULLY, Auburn.

To *Camp Stuart*, Newport News, Va., for duty, from Allentown, Pa., Lieut. MARK F. HEALY, New York City.

To *Camp Upton*, Yaphank, L. I., N. Y., for duty, from Fort Riley, Kan., Lieut. ALBERT C. DURAND, Ithaca.

To *Chicago*, Ill., Neurological School, Presbyterian Hospital, for intensive training in brain surgery, from Orthopedic School, Boston, Mass., Major CHARLES HENNINGTON, Rochester.

To *Concentration Camp*, Garden City, L. I., N. Y., for duty, from Camp Mills, Lieut. ROBERT H. FOWLER, New York City.

To *Fort Benjamin Harrison*, Indianapolis, for the purpose of taking the examination for admission to the medical corps, and upon completion

of this duty to return to his proper station, from Fort Wayne, Mich., Lieut. JOHN J. LANCER, New York City.

To *Fort Oglethorpe*, for duty as an instructor, from Fort Benjamin Harrison, Major FREDERIC W. LOUGHRAN, New York City; Capt. HERBERT L. CELLER, New York City; Lieut. VICTOR C. VON UNRUH, New York City; for duty with Hospital Train No. 23, Lieut. HAROLD B. JOHNSON, Buffalo.

To *Fort Riley*, Kansas, for duty with Hospital Train No. 24, Lieut. WILLIAM E. McCORMACK, Brooklyn.

To *Fort Sill*, Okla., U. S. School for Aerial Observers, for duty, from Aviation Section, Signal Corps, Pittsburgh, Pa., Lieut. EDWIN S. INGERSOLL, Rochester.

To *Langley Field*, Hampton, Va., for duty, from Fort Benjamin Harrison, Lieuts. WARTHER C. A. STEFFEN, College Point; EDWARD L. HAZELTINE, Jamestown.

To *Mineola*, L. I., N. Y., for duty, from Fort Benjamin Harrison, Lieuts. PAUL B. BETOWSKI, Bath; DANIEL M. MacDONALD, New York.

To *New York City*, Bellevue Hospital, for a course of instruction on fractures, and upon completion of this course to proceed to Fort Ontario, N. Y., for temporary duty, from Fort Ontario, Major RALPH A. STEWART, New York City. To proceed to *Camp Sherman*, Chillicothe, Ohio, for temporary duty, Capt. CHARLES W. HOYT, Rochester; from Rockefeller Institute, Capt. ETHAN F. BUTLER, Yonkers. To *Cornell Medical College*, for a course of instruction in military roentgenology, from Fort Benjamin Harrison, Lieut. BERNARD S. STRAIT, Penn Yan. To *Post-Graduate Hospital*, for a course of instruction in urology and dermatology, Lieuts. SAMUEL PARNASS, Brooklyn; WILLIAM G. PHILLIPS, Brooklyn. To *U. S. Army General Hospital No. 1*, for temporary duty, Lieut. ROYAL A. SCHAAF, New York City.

To *Philadelphia*, Pa., for a course of instruction on fractures, and upon completion of this course to proceed to Camp Jackson, for temporary duty in base hospital, from Allentown, Pa., Lieut. JOSEPH S. BALDWIN, Brooklyn.

To *Pullman*, Ill., for duty with Hospital Train No. 1, from Fort Benjamin Harrison, Lieut. GEORGE B. REITZ, Brooklyn.

To *Rockefeller Institute*, New York City, for a course of instruction, and upon completion of this course to report to Bellevue Hospital for a further course of instruction, Major GEORGE B. WALLACE, New York City. Upon completion of this course to proceed to Camp Sheridan for temporary duty in the base hospital, Capt. EDWIN W. PEET, New York City.

To *St. Louis*, Mo., School of Plastic and Oral Surgery, Washington University, for duty, to the military director of the school, Capt. ROBERT T. FRANK, New York City; from Fort Benjamin Harrison, Lieut. JAMES T. HARRINGTON, Poughkeepsie.

To *Syracuse*, N. Y., for duty as medical member of examining board, recruiting officer and temporary officer in charge of physical examining unit, from Examining Unit, Aviation Section, Signal Corps, New York City, Lieut. FEDOR L. SENGEL, Brooklyn.

To *Walter Reed General Hospital*, Takoma Park, D. C., for a special course of instruction in tuberculosis examinations, Capt. THEODOR J. ABBOTT, New York City; JOSEPH R. CULKIN, Rochester; STEPHEN A. MAHADY, Utica; Lieuts. DANIEL R. ROBERT, LOUIS D. STERN, Brooklyn; EDWARD P. EGLEE, Flushing; CLYDE D. OATMAN, Poolville; for duty in the urologic division, LEO C. DuBOIS, Beacon.

Honorably discharged from the Medical Reserve Corps, on account of being physically disqualified for active service, Lieut. ALBERT C. MARGULIES, Brooklyn; from Fort Benjamin Harrison, Lieut. JOSEPH T. SLONIMSKY, New York City; from Fort Oglethorpe, Lieut. JOHN W. MUNRO, Syracuse.

To his home and the inactive list of the Medical Reserve Corps, Capt. GEZA KREMER, New York City; Lieut. FRANK E. MILLER, New York City.

North Carolina

To *Camp Beauregard*, Alexandria, La., 39th Division, from Fort Oglethorpe, Lieut. RANDOLPH E. WATTS, Oriental.

To *Camp Custer*, Battle Creek, Mich., for duty, from Army Medical School, Lieut. MALTHUE R. FREEMAN, Bailey.

To *Camp Jackson*, Columbia, S. C., for active service, Lieut. ALEXANDER F. JONES, Ararat.

To *Camp Joseph E. Johnston*, Jacksonville, Fla., for duty, from Fort Oglethorpe, Lieut. JOHN L. MOORE, Wendell.

To *Camp Lee*, Petersburg, Va., 80th Division, for duty, from Fort Oglethorpe, Lieut. BENJAMIN F. CLIFF, East Flat Rock.

To *Camp Meade*, Annapolis Junction, Md., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Camp Green, Lieut. FREDERICK B. SPENCER, Salisbury.

To *Camp Sevier*, Greenville, S. C., for duty, from Fort Oglethorpe, Lieut. THOMAS J. SUMMEY, Brevard.

To *Fort Oglethorpe*, Ga., for the required course of instruction, Lieut. OSCAR W. KING, Mooresville.

To *New York City*, Bellevue Hospital, for a course of instruction on fractures, and upon completion of this course to Camp Sheridan for temporary duty in the base hospital, from Camp Sheridan, Capt. EVERETT A. LOCKETT, Winston-Salem.

To *Walter Reed General Hospital*, Takoma Park, D. C., for a course of instruction in tuberculosis examination, Lieut. JOHN DONNELLY, Charlotte.

To his home and the inactive list of the Medical Reserve Corps, from Camp Stanley, Leon Springs, Texas, Lieut. JAMES N. MITCHNER, Kingston.

To his home and the inactive list of the Medical Reserve Corps, on account of being physically disqualified for active service from Camp

Gordon, Lieuts. CHARLES Z. CHANDLER, Sylvia; from Camp Meade, Lieut. EDWARD S. KING, Sweethome.

Honorably discharged from the Medical Reserve Corps, on account of being physically disqualified for active service, from Camp Sevier, Lieut. JAMES M. TEMPLETON, Cary.

North Dakota

To Boston, Mass., General Hospital for a course of instruction on fractures, and upon completion of this course to proceed to Fort Oglethorpe for a course of instruction, Major ERIC P. QUAIN, Bismarek.

Ohio

To Army Medical School, for a course of instruction, Lieut. JOHN D. NOURSE, Kenton.

To Boston, Mass., General Hospital, for a course of instruction on fractures, and upon completion of this course to proceed to Camp Sherman, Chillicothe, Ohio, for temporary duty in the base hospital, Lieut. GEORGE M. LOGAN, Akron.

To Camp Custer, Battle Creek, Mich., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieuts. IVAH J. RANSBOTTOM, Coldwater; CHARLES R. DEEDS, Dalton.

To Camp Gordon, Atlanta, Ga., 82d Division, for duty, from Fort Oglethorpe, Lieut. HERMAN L. CRARY, Letart Falls.

To Camp Greenleaf, Fort Oglethorpe, for a course of instruction, Lieuts. ADOLPHUS W. FOERTMEYER, Cincinnati; HARRY E. WILSON, Martins Ferry.

To Camp Pike, Little Rock, Ark., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, Lieut. GEORGE L. HAEFELE, Cleveland.

To Camp Sherman, Chillicothe, Ohio, for duty in the base hospital, Lieut. MELVILLE D. AILES, Warren.

To Camp Stuart, Newport News, Va., for duty, from Allentown, Pa., THOMAS RICHARD KENNERDELL, Cleveland.

To Camp Taylor, Louisville, Ky., for temporary duty at the base hospital, from Fort Benjamin Harrison, Lieut. LAUREN N. LINDENBURGER, Troy.

To Canal Zone, to report in person to the Commanding General, Panama Dept., for duty, from Fort Benjamin Harrison, Indiana, Lieuts. RALPH H. SILL, Cleveland; CARLTON C. STOKES, Port Clinton.

To Chicago, Ill., Neurological School, Presbyterian Hospital, for intensive training in brain surgery, from Orthopedic School, Boston, Mass., Lieut. CHARLES M. PAUL, Cincinnati.

To Fort Benjamin Harrison, Indiana, for a course of instruction in the hospital on fractures, and upon completion of this course to proceed to Louisville, Ky., for temporary duty in the base hospital, from Camp Taylor, Lieuts. DE ENNA D. DE NEEN, Cincinnati; for a special course of instruction in tuberculosis examining, JOSEPH M. ULRICH, Akron; IRWIN W. MAYBERRY, Scott Town; for duty with Hospital Train No. 2, CLYDE K. STARTZMAN, Bellefontaine; for duty with Hospital Train No. 3, HARVEY N. TRUMBULL, Woodville.

To Fort Oglethorpe, Ga., for duty in the provisional base hospital, from Fort Benjamin Harrison, Lieuts. OTTO N. WARNER, Conneaut; for a course of instruction, FRANK B. SNODGRASS, Kenton.

To Mineola, L. I., N. Y., for duty, from Fort Benjamin Harrison, Lieuts. RUDOLPH S. REICH, JOHN W. TIPPIE, Cleveland; CLARENCE J. SCHIRACK, Coldwater; HERMAN G. ROSENBLUM, Toledo; JAMES S. MARINER, Youngstown.

To Rockefeller Institute, New York City, for a course of instruction in the therapy of pneumonia, Lieuts. HENRY J. JOHN, Cleveland; from Allentown, Pa., JOSEPH E. MCCLELLAND, Cleveland.

To Selfridge Field, Mount Clemens, Mich., for duty, from Fort Benjamin Harrison, Lieut. JOHN A. TRUE, Port Clinton.

To St. Louis, Mo., School of Head Surgery, Washington University, for a three weeks' course of instruction, from Fort Riley, Lieuts. WILLIAM S. NICHOLS, Cleveland; ROY F. JOLLEY, Richwood.

To Washington, D. C., for duty as orthopedic instructor, Major HERBERT D. MADDOX, Cincinnati.

Honorably discharged from the Medical Reserve Corps on account of being physically disqualified for active service, from Camp Lewis, Capt. LOUIS L. SYMAN, Springfield.

Oklahoma

To Camp Devens, Ayer, Mass., for duty, from Army Medical School, Lieut. DAVID D. PAULUS, Oklahoma City.

To Camp Doniphan, Fort Sill, Okla., for duty, from base hospital, Fort Sill, Okla., Lieut. JOSEPH M. HANCOCK, Muskogee.

To Camp Jackson, Columbia, S. C., for duty, from Army Medical School, Lieut. PHILIP L. COULTER, Tulsa.

To Fort Sill, Okla., School of Aerial Observers, for duty with the 3d Balloon Squadron, Lieut. HENRY DEW. SHANKLE, Hastings.

To Philadelphia, Pa., University Hospital, for a course of instruction on fractures, and upon completion of this course to proceed to Fort Sam Houston, Texas, for temporary duty; from Fort Sam Houston, Lieut. ABRAHAM L. BLESCH, Oklahoma City.

To his home and the inactive list of the Medical Reserve Corps, from Camp Mills, Major LEWIS A. CONNER, Coalgate; from Camp Cody, Lieut. CHARLES E. HOUSER, Vici; from Camp Bowie, Lieut. ALBERT N. EARNEST, Muskogee.

Oregon

To Army Medical School, Washington, D. C., for a course of instruction, Lieut. ROBERT A. SHERWOOD, Portland.

To Camp Beauregard, for duty as plastic and oral surgeon, section of surgery of the head, with the base hospital, Capt. JUSTIN M. WAUGH, Hood River.

Pennsylvania

To Aberdeen, Md., for duty, from Fort Benjamin Harrison, Lieut. JAMES L. JUNK, Connellsville.

To Army Medical School, Washington, D. C., for a course of instruction from Fort Oglethorpe, Lieut. SAMUEL R. SKILLERN, Jr., Philadelphia.

To Boston, Mass., City Hospital, for a course of instruction on fractures and on completion of this course to proceed to Camp Beauregard, Alexandria, La., for temporary duty, from Fort Ethan Allen, Vt., Lieut. GEORGE W. MILLER, Norristown.

To Camp Beauregard, Alexandria, La., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Oglethorpe, Lieut. WILLIAM RUOFF, Philadelphia.

To Camp Devens, Ayer, Mass., 76th Division from Fort Oglethorpe, Lieut. JOHN S. ANDERSON, Greensburg; for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Walter Reed General Hospital, Lieut. HARRISON M. STEWART, Mont Alto.

To Camp Dix, Wrightstown, N. J., for duty, from Allentown, Pa., Lieut. WALTER WHITEHOUSE, Marcus Hook.

To Camp Dodge, Des Moines, Ia., for duty, from Army Medical School, Lieut. FRANK S. MATLACK, Philadelphia.

To Camp Gordon, Atlanta, Ga., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Walter Reed General Hospital, Capt. ALBERT P. FRANCINE, Philadelphia.

To Camp Greene, Charlotte, N. C., for duty in the base hospital, from Dept. Laboratory, Atlanta, Ga., Capt. CLAUDE P. BROWN, Glen Olden.

To Camp Greenleaf, for a course of instruction, Lieuts. PHILIP L. HATCH, Coudersport; from Fort Benjamin Harrison, DANIEL E. L. STEDEM, Philadelphia.

To Camp Hancock, Augusta, Ga., Twenty-Eighth Division, from Fort Oglethorpe, Lieut. HOWARD L. FARQUHAR, Pittsburgh.

To Camp Joseph E. Johnston, Jacksonville, Fla., for duty, from Fort Shelby, Lieut. ADDISON M. ROTHROCK, Reading; from Fort Oglethorpe, Lieut. ISREAL P. P. HOLLINGSWORTH, West Chester.

To Camp Kelly, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieuts. JOHN S. STRUTHERS, Danville; SAMUEL E. LYON, Mount Braddock; Lieuts. M. ROGERS, Philadelphia; JAMES E. JAMES, Plymouth.

To Camp Logan, Houston, Texas, Thirty-Third Division, from Fort Oglethorpe, Lieut. WALTER L. HENDERSON, East McKeesport.

To Camp Meade, Annapolis Junction, Md., for duty as member of a board of medical officers for the special examination of the command for tuberculosis, from Camp Greene, Lieut. JAMES M. McNALL, Wilkesburg; from Fort Benjamin Harrison, Lieut. WILLIAM H. HERR, Lancaster, for duty, from Allentown; Lieut. CHARLES J. CAVANAGH, Philadelphia.

To Camp Mills, Garden City, L. I., for duty in the base hospital, Major JACK C. GITTINGS, Philadelphia.

To Camp Pike, Little Rock, Ark., for duty, from Army Medical School, Lieut. PAUL M. N. KYLE, Pittsburgh; from Fort Oglethorpe, Lieut. JAMES N. DOUGLAS, Scranton.

To Camp Stuart, Newport News, Va., for duty, from Allentown, Pa., Lieut. DWIGHT E. LONG, Freeburg; from Fort Oglethorpe, Lieuts. FRANK L. KNOX, Claysville; WILLIAM H. HAINES, Thompsonstown.

To Camp Taylor, Louisville, Ky., Eighty-Fourth Division, from Fort Oglethorpe, Capt. PETER H. DALE, State College; Lieut. ARTHUR R. GAINES, Altoona.

To Fort Oglethorpe, for duty as an instructor, from Fort Benjamin Harrison, Major THEODORE B. APPEL, Lancaster.

To Chicago, Neurological School, Presbyterian Hospital, for intensive training in brain surgery, and on completion of this course to return to his proper station, from Fort Benjamin Harrison, Capt. LOUIS J. C. BAILEY, Greensburg.

To Essington, Pa., for duty, from Camp Dix, Lieut. ROBERT S. MCCOOMBS, Philadelphia.

To Hoboken, N. J., for assignment to duty, from Allentown, Pa., Lieut. JOSEPH W. DENNIN, Philadelphia; from Fort Oglethorpe, Lieuts. WALTER E. LANG, Allentown; HERBERT L. RANSOM, Pittston; CONNELL E. MURRIN, Scranton.

To Mineola, L. I., N. Y., Signal Corps, Aviation School, Hazelhurst Field, for duty, from Middletown, Pa., Lieut. WILLIAM P. MCINTOSH, Philadelphia.

To Newport News, Va., for duty, at the Port of Embarkation, from Fort Oglethorpe, Lieut. WILLIAM F. HARRISON, Plains.

To New York City, for the purpose of attending the meeting of the Bureau of Standards on business in connection with the Medical Department, and on completion of this duty will return to his proper station, Major DAVID SILVER, Pittsburgh. To Bellevue Hospital, for a course of instruction on fractures, and on completion of this course to proceed to Fort Worth, Texas, Camp Bowie, for temporary duty, in the base hospital, from Camp Bowie, Capt. JAMES G. FLYNN, Ridgway.

To Philadelphia, for duty as a medical member of the examining board and assistant to the recruiting officer from Essington, Pa., Lieut. JOHN P. GALLAGHER, Philadelphia; for a special course of instruction at the School of Plastic and Oral Surgery, from Army Medical School, Lieut. ARTHUR T. HENRICI, Pittsburgh.

To Roanoke, Va., for conference with the Virginia Committee on Medical Defense, and on completion of this duty to return to his proper station in this city, Major HENRY D. JUMP, Philadelphia.

To Rockefeller Institute, for a course of instruction, and on completion of this duty to Roosevelt Hospital for a further course of instruction, from Army Medical School, Capt. JOHN F. McCLOSKEY,

Philadelphia; Lieuts. JOSEPH G. FERNBACH, Philadelphia; ROY L. SCOTT, Sayre.

To *St. Louis*, Washington University, for a course of intensive training in head surgery, from Fort Oglethorpe, Lieut. THOMAS S. HICKS, Braddock; on completion of this course to report to Camp Greenleaf for a course of instruction, Lieut. WILLIAM BATES, Philadelphia.

To *Walter Reed General Hospital*, Takoma Park, D. C., for a special course of instruction in tuberculosis examinations, Capt. ELMER G. WEIBEL, Erie; Lieuts. RALPH E. HENRY, Erie; HARRISON M. STEWART, Mont Alto; ABRAHAM TRASOFF, Philadelphia.

To *his home* and returned to the inactive list of the Medical Reserve Corps, from Fort Oglethorpe, Lieuts. JOHN S. ANDERSON, Greensburg; JOSEPH F. COMERFORD, Philadelphia.

To *his home* and returned to the inactive list of the Medical Reserve Corps, on account of being physically disqualified for active service, from Fort Oglethorpe, Lieut. LEO DEL. PARRY, Rock Glen; from *Walter Reed General Hospital*, Lieut. FLOYD D. LOHR, Derry; from Fort Benjamin Harrison, Lieut. JOSEPH S. MURRIN, Carbondale.

Porto Rico

To *Camp Stuart*, Newport News, Va., for duty, from Fort Oglethorpe, Lieut. WILLIAM R. GALBREATH, San Juan.

Rhode Island

To *Camp MacArthur*, Waco, Texas, for duty in connection with orthopedic examinations in the division and base hospital, Lieut. JOSEPH E. RAIA, Providence.

To *Walter Reed General Hospital*, for a special course of instruction in tuberculosis examinations, Lieut. NORMAN B. COLE, Providence.

South Carolina

To *Camp Kelly*, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. THOMAS C. GALLOWAY, Columbia.

To *Camp Lee*, Petersburg, Va., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Oglethorpe, Lieut. THOMAS O. WALKER, Greer.

To *Camp Meade*, Annapolis Junction, Md., for temporary duty in the base hospital, from Camp Greenleaf, Lieut. HERBERT HARRIS, Andlison.

To *Camp Pike*, Little Rock, Ark., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Oglethorpe, Lieut. JAMES M. OLIVER, Orangeburg.

To *Mineola*, L. I., N. Y., for duty, from Fort Benjamin Harrison, Lieut. CHARLES C. FISHBURNE, Scotia.

Tennessee

To *Camp Joseph E. Johnston*, Jacksonville, Fla., for duty, from Fort Riley, Capt. JAMES H. SMITH, Trimble; Lieut. GRANVILLE I. WALKER, Gillases Mills.

To *Camp Kelly*, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. GUY McC. REESER, Jr., Church Hill.

To *Camp Pike*, Little Rock, Ark., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Oglethorpe, Lieut. MAURICE L. CONNELL, Ridgetop.

To *Camp Upton*, Yaphank, L. I., N. Y., for duty, from Army Medical School, Lieuts. GEORGE F. AYCOCK, Nashville; MANTON L. SHELBY, Woodlawn.

To *Canal Zone*, to report in person to the commanding general, *Panama Department*, for duty, from Fort Benjamin Harrison, Lieut. WILLIAM E. BOYCE, Flat Woods.

To *Fort Bayaho*, N. M., for duty, Lieut. FRANK B. BREWER, Nashville.

To *New York City*, Bellevue Hospital, for a course of instruction on fractures and on completion of this duty to proceed to Fort Niagara, N. Y., for temporary duty, from Camp Mills, Lieut. WILLIAM R. SEARS, Lebanon.

To *St. Louis*, Washington University, for a course of intensive training in head surgery, from Fort Oglethorpe, Lieut. DORSEY T. GOULD, Lawrenceburg.

Honorably discharged from the Medical Reserve Corps, from Camp Pike, Lieut. WILLIAM G. BUNDRANT, Lawrenceburg.

Texas

To *Army Medical School*, Washington, D. C., for a course of instruction, from Brownsville, Texas, Lieut. LUCIUS L. HANDLY, Houston.

To *Camp Cody*, Denning, N. M., Thirty-Fourth Division, Lieut. JOSEPH V. DOZIER, Menard.

To *Camp Hancock*, Augusta, Ga., for temporary duty in the base hospital, from Fort Oglethorpe, Capt. WALLACE RALSTON, Houston.

To *Camp Jackson*, Columbia, S. C., for duty, from Army Medical School, Lieut. WILLIAM L. STARNES, San Antonio.

To *Camp MacArthur*, Waco, Texas, for duty, Lieut. MARION M. BROWN, Mexia.

To *Camp Sevier*, Greenville, S. C., to report in person to the commanding general, Thirtieth Division, for active duty, Lieut. EDWIN W. REEVES, Galveston.

To *Camp Travis*, Fort Sam Houston, Texas, for duty, Lieuts. ARCHIBALD F. CLARK, Fentress; GEORGE W. DOUGLAS, Martindale; ALLEN D. WAGES, Waco.

To *Fort Oglethorpe*, Field Hospital Co. No. 3, for duty, from Camp Greenleaf, Lieut. JESSE C. McKEAN, Lometa.

To *Hoboken*, N. J., for transportation to France and on arrival in France to report to the commanding general, American Expeditionary

Forces, for duty as roentgenologist, from School of Military Roentgenology, Kansas City, Lieut. DAVIS SPANGLER, Sherman.

To *San Antonio, Texas*, Robert E. Green Memorial Hospital, for duty as a medical member of examining board, and as recruiting officer, from Kelly Field, Lieut. EDWARD E. COLLINS, Fremont.

To report to the commanding general, *Southern Department*, for assignment to duty, Capt. ROBERT H. McLEOD, Palestine; Lieuts. THOMAS R. MOREHEAD, Ben Franklin; GEORGE W. GRISWOLD, Cisco; EVERETT O. ARNOLD, Corpus Christi; JOSEPH KOPECKY, El Campo; RICHARD A. WILSON, Marfa; ALBERT A. JACKSON, Mexia.

To *his home* and honorably discharged from the Medical Reserve Corps on account of being physically disqualified for active service, from Fort Oglethorpe, Lieuts. CHARLES W. WILLIAMS, Bronte; CLARENCE L. McCLELLAND, Frawell.

Utah

To *Camp Travis*, Fort Sam Houston, Texas, for duty in the camp and in the base hospital and for the purpose of examining and consulting in such orthopedic cases as the commanding general of the camp may direct, Lieut. DAVID K. ALLEN, Salt Lake City.

Vermont

To *Camp Grant*, Rockford, Ill., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Benjamin Harrison, Lieut. GEORGE L. BATES, Morrisville.

To *New York City*, Cornell Medical College, for a course of instruction in military roentgenology, from Fort Benjamin Harrison, Lieut. RAY B. THOMAS, Enosburg.

Virginia

To *Camp Greenleaf*, Fort Oglethorpe, for a course of instruction, from School of Plastic and Oral Surgery, Washington University, St. Louis, Lieut. DORSEY C. TYLER, Richmond.

To *Camp Joseph E. Johnston*, Jacksonville, Fla., for duty from Fort Oglethorpe, Lieut. HORACE T. HAWKINS, Richmond.

To *Camp Kelly*, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. FRANK A. FARMER, Roanoke.

To *Camp Lee*, Petersburg, Va., for duty, Lieut. GROVER B. GILL, Tangier; for duty with the auxiliary remount station, from Camp Lee, Lieut. WILLIAM P. MERCHAUT, Manassas.

To *Camp Meade*, Annapolis Junction, Seventy-Ninth Division, for duty, from Fort Oglethorpe, Lieut. JAMES S. BURGER, Hopewell.

To *Camp Pike*, Little Rock, Ark., for duty as a member of a board for the special examination of the command for tuberculosis, from Camp Joseph E. Johnston, Lieut. HORACE T. HAWKINS, Richmond.

To *Fort Oglethorpe*, for a course of instruction, Lieut. GEORGE V. LITCHFIELD, Abington.

To *Newport News, Va.*, for duty at the Port of Embarkation, Lieut. LONSDALE J. ROPER, Portsmouth.

To *Staunton, Va.*, for the purpose of examining applicants for appointments in the Medical Reserve Corps, and on completion of this duty to return to his proper station, from Richmond, Major JOHN G. NELSON, Richmond; JOSEPH T. McKINNEY, Richmond.

To *Walter Reed General Hospital*, Takoma Park, D. C., for a special course of instruction in tuberculosis examination, Lieut. THOMAS N. DAVIS, Lynchburg.

To *Washington, D. C.*, and report in person to the Surgeon-General of the Army for temporary duty in his office, from Fort Randolph, C. Z., Lieut. EDGAR A. BOCOCK, Richmond; to Army Medical School, for a course of instruction, Lieut. HARVEY R. LIVESAY.

Washington

To *Camp Lewis*, American Lake, Washington, for duty in the base hospital, to be relieved of his present duties, Capt. ERNEST C. WHEELER, Tacoma.

To *Fort Mackenzie*, Wyo., for duty from Camp Dodge, Capt. JOHN B. ROBERTSON, Tacoma.

West Virginia

To *Army Medical School*, Washington, D. C., for a course of instruction, Lieuts. ARTHUR N. HENSON, LAWRENCE A. PETTY, Charleston.

To *Walter Reed General Hospital*, Takoma Park, D. C., for a special course of instruction in tuberculosis examinations, Capt. GEORGE H. BARKSDALE, JOHN W. MOORE, Charleston; Lieut. DAVID P. SCOTT, Ashland.

To *his home* and the inactive list of the Medical Reserve Corps on account of being physically disqualified for active service, from Fort Oglethorpe, Lieut. ROBERT K. BUFORD, Princeton.

Wisconsin

To *Camp Custer*, Battle Creek, Mich., Twenty-Fifth Division, for duty, Lieut. WILLIAM C. HANSON, Racine.

To *Camp Jackson*, Columbia, S. C., for duty as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Oglethorpe, Lieut. LEON H. FLANCHER, Milwaukee.

To *Fort Bliss, Texas*, for temporary duty, from Fort Riley, Lieut. ADDISON J. PROVOST, Oshkosh.

To *Fort Oglethorpe*, for a course of instruction, Lieut. HERMAN A. HEISS, Madison.

To *New York City*, Cornell Medical College, for a course of instruction in military roentgenology, from Fort Oglethorpe, Lieut. HARRY B. PODLASKY, Milwaukee.

To *his home* and the inactive list of the Medical Reserve Corps, from Washington University, St. Louis, Capt. GUSTAF R. EGELUND, Sturgeon Bay; from Camp Doniphan, Lieut. GEORGE G. RUHLAND, Milwaukee.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Nolton N. Ashley, chief of the staff of the Oakland Emergency Hospital, has resigned, and has been succeeded by Dr. Charles H. Mackey.—Drs. Henry G. Brainerd, Charles L. Allen, Thomas J. Orbison and Edward H. Williams, all of Los Angeles, are the medical members of the board of trustees of the Psychopathic Association of California, elected at its annual meeting in Los Angeles, October 22.

Anthrax.—During August and September, according to the *Monthly Bulletin* of the state board of health there were eight human cases of anthrax in the state as reported to the board, and the state veterinarian has called attention to outbreaks among animals in Yolo, San Joaquin and Stanislaus counties and in remote sections of the San Joaquin and Sacramento valleys. In Yolo for a period the water in irrigating ditches was ordered shut off to prevent the possible spread of the disease by that means. Warnings have been given in regard to the handling of sick stock and the skinning of dead animals.

COLORADO

Personal.—Dr. Raynor E. Holmes, Canon City, has purchased the Goodloe Hospital, with a capacity of twenty beds, and will conduct it as a private hospital.—Drs. Wilbur T. Little and Hart Goodloe have entered on their military duties at Fort Sill, Okla., and Fort Riley, Kan., respectively.—Dr. Frederick A. Jackson, Salida, has been appointed physician and deputy coroner of Chaffee County, during the absence of Dr. Charles S. Phalen.—Dr. George B. Gilmore has been appointed assistant health officer for West Colorado Springs.

DELAWARE

Personal.—Dr. William P. Orr, Lewes, has been placed in command of the Marine Hospital at Lewes, succeeding Dr. George G. Hart, transferred.—Dr. John W. Mullin, Wilmington, has been appointed chief of the medical staff of the Delaware Hospital.

Typhoid Fever.—October 26, there were twenty-nine cases of typhoid fever in Wilmington which are known to have originated outside of that city. In addition, there are twenty cases which have been traced to one source in Wilmington. The supply of drinking water of the city is reported to be sanitary.

ILLINOIS

Personal.—Dr. Edward A. Glasgow was elected president of the First National Bank of Mulberry Grove, November 5.—Dr. Edgar P. Cook, Mendota, has been appointed chairman of the cooperative committee to promote the antituberculosis campaign of the State Council of Defense.

Assignments to Health Officers.—The state director of health, Dr. C. St. Clair Drake, Springfield, announces the following assignments:

Dr. Clarence W. East, Evanston, relieved as medical officer for Camp Grant Health District, and detailed to investigate poliomyelitis in Cook County, and afterward to report for special assignment.

Dr. Arthur Pearman, Rockford, medical health officer to Camp Grant Health District, Rockford.

Dr. Alexander F. Stewart, Oneida, district health officer for the Western Health District, with headquarters at Galesburg.

Dr. John A. Kappelman, Evanston, relieved as medical health officer of Great Lakes-Fort Sheridan Health District excepting special assignment relating to water supply and sewerage disposal problems in North Chicago and Waukegan, and garbage disposal at Lake Bluff and Lake Forest, and detailed as health officer of the Northeast Health District, with headquarters at Chicago.

Dr. John A. Robison, Chicago, medical health officer of Great Lakes-Fort Sheridan Health District, with temporary headquarters at Lake Forest.

Dr. Charles E. Crawford, Rockford, medical health officer of the Northwest Health District excepting temporarily the Camp Grant District, with headquarters at Rockford.

Dr. Edward M. Irwin, Belleville, medical health officer for the Scott Field Health District, including the towns of Shiloh Valley and Belleville, in St. Clair County.

Dr. Charles S. Nelson, Springfield, medical health officer of the North Central Health District, with headquarters at Springfield.

Dr. Elbert L. Damron, Effingham, district health officer for the South Central Health District, with headquarters at Effingham.

Dr. John A. M. Gibbs, Unity, medical health officer for the Southern Health District, succeeding Dr. Isaac A. Foster, New Haven.

Chicago

Children's Hospital Profits by Rummage Sale.—As a result of the four days' White Elephant Sale, held in the old Calumet Club Building, November 7 to 10, \$25,369 was raised for the Children's Memorial Hospital.

Personal.—Dr. Daniel N. Eisendrath read a paper on "Why Do We Have Recurrence of Symptoms After Operations on the Biliary Tract?" at the annual meeting of the Wisconsin State Medical Society, held in Milwaukee, October 3, and also read a paper on the same subject at the annual meeting of the Southern Illinois Medical Association, held at Murphysboro, November 1.

INDIANA

Tuberculosis Hospital Site.—The Madison County Council has appropriated \$10,000 for the purchase of the site for a county tuberculosis sanatorium. A farm of 92 acres near Anderson has been selected for this purpose.

Endorse Wynn's Candidacy.—The Indianapolis Medical Society, October 27, adopted a resolution endorsing the candidacy of Dr. Frank B. Wynn for a member of the board of school commissioners, and paying high tribute to the ability and attainments of Dr. Wynn.

Personal.—Dr. Henry Jameson, Indianapolis, fuel administrator for Marion County, is the first director whose appointment has been formally recorded by the state administrator.—Major Orange G. Pfaff, Indianapolis, will not be able to accompany Base Hospital Unit No. 32, on account of an injury to his knee.

IOWA

Honor to Rosenow.—At a gathering of representative citizens of Davenport, November 9, honor was rendered to Dr. E. C. Rosenow, in appreciation of his assistance during the recent epidemic of infantile paralysis in Davenport. An inscribed scroll stating the appreciation of his work, signed by the mayor and representatives of civic, social and medical organizations, was presented to Dr. Rosenow.

KENTUCKY

Personal.—Dr. Thomas F. Cleaver, Lebanon, sustained painful injuries when an engine ran into his automobile on a grade crossing, October 19.—Dr. John W. Gilbert, Lawrenceburg, while burning charcoal in a cistern, was overcome by the gas, and managed to get out of the cistern, but fell, sustaining painful wounds of the forehead.

MAINE

Health Department Reorganized.—The old state board of health, which was created in 1885, has been superseded by the state department of health, which was created by an act passed by the seventy-eighth legislature. Dr. Leverett D. Bristol has been appointed commissioner of health, and the state has been divided into health districts, each in charge of a district health officer.

Health Council.—The governor has nominated the following as the new Maine health council: John J. Ryan, Lewiston, probation officer; Eugene A. Cloutier, Lewiston, associate probation officer; Mrs. George F. French, Portland; Drs. Joseph E. Odiorne, North Whitefield; Robert J. Aley, Orono; Hiram W. Ricker, Poland; Sylvester J. Beach, Augusta, and Joseph B. Drummond, Portland.

MASSACHUSETTS

Personal.—Dr. Joseph A. Smith, police surgeon of Worcester, has resigned to enter the army service.—Physicians of Haverhill visited Georgetown, October 22, to pay their respects to Dr. Richmond B. Root, who celebrated the fiftieth anniversary of his entrance into the practice of medicine on that day.

Orthopedic Hospital for Boston.—The Order of Elks has made an offer to the city council of Boston to erect, for the federal government, an orthopedic hospital to cost \$250,000, on the site of the old Parker Hill reservoir, provided the city will sell the site for \$40,000. This is expected to be the first reconstruction hospital in the United States for crippled soldiers and sailors.

MICHIGAN

Tuberculosis Foes Meet.—At the annual meeting of the Michigan Anti-Tuberculosis Association, held in Battle Creek, Dr. William De Kleinie, Flint, was elected president, Drs. John H. Kellogg, Battle Creek, and Christopher G. Parnall, Jackson, vice presidents, and Dr. Henry J. Hartz, Detroit, secretary.

Personal.—Dr. William F. English, Saginaw, a member of the state board of health, will be stationed permanently at Battle Creek to assist the military authorities and the state board of health in the campaign to protect the health and morals of the soldiers at Camp Custer.—The University of Michigan has accepted the resignation of Dr. Claudius B. Kinyon, Ann Arbor, for twenty years professor of obstetrics and gynecology in the Homeopathic Medical School, and has appointed Dr. Theron G. Yeomans, St. Joseph, his successor.

Antituberculosis Notes.—Muskegon, Ottawa and Allegan counties are considering the proposition to build and operate a cooperative tuberculosis sanatorium.—At the meeting of the Michigan Anti-Tuberculosis Society, October 30, it was recommended that the state establish sanatoriums for men rejected from the National Army on account of tuberculosis who could be restored to health.—It is proposed to erect a joint tuberculosis sanatorium, to cost about \$100,000, for the use of the six counties of Oakland, St. Clair, Livingston, Macomb, Washtenaw and Lapeer.—Members of the Delta County Board of Supervisors have approved the establishment of a joint tuberculosis society with Menominee, Dickinson and Iron counties.

MINNESOTA

Smallpox at Hamline.—There are now five cases of smallpox at Hamline University, Minneapolis. Practically all the students have been vaccinated.

Faculty and War Work.—Fifteen men and two women of the University of Minnesota faculty have been granted leave of absence by the board of regents to engage in war work for the government.

Navy Hospital School Opened.—October 29, the Navy Hospital Corps Training School of the University of Minnesota was formally opened, with an initial attendance of 100 Hospital Corps men from the Navy. The staff is supplied by the University of Minnesota Medical School.

Personal.—Dr. Jacob H. Stewart, St. Paul, was found unconscious on Summitt Avenue, St. Paul, November 1. He had apparently suffered a slight concussion of the brain.—Dean T. Frankforter of the College of Chemistry of the University of Minnesota was relieved of his administrative duties at his own request, October 25, and reduced to the rank of professor.—Drs. Clarence E. Lum, Duluth, and Walter Courtney, Brainerd, were severely injured by falling through a trap door at a hunting lodge in Ottertail County, October 25.—Dr. Walter R. Ramsey, St. Paul, will head a medical mission to France in January. Dr. Ramsey will take the place of Dr. Julius P. Sedgwick of the university, who is now in France organizing the work among children in the fighting zone.

MISSOURI

Tuberculosis Ward Opened.—The entire north wing on the fourth floor of the Kansas City General Hospital, which was formerly occupied as nurses' headquarters, is being remodeled, and will be used as a tuberculosis ward, accommodating about sixty-five patients.

Personal.—Dr. George P. Pipkin, Kansas City, who has been in Colorado for the past five months in search of health, has returned greatly improved.—Dr. Louis E. Newman, St. Louis, who had five ribs fractured in a collision between his automobile and a coal wagon, is reported to be convalescent.

Medical Inspection of Schoolchildren.—While medical inspection of the schoolchildren of Kansas City has been suspended by the municipal authorities for lack of funds, a public spirited citizen, who desires to remain incognito, has agreed to pay the expenses of the work for three months. Five physicians, five dentists and ten nurses will form the staff of inspectors and begin work at once under the supervision of the Hospital and Health Board.

Society Inaugurates Movement for Combining Laboratories of State Board of Health and State University.—At a recent meeting of the Boone County Medical Society, to which the members of Audrain, Gallaway, Cole, Cooper, Howard and Randolph County Medical Societies had been invited, resolutions were adopted in which were set forth the advantages

of free laboratory work being done by the state university. It was proposed that the people of Missouri be made acquainted with the beneficial results of such a procedure, and that the next legislature be urgently requested to make the necessary appropriation for rendering the resolution effective.

First Class in Oral and Plastic Surgery Completes Course.—The first class of students from the Officers' Medical Reserve Corps ordered to take the course in oral and plastic surgery in the special school established at Washington University Medical School by the Surgeon-General of the Army has completed its course, the members, numbering thirty-seven, returning to their respective posts. The second contingent has reported for the course which began, November 5. There are thirty-five men in this class, of which twenty-seven are surgeons and eight are dentists. This course differs from the first in that it offers, in addition to oral and plastic surgery, surgery of the cranium and brain. Dr. Robert T. Frank, New York, is acting as military director.

Must Clean Up Vice Conditions.—Kansas City must clean up vice conditions at once or be quarantined against army camps is the edict of United States government officials. Mr. Henry F. Bart, in charge of the law enforcement department of the War Department, recently visited Kansas City and found conditions so demoralizing for the soldiers who visit the city from nearby camps that he ordered the immediate closing of all immoral houses, prohibiting women from soliciting on the street, and keeping all liquor away from soldiers. While the saloons have generally obeyed the law to refuse liquor to soldiers, the rooming houses and some hotels have permitted drinks to be served to soldiers in private rooms. The police department and the prosecuting attorney have promised to wipe out these vicious influences.

NEW HAMPSHIRE

Students Must Have Physical Examination.—The trustees of the New Hampshire College, Durham, have decided that hereafter every student on entering college must pass a physical examination.

Personal.—The residence of Capt. Charles A. Lamson, M. R. C., U. S. Army, at New London, was destroyed by fire, October 2.—Dr. Patrick J. McLaughlin, Nashua, has been appointed physician of Hillsboro County, succeeding Dr. Charles E. Congdon, who is in war service.

NEW JERSEY

Hospital Burns.—The Trenton Municipal Hospital, containing fifty-five patients, was burned, November 6. All the inmates escaped or were carried to places of safety, some of them being taken from the second floor by the staff of nurses, who for a times worked single handed in the mission of rescue. The loss is placed at \$40,000.

Tri-County Physicians Elect Officers.—At the annual meeting of the Tri-County Medical Society, which includes, Cumberland, Salem and Gloucester counties, held at Millville, October 30, the following officers were elected: president, Dr. Harry A. Stout, Wenonah; vice presidents, Dr. Joseph N. Husted, Woodstown, and John H. Moore, Bridgeton, and secretary-treasurer, Dr. George E. Reading, Woodbury.

NEW YORK

Personal.—Dr. and Mrs. William N. Miller, Croton-on-Hudson, were seriously injured in a collision between their automobile and another car at Harmon-on-Hudson.—Dr. Marcus E. Babcock, Bath, was struck by an automobile, October 28, and received a severe wound of the scalp.—Dr. George F. Reusch, Franklinville, has accepted a position with the mining company at Virginia, Minn.

Commission Discusses Care of Insane.—The Hospital Development Commission, which was created by the last legislature to form a plan for the systematic enlargement of state institutions for the insane and feeble-minded, recently conducted a hearing at the New York Academy of Medicine. The commission has presented the results of an investigation of the institutions for the care of the insane in this state and in Massachusetts, as well as in other states. The immediate establishment of psychopathic hospitals, especially in New York City, was urged. These hospitals should be employed simply as clearing houses to determine which persons might be restored by a short term of treatment and which should be sent to the state hospitals. The opinion was expressed that the care of the insane is properly a state

function and should be kept so, as municipal governments were too likely to shift.

New York City

Woman Head of Parole Board.—Dr. Katherine B. Davis has been appointed chairman of the parole board by Mayor Mitchell. The term of office runs for ten years, with a salary of \$7,500 a year.

Anniversary Address.—The anniversary address of the New York Academy of Medicine was delivered, November 15, by Dr. Henry Fairfield Osborn, L.L.D., president of the National Museum of Natural History, on "The Origin and Nature of Life."

Jamaica Hospital Opens Laboratory.—The Jamaica Hospital, Borough of Queens, announces that it has just completed the equipment of a roentgen-ray laboratory and is ready to render prompt and efficient service to the physicians of Queens who refer cases for roentgen-ray examination.

New York's Quota of Doctors for War Service.—The New York Chapter of the Red Cross has issued a statement asserting that when the base hospital units now awaiting a call to duty are in service, New York City will have sent 200 physicians and surgeons and more than 500 Red Cross nurses for war hospital work. The Presbyterian, Roosevelt, New York Port-Graduate, and the New York hospitals are already in service abroad. The other units, Bellevue, Mount Sinai, Herman and Metropolitan hospitals, have long been in readiness.

Medical Services Discuss War Problems.—Under the auspices of the New York State Committee, Medical Section of the Council of National Defense, a rally was held on the evening of November 9 at the Waldorf-Astoria, at which the heads of the medical services of the British and American governments discussed the probable requirements of the medical service. Dr. George D. Stewart presided at the meeting, and the principal addresses were made by Col. Sir Berkeley Moynihan, Major George W. Crile, Cleveland, and Dr. Franklin H. Martin, Chicago.

City Food Cabinet Organizes.—City Market Commissioner Henry Moschowitz has organized a cabinet of advisers drawn from the various city departments to consider the city's new undertaking of buying and selling food and fuel to the people. Work has been assigned to various city departments. The health department has as its task to make a study of wholesale and retail prices of essential commodities and the relation of these prices to the factors of distribution of trade. The Department of Public Charities is to study the relation of present prices to income. The members of this cabinet are to hold a conference each week to discuss ways and means of conducting their campaign to control, if possible, the high cost of living.

PENNSYLVANIA

Hospital Endowed.—The George F. Geisinger Memorial Hospital, Danville, built at a cost of \$600,000 has now been endowed by Mrs. Geisinger for \$1,000,000. A Scranton trust company has been named as trustee, the local board of trustees having been asked to resign.

Personal.—Dr. W. Rowland Davies, Scranton, has been elected president of the Craftmen's Club.—Dr. Adolph Koenig, Pittsburgh, October 1, was reappointed a member of the State Bureau of Medical Education and Licensure.—Dr. Adam L. Kotz, Easton, has resigned from the staff of St. Luke's Hospital, South Bethlehem, and has been appointed pathologist for the Easton Hospital.—Dr. Henry L. Orth, for twenty-seven years superintendent of the State Lunatic Hospital of Harrisburg, has resigned his position, to take effect as soon as his successor can be appointed.—Dr. Harvey L. Gerberich, Lebanon, was operated on in the Good Samaritan Hospital, in that city, and is reported to be convalescent.—Dr. Daniel Frederick, Ashley, who was operated on for appendicitis in St. Francis' Hospital, Pittsburgh, November 7, is reported to be doing well.

Philadelphia

Ambulance for Jefferson Base Hospital.—The West Philadelphia Auxiliary No. 4 of the American Red Cross presented a new field hospital ambulance to Base Hospital No. 38 of the Jefferson Medical College Hospital, November 7.

Reception to Moynihan and Crile.—At the stated meeting of the Club of Physicians in Philadelphia, November 7, the scientific business of the meeting was omitted on account of the reception to Sir Berkeley Moynihan, R. A. M. C., and Major George W. Crile, M. R. C., U. S. Army.

Plant Oak in Honor of White.—October 26, Arbor Day, in the presence of a notable group of representatives of business, professional and city life of Philadelphia, a red oak tree was planted in Rittenhouse Square in honor of the late Dr. William White, surgeon, author and nature lover.

Personal.—Dr. W. Wayne Babcock has been appointed chief surgeon of the base hospital at Fort McPherson, Atlanta, Ga.—Dr. Clarence P. Franklin, adjutant of the Allentown training camp, has been promoted from major to Lieutenant-Colonel.—Dr. Richard M. Pearce, professor of research medicine, University of Pennsylvania, has been made director of the recently established bureau of medical service of foreign commissions of the American Red Cross.—Dr. Edward A. Schumann has been elected lecturer on obstetrics in the Jefferson Medical College.—Dr. Mary D. Ridgeway, Germantown, was seriously burned, October 17, by the explosion of a lamp.—Dr. Hubley R. Owen has been given an indefinite leave of absence as chief of police surgeons of Philadelphia. Dr. Owen is an officer of the Medical Reserve Corps, and is connected with the Jefferson Hospital Unit.

School of Oral Surgery Opens.—November 10, Provost Smith of the University of Pennsylvania announced that a new course for army dentists and surgeons had been established at the Evans Dental Institute, Fortieth and Spruce streets, under the direction of Dr. Charles K. Turner, dean of the dental school.—Thirty-two advanced students, who are not only practicing physicians and surgeons, but who are at present actively engaged as officers of the Medical and Dental Corps of the Army, have been detailed to Philadelphia for the school. The course will continue during the period of the war. While the University Dental School has been designated as the headquarters of the course, some of the branches and laboratory work are being done at the Jefferson Medical College, Jefferson Hospital, Baugh Institute of Anatomy of the Jefferson College, Medico-Chirurgical Hospital, Philadelphia General and the Pennsylvania.—The commissioned officers sent to the school from the United States Dental Corps are: surgeons: Major E. J. Johnson, Capt. R. E. Balch, Carl Eggers, A. P. Roope, R. C. Wiggon; Lieuts. Ivan R. Burket, Bernard Friedlaender, S. D. Gleeton, C. W. Hoffman, R. M. Kleckner, F. Koontz, A. J. McCracken, W. H. Maley, J. W. Means, Samuel Oast, Jr., Howard Schriver and E. M. Vaughan. Dental surgeons: Lieuts. Vincent E. D. Bragg, R. S. Catheron, H. O. Cowles, F. H. Cushman, H. T. Hinrici, W. H. Hynard, C. J. Meyer, G. C. Parry, S. D. Ruggles, W. J. Scruten, I. E. Smith, J. D. Stone, C. W. Swing, C. E. Waters, J. B. Williams and P. J. Wumkes.

CANADA

Officers Wounded.—The following officers of the Canadian Army Medical Corps were recently reported wounded: Lieut.-Col. Anson S. Donaldson, Calgary, Alta.; Capt. James E. Bloomer, Moose Jaw, Sask.; J. Harold Jones, Vancouver, B. C.; Richard W. Kenny, Winnipeg, Manit.; Robert Mackenzie, Vancouver, B. C., and James Moore, Listowel, Ont.

Medicated Wines.—The Ontario License Board is instituting an active campaign against the "medicated wines." According to an amendment to the Patent Medicine Law recently passed at Ottawa, the board can now proceed with prosecutions under the Ontario Temperance Act, which carries a maximum penalty of \$1,000 fine. It is understood that the board will proceed direct against the manufacturers and not the druggists.

Notification of Venereal Diseases.—The Board of Health of Toronto, through Dr. Charles J. C. O. Hastings, will ask the Ontario Board of Health to have all persons with venereal disease placed under quarantine, as is the case with all other communicable diseases. They will also seek legislation to provide for any one suspected of being infected undergoing an examination, and, if found diseased, quarantined, the board of health to have the final decision in case of dispute.

Canadian War Cripples.—Douglas C. McMurtrie in *The Survey*, Nov. 3, 1917, gives an account of the work done by the Military Hospitals Commission and allied organizations and officials in Canada for the training of soldiers crippled in the war. This work is now well organized in Canada and decided progress is being made. McMurtrie describes particularly the work in Alberta in the Ogden Military Convalescent Hospital, near Calgary, and also at Edmonton, where well equipped institutions are carrying on this work.

Fee-Splitting in Toronto.—Dr. D. J. Gibbs-Wishart, president of the Academy of Medicine, Toronto, took occasion to rap fee-splitting in his presidential address before that body.

"It is a frankly dishonest transaction which stamps as a fraud the practitioner who demands his pound of flesh." He stated he was credibly informed that men in Toronto had endeavored to solicit the operative work of practitioners on the frankly stated basis of a fifty-fifty division of the fee. He, even—specialist in nose and throat—had been personally solicited by a general practitioner to state what percentage he might expect to receive on referred cases.

Scarcity of Doctors in Canada.—Dr. John W. Edwards, ex-member of parliament, Cataraqui, Ont., says that medical students should be exempted from the military service. Medical officers point out that the public does not realize the scarcity of doctors in Canada at the present time. It is understood that the government intends issuing authority to the exemption boards to allow medical students to continue their studies, in view of the fact that the War Office has sent back to Canada to finish their course second and third-year men of Queen's, Toronto and other medical colleges, who were serving in various capacities overseas.

Cancer in Canada.—Dr. Charles J. C. O. Hastings, M. O. H., Toronto, estimates there are between 7,500 and 8,000 deaths from cancer in Canada every year, and the majority of these, 80 to 90 per cent., are of persons over 40 years of age. Three quarters of those lives might be saved by early diagnosis and proper treatment. He sounds a note of warning to the public and says that as there is no known medical cure for cancer there is therefore no worse criminal than the man who advertises to sell a cure for cancer (or consumption), as he is robbing the victims of their only chance for recovery—early eradication, radium or roentgen-ray treatment.

Hospital News.—Some time ago the Hamilton (Ont.) City Council appropriated \$60,000 to \$70,000 for remodeling the administration building of the Hamilton City Hospital, but had held back the money. Last week a conference took place between the hospital governors and the board of control, but they failed to come to an agreement as to the absolute necessity of the alterations at the present time.—The Military Hospitals Commission of Canada has decided on the immediate erection of a convalescent home for returned soldiers at London, Ont. Provision will be made for 300 beds, and arrangements will be made later on to expand to a capacity of 600 beds. The Ontario government will bear a substantial proportion of the cost of construction.

Medical Inspection of Schools in Toronto.—The system of medical inspection of schoolchildren now in operation in Toronto provides for inspection in the separate (R. C.) schools as well as the public schools, and for all the year round, instead of for ten months of the year, as formerly. Dr. Marchant B. Whyte, who was superintendent of the Isolation Hospital, has been placed in charge of the work under Dr. Charles J. C. O. Hastings, the former being director of medical services. Under the arrangement the health physicians employed in the schools are required to carry out the duties of medical officers of health, each being assigned a district—the city having been divided into several health districts, five in number, and under this arrangement, likewise, the public school nurses have been incorporated into the general public health nursing system of the city.

Personal.—Capt. John M. Adams, C. A. M. C., who has been overseas for two years, has been recalled to Ottawa for special duty in the department of documents.—Major Andrew Macphail has arrived in Montreal from overseas.—An escaped prisoner from Germany has brought word of the Hon. Dr. Beland, formerly postmaster-general of Canada. He is in good health, but has lived regularly in prison since June last. He is allowed out twice weekly under guard. He gives his medical services freely among the British prisoners and maintains a kitchen at his own expense, and is a very efficient cook. Dr. Beland was not told of the death of his wife until three days thereafter, apparently so that he would not have a good excuse to ask to go to her funeral.—Dr. William H. Hattie, Halifax, N. S., was elected president of the Canadian Public Health Association at its recent meeting.—Dr. Frederick S. Minns, who was acting medical inspector in chief of the board of education in Toronto when it was transferred to the Department of Public Health, has resigned.—Drs. Norman E. McKay, M. O. H., Halifax, N. S., and Napoleon Boucher, M. O. H., Montreal, Que., have been members of a special committee under the food controller, inquiring into the milk supply of Canada.—Capt. Charles A. Temple and William J. Clark and Major W. Harley Smith, Toronto, who have been in England for two years, have returned.—Lieut.-Cols. Irving H. Cameron, Toronto, Clarence L. Starr and John D. Courtney, Ottawa; Major Donald

McGillivray, Toronto, and Dr. Robert B. Wilson, roentgen-ray expert, Montreal, have started from Halifax to make an official visit of inspection of all the military hospitals of Canada from coast to coast.—Capt. H. A. Simkins of the Spadina Military Hospital, Toronto, has been transferred to England.—Dr. J. Gordon Gallie, Toronto, has resumed practice after service abroad.—Capt. Andrew S. Moorhead, Toronto, is now doing surgery in France under Lieut.-Col. Herbert A. Bruce, Toronto.—Capt. Roland W. Young, Oshawa, Whitby Military Hospital, has been transferred to the Toronto Military Base Hospital.—Major Andrew Macphail, Montreal, editor of the *Canadian Medical Association Journal*, has gone to visit his old home in Prince Edward Island.

GENERAL

Correction.—At the Physicians' Club banquet to Dr. Billings, described last week, it was stated that Governor Lowden was introduced by Dr. A. M. Corwin and that Dr. Arthur O'Neil acted as toastmaster. Dr. A. Augustus O'Neil acted as toastmaster and introduced Governor Lowden.

Correction.—In publishing the list of chiefs of the medical service in the cantonment hospitals in THE JOURNAL for Oct. 20, 1917, Major William S. Bigelow of Boston was given as the chief of the service of Camp Cody, Deming, N. M. This should be Major Edward B. Bigelow of Worcester, Mass.

Paul Jones Club Officers.—At the annual meeting of the Paul Jones Club, Sons of the American Revolution, held at Portsmouth, N. H., November 7, Dr. Henry I. Durgin, South Eliot, Me., was elected president, and Drs. William O. Junkins, Eugene B. Eastman, Portsmouth, and Fred S. Cowle, Portsmouth, were elected members of the board of managers.

Ohio Valley Physicians Elect Officers.—At the nineteenth annual meeting of the Ohio Valley Medical Association, held in Evansville, November 7, the following officers were elected: president, Dr. J. Rawson Pennington, Chicago; vice presidents, Drs. Walter F. Boggess, Louisville, Ky.; Meyer L. Heidingsfeld, Cincinnati, and Virgil H. Moon, Indianapolis, and secretary-treasurer, Dr. Benjamin L. W. Floyd, Evansville (reelected).

Eye, Ear and Throat Men Meet.—At the twenty-sixth annual meeting of the American Academy of Ophthalmology and Oto-Laryngology, held in Pittsburgh, October 29 and 30, the following officers were elected: president, Major Allen Greenwood, M. R. C., U. S. Army, Boston; vice presidents, Drs. Virginius Dabney, Washington, D. C.; Frank R. Spencer, Boulder, Colo., and W. Likely Simpson, Memphis, Tenn.; secretary, Dr. Lee Masten Francis, Buffalo, and treasurer, Dr. Second H. Large, Cleveland.

Bequests and Donations.—The following bequests and donations have recently been announced:

University of Pennsylvania, \$600,000 from the executors of the will of Eckley B. Cox; of which \$500,000 is to be used for the University Museum, and \$100,000 for the pay of professors and keepers.

St. Luke's Hospital, Bethlehem, a gift of a ward, costing \$90,000, from the Bethlehem Steel Company, October 18.

The Board of School Commissioners, Indianapolis, his medical laboratory for the use of physicians and others needing information, and the Presbyterian Board of Missions, his instrumental and surgical equipment by the will of Dr. John Kolmer.

St. Bartholomew's Clinic, New York, \$10,000; the Morristown (N. J.) Memorial Hospital, \$100,000; Germantown Dispensary and Hospital, \$100,000; St. John's Guild, New York, \$50,000, and Babies Hospital and St. Mary's Free Hospital for Children, New York, each \$100,000 by the will of Mrs. Mary Warden Harkness.

St. John's Guild and Hebrew Orphan Asylum, New York, each \$500, by the will of Joseph Morningstar.

Augustana College, Rock Island, Ill., his library, by the will of Dr. Carl Oscar Bernhardt, Rock Island.

FOREIGN

De Quervain Succeeds Kocher.—F. de Quervain, now professor of surgery at the University of Basle, has accepted a call to the medical faculty of Berne as successor to Kocher.

Jadassohn Called to Succeed Neisser.—J. Jadassohn, who has been professor of dermatology at the University of Bern since in the nineties, and is said to have been practically the founder of dermatology in Switzerland, has now gone to Breslau to take the chair left vacant by the death of his old teacher, Neisser, some months ago. He was born not far from Breslau, in 1863.

Beretta Prize for Milan Physicians.—Dr. A. Beretta of Milan bequeathed to the city of Milan a fund of \$40,000, the income of which is to be awarded as a biennial prize for the best work on clinical medicine or pathologic anatomy done during the two years by some physician who has resided in

the province of Milan for at least five years, but has not been in practice longer than twelve years. The money prize is to be accompanied with a gold medal.

Memorial to Gutierrez of Madrid.—A statue of Gutierrez, Count of San Diego, was recently unveiled on the grounds of the Rubio Institute at Madrid, three years after the death of this leader in gynecology in Spain. Among the speakers, Cortezo, president of the Academia de Medicina and editor of the *Siglo Medico*, classed Gutierrez with Letamendi and Cajal as Spain's great modern trio. He remarked further that the fame of the practitioner is ephemeral, even the best beloved, but a monument prolongs it and thus makes up in part for the inadequate compensation which the fees for his visits represent in return for the persevering devotion and self abnegation which the practice of medicine signifies.

Deaths in the Profession Abroad.—**Sir David Caldwell** McVail, Glasgow, Scotland; L.F.P.S. (Glas.), 1866; L.R.C.P. (Edin.), 1866; M. B. University of Glasgow, 1876; aged 72; formerly professor of clinical medicine in St. Mungo's College, Glasgow; physician to the Glasgow Royal Infirmary; Crown member for Scotland of the General Medical Council; a member of the Court of Glasgow University, since 1891; a prolific writer on the mechanism of respiration and diseases of the respiratory organs; died at his home in Glasgow, November 4.—**E. Huet**, one of the pioneers in electrology in France, aged 57. He had charge of the electrotherapeutic department at the Salpêtrière, and the account of his work and honors is practically the history of electrodiagnosis during the last twenty-five years.—**Lieut.-Col. F. E. Viana**, professor of surgery at the Medico-Military School at Mexico City.—**P. Malerba**, research worker and professor of physiologic chemistry at the University of Naples, aged 68.—**D. Sangrador** of Madrid, killed in a railroad accident while on his way to the recent medical congress at Valladolid.—**J. Rambousek**, professor of factory hygiene at the University of Prague, and an authoritative writer on industrial poisonings.

LONDON LETTER

LONDON, Oct. 23, 1917.

The War

MINISTRY OF HEALTH POSTPONED

The prime minister, Mr. Lloyd George, received a deputation from the joint committee of approved societies and the conference of the Amalgamated Society of Industrial Assurance, representing about 12,000,000 insured persons. The objects of the deputation were: 1. The early establishment of a ministry of health on lines satisfactory to national health insurance organizations. 2. The early passage into law of a bill for the simplification of insurance administration. 3. The financial readjustment of national health insurance by a further grant. The premier said that the exchequer was not in a position in the middle of a great war to make the same promises in regard to insurance or any other social projects that it could very well make in days of peace. Our energies and our thoughts had been taken away from projects for the amelioration of the condition of the people to the terrible demands made on us in the defense of our liberties. The drain on our resources was unparalleled, and we were not at the end of the charge on our national wealth. He wished he could predict that we might soon see the end of it, but the task which the nation had taken in hand must be accomplished. Otherwise not merely the power and prestige of this nation were broken, but its future was pretty hopeless. We must husband our resources and incur no obligations beyond the strictest and sternest necessities of the hour, and when demands were put forward for improvements here and there, his answer would be, "Concentrate on victory." For the moment every claim on the exchequer must be considered in the light of the terrible possibilities of the war; and when it was over, in a freer and happier atmosphere we could begin to rebuild, reconstruct and regenerate. As to the bill for a ministry of health, Mr. Lloyd George said he was the last person to contend that it was not an urgent measure. We had to repair the ravages of the war. Stricter attention to the health of the community and to the saving of life by that means was one of the most efficient and surest methods of attaining that end. The damage would be great, even if the war was arrested now. The losses would be beyond count; and we should have to devote resolution, courage and readiness to find an agreement which this war had disclosed rather than seek for a point of controversy—we should have to apply the whole of that new spirit to proposals of this kind. Otherwise we should never repair within our day, nor

within the day of our children, the ravages of this great war; but if we did concentrate in that spirit we should not merely clear the débris of war, we should not merely restore, but we should build something stronger, grander and on a firmer foundation than we had ever witnessed. He was certain that in one form or another we must drastically reform the administration of our health laws. There were conditions that were incompatible with health. It was a scandal that a nation which had shown such capacity for meeting great emergencies should have lethargically tolerated conditions of that kind. It was regrettable that people capable of the sort of explosive energy which this country had put forth in two or three years should have allowed slums, misery, and wretchedness and squalor to drain the land. We wanted people who enjoyed liberty to be fit to defend it, and that was one of the problems of the future.

THE MEDICAL TREATMENT OF INVALIDED SOLDIERS

The Army Council has issued revised instructions relating to the continued treatment and training of soldiers discharged from the army on medical grounds. Two categories of patients are contemplated in these instructions: (1) soldiers who at the actual time of their discharge require further treatment, and (2) soldiers who at some time after their discharge are found to require further treatment. This category is confined to men suffering from ailments arising from wounds or injury sustained during military service. As a general rule, the patients to whom these instructions apply will be those suitable for treatment as outpatients in hospitals, because army regulations in force already provide that so long as inpatient treatment is required, soldiers shall not be discharged from hospital. It is foreseen, however, that in certain special cases, as in tuberculosis or paraplegia, further inpatient treatment may be necessary. The further treatment thus to be afforded will be available at military Red Cross hospitals through agency of the local war pensions committees. In order that the local committees may efficiently carry out the duties devolving on them, they are to be furnished with cards, recording all relevant information relating to men about to be invalided out of the army. These cards will indicate whether or not further treatment is needed, and, if so, where it may be obtained. The committees will also be empowered to appoint hospital visitors, to visit and confer with the hospital authorities—or the medical authorities at command depots and camps—responsible for men about to be invalided out. In addition to treatment, special courses of technical training may in many cases be desirable. Patients for treatment in the second of the two categories described above must themselves make application in the first instance to the local committees. After ascertaining the eligibility of the applicant, the committee will send him to a military hospital for examination. The hospital will furnish a card, as described above, giving authority for the further treatment of the applicant.

FOOD ECONOMY

Sir Arthur Yapp, president of the Y. M. C. A., has undertaken the direction of a new food economy campaign, which is necessary in view of the dearth of many of the principal foods. Next month a flood of oratory is to be let loose throughout the country. A committee of experts in the food controller's department is working out a scientifically graded scheme of rationing. Taking into consideration the available supplies of food and the needs of our allies, they are seeking to find out exactly what each man, woman and child ought to have according to age and occupation and other relevant circumstances. As soon as they have reached decisions, the scale of consumption which they recommend will be made known. The rationing will be for all essential foods. It will be our task to see that the scale is observed. In addition it will be necessary to ask people occasionally to make a definite sacrifice and for a time to go without some particular thing altogether. Sir Arthur Yapp is endeavoring to establish a league or committee of national safety to bring home to the people that our national safety and the allied cause generally depend on the extent to which we economize in food consumption. The first members of the league will be asked to do everything possible to educate others. They will be asked to pledge themselves to live within the scale of rations laid down and to avoid waste. It is hoped to evolve a scheme to keep in touch with members so that once a month points for use in the campaign can be sent to them.

THE NATIONAL HEALTH IN 1916

The report for 1916 of Sir Arthur Newsholme, medical officer of the Local Government Board, has just been issued.

A review of the national health of the present time is rendered exceptionally difficult by the disturbances of population due to the war and to the gigantic new industries which have been created. So far as ordinary infectious diseases are concerned, with the exception of measles, the record of 1916 has remained favorable. There have been no cases of cholera. The tuberculosis work of local authorities during the year has been further restricted by the war. One of the most urgent of after-war problems will be to secure the early resumption and extension of this work, particularly in regard to the provision of greatly increased hospital accommodation for persons with advanced cases of consumption. The reduction in the number of births emphasizes the importance of saving child life and of improving the health of all survivors. Sir Arthur Newsholme considers that there is no insuperable difficulty in reducing the total deaths in childhood to half their present number. During 1916 the rate of infant mortality was the lowest on record. Owing to a large proportion of health officers having been released for military service, an increasing number of women physicians have been appointed for public health work, the depletion of the services having become serious. Unless considerable readjustments are made, more officers cannot be spared for the army consistently with the public safety. The staffs of inspectors of nuisances had also been greatly depleted, and many untrained men and women are performing duties formerly in the charge of trained men. It is not surprising that under these conditions, outbreaks of infectious diseases in a few instances have not been promptly controlled, and that, especially in regard to smallpox, enhanced risks have been, and continue to be, incurred owing to the inexperience of the local officers. A large part of the time of those medical inspectors who are not on military duty is taken up in emergency work arising out of the foregoing considerations. Health officers and sanitary inspectors remaining on civil duty have done admirable work in assisting less experienced temporary colleagues in other districts. In a not inconsiderable number of instances, one officer has acted for several areas in addition to his own.

PARIS LETTER

PARIS, Oct. 18, 1917.

The War

RESULTS OF ANTITYPHOID AND ANTIPARATYPHOID VACCINATION OF THE SOLDIERS DURING THE WAR

An interesting communication on this subject was read by Prof. H. Vincent at a recent meeting of the Académie des sciences. He said that in the present war, during the winter of 1914-1915, a very severe, rapidly progressing epidemic had made its appearance. Because of the exigencies of war, preventive vaccination could not be made effective at the front during that period. A less serious recurrence of paratyphoid took place during the fall of 1915. Since then the armies at the front have enjoyed an unusually good state of health. Typhoid and paratyphoid have existed only in a very slight degree, in spite of the presence of the aggravating conditions of exceptional severity brought about by a violent and prolonged war; by the mobilization of large numbers of troops, such as have never been observed before in any war; by the constant arrival of new troops; by the close contact of many men, thus increasing the danger of direct and indirect contact through the agency of the sick, as well as by carriers; and by the flies and the continual contamination of the soil.

The wholesale vaccination of the troops at the front was commenced in February, 1915. Since the beginning of the war the laboratory of the army has sent to the front 5,513,073 doses of vaccine. Before the war and since the year 1911, 20,000 soldiers have been vaccinated against typhoid and paratyphoid A and B with mixed or triple vaccine; 200,000 others have been vaccinated against typhoid only. At the present time, thanks to this active immunization, these diseases can be considered as having been practically vanquished. From 6.12 in November, 1914, 7.24 in December, 1914, and 7 in January, 1915, per thousand men, the number of cases dropped rather suddenly to 4.3, 2.49 and 1.6. In August and September, 1915, the morbidity (paratyphoid predominant) rose to 2.47 and 2.65, but since then it has diminished more and more. During February, 1916, the percentage of cases per thousand was less than 1, and this percentage has been maintained. In 1917, the monthly rate was: 0.1, 0.048, 0.025, 0.028, 0.036, 0.064, 0.068 and 0.063 per thousand. As for the mortality, from the fastigium of the 1914-1915 epidemic (November to March), the curve descended almost vertically

to the present time. The vaccination by two injections is responsible for this remarkable recession in the number of cases and deaths, and the mortality is now so low that one is obliged to evaluate on the basis of 100,000. Even when we reduce to that scale, the percentage is often fractional. In 1917, it has been successively 0.6, 0.5, 0.5, 0.1, 0.3, 0.6, 0.4 and 0.3 per hundred thousand.

The value of this specific prophylactic measure cannot, in fact, be determined precisely. If the morbidity and mortality of these typhoid diseases as observed from November, 1914, to January, 1915, had been maintained, one could estimate, on the basis of 4 or 5 million soldiers having been sent to the front during the thirty-eight months of the war, that the number of cases of typhoid would have exceeded a million, with 145,000 deaths. This is not taking account of the aggravating influences obtaining during the war and the unusual weather conditions of the fall months of the three years during which this war has been waged; consequently, this preventive vaccination may be credited with having been of immense economic value to the army as well as to France as a whole. Taking for comparison the health of the French army before the war, as set forth in the official statistics for the year 1911 (the last published), it will be seen that at present the number of cases of typhoid fever occurring in the armies at the front are more than seven times less numerous, and that the number of deaths is 8.5 times less numerous than during peace times.

SHELL FRAGMENT IN THE LEFT AURICLE

At a recent session of the Académie de médecine, Dr. Le Fort reported an observation made on a wounded soldier from whose left auricle he extracted a piece of shell the size of a pea. Of the six walls of the left auricle, only one is accessible, the postero-inferior, the narrow space bounded by the pulmonary veins, the auricular appendage and the auriculoventricular vessels. The shell fragment had been fixed with the fingers in a fold of the auricular wall; two loops of thread were passed at the base of the fold. Then the auricle was incised with a bistoury, the fragment extracted and the threads tightened. Complete hemostasis was effected. The patient died on the fourth day. The necropsy showed that the sutures had held perfectly, that there had been no hemorrhage in the pericardium, and no blood clots were found in the heart. The patient was 45 years of age, and he had recovered from a pulmonary affection shortly before he was wounded. The intrapleural space was entirely obliterated. The heart was small and fatty, with fatty perinephritis of the right kidney, slight hydronephrosis of the left, etc. Dr. Le Fort has thus far performed seven operations for the extraction of foreign bodies from the heart, and four pericardial extractions with one death and ten recoveries.

Repression of Public Drunkenness

October 1, a law, dealing with the repression of public drunkenness and the supervision of saloons, was promulgated. This law imposes on persons found in a manifest state of drunkenness on the streets a fine of from 1 to 5 francs for the first offense. The second offense is punishable by from one to three days' imprisonment, and a third offense, when occurring within the first twelve months, is punishable by imprisonment for from six days to one month or a fine of from 16 to 300 francs. Any person who is convicted twice may be deprived of his electoral and civic rights for two years. The law fixes an analogous penalty for such dealers as shall serve liquors to minors (under 18), and dealers who are fined more than once will be liable to closure of their establishments for a year or more. The sale of alcoholic liquors on credit is interdicted. The law forbids the employment of females under 18 years of age in retail liquor establishments, unless they are members of the proprietor's family. Dealers who encourage debauchery shall be imprisoned for from six days to six months, and shall forfeit their political rights for five years. Their establishments shall be closed permanently.

Treatment of War Fractures

At one of the recent sessions of the Société de chirurgie of Paris, Dr. Heitz-Boyer, chief of the surgical clinic of the Faculté de médecine de Paris, described the organization and method of procedure of the Fracture Center at Châlons-sur-Marne, of which he is director. This center was established for the following reasons: (1) to assure patients, whose condition often demands many months of hospital residence, of continued care under conditions which must obtain if the surgeon is to assume full responsibility; (2) to provide that

the care is always given in a center of this kind properly equipped from the point of view of the necessary material organization, apparatus and procedure; (3) to institute such care as early as possible, endeavoring to keep in mind the military as well as the surgical needs; (4) to assure the evacuation of these patients at the earliest possible time to the next unit formation within the same surgical group.

From the application of these principles has been born the special surgical "bone group" in each army, consisting of three grades or divisions, comprising the principal formations situated in the rear of the lines where operations are performed. Farther back in the interior are two branches, the first known as the second hospital, where the discharged patients, or those who are out of danger, are hospitalized until such time as the wounds have healed and the bones have united; and a second, known as the division of physiotherapy where the convalescents and those who are to be discharged from the army on account of disability receive such care as will restore to them as much function as their injury permits. Therefore, the treatment of the wounded is always under the surveillance and direction of a single responsible head. All records are carefully kept and interchanged, so that complete observations may be made, and the value of different procedures employed by the single units may be compared. Finally, from a material point of view, each group can be so well equipped that all kinds of work can be done, the equipment sufficing to take care of the wounded in the different stages of their illness. The apparatus accompanies the wounded into the different relays of the entire course. The results obtained by Heitz-Boyer in his center, where he has treated, since April, nearly 700 cases of fracture, more than 100 of these involving the thigh, have been so good that the value of this team-work method is fully attested.

New School for the Reeducation of Disabled Soldiers

The president of the republic recently visited a new school for the vocational reeducation of the mutilated, founded by the Union of Foreign Colonies in France in the Ferme de Champagne at Juvisy-sur-Orge for the benefit of war victims. The new school was founded exclusively for the benefit of mutilated or wounded agriculturists. It includes sections for general training, horticulture, nurseries, agricultural mechanics and automobile traction. Since the opening of the school, 550 patients have been admitted. A large number have been returned to their homes, properly benefited; for the others, lucrative positions have been obtained by the union. The principal workers in establishing these foundations, in which cooperated American, English, Dutch, Norwegian, Russian and other committees, constituting the Union of Foreign Colonies, are: Mm. Ascher, L.-V. Benet, L. Kone and B.-J. Shoninger, vice presidents.

The Bread Card and the Composition of Bread

Commencing October 15, a rigorous bread card régime was instituted. The maximum quantity of bread allowed for the weekly consumption of each individual was fixed on the following basis: for persons from 1 to 6 years of age, 300 gm. per day; more than 6 years of age, 500 gm. In addition, a flour ration of 50 gm. per day is provided for infants under 3 years of age; on the other hand, a supplementary ration, not exceeding 200 gm. per day, is allowed for all persons who shall make satisfactory declaration to the effect that such addition is indispensable to their nourishment. A second supplementary ration, not to exceed 200 gm., is allowed to persons engaged in hard work, and whose food consists largely of bread.

The composition of bread provoked an interesting discussion in a recent session of the Académie de médecine. The following resolutions were adopted: (1) the miller must grind only grain which is sound, free from foreign bodies and altered grains, that is, good and not damaged grain; (2) the percentage of the boltage cannot be uniform; it necessarily must vary with the quality of the grain, as determined by the weight of a hectoliter ($2\frac{3}{4}$ bushels); (3) acting on the directions so far received, it seems that the present regulations in vogue have brought about the distribution of bread which has in a certain number of cases caused some illness; (4) the method of making bread with lime water, besides having many advantages, does not seem to cause any inconvenience from the health standpoint; (5) in regard to substitutes for cereals, it is very desirable to use rice in the French diet as much as is possible. Rice flour, as well as barley, rye, buckwheat and corn flour can be added to wheat flour for bread making. If well prepared, these flours do not give rise to any untoward effects.

Association News

THE CHICAGO SESSION

Local Committee on Arrangements for the Chicago Session of the American Medical Association

The following constitute the Local Committee on Arrangements for the session of the American Medical Association to be held in Chicago, June 10-14, 1918: Drs. Ludvig Hektoen, chairman; Charles J. Whalen, secretary; W. A. Pusey, John V. Fowler, Hugh T. Patrick, M. L. Harris, Charles F. Humiston, J. B. Herrick and Frank Billings.

Marriages

LIEUT. PHILIP EMERSON THOMAS, JR., M. R. C., U. S. Army, Camp Beauregard, Alexandria, La., to Miss Louise Walls of Holly Grove, Ark., October 28.

SAMUEL LUTZ ZURMEHLY, M.D., Rushsylvania, Ohio, to Miss Ethel Long of Kingston, Ohio, at Chillicothe, Ohio, October 26.

MAJOR ARTHUR WELLS ELTING, M. R. C., U. S. Army, Albany, N. Y., to Mrs. Francis W. Rawle of Bryn Mawr, Pa., October 25.

WALTER SCOTT PATTERSON, M.D., Butler, Pa., to Miss Gertrude Connors of Penn Township, at Butler, October 24.

JOHN THOMAS SULLIVAN, M.D., Milwaukee, Wis., to Miss Lona Chapman of North Fond du Lac, Wis., October 27.

AUGUST EDWARD WITZEL, M.D., Utica, N. Y., to Miss Helen Marguerite Van Alstyne of Ilion, N. Y., October 24.

ROBERT MORTON MANSON, M.D., San Leandro, Calif., to Miss Madeline Strohl of Oakland, Calif., October 31.

JOHN C. REED, M.D., Duquesne, Pa., to Miss Lillian Bennethum of Harrisburg, Pa., October 24.

PETER BURRELL MULLIGAN, M.D., Hazleton, Pa., to Miss Helen Leonard of Camden, N. J., recently.

AUDLEY DURAND STEWART, M.D., Rochester, N. Y., to Miss Jane Walker Russell of Chicago, recently.

WALTER MARTIN SKALLERUP, M.D., Walker, Iowa, to Miss Belle Forrester Black of Chicago, June 27.

PATTISON ALBERT WATERS, M.D., Monte Vista, Colo., to Miss Ethel Keen of Denver, October 7.

Deaths

Newell Bly Burns, M.D., North Wilmington, Mass.; Harvard Medical School, 1909; aged 35; a Fellow of the American Medical Association, and a member of the National Association for the Study and Prevention of Tuberculosis and the American Sanatorium Association; assistant superintendent and physician to the North Reading (Mass.) State Sanatorium for Tuberculosis; instructor in pulmonary diseases in Tuft Medical School, Boston; died in the sanatorium, October 27, from rheumatic endocarditis.

Harris Gray Sherman, M.D., Cleveland; College of Physicians and Surgeons in the City of New York, 1880; aged 61; a Fellow of the American Medical Association, and a member of the American Academy of Ophthalmology and Otolaryngology, and American Ophthalmological Society; a specialist on diseases of the eye; first medical inspector of schools of Cleveland; at one time president of the Cleveland Chamber of Commerce; died in Charity Hospital, Cleveland, October 30, from pneumonia.

Francis L. Springer, M.D., Newport, Del.; University of Pennsylvania, Philadelphia, 1877; aged 63; formerly a Fellow of the American Medical Association; a member of the Delaware State Medical Society, and its president in 1912; for nine years trustee of the poor, and once a member of the visiting staff of the State Hospital, Farnhurst; for several terms physician of New Castle County; died suddenly at his home, October 24, from cerebral hemorrhage.

Lieut. George Walter H. Conrad, M. R. C., U. S. Army, Philadelphia; Hahnemann Medical College, Philadelphia.

1913; aged 29; a specialist on diseases of the eye, ear, nose and throat; who had been on duty at Fort Benjamin Harrison, Ind., until August 27, when he was transferred to the aeronautical school at Austin, Texas; died in the Army Base Hospital, San Antonio, Texas, October 30, from abscess of the brain.

John C. Webster, M.D., Lafayette, Ind.; Rush Medical College, 1870; aged 76; a Fellow of the American Medical Association; formerly president of the Indiana State Board of Medical Registration and Examination; consulting physician to St. Elizabeth's Hospital, Lafayette; died, November 11, from the effects of carbolic acid accidentally self-administered, in mistake for liquid petrolatum.

Jefferson A. Davis, M.D., Kansas City, Kan.; Medico-Chirurgical College of Kansas City, Mo., 1902; aged 54; a Fellow of the American Medical Association; for eight years coroner of Wyandotte County, Kan., and formerly police surgeon of Kansas City, Kan.; died in St. Margaret's Hospital, Kansas City, Mo., October 7, from heart disease.

Andrew Jackson Hall, M.D., Natchez, Miss.; Bellevue Hospital Medical College, 1879; aged 78; formerly a Fellow of the American Medical Association; vice president of the Mississippi State Medical Association in 1892; a member of the staff of the Natchez City Hospital since 1889; a Confederate veteran; died in New Orleans, October 21.

Horace Edward Bunce, Jr., M.D., Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1900; aged 47; formerly a member of the Medical Society of the State of Pennsylvania; a member of the medical staff of the Jones and Laughlin Mills, Pittsburgh; died at his home, October 28, from septicemia.

George L. Saunders, M.D., Columbus, Ohio; Ohio State University, Columbus, 1908; aged 43; a member of the Ohio State Medical Association; formerly a member of the staff of the Ohio Hospital for Epileptics, Gallipolis; died in Grant Hospital, Columbus, October 29, from disease of the intestine.

John Milton Dexter, M.D., New York City; College of Physicians and Surgeons in the City of New York, 1894; aged 49; formerly a member of the Medical Society of the State of New York; was run over and killed by an automobile, near his home, November 1.

Albert Nathan, M.D., Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1909; aged 31; a member and once secretary of the South Carolina Medical Association; died in Boston, October 22.

Paul S. Morrison, M.D., Bancroft, Kan.; Ensworth Medical College, St. Joseph, 1909; aged 33; for several years a druggist and physician of South St. Joseph, Mo.; died in a hospital in Atchison, Kan., November 2.

A. C. McNutt, M.D., Bucyrus, Ohio; Starling Medical College, Columbus, Ohio, 1856; aged 89; surgeon of the Eleventh Ohio Volunteer Infantry during the Civil War; died at his home, October 16, from uremia.

Abraham L. Lehman, M.D., Philadelphia; Medico-Chirurgical College of Philadelphia, 1899; aged 62; a pioneer of the Coeur d'Alene district; died in the Providence Hospital, Wallace, Idaho, October 21.

William Albert McCallie, M.D., Knoxville, Tenn.; Vanderbilt University, Nashville, Tenn., 1876; aged 65; formerly a member of the Tennessee State Medical Association; died at his home, October 18.

James H. Dobbins, M.D., Bellefonte, Pa.; University of Pennsylvania, Philadelphia, 1849; aged 90; formerly a member of the Medical Society of the State of Pennsylvania; died at his home, recently.

Dennie Daniel Trotter, M.D., Madison, Ga.; Atlanta, Ga., School of Medicine, 1912; aged 28; formerly a member of the Medical Association of Georgia; died in a hospital in Atlanta, October 16.

Decatur H. Burk, M.D., Warner, Okla.; Medical College of Georgia, Augusta, 1889; aged 67; formerly a member of the Oklahoma State Medical Association; died in Muskogee, Okla., October 24.

John Kolmer, M.D., Indianapolis; Jefferson Medical College, 1894; aged 51; a Fellow of the American Medical Association; a well known surgeon of Indianapolis; died at his home, October 21.

John Craig Johnstone, M.D., Lawton, Okla.; St. Louis University, 1912; aged 34; formerly a member of the Oklahoma State Medical Association; died in Blackwell, Okla., October 7, from diabetes.

James M. Bartholow, M.D., Urbana, Ill.; Rush Medical College, 1871; aged 70; a member of the Illinois State Medical Society; a veteran of the Civil War; died at Champaign, Ill., October 8.

James A. Summers, M.D., Johnson City, Tenn.; College of Physicians and Surgeons, Baltimore, 1874; aged 69; died at his home, August 4, from dysentery and laryngeal tuberculosis.

Rudolph Myers, M.D., Huntingdon, Pa.; Bellevue Hospital Medical School, 1863; aged 77; a Fellow of the American Medical Association; died at his home, August 24, from toxic myocarditis.

Edward Johnson, M.D., Columbus, Neb.; Medical School of Maine, Portland, 1883; president of the First National Bank of Columbus; died in the Clarkson Hospital, Omaha, October 27.

Newton C. Davis, M.D., Kingman, Kan.; Homeopathic Hospital College, Cleveland, 1884; aged 61; formerly a member of the Kansas Medical Society; died at his home, about October 25.

Samuel A. Orentreich, M.D., Denver; University of Krakow, Austria, 1890; died in Detroit, October 23, from the effect of poison, self-administered, it is believed, with suicidal intent.

Robert Lee Ray, M.D., Monterey, Tenn.; University of Tennessee, Nashville, 1892; aged 52; a Fellow of the American Medical Association; died in his office, October 29.

Isaac B. Gallup, M.D., Willimantic, Conn.; Philadelphia University of Medicine and Surgery, 1869; aged 72; died at his home, August 2, from carcinoma of the bladder.

Levi A. Horn, M.D., Austin, Pa.; University of Louisville, Ky., 1894; a member of the Medical Society of the State of Pennsylvania; died at his home, about August 15.

Samuel O. Knapp, M.D., Frankfort, Ind.; Medical College of Ohio, Cincinnati, 1884; aged 59; died in Mulberry, Ind., September 20, from chronic interstitial nephritis.

Charles Z. Ellis, M.D., Berkeley, Calif.; California Eclectic Medical College, Los Angeles, 1891; aged 54; died in Berkeley, October 16, from carcinoma of the stomach.

F. N. Sheppard, M.D., Riverside Manor, Md., American College of Medicine, Philadelphia, 1865; aged 78; died at his home, near Crumpton, Md., October 14.

Andrew N. Falkenstein, M.D., Glen Rock, Pa.; College of Physicians and Surgeons, Baltimore, 1887; aged 63; died at his home, October 19, from nephritis.

Henry T. Fullerton, M.D., Kenton, Tenn.; Missouri Medical College, St. Louis, 1866; aged 77; died at his home, September 4, from cerebral hemorrhage.

Charles C. Dalton, M.D., Wiot, Wis.; Bennett Medical College, Chicago, 1903; aged 39; died in Madison, Wis., September 15, from pneumonia.

Thomas C. Van Tries, M.D., Bellefonte, Pa.; University of Pennsylvania, Philadelphia, 1868; aged 38; died in Pittsburgh, August 1, from pneumonia.

John G. Rogers, M.D., Cherrygrove, Tenn.; Vanderbilt University, Nashville, Tenn., 1875; aged 78; died at his home, July 14, from nephritis.

Merriken B. Lukens, Atlanta, Ga. (license, Georgia); a practitioner since 1871; aged 83; died at the home of his niece in Atlanta, October 22.

John R. Bartlett, Burlison, Tenn. (license, Tennessee, 1889); aged 61; a practitioner since 1880; died at his home, July 28, from angina pectoris.

Joseph George Church, M.D., Shenandoah, Pa.; University of Pennsylvania, Philadelphia, 1887; aged 52; died at his home, October 19.

Jesse B. Mitchell, Sneedville, Tenn. (license, Tennessee, 1889); aged 76; died at his home, August 22, from cerebral hemorrhage.

Joseph James Harrison, M.D., Loudon, Tenn.; University of Nashville, Tenn., 1854; aged 83; died at his home, October 25.

Charles Dingee, M.D., Burlington, N. J.; University of Pennsylvania, Philadelphia, 1887; died at his home, October 10.

Joseph Lewandowski, M.D., Boston, Mass.; University of Krakow, Austria, 1894; aged 53; died at his home, October 23.

Oran A. Dean, M.D., South Haven, Mich.; University of Buffalo, 1868; died at his home, October 19.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

IODEOL AND IODAGOL

Report of the Council on Pharmacy and Chemistry

Iodeol and Iodagol (formerly called Iodargol) are products of Viel and Company, Rennes, France, widely advertised in this country by David B. Levy, Incorporated, New York. The claim made for both preparations is that they depend on "colloidal iodine" for their action. They are put up in a number of forms, for instance:

"Iodeol Ampoules each containing 1 c.c. (20 centigrammes colloidal iodine in an oily vehicle)."

"Iodeol External, containing 50 per cent. colloidal iodine."

"Iodagol Ampoules, each containing 2 c.c. (50 centigrammes colloidal iodine in an oily vehicle)."

The claim is, that, the iodine being in the colloidal state, it has the properties of elementary iodine and thus the preparations may be used in concentrations and under conditions which would make the use of free iodine impossible. The products have been extensively and extravagantly advertised for use in a wide range of conditions. Thus Iodeol has been proposed in the treatment of:

"Pulmonary Tuberculosis"

"Laryngeal Tuberculosis,"

"Glandular Tuberculosis"

"Tuberculosis of the Bones"

"Pneumonia, Broncho-pneumonia, and Congestive Conditions"

"Whooping Cough, Influenza, Asthma"

"Typhoid Fever"

"Syphilis"

"Obesity".

Iodagol, which is for external use, has been advised in the treatment of:

"Gonorrhea and its Sequelæ"

"Cystitis"

"Tetanus"

"Wounds complicated by gaseous gangrene"

"Burns"

"Old Suppurations, ulcers, abscesses, etc."

"Articular rheumatism"

"Abscess Alveolar"

"Pyorrhea Alveolaris"

"Stomatitis (Canker-Sores)."

Nearly two years ago the American agents requested the Council to consider Iodeol and Iodagol for admission to New and Nonofficial Remedies. The information submitted in regard to their character and composition was vague and indefinite, the pharmacologic information practically nil and the clinical data as voluminous as it was unconvincing.

On the basis of chemical, pharmacologic, bacteriologic and clinical investigation carried out under the direction of the referee and a study of the submitted evidence, the referee reported:

1. Iodeol and Iodagol do not contain the amount of iodine claimed.

2. The iodine is not present as elementary iodine, but instead the preparations behave similarly to the well-known organic iodine compounds such as iodized fats.

3. The therapeutic claims made for the preparations are exaggerated and unwarranted.

In view of his findings he recommended that Iodeol and Iodagol be declared inadmissible to New and Nonofficial Remedies for conflict with Rules 1 and 2 (misleading statements regarding composition and identification) and Rule 6 (unwarranted therapeutic claims). The Council adopted the recommendation of the referee, directing inclusion of the full report in the annual Council reports after submission to the manufacturer, and recommending publication of an abstract of this report in THE JOURNAL.

This report was brought to the attention of the American agent, David B. Levy, Inc., and through them to the French manufacturers, E. Viel and Company. The manufacturers

have intimated that they will not file a reply to the report. The firm of David B. Levy, Inc., has decided to sever its connection with these products and to discontinue their sale.

W. A. PUCKNER, Secretary.

Referee's Report

Iodeol and Iodagol were submitted to the Council nearly two years ago as "electro-colloidal iodine" and with the claim that they produced all the antiseptic and other effects of ordinary iodine without any of its side actions. The referee has done much work on the subject, conducted a large amount of correspondence and has contended with long delays. He feels that the consideration of these products should be brought to a conclusion and accordingly he submits this report of their consideration. The following is a summary of the report, which is appended:

I. Discrepancy in Iodine Percentage.—The examination at the Chemical Laboratory of the American Medical Association, as well as that of the referee, shows that the various samples of Iodeol and Iodagol examined contained a little less than one-half of the total iodine claimed. These facts were reported to the American agent. After a lengthy delay a reply was received which presented a double excuse: (1) that the full amount of iodine had been added, whatever had become of it later; (2) that the claims were made for "colloidal iodine" and that this is not elementary iodine in the colloidal state, but a preparation of iodine containing only 50 per cent. of real iodine. Neither explanation can be taken seriously, as they are obvious quibblings. The referee concludes that the preparations are falsely labeled as to iodine content.

II. Nature of the Iodine Compound in Iodeol and Iodagol.—In the information sent the Council, Iodeol and Iodagol were defined as "A suspension of electro-chemical colloidal iodine in a vehicle of purified oil." Numerous inquiries have failed to elicit more specific information from the manufacturer or his agent. The statement of composition can mean only that the preparations contain free iodine (but in colloidal form) suspended in oil. No evidence to substantiate this claim has been submitted. (There is evidence that the preparations contain colloidal particles, but it does not indicate if this colloidal material is iodine, or a combination of iodine or indeed whether the colloid component contains any iodine.) The recent statements of the agent seem to concede that what they call "electro-colloidal iodine" contains only about 50 per cent. of real iodine, in other words that it is not "colloidal iodine" at all but a mixture or combination of iodine with some other unnamed substance. This, of course, is something very different.

Certain results reported from the American Medical Association's Chemical Laboratory suggest that the so-called "colloidal iodine" of Iodeol may be a combination of iodine with a volatile oil. The investigations of the referee indicate that the iodine exists in a rather resistant form or combination behaving altogether differently from ordinary free iodine, and rather resembling the behavior of iodine substitution products, such as iodized fats or phenols. Briefly, then, the recent admissions of the agents indicate that Iodeol does not contain "colloidal iodine" in a chemical sense, and there are indications that it does contain its iodine in a rather firm (chemical) combination.

III. Chemical Properties of Iodeol.—From a study of different specimens of Iodeol, the referee concludes that fresh specimens contain no free iodine and that old ones contain small amounts as a result of decomposition. Iodeol has the solubility characteristics of fats and fat-like compounds. The examination, as a whole, shows that Iodeol contains a peculiar and rather resistant form or combination of iodine. There is nothing in the chemical data that suggests that it could act differently from ordinary iodine compounds, such as iodized fats. It would not act as ordinary iodine.

IV. Pharmacologic Data.—The pharmacologic statements which were submitted were loose and apparently meaningless or misleading. In reply to questions submitted by the referee, the manufacturer finally had some work done and submitted a report by Jean Laumonnier. The referee was unable to confirm some of this work, and as a whole it does not appear materially to elucidate the action of Iodeol. From a consideration of the submitted evidence and as a result of his own work, the referee concludes that Iodeol does not behave like elementary iodine; it does not coagulate proteins and therefore is not irritant. It is presumably absorbed, but quite probably after chemical change; it is changed into iodide and, like organic iodides, is excreted somewhat more

slowly than when inorganic iodids are administered, but the difference does not appear important.

V. Antiseptic and Bactericidal Action.—Elementary iodine is considered a fairly powerful agent in these respects. The activity is presumably due to changes in the proteins, etc., of the bacteria, analogous to the effects which produce pain, irritation and necrosis of the tissue cells. Since the latter effect is not produced by Iodeol, it seems highly improbable, if not impossible, that it should act on bacteria like elementary iodine. It is entirely unjustifiable to credit the known antibacterial qualities of ordinary iodine to "colloid" iodine. This misrepresentation is especially prominent in the circular "Notable New Therapeutic Agents," as will be seen, for instance, from the following citations:

"Iodine has long been universally recognized as an antiseptic of extraordinary potency. Not only is it rapid and certain in its germ-destroying action, but it also possesses an attribute denied many other antiseptic agents, namely, the power to penetrate and impregnate the tissues. Other antiseptics, as is well known, act on the surface epithelium only."

"According to Kinnaman (JOURNAL A. M. A., Aug. 26, 1905), iodine is far superior to bichloride of mercury, a two per cent. solution killing streptococcus pyogenes in two minutes. Iodine does not coagulate albumin, and is very penetrating."

The citations imply that this "colloidal iodine" of Iodeol and Iodagol acts as an antiseptic like ordinary iodine, except that it is claimed to be more efficient by "diffusing" more readily. This is entirely unjustified and misleading. If Iodeol and Iodagol are really antiseptic, they must act by some other mechanism than that through which elementary iodine acts, and such antiseptic action would have to be demonstrated by direct observation and not assumed from the known action of free iodine.

Antiseptic and bactericidal effects are easily estimated by laboratory methods. Yet no evidence on this point appeared to have been available until the Council called for this. Laumonier then carried out some experiments which were in turn submitted to bacteriologic control. The bacteriologist failed to obtain any results with some of the tests, and considered the other data of little value.

The claim that Iodeol and Iodagol have the antiseptic and bactericidal action of free iodine lacks proof and must be considered unwarranted and misleading in the extreme.

VI. Clinical Trials.—The manufacturers and agents of Iodeol presented many letters from physicians; but few, if any, of these gave evidence of careful, critical, controlled observations. They could not, therefore, be considered as acceptable evidence. The more important claims, letters and published papers, however, were submitted to clinical specialists collaborating with the Council, with the request that they examine these and conduct some clinical trials, if they considered it advisable. The results obtained in these preliminary trials did not appear sufficient to warrant further experimentation.

From a consideration of the evidence presented, the referee concludes that the claims made for Iodeol and Iodagol are unwarranted, exaggerated and misleading. He recommends that Iodeol and Iodagol be declared ineligible for New and Nonofficial Remedies for conflict with Rules 1 and 2 (misleading statements as to composition and identification) and with Rule 6 (unwarranted and misleading therapeutic claims). He further recommends that the Council authorize publication of the preceding summary of the consideration of Iodeol and Iodagol in THE JOURNAL and inclusion of the full report in the annual Council reports after submission to the manufacturer.

Garbage Saving at Army Cantonments.—Another practical demonstration of what may be done in the use of garbage is made by the War Department in the Army training camps. The garbage of thirteen of the cantonments will be sold to a contractor for feeding swine, yielding the government an annual price of \$446,394. It is estimated that garbage waste from ten to fifteen soldiers will feed one hog, putting onto the animal 1 pound of weight per day. At this rate garbage from thirteen cantonments will produce 18,900,000 pounds of pork yearly. In cases where garbage can not be used for feeding, it will be treated for grease extraction and the tankage ground for stock food or fertilizer. The custom of burning garbage will be abolished altogether. The War Department will receive \$240,000 annually for the manure from the horses and mules at Army cantonments.—*Weekly Bulletin.*

Correspondence

"DISORDERED ACTION OF THE HEART" IN BRITISH SOLDIERS

To the Editor:—The report on soldiers returned as cases of "disordered action of the heart" of the Medical Research Committee in England has recently been supplemented by reports of the detailed clinical studies made by members of the staff, contained in *Heart*, 6, No. 4. The most striking features of these excellent and very detailed studies are, first, the negative conclusions as to the etiology and pathology of this syndrome, and, second, the positive conclusion that graduated exercises cure a large proportion of the patients.

These patients show certain symptoms which to my mind are most significant—breathlessness, and blood pressure and pulse reactions to exercise. The authors state that "the response of the respiratory rate to exercise is a very exaggerated one." Again, "None of our patients are capable of such effort (i. e., amounts of work healthy young adults are capable of): equal distress and similar pulse rates and systolic pressure are produced by smaller amounts of work or work done more slowly. It is clear that if we chose a given amount of work as a stimulus and apply the stimulus to healthy controls and to our patients, the latter react to the stimulus in an exaggerated fashion. The pulse rate rises much higher than in controls, and the high rate is longer sustained, the blood pressure rises higher, and the raised pressure is longer sustained than in controls: the summit of the blood pressure is not delayed,¹ however: breathlessness, fatigue and palpitation are also much more in evidence."

It seems to me very clear that the patients who presented the foregoing symptoms were suffering from a decreased cardiac reserve power. The fact that so many of them were cured by graduated exercises affords additional and convincing proof. The neurotic symptoms that were often present are not necessarily a sequence of the decreased cardiac reserve power, but probably are simply a concomitant. Very possibly they are caused by the same factors that produced the decrease in cardiac reserve power.

We frequently see these patients with decreased cardiac reserve power in civil life, and graduated exercises cure them. One half of the patients described in the report dated the onset of symptoms a number of years back. Infections of various kinds contracted during service immediately preceded the onset of symptoms in another large group. The cardiac reserve power is always lowered after any infection of moderate severity. Any one who has indulged in exercise too soon after a sojourn in bed with fever can appreciate the truth of this statement. The report takes cognizance of this etiologic factor when it states that "convalescent treatment should be more prolonged than is often the case; a graduated system of retraining seems most desirable."

A group of patients is described who suffered from precordial pain and in many instances hyperesthesia of the chest wall, both accentuated by exercise. The circulatory reactions of this group to exercise are not given except in one instance, probably because it was inadvisable to carry out exercise experiments on account of their effect on the pain. These patients are quite rare in civil life, and their subsequent histories would be of much value.

Objections may be made to my use of the term "cardiac reserve power." The heart's total capacity is made up of two component parts; one, the smaller, comprises the power expended in furnishing the requirements of the metabolism with the body at rest; the other, by far the larger, is utilized when physical work is performed. It is this potentially large component that is called into action by graduated exercises. Any expression which describes a definite function of a bodily organ has a perfectly legitimate use. In this instance the

1. The summit was not delayed because the authors in each experiment stopped increasing the work just as they were about to reach a "delayed rise." The controls were given from $\frac{1}{3}$ to 4 times more work than the patients (comparing the maximum amounts given). Had the authors been a little more persistent they would have found the "summit of maximal pressure is delayed" exactly as they found it was in normal patients and with decidedly less work.

term "cardiac reserve power" denotes a most important function of the heart, the variations of which are matters of personal experience to every man who has gone through a course of physical training. Our inability to measure the heart's reserve power directly is not a reason for ignoring its existence.

When the reserve power is impaired, not from organic disease of the heart, but from any one of numerous causes, there is presented a characteristic clinical picture which to my mind the authors of this report have described quite accurately. The neurotic symptoms from which these patients suffer do not alter the significance of the respiratory and circulatory reactions to work or the significance of the curative effect of graduated exercises.

THEODORE B. BARRINGER, JR., M.D., New York.

THE CARREL-DAKIN TREATMENT

To the Editor:—I am enclosing a letter which I wrote recently to Dr. William H. Welch in regard to the Carrel method of wound treatment which is at present so actively under discussion. I believe that it presents a point of view that might very well be presented to the profession at this time through the columns of THE JOURNAL.

ARTHUR DEAN BEVAN, M.D., Chicago.

My Dear Dr. Welch:

I want to write you about a problem which I think is of considerable importance to the Medical Corps at this time and in which I believe you are interested. The problem is that of the Carrel method of wound treatment. I of course have followed in the past two years the surgical literature on this subject with a great deal of interest. At the meeting of the American Surgical Association this spring, Dr. Charles Gibson of New York read a paper on this subject, and at the American Medical Association meeting in June, Dr. William Sherman of Pittsburgh discussed the subject before the surgical section. They both presented the subject in a most enthusiastic way and made very startling claims for the new method. These were so out of keeping with the reports that I have been able to obtain from well qualified surgeons of large experience who had the opportunity of employing it in their military hospital work, and were in such opposition to the generally accepted views of surgical pathology and wound repair, that I have taken the pains to go into the subject pretty fully with an attempt to analyze the facts and arrive at a judicial opinion as to its value.

When I was in Washington during the first two weeks in October, I found that classes of men were being sent to the Carrel Hospital in connection with the Rockefeller Institute in New York for the purpose of taking short courses in the Carrel-Dakin method. On leaving Washington I went to New York and spent one morning at the Carrel Institute and had the opportunity of obtaining a syllabus of the work that is being done in these courses, of seeing their hospital and laboratories, and of witnessing one operation done by Josh Hartwell, not under the supervision of Carrel himself, but of a French army officer who is at the hospital and who has been with Carrel for some time.

I found in discussing personally with several surgeons and from letters and reports which I have had an opportunity of reading from Dr. James Neff, who was in charge of a base hospital of a thousand beds or more for a year on the western front, from a report by Dr. George Crile, from a talk with Dr. James Burry, who has had the treatment tried for a number of months in his accident work in the Illinois Steel Company, from the statements made by Fred Murphy and reports from Joe Blake, and personal communication from Sir Berkeley Moynihan, that they and many surgeons were skeptical as to its practical value. I did not venture, however, to form an opinion of my own until I had the opportunity during the last week of reading Carrel's book and analyzing the problem from this report of his own work. I should like to make clear that the views that I express in this letter are not obtained from any hearsay evidence but from an analysis of Carrel's own views expressed in this book. One of the important parts of modern surgery and one of the things that has made modern surgery possible is that division of the science that is known as surgical pathology. By this I mean a division of pathology that has been specially studied and developed by scientific clinical surgeons. It is only necessary for me to state that the development of modern

surgical pathology rests on the work of Lister, of Paget, of Billroth, of such men in this country as Fenger and Senn, and is well presented today by the work done by Lexer and presented in a book which is known as Lexer's "General Surgery." From the time of Lister until now, scientific clinical surgeons have studied the special pathologic problems that were involved in the science and practice of surgery. The problems of wound repair, of infection and the processes by which an organism frees itself from infection, separating the living from the devitalized tissues, the extrusion, digestion and encapsulation of foreign bodies, etc., have been studied with the greatest possible care, and many of these problems worked out as thoroughly both experimentally and clinically as in any field of medical science. Analyzing the Carrel work from the standpoint of what is known of modern scientific surgical pathology, I am forced to the conclusion that his work does not at all meet the requirements essential to a piece of scientific research. I take it for granted that the chemical problems involved have been scientifically handled; but the problems of surgical pathology have been handled in a superficial, incomplete way without the necessary controls, and frankly the conclusion is forced on me that Carrel's part of the work is not scientifically proved and cannot be accepted.

It is evident as one analyzes Carrel's statements that it is a piece of work done by a laboratory man who does not understand the clinical problems involved, who either does not know or ignores many essential facts, and whose conclusions as to the miracle working effects of the Dakin solution in his scheme of treatment have about as little basis in fact as the exaggerated claims that have been made for "ambrine" in the treatment of burns. The trouble is that this problem has not been attacked in the right way. A problem of this kind should be attacked by the joint labor of a number of teams, each one composed of a thoroughly scientific clinical surgeon who is well trained in the science of surgical pathology, in conjunction possibly with such a laboratory worker as Carrel, and with the assistance of competent chemists and bacteriologists. It should be attacked in the most scientific and broadest possible way and with the necessary controls, controls that would enable the investigators to determine, first, the results from the employment of the accepted surgical methods of surgical technic as applied, for instance, to a shell wound of the thigh with compound fracture of the femur, including the earliest possible removal of foreign bodies and of devitalized tissue, the complete excision of the wounds with immediate closure in some cases and with free drainage, moist dressing with sterile water in others, the immobilization of the limb and the best possible general care of the patient, and the results of such wound treatment which could be designated as the control compared with similar cases treated with the employment of various antiseptic solutions, including the Dakin fluid. These experiments to be of value would have to be on a considerable scale. I am personally so thoroughly convinced that wound healing and the freeing of tissues and an organism from infection depends so largely on the life processes in the living cells at the point of injury and infection and the reaction of the sum total of living cells that make up the entire individual, and that the important thing that a surgeon can do is to eliminate noxious influences and place the particular part injured and the entire individual in a condition where this wound repair and elimination of infection can go on uninterfered with as little as possible, that I can see but a limited value in the local employment of antiseptics of any kind on the surface of the infected wound. That any antiseptic has any healing property, that any antiseptic is miracle working in the handling of wounds, is inconceivable.

Looking at the problem in a broad way, if we could express in figures the value of the means at our disposal of treatment of the shell and rifle wounds of this war, certainly much more than 90 per cent. of the sum total of the value of wound treatment would consist of the proper employment of the well known and generally accepted rules of surgical technic. Granted that the remaining 5 or 10 per cent. depended on the proper employment of antiseptic solutions, one may be very sure that the choice of one of a half dozen thoroughly tried out antiseptics, such as boric acid, aluminum acetate, Dakin solution, dichloramin-T, hydrogen peroxid, phenol and iodine, would not make any enormous difference in the sum total of the end-results.

If the above statements are true, it would be a serious mistake for the government medical services to adopt the Carrel treatment as a great and wonder-working improvement in our surgical technic, and to force a complicated,

time-consuming, expensive plan of treatment on our medical service, possibly to find within a short time that it is of little or no value. As I have studied Carrel's book and attempted to form a judicial opinion of this problem, I am forced to the conclusion that, like Koch's lymph, Bier's hyperemia and the vaccine therapy for acute infections, the Carrel treatment will have a short period of popularity among that small corps of enthusiasts of the type that is easily carried away by new, startling methods, and like the Bier's hyperemia and the vaccine therapy for acute infections, will shortly disappear, consumed in the fire of actual experience and scientific research.

I am venturing to write this to you because I know how much you are interested in the sound, practical, successful organization of the Medical Department for this war, and because I know how deeply interested you are in the success of the Rockefeller Institute. I think this matter should be handled in a practical way in our army organization. The Carrel treatment cannot and should not be accepted at this time as a demonstrated truth. It should be accepted as a method that is experimental and under trial. It should not be adopted by the United States medical service to the exclusion of other methods. If possible, a number of base hospitals officered by strong corps of men should try out thoroughly, in a scientific way, the various methods of wound treatment that seem to offer possibilities of adding to our present knowledge in this particular field of surgical pathology. The very exaggerated claims which have gotten into our medical journals and even into the lay press should be disparaged by those who are in a position to control the situation.

Very truly yours,

ARTHUR DEAN BEVAN.

VARIATIONS IN RESISTANCE OF BLOOD CELLS TO HEMOLYSIS

To the Editor:—In conducting experiments with preserved complement, I have found that the complement apparently varies in strength from week to week, fluctuating from strong to weak and strong again, sometimes stronger the third week than the first.

I have found this to be due to a factor, hitherto unnoted, namely, the marked variation in resistance of different batches of blood cells to hemolysis. I want, therefore, to issue this note of warning to all serologists utilizing my complement preservative (*THE JOURNAL*, Sept. 22, 1917, p. 973): *It is necessary to retitrate the complement with each new supply of blood cells.* For example, one batch of blood cells required 0.175 of complement to complete the hemolytic system. Another batch of cells, used two days later, required only 0.1. Still another batch of cells, used two days following the latter, required 0.125 of this same complement for the Wassermann tests.

B. W. RHAMY, M.D., Fort Wayne, Ind.

BELGIAN AND FRENCH PHYSICIANS' FUND

To the Editor:—I beg leave to report the following contributions which have been made for the relief of the Belgian and French civilian physicians to enable them to reestablish themselves in their looted or even destroyed offices now made accessible by the retreat of the German army. This is in addition to the sum of \$920 reported in *THE JOURNAL*, October 13. The total, including interest on the deposits, is \$1,127.28. One half of this, \$563.64, I have forwarded to Dr. A. Depage at La Panne, Belgium, through the Belgian Relief Committee, 1524 Walnut Street, Philadelphia. The other half I have forwarded to M. Charles Halais, 15 boulevard de Latour-Maubourg, Paris, for the French civilian doctors, through Mrs. Sara Y. Stevenson of the French relief here, 1122 Walnut Street.

I have also received instruments from the doctors named and also 5,000 disinfected fiber spoons from the Sanispoon Sales Co., Philadelphia. These disinfected and cheap spoons will be valuable to the civilian doctors in the cases of various contagious diseases, and they are so cheap that they can be used and thrown away.

I have to thank Charles Lentz & Sons, Philadelphia, for their very generous help in repairing and packing all the instruments. The value of the box sent to Belgium they place

at \$500. The box for the French doctors is not yet ready for packing.

Since this list has been made up and the checks sent several more contributions in money and instruments have been received. These will be acknowledged later. I hope for much more in money and in instruments.

Our colleagues when they return to their desolated and looted offices will bless their American colleagues for this timely help. Suppose the tables were turned and *we* were the sufferers. How grateful we should be!

W. W. KEEN, M.D., Philadelphia.

SUBSCRIPTIONS IN CASH

| | |
|---|---------|
| Dr. W. J. Stapleton, Detroit..... | \$ 5.00 |
| Dr. Myrtle A. Hoag, Buffalo | 10.00 |
| Dr. Alfred Gordon, Philadelphia..... | 5.00 |
| Dr. E. H. Noble, Clemons, Iowa | 5.00 |
| Estate of Dr. F. A. Stillings, Concord, N. H., per Mrs. Stillings and her daughter, Mrs. E. C. Hirst..... | 100.00 |
| Dr. Clara A. March, Buffalo | 15.00 |
| Dr. S. M. Strohecker, Portland, Ore..... | 5.00 |
| Dr. J. W. Preston, Roanoke, Va..... | 10.00 |
| Dr. James M. Patton, Omaha..... | 50.00 |

DONATION OF INSTRUMENTS

| | |
|---|--|
| Dr. C. B. Crume, Bloomfield, Ky. | |
| Sanispoon Sales Company, Philadelphia. | |
| Dr. A. T. Cooper, Fort Bliss, Texas. | |
| Dr. Myrtle A. Hoag, Buffalo. | |
| Dr. E. H. Noble, Clemons, Iowa. | |
| Dr. S. M. Strohecker, Portland, Ore. | |
| Drs. W. E. Leonard, George M. Haywood, W. H. May and J. S. Reynolds, Minneapolis, Minn. | |
| Dr. M. T. Clark, Walters, Okla. | |
| Dr. Frank H. Jackson, Houlton, Maine. | |
| Dr. Eugena Caravia, New York. | |
| Dr. J. T. Foley, Lewistown, Mont. | |

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

LITERATURE ON WAR NEUROSES

To the Editor:—I should like to have the titles and publishers of books on mental and nervous diseases pertaining to war conditions, and in particular the literature on the subject of predisposition to these diseases in persons entering the military service.

C. W. MACK, M.D.,

Lieutenant, M. R. C., U. S. Army, Fort McDowell, Calif.

ANSWER.—

- Buzzard, E. F.: Effect of War on Nervous System, *Lancet*, London, Dec. 30, 1916.
 Saaler, B.: Nervous and Mental Diseases in Relation to Military Service, *Berl. klin. Wchnschr.*, Dec. 25, 1916.
 Farrar, C. B.: War Neuroses with Observations on Canadian Expeditionary Force, *Am. Jour. Insan.*, April, 1917.
 Mann, L.: Treatment of War Neuroses, *Berl. klin. Wchnschr.*, Dec. 11, 1916.
 Mann, G.: War Neuroses, *Wien. klin. Wchnschr.*, Dec. 28, 1916.
 Regis: Psychic and Neuropsychic Affections in War, *Boston Med. and Surg. Jour.*, Nov. 30, 1916.
 Roussy and Lhermitte: War Psychoneuroses, *Ann. de méd.*, September-October, 1916; November-December, 1916.
 Campbell: War Neuroses, *Practitioner*, London, May, 1916.
 Eder: Psycho-Pathology of War, *Lancet*, London, Aug. 12, 1916.
 Mott: High Explosives and Central Nervous System, *Lancet*, London, Feb. 12, Feb. 26, March 11, 1916.
 Lépine: Effects of Explosives Without Direct Contact on Nervous System, *Bull. de l'Acad. de méd.*, July 4, 1916.
 Lhermitte, J., and Roussy, G.: Psychonévroses de guerre, Masson et Cie, Paris, 4 francs.
 Babinski, J., and Froment, J.: Hystérie—pithiatisme et troubles nerveux d'ordre réflexe en neurologie de guerre, Masson et Cie, Paris, 4 francs.
 Smith, G. E., and Pear, T. H.: Shell Shock and Its Lessons, New York, Longmans, Green & Co., \$1.
 Graham, W.: War and Incidence of Insanity, *Pub. Health Jour.*, January, 1917.

TYPHOID IN THE WAR OF 1898

To the Editor:—1. How many cases of typhoid were there in the Army during the Spanish-American War? How many deaths from this disease?

2. To what degree is typhoid vaccine a preventive?

J. E. BRINKMAN, M.D., Waterloo, Iowa.

ANSWER.—1. In our war with Spain there were 20,738 cases of typhoid fever among 108,000 men, all occurring within three

and one-half months. Typhoid fever caused nine tenths of all deaths among troops in the United States in 1898.

2. Antityphoid vaccination has demonstrated itself to be an almost certain preventive of typhoid fever. For comparison with the foregoing figures, on October 19, there were practically 1,000,000 soldiers in camp in the United States, all of whom had been vaccinated or were undergoing vaccination against typhoid fever, with a total incidence of twelve cases of this disease.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

DELAWARE: Wilmington, Dec. 11-13. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

FLORIDA: Jacksonville, Dec. 4-5. Sec., Dr. W. M. Rowlett, Citizens Bank Bldg., Tampa.

KENTUCKY: Louisville, Dec. 4-6. Sec., Dr. A. T. McCormack, Bowling Green.

LOUISIANA: New Orleans, Dec. 6-8. Sec., Dr. E. W. Mahler, 730 Audubon Bldg., New Orleans.

MARYLAND: Baltimore, Dec. 11. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.

MINNESOTA: St. Paul, Jan. 2-4. Sec., Dr. Thomas McDavitt, 741 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, Dec. 17-19. Sec., Dr. George H. Jones, 206 Washington St., Jefferson City.

NATIONAL BOARD OF MEDICAL EXAMINERS: New York City, Jan. 9-17. Assistant Sec., Mrs. Isabelle F. Tiers, 310 Real Estate Bldg., Broad and Chestnut Sts., Philadelphia.

NEW HAMPSHIRE: Concord, Dec. 10-12. Sec., Dr. W. S. Crosby, Beacon Bldg., Manchester.

NORTH DAKOTA: Grand Forks, Jan. 1. Sec., Dr. G. M. Williamson, Grand Forks.

OHIO: Columbus, Dec. 4-6. Sec. Pro-tem., Dr. Herbert M. Platter, 185 E. State St., Columbus.

OREGON: Portland, Jan. 1. Sec., Dr. Herbert S. Nichols, Portland.

RHODE ISLAND: Providence, Jan. 3. Sec., Dr. B. U. Richards, State House, Providence.

TEXAS: Dallas, Nov. 20-22. Sec., Dr. M. F. Bettencourt, Mart.

VIRGINIA: Richmond, Dec. 11-14. Sec., Dr. J. W. Preston, McBain Bldg., Roanoke.

WASHINGTON: Spokane, Jan. 1. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

WEST VIRGINIA: Clarksburg, Nov. 21-23. Chairman, Dr. S. L. Jepson, Capitol Bldg., Charleston.

California April Examination

Dr. C. B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the written examination held at Los Angeles, April 9-13, 1917. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of the 56 candidates examined, 40, including 27 osteopaths, passed, and 16, including 12 osteopaths, failed. Sixty-two candidates were licensed through reciprocity. Twelve candidates were granted drugless practitioner certificates. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|--------------------------------|------------|-----------|
| College of Physicians and Surgeons of San Francisco | (1915) | | 85.7 |
| Hahnemann Medical College of the Pacific | (1916) | | 75.5 |
| Leland Stanford Junior Univ. | (1914) 88.2; (1915) 89; (1916) | | 88.7 |
| Chicago College of Medicine and Surgery | (1916) | | 81.1 |
| Rush Medical College | (1916) | 87.3, 88.2 | |
| Columbia University | (1914) | | 76.8 |
| Jefferson Medical College of Philadelphia | (1916) | | 84.4 |
| Vanderbilt University | (1913) | | 76.2 |
| Laval University | (1911) | | 81 |
| Nagasaki Special Medical School | (1905) | | 79.5 |

| College | Year Grad. | Per Cent. |
|--|------------|-----------|
| California Eclectic Medical College | (1915) | 72.2 |
| Loyola University | (1916) | 73.5 |
| St. Louis College of Physicians and Surgeons | (1907) | 51.2 |
| Kioto Imperial University | (1910) | 23.2 |

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|--|------------------------------|------------|------------------|
| University of Alabama | (1910) | | Arizona |
| Denver and Gross College of Medicine | (1909) | | Washington |
| University of Colorado | (1912) | | Colorado |
| American Medical Missionary College | (1900) | | Illinois |
| Bennett College of Eclectic Medicine and Surgery | (1903) | | Wisconsin |
| Bennett Medical College | (1914) | | Illinois |
| Chicago College of Medicine and Surgery | (1912) | | Arizona |
| | (1914) (1915) | | Illinois |
| Chicago Medical College | (1873) | | Colorado |
| College of Physicians and Surgeons, Chicago | (1902) | | Iowa |
| | (1905) | | Illinois |
| Hahnemann Medical College and Hospital | (1903) | | Nebraska |
| Northwestern University | (1894) Idaho; (1897) | | Wisconsin |
| | (1907) | | Pennia. |
| Rush Medical College | (1878) Illinois; (1902) | | Iowa |
| Ecobuk Med. College, Coll. of Phys. and Surgeons | (1905) | | Iowa |

| | | |
|--|--------------------------|------------|
| State University of Iowa College of Medicine | (1873) | Illinois |
| | (1902) Minnesota; (1903) | Iowa |
| University of Kansas | (1910) | Kansas |
| Kentucky School of Medicine | (1892) Ohio; (1893) | Kentucky |
| Louisville Medical College | (1887) | Colorado |
| Medical School of Maine | (1910) | Maine |
| Baltimore Medical College | (1898) New York; (1900) | Kansas |
| Detroit College of Medicine | (1902) | Michigan |
| University of Michigan Homeo. Medical School | (1899) | Nebraska |
| University of Michigan Medical School | (1882) | Michigan |
| Minneapolis College of Physicians and Surgeons | (1907) | N. Dakota |
| Barnes Medical College | (1909) | Illinois |
| Marion-Sims College of Medicine | (1899) | S. Dakota |
| Medico-Chirurgical College of Kansas City | (1900) | Missouri |
| Missouri Medical College | (1887) | New York |
| St. Louis University | (1911) | Illinois |
| University Medical College of Kansas City | (1902) | Kansas |
| John A. Creighton Medical College | (1909) | Nebraska |
| Lincoln Medical College | (1901) | Nebraska |
| University of Nebraska | (1910) | Nebraska |
| Columbia University | (1900) | New York |
| Cornell University | (1899) | New York |
| New York Homco. Medical College and Hospital | (1907) | New York |
| Cleveland College of Physicians and Surgeons | (1899) | New York |
| Eclectic Medical Institute | (1888) | Iowa |
| Homeopathic Hospital College | (1880) | Ohio |
| Miami Medical College | (1890) | Illinois |
| Toledo Medical College | (1897) | N. Dakota |
| Western Reserve University | (1907) | Ohio |
| University of Oregon | (1906) | Washington |
| University of Pennsylvania | (1907) | Pennia. |
| University of Pittsburgh | (1908) | Illinois |
| Memphis Hospital Medical College | (1894) | Tennessee |
| University of Tennessee | (1914) | Tennessee |
| Milwaukee Medical College | (1897) | N. Dakota |
| Queen's University | (1885) | Washington |
| McGill University | (1903) | Mass. |
| University of Berlin | (1883) | New York |
| University of Palermo | (1900)* | Pennia. |
| University of Rome | (1900) | New York |

* Official information from the University of Palermo says this candidate is not a graduate of that university.

Arkansas May Examination

Dr. T. J. Stout, secretary of the State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock, May 8-9, 1917. The examination covered 12 subjects, and included 120 questions. An average of 75 per cent. was required to pass. Of the 45 candidates examined, 40 passed and 5 failed. Six candidates were granted reregistration certificates. Twenty-eight candidates were licensed through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|------------------------------|--|------------|-----------|
| University of Arkansas | (1917) 75, 80.5, 80.7, 81.3, 82.3, 82.7, 83.2, 83.5, 83.7, 84.6, 84.8, 87.1, 87.2, 88.2. | | |
| George Washington University | (1908) | | 84.6 |
| Louisville Medical College | (1877) 81.4; (1905) | | 93 |
| Meharry Medical College | (1916) 75, (1917) 79.4, 82.6, 87.7. | | |
| University of Tennessee | (1917) 78.4, 81.2, 82.2, 85.1, 85.2, 85.5, 85.5, 85.8, 86.3, 86.3, 86.6, 86.8, 87.2, 88, 88.2, 88.8, 88.9, 89. | | |
| Baylor University | (1910) | | 78.7 |

| College | Year Grad. | Per Cent. |
|--|---------------------|-----------|
| Birmingham Medical College | (1915) | 72.4 |
| College of Phys. and Surgs., Little Rock | (1908) 58.2; (1910) | 52.6 |
| University of Arkansas | (1907) | 61 |
| Vanderbilt University | (1892) | 15.7 |

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|---|--|------------|------------------|
| Arkansas Industrial University | (1896) | | Texas |
| Chicago College of Medicine and Surgery | (1907) | | Illinois |
| Hospital College of Medicine | (1900) | | Kentucky |
| Louisville and Hospital Medical College | (1908) | | Kentucky |
| Louisville Medical College | (1903) Mississippi; (1907) | | Kentucky |
| University of Louisville | (1907) | | Mississippi |
| Tulane University of Louisiana | (1888) (1891) | | Mississippi |
| | (1915) | | Louisiana |
| College of Physicians and Surgeons, Baltimore | (1891) | | Tennessee |
| Memphis Hospital Medical College | (1838) (1898) (1901) (1904) (1905, 2) | | |
| | (1909) Mississippi; (1908) (1910) Tennessee. | | |
| Sewanee Medical College | (1899) | | Mississippi |
| University of Nashville | (1906) (1908) | | Mississippi |
| Universities of Nashville and Tennessee | (1910) | | Mississippi |
| University of Tennessee | (1909) Tennessee; (1916) | | Mississippi |
| Vanderbilt University | (1915) Alabama; (1916) | | Mississippi |

Connecticut Eclectic July Examination

Dr. James E. Hair, acting secretary of the Connecticut Eclectic Medical Examining Board, reports the written examination held at New Haven, July 10, 1917. The examination covered 10 subjects, and included 100 questions. An average of 75 per cent. was required to pass. Four candidates were examined, all of whom passed. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|--------------------|------------|-----------|
| Kansas City College of Medicine and Surgery | (1917) 81, 86, 88. | | |
| Eclectic Medical College | (1917) | | 86 |

Book Notices

POLIOMYELITIS IN ALL ITS ASPECTS. By John Ruhräh, M.D., Professor of Pediatrics in the University of Maryland Medical School and the College of Physicians and Surgeons, and Erwin E. Mayer, M.D., First Lieutenant in the Medical Reserve Corps, United States Army. Cloth. Price, \$3.25. Pp. 297, with 120 illustrations. Philadelphia: Lea & Febiger, 1917.

The great epidemic of poliomyelitis of 1916 in New York and in the East generally has been productive of several books concerning this disease. This book contains an excellent historical review of the subject, illustrated with reproductions from some of the first monographs on the subject. The section on pathology follows the usual lines. Especial interest attaches to the discussion of the nature of the virus, a question now the subject of rather interesting argument. The authors consider literature up to July, 1917, and finally conclude that it is reasonably safe to state that the streptococci and diplococci found by various investigators are not the causal agents of the disease. The discussion of epidemiology and classification of the various types is excellent. The chapter on paralysis is illustrated with photographs of the different types of paralysis. A chapter is devoted, very properly, to the technic of lumbar puncture, a much needed lesson. Other chapters concern the diagnosis and prognosis. By far the larger portion of the book is devoted to treatment, which adds to the practical value of the work. The authors have very thoroughly covered most of the articles on treatment that appeared in periodical literature during the recent epidemic. The exceedingly valuable work of Lovett, leading to muscle training and exercises, is outlined in detail. The book concludes with a chapter of anatomic and physiologic reminders, and a complete list of all the epidemics from which the world has suffered. It is an excellent book, not only for those especially interested in poliomyelitis, but also for any physician who wishes to be thoroughly informed on this important disease.

OBSTETRICS FOR NURSES. By Charles B. Reed, M.D., Obstetrician to Wesley Memorial Hospital, Chicago. Cloth. Price, \$2.50. Pp. 374, with 130 illustrations. St. Louis: C. V. Mosby Company, 1917.

The author has prepared a practical and complete manual of obstetrics for nurses. The subject is taken up in the usual order, a small amount of space being devoted to anatomy and physiology, followed by a discussion of normal and abnormal pregnancy, labor and puerperium; operations; complications; infection; a large section on the care of the child and infant feeding; an extensive list of diets and formulas; solutions; a therapeutic index, and a glossary. The book is well illustrated. It is interesting to find that the author recommends morphin and scopolamin for the first stage of labor, and gas for the second stage, with a change to chloroform and ether just before the completion of the second stage. The section on the care of the child is hardly up to the standard of the first part of the book. The author recommends a mixture of asafetida or whisky and hot water for attacks of colic. The therapeutic index might better have been omitted, especially since the pharmacology of several of the drugs hardly agrees with modern ideas, including the fact that at least three proprietary preparations are mentioned for which pharmacopeial preparations might better have been substituted. The increase in the cost of paper may be responsible for the fact that at least three different qualities of paper are used in the book. All in all, the book is to be recommended as a manual for the obstetric nurse.

SANITATION PRACTICALLY APPLIED. By Harold Bacon Wood, M.D., Dr.P.H., Assistant Commissioner, West Virginia State Department of Health. Cloth. Price, \$3 net. Pp. 473, with illustrations. New York: John Wiley & Sons, 1917.

This was written, the author states, as a practical guide for the field practice of sanitation. Omitting most of the details of analysis and examination from the laboratory side, which can be found in the larger treatises on hygiene and preventive medicine, the author covers a large field in such a manner that not only the physician and public health officer but also the layman will profit by reading the book. The

opening chapter states the need for public health work, and maps the organization of a health department. In his discussion of the laboratory, it is interesting to note that Dr. Wood believes laboratory examinations for syphilis and gonococcal infections not made to determine quarantine are not the work for the public health laboratory. Statistics are reviewed in the second chapter. The third chapter reviews the latest methods of control of each of the communicable diseases. In considering Behring vaccination in diphtheria, a brief description of the methods would make the discussion clearer to the average reader. The author in successive chapters discusses child welfare, school hygiene, and the inspection and preservation of foods, giving a separate chapter to milk. Under water supplies are described the various modes of protecting and purifying water. Sewage disposal describes the care of sewage from the house to its final disposition, comparing the different methods of treatment. Industrial and occupational diseases are treated under hygiene of the home and factory. With our present knowledge of the rôle played by lower forms of animal life in transmitting disease, the chapter on the destruction of insects that transmit disease is especially timely. Methods also for destroying ground squirrels and our most deadly and expensive pest, the rat, are described. The last chapter is of particular interest to public health officers in that it outlines courses for interesting and teaching the people their part in conserving the health of the community.

AN INDEX OF DIFFERENTIAL DIAGNOSIS OF MAIN SYMPTOMS. By Various Writers. Edited by Herbert French, M.A., M.D., F.R.C.P., Physician, Pathologist and Lecturer, Guy's Hospital. Second Edition. Cloth. Price, \$10 net. Pp. 912, with 343 illustrations. New York: William Wood & Co., 1917.

This book, which covers medicine in all its branches, is the combined work of twenty-three well-known English physicians and surgeons. The symptoms are arranged in alphabetical order, the symptom being named and followed by a discussion as to the possible diagnosis in the presence of the symptom discussed. Because of its size, it is impossible to review all of the various sections of the book critically. It is well printed on enameled paper of excellent quality. There are 306 good halftone illustrations and thirty-seven colored plates. The final 150 pages are devoted to an index in which main topics are distinguished from notes and mere mention of the subjects discussed. This index in itself is a thought producer; for example, a reference to the main heading is followed by an outline of the possible diagnosis attached to this symptom.

CONGENITAL WORD-BLINDNESS. By James Hinselwood, M.A., M.D., F.R.F.P.S., Lecturer on Ophthalmology in the Glasgow Western Medical School. Cloth. Price, 4 shillings net. Pp. 112. London: H. K. Lewis & Co., Ltd., 1917.

This is not only a valuable and convenient monograph for those interested in the subject, but so far as we know the only collective work in this restricted field. First, the author gives an excellent description, with illustrative cases, of acquired word-blindness. A brief history of our knowledge of this particular defect as a congenital condition and a statement of the symptomatology follow. Cases are then reported. Finally there is an account of the syndrome as a family or hereditary occurrence, and a consideration of prognosis and treatment. The book should be on the shelves of every neurologist and pediatrician, and the principal features of the syndrome in a compartment of his memory.

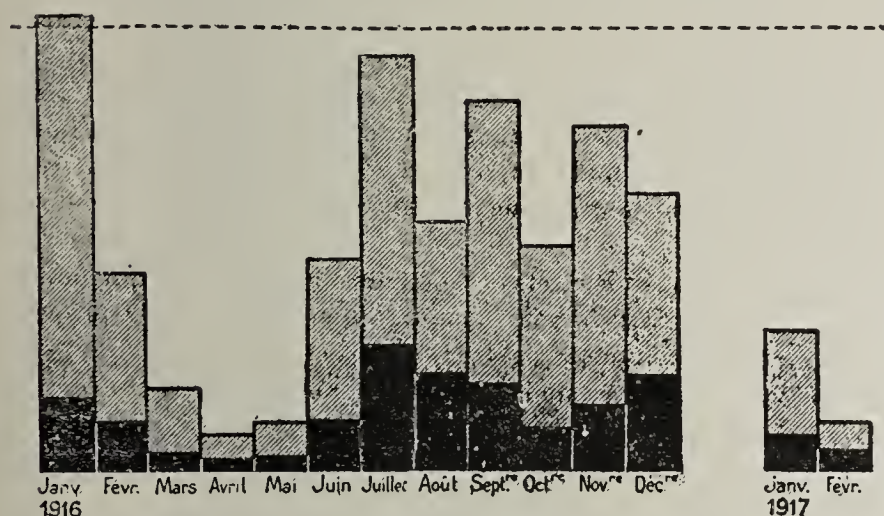
BIBLIOGRAPHY OF TITLES ON POLIOMYELITIS CONTAINED IN THE SUPPLEMENTARY CARD CATALOGUE OF THE LIBRARY OF THE SURGEON-GENERAL'S OFFICE. 1908-1917. Compiled by the Medical Department of the American Research Institute (May 15, 1917). Paper. Price, \$5. Pp. 80. Washington: American Research Institute, 1917.

This bibliography supplements the references in Volume 13 of the Index Catalogue of the Library of the Surgeon-General's Office published in 1908. It contains approximately 1,500 titles of books and articles, and in the arrangement of the articles and in the citation of the references the general style of the Index Catalogue is followed. The American Research Institute will issue quarterly a supplement to this bibliography at \$1 for every 500 titles.

Social Medicine, Medical Economics and Miscellany

Share of Vaccination Against Typhoid and Paratyphoid in the Disappearance of These Diseases in the Macedonian Campaign

P. Armand-Delille, Paiseau and Lemaire call attention to the success of the vaccinations in reducing typhoid and paratyphoid among the troops in the Saloniki region, the *armée d'Orient*, as they call it. They emphasize first the almost exclusive limitation of the cases of typhoid to the nonvaccinated, and, secondly, the almost complete disappearance of paratyphoid after the vaccine included both the paratyphoid A and B bacilli as well as the typhoid. Their figures include the entire Saloniki region and show the proportion per thousand men. The large number of cases in the summer months was due to the fatigues of the occupation of Macedonia and an extensive offensive. The mixed vaccine was not obtained until June, and was not generally used until toward the close of 1916. The effects are shown best by comparing the



Typhoid and paratyphoid after combined vaccination.

records for January, 1916 and 1917, although the troops at the later date were undergoing greater hardships than the year before. The total number of cases of typhoid, January, 1916, was 0.20 per thousand men, and of paratyphoid, 0.85. In January, 1917, the proportions were 0.09 typhoid and 0.22 paratyphoid, while in February the figures were respectively 0.05 and 0.06 per thousand men.

Report of Rockefeller Foundation

The annual report of the Rockefeller Foundation for 1916 covers three of the chief activities of the foundation: the work of the International Health Board, the China Medical Board and the War Relief Commission. The International Health Board during the period named began work in Siam, Ceylon, Salvador and Brazil in cooperation with the governments of those countries for the relief and control of hookworm disease. This work also included activities in eight of the Southern States and fifteen foreign countries, and arrangements have been made to begin similar work in the Fiji Islands, Queensland and elsewhere. The report also includes the work of the Yellow Fever Commission headed by Surgeon-General Gorgas, which made a survey of the yellow fever situation in South and Central America. This commission found that Guayaquil, Ecuador, was the chief focus of the spread of yellow fever, with certain portions of the Carribean Coast of South American and Eastern Brazil as points to be carefully watched. Intensive experiments were carried out in circumscribed areas in the Southern States, looking to the control of malaria. Three of these experiments were completed in 1916 with promising results, showing the feasibility of malarial control.

The China Medical Board, to promote the development of a comprehensive and efficient system of medicine in China, in addition to appropriations to existing medical schools and missionary organizations throughout China, voted to estab-

lish a medical school in Shanghai; a premedical school in Peking for the preliminary education of students who are to take up the medical course, it being found that the scientific courses in existing Chinese schools are not sufficiently advanced to prepare students for the medical courses, and a Red Cross hospital in Shanghai. The services of Dr. Henry S. Houghton, formerly dean of the Harvard Medical School of China, were arranged for from July 1, 1916. He is to have charge of the Red Cross hospital, and will cooperate with Mr. Greene in directing the board's activities in China.

The foundation and the General Education Board have pledged a million dollars each toward the development of a center of medical education in connection with the University of Chicago; also in cooperation with the authorities of Johns Hopkins University an appropriation of \$267,000 was made to establish in that university a school of hygiene and public health, which opened in October, 1917, with Dr. William H. Welsh as director. This school is intended to fit men for a public health career.

Medicolegal

Trained Nurses as Anesthetists, and the Practice of Medicine

(Frank et al. vs. South et al., State Board of Health (Ky.), 194 S. W. R. 375)

The Court of Appeals of Kentucky reverses a judgment that was rendered in favor of the plaintiff members of the state board of health, the court being of the opinion that defendant Hatfield, a trained and licensed nurse, in the performance of services as an anesthetist for defendant Frank, a duly licensed physician and surgeon who limited his practice to surgery, was not engaged in the practice of medicine, within the meaning of the statute laws on that subject.

The court says it has never heretofore been called on to define the term "the practice of medicine" as defined in the present statute, or to determine what things were or were not within the meaning of that act. While the practice of medicine is one of the most noble and learned professions, it is apparent that such a construction ought not to be given to the statute which regulates the profession that the effect of it would be to invade the province of the professions of pharmacy, dentistry or trained nursing, all of which are professions which relate to the alleviation of the human family of sickness and bodily afflictions, and to make duties belonging to those professions also "the practice of medicine" within the meaning of the statute. Neither should such a construction be given to it as to deprive the people from all service, which could be rendered to them in sickness and affliction, except gratuitous service, or else by licensed physicians, unless the legislature intended that such should be the result of the enactment of the statute.

As used in the present statute, the words "treatment of any human ailment or infirmity by any method" mean only to undertake the cure of any ailment or infirmity by some method, and it is clear that the legislative authority so understood it when it enacted the statute. To say that the term "practice of medicine" means the "treatment of any human ailment or infirmity by any method" is only an equivalent to saying that the practice of medicine shall be construed to be the attempt to effect the cure of such ailment by the application of some method, without regard to the method used. To do this it is necessary that the one undertaking the practice of medicine or to treat any human ailment or infirmity for the purpose of effecting a cure or to alleviate suffering arising from it by a method other than a treatment by medical agencies must necessarily do the things which are necessary to be done by one undertaking to practice medicine by medical agencies alone, and that is, he must make such a diagnosis of the symptoms of the ailment to determine what the ailment is. He must furthermore determine what the remedy should be and how it should be administered and when it should be administered, and then to administer the remedy, either in

person or by directions to some one who is associated with the patient. It was contended that the language "the treatment of any human ailment or infirmity by any method" was enlarged by the language preceding it: "To treat the sick or injured or in any way discharge the duties usually performed by physicians, whether by medical, surgical or mechanical means"; but, construing all of the language of the subsection together, it is evident that "or in any way discharge the duties usually performed by physicians" must necessarily mean the duties usually performed by physicians in the practice of medicine at the time of the enactment of the statute and as understood at that time. The things usually performed by physicians which are not the practice of medicine are not included or intended to be included in the act.

It is the duty of the surgeon who would undertake a surgical operation to make a diagnosis of the symptoms of the patient to determine his ailment and the remedy necessary, and, if he determines that an anesthetic is necessary for the performance of the operation, to determine what anesthetic is necessary and the manner of its administration, and to give the necessary directions for so doing and to supervise and direct its giving, and in the selection of an assistant to administer the anesthetic he should exercise the same degree of knowledge, skill and care as he is required by law to exercise in the performance of any part of the operation.

Insufficient Evidence of Malpractice in Treatment of Injured Wrist

(*Dishman vs. Northern Pacific Beneficial Association et al.*
(Wash.), 164 Pac. R. 943)

The Supreme Court of Washington reverses a judgment that the plaintiff recovered in this case, against one of the surgeons of the beneficial association, for alleged malpractice and negligence on the part of the surgeon in failing to operate on and suture the injured extensor tendons of the plaintiff's left hand and wrist. The court says that of the eight physicians and surgeons testifying, other than this defendant, three were of the opinion that the extensor tendons were severed, that this defendant should have operated on the injured parts and sutured the extensor tendons, and that in failing to do so he was guilty of such unprofessional and unskilful practice as amounted to negligence, notwithstanding the carpal bones of the wrist were seriously disturbed in their setting, some of them were cracked, and the outer flesh of the wrist and hand was not broken. The other five witnesses, of apparent equal skill and learning in their profession with the foregoing three, were of the opinion that the extensor tendons were not severed, and that this defendant not only did not fail to exercise a reasonable degree of skill and judgment in not operating on the injured parts, but that his treatment of the injury was in their opinion such as the judgment of a skilful and prudent physician and surgeon would, under all of the circumstances, have dictated. Not only that, but the opinion of these physicians and surgeons was in substance that the defendant would have been pursuing the correct course in not operating on the injured parts, even had he been of the opinion that the extensor tendons were severed, in view of the serious injury to the carpal bones of the wrist and the fact that there had been no breaking of the outer flesh and skin. Such were the conflicting views of the learned doctors testifying in this case touching this manifestly intricate and delicate question of surgical science. To allow a jury or court to award damages against a physician for failure to perform such a delicate and risky surgical operation, when learned men of the profession have conflicting views touching the advisability of performing such an operation as appeared by the evidence in this case, would be, indeed, to allow the awarding of damages to rest on mere speculation and conjecture. The court has not noticed the testimony of these learned doctors at such length as it has for the purpose of determining which entertained the correct and which the erroneous opinion touching the defendant's treatment of the plaintiff's hand and wrist; but their testimony has been noticed by the court with a view of demonstrating that neither the defendant nor any other physician could, in the light of the plaintiff's injury and in the light of

medical and surgical science, as the evidence in this case showed, have determined with any degree of certainty whether the treatment he pursued or the surgical operation which it was claimed he should have performed would have produced the better results. Had he operated, as it was claimed he should have done, and the result been no better than the treatment he gave, or worse, as the testimony of a majority of these learned doctors seemed to indicate, there would have been just as good ground for the plaintiff to rest a claim of damages on against him as that on which the plaintiff's present claim of damages was rested. This court has recognized the law to be that a physician is not an insurer of a cure in cases of affliction under his care for treatment, and that he is not to be held liable as for negligence or malpractice for the mere failure to cure, or for bad results because of his choosing one of two or more methods of treatment, when such choosing is an exercise of honest judgment on his part, and the method so chosen is one recognized by the medical profession as a proper method in the particular case, though it might not meet the unanimous approval of the medical profession.

Invalid Provisions for Revocation of Certificate

(*Jewell vs. McCann et al.* (Ohio), 116 N. E. R. 42)

The Supreme Court of Ohio reverses judgments of the court of common pleas and of the court of appeals that sustained a demurrer to the plaintiff's petition to enjoin the state medical board and its secretary from holding any hearing on, or making any finding or order with reference to, an application in the office of the board for the revocation of the plaintiff's certificate which authorized him to practice medicine and surgery. The court says that by the demurrer the question was presented whether the statutes which authorized proceedings to revoke the certificate, being Sections 1275 and 1276 of the General Code, were violative of the due process of law provisions of the state and federal constitutions. At the time of the commencement of this action, Dec. 18, 1914, those sections provided:

"Sec. 1275. The state medical board may refuse to grant a certificate to a person guilty of fraud in passing the examination, or at any time guilty of felony or gross immorality, or addicted to the liquor or drug habit to such a degree as to render him unfit to practice medicine or surgery. Upon notice and hearing, the board, by a vote of not less than five members, may revoke a certificate for like cause or causes.

"Sec. 1276. An appeal may be taken from the action of the state medical board refusing to grant, revoking or suspending a certificate, for the causes named in the preceding section, to the governor and attorney general, whose decision affirming or overruling the action of the state board shall be final."

Thereafter these sections were amended and supplemented; but, by reason of the provisions of Section 26 of the General Code, the statute as amended and supplemented subsequent to the institution of this proceeding could in no wise affect this case. The only authority possessed by the state medical board in the matter under consideration, at the time it attempted to take the action sought to be enjoined in this proceeding, was conferred by the sections above quoted. No provision whatever was made or then existed whereby the attendance of witnesses could be required or their testimony procured, nor was any procedure provided whereby the rights of the holder of such a certificate to engage in the practice of medicine could be protected and safeguarded. Although the statutes authorized the revocation of such certificate "upon notice and hearing," the board was not vested with any of the powers essential to the conduct of the trial or hearing. No process was authorized and no method or means for such hearing prescribed or provided, nor was an opportunity to be heard furnished by the provisions of Section 1276 authorizing an appeal to an officer or officers in whom was vested no authority to subpoena witnesses, enforce attendance, compel the giving of testimony, or the production of necessary books, records and documentary evidence. The statutes in question did not provide the plaintiff due process of law, and are therefore invalid. The demurrer to his petition should have been overruled.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Minneapolis, Dec. 27-29.
American Physiological Society, Minneapolis, Dec. 27-29.
Porto Rico Medical Association, San Juan, Dec. 22-23.
Society of American Bacteriologists, Washington, D. C., Dec. 27-29.
Southern Minnesota Medical Association, Mankato, Nov. 26-27.
Western Surgical Association, Omaha, Dec. 14-15.

DELAWARE STATE MEDICAL SOCIETY

*One Hundred and Twenty-Eighth Annual Meeting, held at
Middletown, Oct. 8-9, 1917*

The President, DR. JAMES BEEBE, in the Chair

A Plea for Medical Supervision of Schools for Delaware

DR. JAMES BEEBE, Lewes: As a member of a local draft board I found that the percentage of physically deficient young adults was appalling. The most impressive fact in this connection was that most of these defects could have been corrected by proper treatment early in life. I have observed that, as a rule, the family physician rarely pays attention to the children of a family other than those suffering from an acute illness. The only logical way to reach these cases is by medical inspection of children in the schools. Such inspection also leads to the early discovery of contagious diseases and provides for proper sanitary measures.

Traumatic Rupture of Spleen; Pancreatic Cyst; Bullet Wound of Bowel

DR. JOHN PALMER, Wilmington: A boy, aged 19 years, fell from a cherry tree. He had almost no external evidence of injury but was unconscious. The next day he suddenly showed symptoms of shock as from internal bleeding. On operation the spleen was found ruptured and still bleeding. The region was packed for six days and the patient made an uneventful recovery. A pancreatic cyst in a man, aged 30, was drained of about 5 quarts of fluid and packed, and within five weeks recovery was complete. A boy, aged 15 years, had a pistol shot wound of the abdomen. By roentgenoscopy the bullet was located in the posterior part of the pelvis. At operation, a hole was found in one side of the lower part of the ileum. This was sutured, and recovery was complete. A later roentgenogram did not show a bullet. The presumption is that it had lodged in the intestine and later passed out by the bowel.

DISCUSSION

DR. WILLIAM J. MARSHALL, Milford: Dr. Palmer's cases have been unusual. Up to 1890, no operations for ruptured spleen had been performed, and the mortality rate at that time was 84.6 per cent. The operation of choice is supposed to be a partial or total splenectomy. But in operating we are not after mechanically successful operation but results.

Pneumonia

DR. JOSEPH W. BASTIAN, Wilmington: Pneumonia is a self-limited disease for which we have no specific. The most promising treatment is with serum which, however, is still in the experimental stage. If any local application has any effect it is the ice bag. These patients should be fed more liberally than was formerly done. Serum should not be used unless we first determine the variety of pneumococcus that causes the disease. Digitalis and strychnin are useful.

DISCUSSION

DR. H. W. BRIGGS, Wilmington: All pneumonia patients do better in fresh air, but the temperature of the air should be such as not to create discomfort.

DR. I. J. MACCOLLUM, Dover: I believe in the use of counterirritation over the chest both in bronchopneumonia and in lobar pneumonia. I do not favor the ice cap in pneumonia. The only time an ice cap is permissible in pneumonia would be in the first twenty-four hours, as it is

in all inflammatory local conditions in which one is attempting to prevent more congestion, and it does help in the progress of the disease. After that time it leads to stasis and is a hindrance rather than a help.

DR. ROBERT B. HOPKINS, Milton: We still are undecided as far as specific treatment is concerned, yet my treatment has consisted of elimination. I do not object to giving half an ounce of compound jalap powder. By that we drain the system. I believe we relieve the congestion to a certain extent, and, while pneumonia is a specific disease, I believe that pneumonia is also a mechanical disease. If we can relieve the portal circulation, we place the men in a better position for recovery. I have used largely ammonium chlorid combined with syrup of ipecac. I did not lose a pneumonia patient last winter.

DR. J. W. BASTIAN, Wilmington: It has been conceded that patients do better with abundance of fresh air, comparatively cold; that is, hearty, robust patients. Unless there are some contraindications we put the patients on the porch with hoods on and their hands well protected by mittens. After being on the porch for a few hours, the majority request to be left there. The ice cap is, as a rule, kept on only for the first twenty-four hours. I am unable to see wherein the large doses of purgatives would have any particular advantage. If a man has had personal experience with large doses of purgatives, he realizes their effect. I think high rectal irrigations are better.

Leukemia

DR. JOHN W. JAMES, Dover: I would urge the importance of blood examinations in cases of anemia. If this were done we should much less often fail in diagnosis. The three agents most commonly used in the treatment of leukemia are the roentgen ray, benzene (benzol, C_6H_6) and radium. The roentgen ray has probably given the best results, but the results of radium treatment have likewise been wonderful. Nothing, however, has been found to be curative. Good results cannot be obtained unless the patient will keep under constant treatment.

DISCUSSION

DR. JOSEPH P. WALES, Wilmington: Year before last I had a very interesting case of leukemia. The patient has been practically well for a year and a half. The spleen was down in the pelvis. She had an uncommon symptom, that is, a very large pleural effusion on the left side. I had to aspirate eight times. The treatment was by the use of roentgen ray. Her spleen is now normal. She weighs 200 pounds, and is the picture of health.

Recognition and Treatment of Some Common Injuries and Diseases of the Eye

DR. W. O. LA MOTTE, Wilmington: In all eye conditions, the eye should be examined carefully. The treatment first adopted largely determines the outcome. Foreign bodies under the lids should be looked for. In looking for a foreign body on the cornea, rays from daylight or artificial light should be concentrated on it by means of a 3 inch lens, and if a foreign body is found, it should not be removed with a toothpick, and a cotton applicator should not be rubbed over the cornea. The foreign body should be removed with a sterile spud. Lime is a common cause of burns, and all foreign particles should be removed, which is best done by forcible irrigation of the conjunctival sac with clean water. Subsequently olive oil or sterile petrolatum should be instilled, and if the cornea is much inflamed, atropin should be used to prevent iritis. In all suspicions of entrance of a foreign body, as a piece of steel, a roentgenogram should be made. By Sweet's method its exact location can be found. Syphilis is the most common cause of iritis. Tuberculosis is second. Traumatism may be the exciting cause. Rheumatism is a doubtful cause. It may be caused by disturbance in metabolism or by absorption of toxins from the gastrointestinal tract. Many cases of so-called rheumatic iritis are gonorrheal. Iritis should not be treated for conjunctivitis, as is often done, for it may mean the loss of an eye. Glaucoma is a disease that should always be kept in mind, because of the importance, among other things, of not using

atropin in such an eye. Strabismus should be treated early by proper glasses, muscle exercises, etc. Eighty per cent. of these patients can be cured without operation if proper treatment is instituted early enough and carried out. Functional headaches are due to eyestrain in 75 per cent. of the cases. In gonorrheal ophthalmia, the conjunctival sac should be irrigated from every half to one hour day and night. Once a day after the eye has been cleansed, the conjunctiva should be treated by being brushed over with a 2 per cent. solution of silver nitrate, and then the excess of the drug washed away with physiologic sodium chlorid solution. Then the lids should be greased with petrolatum.

Fraternity and Cooperation

DR. PETER W. TOMLINSON, Wilmington: Envy, jealousy and ungenerous rivalry too frequently scandalize our ranks. Our love and loyalty to our great and honorable profession require us to accord to every accredited confrère a square deal and a fair field, and even compel us to spread a magnanimous mantle of courtesy and charity over minor deficiencies and unpleasant peculiarities. We must regard our brother's art and accomplishments in the spirit of family pride. We must count his discovery or invention as a victory for the profession. His honor is ours. Our gains and losses are both mutual and individual. His personal achievement is a professional asset. A profession is a fraternity. Ours is the most confidential and sacred profession in the secular world, dealing as it does with the most sacred and secret interests and relations of individuals and families, and frequently determining the question of life and death. The very heart of fraternity is cooperation. How often we forget this and outstretch all other professions in ungenerous competition and relentless rivalries. Competition means selfish isolation. Cooperation means friendly associations.

INTERSTATE ASSOCIATION OF ANESTHETISTS

Meeting held at Toledo, Ohio, Oct. 9-11, 1917

(Concluded from page 1647)

Ether and Etherization in Relation to Infection and Immunity

DR. WILLIAM D. HAINES, Cincinnati: For the past two and a half years we have used ether intraperitoneally in all operative cases in which peritonitis was present. In forty-three recent cases the mortality was 9.13 per cent. In the total of sixty-six cases there occurred seven deaths, or a mortality of 10.4 per cent. for the entire series, which included gastrointestinal perforations, gunfire and stab wounds, abortions, leaking pus tubes, and tuberculous peritonitis. In a number of the more virulent cases, ether was introduced through the drainage tube several times during the first and second days after operation. Postoperative complications, including shock, prolonged anesthesia, vomiting, dilatation of the stomach or heart, septic thrombophlebitis and gaseous distention of the intestine were not more frequent, severe or prolonged than in similar cases in which operation was performed prior to the adoption of ether in the treatment of peritonitis. Encouraged by our results, we have gradually enlarged the field of application to other infected regions of the body. Personal experience gained by reopening the abdomen for ileus and other postoperative conditions has led me to conclude that the formation of adhesions is dependent on some inherent condition in the patient's constitution rather than on the type of infection or the use of ether intraperitoneally. I have observed no instances of immediate or remote toxicity, sloughing or increased drainage due to the use of ether. Changes in dressings have been less frequent, toxemia has been more rapidly controlled, and recovery has been hastened by the use of ether, in quantities regulated by the age and condition of the patients.

Perfected Open Etherization and Its Utility in Routine Surgical Procedures

DR. ISABELLA C. HERB, Chicago: Etherization has become popular and prevalent as a safety-first precaution against

chloroform fatalities. Open etherization has superseded other methods of administration because of its simplicity, efficiency, safety and freedom from untoward complications. My experience has convinced me that the method has a wider scope of utility in routine surgical procedures than any other technic of narcosis. Dissatisfaction with the method is invariably due to faulty technic. Induction may be facilitated by means of nitrous oxid-oxygen, ethyl chlorid or ethyl bromid, but these adjuncts are not necessary for a pleasant induction if etherization is not pushed. This method is not fool-proof. When ether alone is administered properly, the induction of narcosis by the open method is comparatively comfortable; the blood is well oxygenated throughout narcosis, and the patient leaves the operating table with normal respiration and normal color. Barring operations requiring insufflation anesthesia, the open method is suitable for any patient or operative procedure in which ether is the anesthetic of choice. Experimental evidence shows that with the open method of etherization there is less injury to the lung epithelium than when closed or semiclosed methods are employed. The conservation of body heat during narcosis is of greater importance than the warming of the ether vapor.

Vapor Anesthesia, with Special Reference to Ether-Oxygen

DR. JOHN J. BUETTNER, Syracuse, N. Y.: While vapor or insufflation anesthesia has its broadest scope in nose, throat and mouth operations, it is serviceable for many other procedures, and is advantageous in certain types of hazardous risks. The tendency from the start has been to stabilize vaporization by heating, and to promote increased safety by the use of oxygen as a vehicle. Asphyxia may be produced by a lack of oxygen as well as by an excess of carbon dioxide. For simplicity and convenience I now use an oxygen autogenor to which is attached a three-bottle anesthetic device capable of providing a washed, moist ether, chloroform or combined vapor with oxygen, through nasal tubes or mouth hook.

Low Pressure Nasal Administration of Nitrous Oxid-Oxygen

DR. M. ECKER, New York: For those who of necessity do many oral operations under a personally conducted anesthesia or analgesia, an apparatus that gives a perfectly controlled and visibly gaged flow of gases, and a nose-piece that delivers what the apparatus feeds without demanding the attention of the operator's hands are essential requisites for successful analgesia and anesthesia with nitrous oxid-oxygen under low pressures. By using low pressures, which supply sufficient amounts of the anesthetic to meet the respiratory demands of nose and mouth breathers, without loss by forcing, a decided element of economy is introduced in this somewhat expensive form of anesthesia. Just sufficient flow and pressure to meet the patient's respiratory capacity will obviate loss by respiratory wastage or air admixture, while forcing will promote such loss. The rebreathing bag attached directly to the nasal inhaler facilitates free respiration under normal pressure, secures the desirable carbon dioxide content, serves as a guide to the depth and frequency of respiration, and promotes the economical use of the anesthetic gases.

Local Anesthesia for Certain Operations

DR. LEIGH F. WATSON, Chicago: When the field of operation cannot be absolutely blocked or obtunded, local anesthesia is contraindicated and should not be attempted unless all painful periods of the procedure are offset by general anesthesia. Such combined narcosis is invaluable under questionable circumstances. As the technic of infiltration and nerve blocking is perfected, local and conductive anesthesia are being utilized for many major operations previously contraindicated.

Nitrous Oxid-Oxygen Analgesia and Anesthesia in Obstetrics

DRS. C. E. TURNER and W. I. JONES, Columbus, Ohio: Nitrous oxid is the ideal agent for the relief of labor pains. It is inhaled as readily as air, is practically odorless, almost

instantaneous in its analgesic action, and is eliminated before the next uterine contraction occurs. By varying its dosage, one may so accurately control the administration of nitrous oxid as to offset the increased or decreased distress of each individual pain. Its flexibility and rapidity of elimination make nitrous oxid analgesia preferable to hypodermic amnesia (twilight sleep) and chloroform à la reine. Nitrous oxid-oxygen has practically no contraindications in labor.

Anesthesia in the Surgery of Epileptics and the Control of Status Epilepticus

DR. G. KIRBY COLLIER, Sonyea, N. Y.: In operating on these epileptics we have in the majority of instances used open etherization by the drop method and have found it efficient, pleasant and safe. We have not noted even minor seizures during the induction period of narcosis, except in a few cases, and in these the attack could scarcely be termed a petit mal. Our results are in rather striking contrast to those of other observers who initiate induction with nitrous oxid and then switch to etherization. Nor have we noted seizures during the operative period, irrespective of the location of the operative field. In the mentally weak or dull we have sometimes found it tedious to secure cooperation, but the reaction to the anesthetic has always been the same. If difficulty arises it is most probably due to misunderstanding or dulness, and not to any physiopathologic distinction. For some time we have also been using chloroform in the control of the convulsions of status epilepticus, in association with other procedures and remedies. Chloroform is given to control the initial convulsions as immediately as possible. We have found this an efficacious routine and comparatively free from danger, although in one instance the use of chloroform probably played a part in the production of a delayed toxic poisoning, or precipitated an acute exacerbation of an already existing acidosis. This is the only untoward experience we have had. The utility and value of chloroform in status epilepticus is in direct ratio to the opportunity of administering it as early as possible in the attack. Thus administered, in conjunction with high colonic flushing, and sedatives, it is frequently a life-saving measure.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

October, XLIV, No. 3

- 1 Integumentary Photosensitivity in Marine Fish, *Epinephelus Striatus* Bloch. H. Jordan.—p. 259.
- 2 Movements of Excised Ureter of Dog. G. B. Roth, Washington, D. C.—p. 275.
- 3 *Effect of Ether Anesthesia, Emotions and Stimulation of Splanchnics on Catalase Content of Blood. W. E. Burge, Chicago.—p. 290.
- 4 *Factors Influencing Interchange of Fluid Between Blood and Tissue Spaces. Blood Pressure. F. H. Scott, Minneapolis.—p. 298.
- 5 *Id. Muscular Activity. F. H. Scott, E. T. Herrmann and A. M. Snell, Minneapolis.—p. 313.
- 6 *Presence of Albumoses in Tissues and in Blood, with Special Reference to Their Occurrence in Gastro-Intestinal Mucosa. J. J. Abel, M. C. Pincoffs and C. A. Rouiller, Baltimore.—p. 320.
- 7 *Effect of Temperature on Rhythm of Excised Segments from Different Parts of Intestine. F. B. Taylor and W. C. Alvarez, San Francisco.—p. 344.
- 8 Mechanism for Vasodilatation from Epinephrin. F. A. Hartman and L. M. Fraser, Toronto, Canada.—p. 353.
- 9 *Physiology of Respiration. Changes Taking Place in Composition of Alveolar Air During Inspiration and Expiration. R. G. Pearce, Cleveland.—p. 369.
- 10 *Id. Oxygen and Carbon Dioxid Dead Space in Man. R. G. Pearce and D. H. Hoover, Cleveland.—p. 391.
- 11 Responses of Catfish, *Amiurus Nebulosus*, to Metallic and Non-metallic Rods. G. H. Parker and A. P. Van Heusen, Boston.—p. 405.
- 12 Heat Liberated by Beating Heart. C. D. Snyder, Baltimore.—p. 421.

3. Effect of Ether Anesthesia on Catalase Content of Blood.—Burge found that the catalase content of the blood

decreases during the administration of ether and increases during the recovery from ether. The decrease is due to the destruction of catalase by ether, the increase to an increased output of catalase from the liver. The decrease in catalase during the administration of ether may be the cause of the decreased oxidation during anesthesia, while the increased output of catalase from the liver during recovery may account for the increased oxidation during this period. Blood catalase is destroyed in vitro by exposure to ether vapor, as happens in vivo during the administration of ether; however, in the former case catalase is not restored to the normal amount when the ether is removed by bubbling air or oxygen through the blood, as occurs in vivo when the animal is permitted to recover from the effect of ether by breathing air. The catalase content of the blood can be increased by prolonging the excitement stage of ether anesthesia or by stimulating electrically the splanchnic nerves distributed to the liver. The increase in catalase may account for the increased oxidation during the excitement stage of ether anesthesia, just as the decrease in catalase may account for the decreased oxidation during the rest of the stages.

4. Factors Influencing Interchange of Fluid in Blood.—

According to Scott the hemoglobin content of the blood is rapidly modified by any alteration in blood pressure, a rise of pressure leading to an increase of hemoglobin and a fall to a decrease. These results can only be explained by the increased pressure forcing fluid out of the blood to the tissue spaces and the passage of fluid back from the tissue spaces to the blood when the pressure is lowered.

5. Id.—The authors state that there is an increase in the water content of muscle as a result of contraction if the blood is circulating through it. There is an increase in the hemoglobin content and in the blood count as a result of muscular contraction. This is due to the passage of fluid from the blood to the muscles. In some experiments the alterations found for the hemoglobin and for the blood count are not exactly the same. The authors believe this is due to technical errors and has no physiologic significance.

6. Albumoses in Tissues and in Blood.—Albumoses can be isolated in varying amounts from the tissues of the body, inclusive of the cellular elements of the blood. The methods employed did not, however, enable the authors to separate a proteose of any kind from the plasma of the blood. To prepare an albumose from the gastric or intestinal mucosa which is entirely devoid of pharmacologic activity (pressor, oxytocic and secretory) requires the employment of numerous chemical procedures, as outlined in this paper. The gastro-intestinal mucosa can be washed free of soluble adherent substances, such as the proteoses. The authors feel justified in assuming that what cannot be washed away must be truly a part of the mucosa. The gastro-intestinal mucosa contains from three to five times as much albumose during digestion of meat as after deprivation of all food (except water) for four days. In view of this finding the authors cannot accept the theory that proteins are taken up by the absorbing surfaces of the digestive apparatus only in the form of amino-acids, but must believe, rather, that proteoses as well as amino-acids are freely absorbed, as has long been maintained for the former by certain investigators. While they are able to trace the further passage of amino-acids from the mucosa to various organs via the blood current, they find it impossible at present to do this with proteoses. These cannot be traced further than into the absorbing mucosa, unless it should be assumed that the cellular elements of the blood are distributing agents for them—a point of view which they are at this moment not justified in advancing. The details of the fate of the absorbed proteoses still remain to be determined.

7. Effect of Temperature on Rhythm of Excised Intestine.—The evidence presented by Taylor and Alvarez indicates that the rate of rhythmic contraction is determined by the chemical changes taking place in the muscle. The difference in the coefficient for the four different segments implies a difference in their metabolism.

9. Physiology of Respiration.—The blood in the pulmonary capillaries contains less carbon dioxid during inspiration than during expiration. The alveolar air receives a greater amount

of carbon dioxid during inspiration than during expiration. The greater amount of the carbon dioxid given off during the respiration cycle occurs at a pressure less than the mean; the less amount is given off at a pressure above mean. The alveolar carbon dioxid tension rises relatively more rapidly during the termination of inspiration and during the first part of expiration than during the latter part of expiration. This condition is due to the fact that during the first part of expiration the pressure of carbon dioxid is less than in the latter part, inasmuch as the total volume of air is reduced by the expiratory act, and each added increment of carbon dioxid is added to progressively decreasing amounts of air, and accordingly the percentage of carbon dioxid mounts very rapidly; even though the actual evolution of carbon dioxid from the blood is less at high partial pressures of carbon dioxid than at low pressures. The rate of oxygen intake of the blood is practically constant during both phases of the respiration at ordinary barometric pressures. A method based on theoretical grounds is proposed by Pearce for the determination of the gaseous composition of the alveolar air and for the capacity of the dead space for both oxygen and carbon dioxid. He believes that the results obtained by this method give very accurate values for mean tensions of carbon dioxid and oxygen in the alveolar air. Samples obtained by the Haldane-Priestley method give figures 6 to 15 per cent. higher for carbon dioxid, and 9 to 20 per cent. higher for oxygen absorbed than are obtained by this method. The dead space determined by this method fails to show as great variation as when determined by the Haldane-Priestley method, and the dead spaces for oxygen and carbon dioxid are of the same magnitude within the experimental error.

10. Oxygen and Carbon Dioxid Dead Space in Man.—The experiments outlined by Pearce and Hoover, together with the correct calculations of the data of Haldane, show that deep breathing, which is controlled by needs of the body, does not alter the dead space or "virtual dead space" of Henderson. When the respirations are controlled by the respiratory center and not of extreme depth: (a) The dead space is relatively fixed anatomic and physiologic entity. (b) The dead space for carbon dioxid and that for oxygen are essentially the same under all conditions. The variations which Haldane, Henderson and their associates find in the capacity of the dead space on deep breathing, and the lack of agreement between carbon dioxid and oxygen dead spaces, are attributable to faulty methods and artificial modes of breathing. The Haldane-Priestley method for the determination of the dead space for oxygen or for carbon dioxid is inaccurate. As great variations in the dead spaces as those found by Haldane and Henderson can be obtained by other methods of altering the respiration than by increasing the depth of breathing. The determination of the percentage of oxygen in the alveolar air by the Haldane-Priestley method is subject to greater error than that for carbon dioxid and any figures obtained by it for oxygen tension in the alveolar air during exercise or at reduced barometric pressures are untrustworthy.

American Journal of Roentgenology, New York

October, IV, No. 10

- 13 Diagnostic Points in Suppurative Diseases of Ribs and Sternum. E. G. Beck, Chicago.—p. 491.
- 14 *Bone Changes in Leprosy. J. A. Honeij, New Haven, Conn.—p. 494.
- 15 Greater Certainty in Localization of Foreign Bodies in Eye. J. G. Van Zwaluwenburg, Ann Arbor, Mich.—p. 512.
- 16 Surgery of Roentgen Ray Lesions. L. L. McArthur, Chicago.—p. 521.
- 17 Abdominal Tuberculosis. P. Eisen, Chicago.—p. 525.
- 18 Dental Pathology; Its Importance as Avenue of Infection. F. D. Leach, Chicago.—p. 526.
- 19 Renal Calculus of Unusual Size. E. H. Kessler, St. Louis.—p. 529.
- 20 "Quiet" Pott's Disease. W. A. Evans, Detroit.—p. 530.

14. Bone Changes in Leprosy.—The bone changes in leprosy observed by Honeij vary from slight thinning, atrophy or periostitis to advanced changes with total absorption of phalanges, marked inflammatory action in bone, distortion, ankylosis and fractures. Changes may begin in the periosteum, articular surfaces, corticalis or medullary canal, and apparently any of these changes or all of them may occur in the

same set of bones. Also the bones of the hands and feet show the changes soonest and to the greatest extent. The tibia was in one case markedly affected, but in a number of cases the ankle joint bones were not affected. A curious exception in the hands was the thumb, the bones here being in but a few cases slightly affected. The changes in the nerve type are atrophic and in the nodular type inflammatory or hypertrophic. In these particular cases the reverse has occurred and both types of changes have appeared in each form. Periostitis is common. In the absorption process the epiphysis suffers first and most. Cyst or cavity formation is greatest in the diaphysis. Ankylosis occurs, but not healing of fractures, in which salt deposit is necessary. Ulceration of the skin is not necessary, as marked periostitis occurs without any discoverable lesion in the tissues outside the bone. Definite atrophic bone changes, without apparent change in the contour of the phalanx and periosteum, do occur. Atrophic bone changes occur in cases of nodular leprosy; demonstrating the fact that definite nerve disturbances are as much a part of nodular leprosy as inflammatory bone absorption is a part of the process in nerve leprosy. Not in a single case can it be definitely said that the destructive bone process arises internally or externally, for in a single case a periostitis may exist in one phalanx, while in another phalanx the changes are wholly medullary.

Annals of Surgery, Philadelphia

October, LXVI, No. 4

- 21 Handling of Early and Doubtful Cases of Cancer. R. B. Greenough, Boston.—p. 385.
- 22 *Technic for Radical Caution Operation in Breast Cancer. J. F. Percy, Galesburg, Ill.—p. 397.
- 23 Regional Anesthesia in Extrapleural Thoracoplasty and Some Intrathoracic Operations. W. Meyer, New York.—p. 404.
- 24 *Advantage of Cholecystectomy in Avoidance of Adhesions in Gallbladder Surgery. A. M. Willis, Richmond, Va.—p. 411.
- 25 *Posture in Cases of Abdominal Drainage. R. Hill, St. Louis.—p. 414.
- 26 *Operative Treatment of Hour-Glass Stomach; Report of Case Treated by Double Posterior Gastro-Enterostomy. R. C. Webb, New York.—p. 418.
- 27 *Extent of Tissue to Be Excised for Radical Removal of Carcinoma of Stomach. W. Thalheimer and A. O. Wilensky, New York.—p. 421.
- 28 *Hyperplastic Pyloric Stenosis. D. W. Palmer, Cincinnati.—p. 428.
- 29 Giant Duodenum; Report of Case in Child. W. A. Downes, New York.—p. 436.
- 30 Case of Megacolon: Megasygmoid, Hirschsprung's Disease. W. R. Jackson, Mobile, Ala.—p. 441.
- 31 Safe Elimination of Colon for Relief of Uncontrollable Intestinal Stasis. A. J. Ochsner, Chicago.—p. 443.
- 32 Idiopathic Choledochus Cyst; Report of Case Cured by Choledochoduodenostomy. E. Waller, Lidköping, Sweden.—p. 446.
- 33 Relative Indications for Cholecystectomy and Cholecystostomy. F. R. Benham, Syracuse, N. Y.—p. 464.
- 34 Torsion and Inflammation of Appendices Epiploicae; Report of Case and Review of Literature. A. H. Harrigan, New York.—p. 467.
- 35 *Ultimate Results Following Nephropexy in Cases of Symptomatic Nephroptosis. J. G. Clark and F. B. Block, Philadelphia.—p. 479.
- 36 Congenital Elevation of Scapula (Sprengel's Deformity). J. F. Binnie, Kansas City, Mo.—p. 488.
- 37 *New Method of Excising Head of Humerus. T. T. Thomas, Philadelphia.—p. 492.
- 38 Fungous Diseases of Foot, or Madura Foot, in America; Report of Case. R. Winslow, Baltimore.—p. 496.

22. Abstracted in THE JOURNAL, Jan. 13, 1917, p. 146.

24. Cholecystectomy to Avoid Adhesions in Gallbladder Surgery.—In a well performed cholecystectomy where no bile is split in the cavity and no drain of the liver is used, Willis says, the trauma of operation seems to be an insignificant factor in stirring up adhesions. On the other hand, in cholecystostomy and cholecystectomy where a drain is used and there occurs spilling of bile, adhesions invariably follow. From the results of his experiments Willis feels that bile is an important factor in the production of adhesions, and that it is of the utmost importance that the irritating and often infected bile should not be allowed to come in contact with peritoneum.

25. Abstracted in THE JOURNAL, Jan. 13, 1917, p. 145.

26. Operative Treatment of Hour-Glass Stomach.—In view of the fact that gastropasty is often unsuccessful in wide-

spreading ulcer and gastrogastrostomy is relatively dangerous in the presence of much tension, Webb is of the opinion that double posterior gastro-enterostomy is a logical operation and is definitely indicated in certain cases. He cited one successful case.

27. Radical Removal of Carcinoma of Stomach.—According to Thalhimier and Wilensky, in small carcinomas of the stomach, situated elsewhere than at the pylorus, the malignant process is so limited in extent that local resection at a distance of from one to two centimeters beyond the macroscopic limits of the tumor will, in the majority of instances, remove the entire tumor. Even in some of the comparatively large tumors included in the authors' study there was no extension of the tumor detectable by the microscope beyond this limit. When a malignant tumor is situated at the cardiac end of the stomach, the surgeon may either perform a complete gastrectomy or consider these cases inoperable. The serious consideration of complete gastrectomy is almost forbidden in these cases because of the high mortality of this operation. Local excision of the tumor is a far less dangerous procedure, and, since the authors' investigations have shown that such local excision is sufficient for the removal of the malignant process, these tumors become accessible for radical operative treatment. Of course such excision is only radical provided no metastases are present.

28. Hyperplastic Pyloric Stenosis.—Palmer reports on thirteen cases of congenital pyloric obstruction. In three of these further observation was advised; one patient died suddenly while waiting for the mother's permission to operate, and of the remaining nine, on three gastrojejunostomy was made, and on six the Rammstadt operation. Eight of the nine patients operated on had a marked tumor formation at the pylorus that could not but produce a decided obstruction to the passage of food. The average age of the eight living operated patients when last heard from was 7½ months, and the average weight was 17½ pounds, or nearly 1 pound above the average given in Holt's book.

35. Ultimate Results Following Nephropexy.—While the results obtained by Clark and Block are said to be by no means perfect, they nevertheless present a 70 per cent. restoration to active efficiency of the women operated on, a degree of restoration which compares favorably with many other operations generally accepted by representative surgeons. The authors call attention to the fact that the kidney, particularly the right, is not a fixed organ, and even an excessive range of mobility is no certain index of a reflex gastric or nervous disability unless direct renal symptoms referable to the kidney itself are present. The three cardinal symptoms of disturbed renal function are pain in the renal area; a urinary or Dietl's crisis, due to kinking of the ureter; or vesical irritability directly referable to the kidney of the affected side. No diagnosis should rest solely on palpation of even an unduly movable kidney or on a definite symptomatology unless this is confirmed by a cystoscopic examination, catheterization of the ureters, and a pyelograph to define the point of kinking in the ureter and the degree of dilatation of the renal pelvis. With this rigid method of exclusion and clear symptomatic definition the surgeon may confidently count on securing 70 per cent. of cures and from 10 to 15 per cent. of improvements as the result of the operation. The dangers arising from the injection of roentgenographic substances into the renal pelvis are great if piston or excessive gravity pressure is employed during the injection. With slight gravity pressure no untoward symptom has been observed in their series of cases. In the hands of the authors the Edebohls method, with slight modification, has proved satisfactory as a permanent means of anchorage.

37. Excising Head of Humerus.—The operation described by Thomas was performed in one case of recurrent dislocation of the shoulder and in one of old unreduced dislocation. It does not disturb any of the muscles except the subscapularis, which is divided, but later is reunited. Only the cartilage covered portion of the humeral head is removed by sawing through at the anatomic neck. This prevents recurrences of the dislocation, because it removes the only portion which can be dislocated, while it does not disturb any of the

muscle attachments except that of the subscapularis, which reunites closely later. In the old unreduced dislocation this operation removes the bony obstruction to the ascent of the remaining portion of the humerus to its normal level just below the acromion process.

Archives of Internal Medicine, Chicago

October, XX, No. 4

- 39 *Study of Uric Acid in Gout. C. W. McClure and J. H. Pratt, Boston.—p. 481.
- 40 Ferment Antiferment Balance and Its Relation to Therapeutics. W. F. Petersen, Chicago.—p. 515.
- 41 Relation of Pellagra to Location of Domicile in Inman Mills, Inman, S. C. J. F. Siler, P. E. Garrison and W. J. MacNeal, New York.—p. 521.
- 42 *Absorption of Phenolsulphonephthalein from Subarachnoid Space in Diseases of Central Nervous System. H. G. Mehrtens and H. F. West, San Francisco.—p. 575.
- 43 *Study of Erythrocytes in Case of Severe Anemia with Elongated and Sickie-Shaped Red Blood Corpuscles. V. E. Emmel, Chicago.—p. 586.
- 44 *Cholesterol Content of Human Blood. F. D. Gorham, St. Louis, and V. C. Myers, New York.—p. 599.
- 45 Temperature Method in Localization of Cardiac Pacemaker. B. H. Schlomovitz, Chicago, and C. S. Chase, Iowa City, Iowa.—p. 613.
- 46 Pyopneumothorax and Pneumothorax; Report of Two Cases. J. A. Honeij, New Haven, Conn.—p. 629.
- 47 Asthma Complicating Serum Treatment of Pneumonia. H. L. Alexander, Boston.—p. 636.

39. Uric Acid in Gout.—The authors' studies on the intravenous injection of uric acid and the feeding of nuclein containing material, together with the compilations they have made from reports in the literature, show that in normal and nongouty as well as in gouty persons there is great variability in the quantity and in the duration of exogenous uric acid excretion. For this reason a diminished or a protracted exogenous uric acid output most probably results from factors other than disturbances in the nuclein intermediary metabolism. If this is not true, then derangements in nuclein metabolism are so common that their importance in the etiology of any diseased condition is problematic. In the majority of gouty persons the uric acid in the blood is more than 3 mg. per hundred c.c. when determined by the method of Folin and Denis. No relation exists between the amount of uric acid and of total nonprotein nitrogen found in the blood of gouty persons. A marked retention of nonprotein nitrogen is not frequent in gout. The excretion of exogenous uric acid by normal, by arthritic, and by gouty persons varies greatly both in amount and in duration. The retention of exogenous uric acid is regarded as a symptom of questionable importance in the diagnosis of gout.

42. Phenolsulphonephthalein Absorption.—Mehrtens and West summarize their paper as follows: Phenolsulphonephthalein when injected into the subarachnoid space in normal persons appears in the urine in ten minutes or less. Diseases of the central nervous system, especially when involving the meninges, produce a lengthening of the appearance time to as much as seventy minutes in some cases. This delay cannot be accounted for by disease of the kidneys, or by the reduction of the phenolsulphonephthalein in the spinal fluid. Advanced general arteriosclerosis may be a factor in causing the delay in some instances. In syphilis a lengthening of the appearance time may be produced before any other evidence of central nervous system involvement has appeared. The method may prove of value in detecting instances of organic central nervous system disease in which the ordinary spinal fluid findings are negative or incomplete. At this time no definite conclusion can be drawn as to the exact location of the absorbing tissues.

43. Erythrocytes in Anemia.—The patient, aged 21, entered the hospital with an ulcer on the leg. The ulcer healed under treatment and after her discharge from the hospital, Dec. 3, 1914, the patient gained in weight and showed general improvement. An ulcer had appeared on the leg at two previous times in her history, the first at the age of 5, and the second at the age of 19. In both instances, with treatment, it soon healed. The third appearance occurred ten months previous to the patient's entering the hospital. Aside from this ulceration the physical examination otherwise furnished

apparently little data of evident significance. Examinations for syphilis or parasites were negative. The blood picture constituted the most striking feature of the case and has been more or less persistent up to date, a period of over two and one-half years. About one third of the erythrocytes instead of presenting the normal disk form are greatly elongated in shape. A large percentage of the latter have a crescentic or sickle-shaped form. Nucleated erythrocytes occurred in all preparations. Some of the normoblasts present a biconcave disk shape. Punctate basophilia occurs in many of the nucleated red corpuscles, but was not observed in either the disk-shaped or sickle-shaped nonnucleated corpuscles. Jolly bodies or Cabot rings were not found. Phagocytosis of erythrocytes is taking place to a certain extent in the peripheral circulation. In culture preparations kept at room temperature it was found that great numbers of the previously disk-shaped corpuscles became transformed into elongated and crescentic elements. The tips of the latter were frequently extended into tapering hair-like processes. During one period of the study, for some unknown reason, the abnormal crescentic forms had temporarily disappeared from the circulation. In culture preparations, however, the erythrocytes still manifested the tendency to assume elongated and crescentic forms. Similar cultures from normal blood and from cases of pernicious anemia, chlorosis and myelogenous leukemia gave only negative results.

An interesting exception was obtained in the case of the patient's father. In this instance the circulatory erythrocytes presented an apparently normal structure, but under culture conditions occasional corpuscles were found to assume elongated and crescentic forms. In culture preparations made by placing erythrocytes from a case of pernicious anemia in the centrifuged serum of the patient's blood, some of the red corpuscles assumed characteristics comparable to those observed in cultures of the patient's blood. The culture reaction of the erythrocytes appears to be specific for this case of anemia, and the manner in which the red blood corpuscles are transformed into the sickle-shaped elements suggests that the phenomenon is in part at least due to an accentuated or abnormal activity of the same factors which in normal hematogenesis are involved in the transformation of the original spherical erythrocyte into a biconcave disk-shaped form.

44. Cholesterol Content of Human Blood.—Cholesterol estimations were made by Gorham and Myers in the blood of about 200 patients, suffering clinically from about twenty-five different diseases. Hypercholesterolemia was observed, though not invariably, in arteriosclerosis, nephritis, obstructive jaundice and diabetes. A hypocholesterolemia was found in the cachexia of malignancy and all anemias of the pernicious type. The low cholesterol values encountered in the blood plasma of patients with pernicious anemia are regarded as of considerable significance, especially in view of the strong antihemolytic action of cholesterol. The findings in cholelithiasis were quite inconstant. Since hypercholesterolemia may be found in many conditions and is not uniformly constant in cholelithiasis, it would seem that the blood cholesterol possessed only a limited diagnostic usefulness in this condition. It is suggested that the estimation may possess some diagnostic value in diabetes, since the cholesterol serves as an easily determined index of any lipemia.

Boston Medical and Surgical Journal

October 25, CLXXVII, No. 17

- 48 Bearings of Industry on Medical Practice. D. L. Edsall, Boston.—p. 575.
- 49 Activities of Labor Department. E. Mulready, Rockland.—p. 576.
- 50 Adjustment of Physical Defectives to Employment. W. I. Clark, Worcester.—p. 578.
- 51 Establishment of First Aid Hospital in Industry. H. J. Cronin, Cambridge.—p. 580.
- 52 Changing Methods and Advances in Treatment of Progressive Deafness from Chronic Secretory Otitis Media. F. P. Emerson, Boston.—p. 583.
- 53 Etiology of Disturbances of Heart Beat. G. E. Barnes, Herkimer.—p. 588.
- 54 *Case of Brain Tumor Showing Extensive Destruction, with Few Diagnostic Symptoms. H. E. Thompson, Worcester.—p. 592.
- 55 Hemorrhage Following Tonsillectomy. H. H. Amsden, Concord, N. H.—p. 594.

54. Brain Tumor Showing Extensive Destruction.—Thompson reports a case of glioma of the brain in a man, 70 years of age, causing extensive destruction of the brain tissue. It involves the corpus callosum, white matter of the left frontal lobe, caudate and lenticular nuclei and internal capsule. The mental symptoms showed themselves by a tendency to wander about, increased irritableness and loss of memory. An early symptom was the loss of control of the sphincters. The history is one of occasional seizures, characterized by pallor, rigidity and confusion, followed by prolonged sleep. As the disease progressed, memory loss and confusion increased. Twenty days before his death the patient was able to walk with a normal gait, and the hand grips, although weak, were equal. Pupils reacted normally and tendon reflexes showed nothing unusual. The eye grounds were not examined. As his mental confusion progressed it became necessary to keep the patient in bed and feed him with a spoon, but no paralysis of either upper or lower extremities was noted; neither were any speech difficulties mentioned. Headache is nowhere mentioned in the case, either before or after admission to the hospital. The case seems interesting on account of the poverty of diagnostic features as compared with the extensive destruction of brain tissue.

Canadian Medical Association Journal, Toronto

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- 56 From Vague to Concrete in Science and Medicine. F. Harris, Halifax.—p. 865.
- 57 Sanitary Records of Houses. J. A. Baudouin, Montreal.—p. 879.
- 58 Care and Treatment of Mental Defectives. H. MacMurchy, Toronto.—p. 893.
- 59 Case of Hysteria in Male. C. Meyers, Toronto.—p. 896.
- 60 Cases of Carcinoma of Cervix Uteri. C. E. Holbrook, Montreal.—p. 906.
- 61 Deficiency Diseases of Infancy and Childhood. A. Brown, Toronto.—p. 911.

Colorado Medicine, Denver

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- 62 The Physician's Duty in Time of War. A. C. Magruder, Colorado Springs.—p. 260.
- 63 The Call to Duty. J. C. Gunter.—p. 267.
- 64 The French Military Medical Service. F. Trèves.—p. 270.
- 65 National Defense. J. A. B. Scherer, Washington, D. C.—p. 272.
- 66 Conjunctival Epithelioma at Limbus. W. H. Crisp, Denver.—p. 273.

Florida Medical Association Journal, Jacksonville

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- 67 Creeping Eruption. J. L. Kirby-Smith, Jacksonville.—p. 95.
- 68 Management of Increased Blood Pressure. J. V. Freeman, Jacksonville.—p. 100.
- 69 Treatment of Chronic Gonorrhea. H. A. Mills, Jacksonville.—p. 103.
- 70 Baths in Neurasthenia. J. Reeve, DeLand.—p. 105.
- 71 Tinnitus in Neurasthenia. F. J. Walter, Daytona.—p. 106.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

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- 72 Action of Certain Emetin Derivatives on Amebae. F. L. Pyman and C. M. Wenyon.—p. 237.
- 73 *Action of Alypin, Eucaïn, Holocain, Novocain and Stovain on Bladder. J. A. Waddell, Charlottesville, Va.—p. 243.
- 74 *Action of Epinephrin in Inhibiting Flow of Pancreatic Secretion. F. C. Mann and L. C. McLachlin, Rochester, Minn.—p. 251.
- 75 *Nondependence of Protein Quotient in Blood Serum on Rapidity of Metabolism with Especial Reference to Noneffect of Anipyretics, Sodium Cacodylate and Thyroid Extract. S. Hanson and I. McQuarrie, San Francisco.—p. 261.
- 76 Physiologic Action of Cordyceps Sinensis. J. F. Brewster and C. L. Alsberg, Washington, D. C.—p. 277.
- 77 *Fate of Strychnin in Body. R. A. Hatcher and C. Eggleston, New York.—p. 281.

73. Action of Alypin, Eucaïn, Holocain, Novocain and Stovain on Bladder.—Waddell found that alypin, alpha and beta-eucaïn, holocain, novocain and stovain stimulate the excised bladder when suspended in oxygenated Tyrode's solution at body temperature. Compared with cocain, the stimulating action of beta-eucaïn is approximately one-seventh; of novocain, one-sixth; of alypin, alpha eucaïn and stovain, one-third; and of holocain, two-thirds. Mixtures of the synthetic cocain substitutes with each other give simple summation on the excised bladder. Combinations with epinephrin exhibit simple antagonism and with pituitary extract simple summa-

tion on the excised bladder. Paralysis of the parasympathetic myoneural junctions by atropin does not alter the response of the excised bladder to any of the drugs of this series. The conclusion drawn is that these drugs act on the muscle directly, since their effects are the opposite to those of sympathetic stimulation and are unchanged by paralysis of the parasympathetic myoneural junctions.

74. Epinephrin Inhibiting Flow of Pancreatic Secretion.—Experiments conducted by Mann and McLachlin showed that large doses of epinephrin, which produce a marked rise of blood pressure, always decrease the flow of pancreatic secretion. Very small doses usually also decrease the activity of the pancreas regardless of whether a pressor or depressor action of blood pressure is produced. Epinephrin also decreases pancreatic volume at the same time it decreases pancreatic flow, regardless of its effect on the general blood pressure. While it is not stated definitely that epinephrin does not specifically inhibit the pancreatic cells, it would seem that the action of epinephrin in inhibiting the pancreatic secretion depends on the amount of blood passing through the gland. Large doses of epinephrin, even though general blood pressure is greatly increased, decrease the amount of blood to the pancreas by excessive local constriction, and thus decrease the flow of pancreatic juice. Small doses may or may not affect the secretion of the pancreas, depending on whether the relation of the local constriction and the changes in general blood pressure change the amount of blood going to the gland. The pancreatic vessels may constrict with a dose which will produce enough dilatation elsewhere to cause a decrease in general blood pressure, or which may not produce enough general action to affect blood pressure at all. In every case the cause is the same, a reduction of the amount of blood passing through the gland per unit of time. However, these results all tend to accentuate the fact that the pancreatic vessels seem to be more sensitive toward the pressor action of epinephrin than those of any other region concerning which data are available.

75. Nondependence of Protein Quotient.—According to Hanson and McQuarrie, antipyrin, even in large doses, causes no change in the serum proteins. Substances most intimately related to antipyrin in their pharmacologic action (acetanilid and paramidophenol) have no effect on the protein quotient. Other substances influencing metabolism (*a*) in the direction of retardation (quinin and sodium cacodylate), or (*b*) in the direction of acceleration (thyroid extract), produce no change in the relative proportions of the serum proteins. These experimental results consistently indicate that the quantity of albumins and globulins in the blood serum is quite independent of the rapidity of the nitrogenous metabolism.

77. Fate of Strychnin in Body.—Experiments carried out by Hatcher and Eggleston on cats, dogs and guinea-pigs showed that toxic doses of strychnin may be administered at short intervals during periods up to twelve days, the total amounts so administered being equal to twenty-five times the single fatal dose, without causing perceptible lasting effects. Only a small percentage of the strychnin so administered can be recovered from the urine, and none from the feces. The excretion in the urine usually ceases within twenty-four to forty-eight hours. The tissues of the guinea-pig (exclusive of the skin, which was not examined) do not yield any strychnin even after the administration of very large amounts provided that death does not take place within three hours after the administration of the last dose. The facts just stated point conclusively to the rapid destruction of the strychnin in the body of the guinea-pig and almost as conclusively to that in the bodies of the cat and dog.

Perfusion of the liver of the dog and that of the guinea-pig with defibrinated blood or Locke's solution to which strychnin has been added results in the destruction of a large part of the strychnin, and the storage of a greater portion of the remainder than can be accounted for by the proportion of the perfused fluid held in the liver. The strychnin stored in the liver is loosely bound and the greater part of it may be removed by perfusing once with an amount of Locke's solution equal to several times the weight of the liver. Strychnin is not destroyed in all cases when it is added to

defibrinated blood or hashed liver tissue and allowed to stand at body temperature for several hours, but there is some evidence that small amounts may be destroyed in this way under slight differences in conditions which Hatcher and Eggleston have not determined. Strychnin is destroyed slowly, or not at all, when it is added to the guinea-pig's intestine and its contents and the mixture is allowed to stand at body temperature for twenty-four hours. Strychnin is not excreted in the bile after its intravenous injection into the dog.

Journal-Lancet, Minneapolis

October 15, XXXVII, No. 20

- 78 Transverse Incision in Upper Abdomen. E. P. Quain, Bismarck, N. D.—p. 657.
- 79 Tuberculosis Problem in Minnesota. H. M. Bracken, Minneapolis.—p. 664.
- 80 Roentgenology in Medicine and Surgery. N. J. Nessa, Sioux Falls, S. D.—p. 671.
- 81 Some Commoner Diseases of Eye, Ear, Nose and Throat. J. D. Lewis, Minneapolis.—p. 674.
- 82 Use of Bacillus Lactis Bulgaricus in Treatment of Infected Wounds. W. A. Fansler, Minneapolis.—p. 679.

Laryngoscope, St. Louis

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- 83 New Method of Working Out Difficult Mechanical Problems of Bronchoscopic Foreign Body Extraction. C. Jackson, Philadelphia.—p. 725.
- 84 Tracheobronchial Diphtheria; Report of Cases. H. L. Lynah, New York.—p. 734.
- 85 Epithelioma of Middle Ear and Mastoid; Report of Case. F. A. Burton, San Diego, Calif.—p. 755.
- 86 Vincent's Angina; Report of Cases. F. Carroll, Cedar Rapids, Iowa.—p. 763.
- 87 Experience with Beck-Pierce Tonsillectome. H. Dupuy, New Orleans.—p. 769.

Medical Record, New York

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- 88 Relation of Spleen to Certain Obscure Clinical Phenomena. W. J. Mayo, Rochester, Minn.—p. 705.
- 89 Field of Neurologic Surgery. W. Sharpe, New York.—p. 711.
- 90 Lumbar Puncture in Seven Hundred Cases. Y. C. Lott, New York.—p. 717.
- 91 Appearance of Fundus Oculi in Certain Intracranial Conditions. J. A. Kearney, New York.—p. 720.
- 92 Pernicious Anemia. J. F. Jenkins, Opelika, Ala.—p. 721.
- 93 New Surgical Treatment of Atrophic Rhinitis: Enlarging the Inferior Turbinate. E. A. Griffin, Brooklyn.—p. 723.

Medicine and Surgery, St. Louis

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- 94 Obscure Tarsal and Malleolus Fractures; Report of Cases. W. P. Coues, Boston.—p. 801.
- 95 Screw Fixation in Joint Fractures; Report of Cases. A. P. C. Ashhurst, Philadelphia.—p. 812.
- 96 Case of Melanocarcinoma Showing Its Stealthy Nature and Rapidly Malignant Course. P. G. Skillern, Jr., Philadelphia.—p. 822.
- 97 "Bipping" of Blacksmithing; Treatment of Fractures. D. H. Stewart, New York.—p. 828.
- 98 Syphilis of Joints. J. K. Young, Philadelphia.—p. 836.
- 99 Nitrous Oxid Oxygen Anesthesia. E. L. King, New Orleans.—p. 843.
- 100 Uniform Standardization of Roentgenographic Technic. F. H. Kuegle, Omaha.—p. 848.
- 101 Some Orthopedic Suggestions for Everyday Use. C. L. Lowman, Los Angeles.—p. 866.
- 102 Review of Some Recent Work on Treponema Pallidum. H. H. Hazen, Washington, D. C.—p. 875.

Modern Hospital, St. Louis

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- 103 Federal Inspection and Control of American Hospitals. R. J. Wilson, New York.—p. 233.
- 104 Hospitals and Workmen's Compensation. T. Howell and K. Buckley, New York.—p. 234.
- 105 Addison County Hospital, Middlebury, Vt. H. L. Walker, New York.—p. 240.
- 106 The Public Health Work of Children's Hospital. C. V. Dorwarth, Philadelphia.—p. 242.
- 107 Industrial Hospital Managed by Employees. H. B. Smith.—p. 244.
- 108 Family as Unit of Public Health Work. M. Beard, Boston.—p. 247.
- 109 Unique Attempt to Express Medical Service without Charity. R. Pollock, San Diego, Calif.—p. 251.
- 110 Standardization of Hospitals—Class IV, Small Semipublic Hospitals. J. A. Hornsby and others.—p. 253.
- 111 Reorganization of Civilian Hospital on War Basis. W. H. Smith.—p. 262.

New York Medical Journal*October 27, CVI, No. 17*

- 112 War Tetanus. L. H. Cornwall, New York.—p. 773.
- 113 Bringing Up of Children and Nervous Diseases. A. Stern, New York.—p. 777.
- 114 Diabetes Mellitus. I. W. Held and M. H. Gross, New York.—p. 780.
- 115 Two Cases of Inflammatory Stricture of Right Ureter Due to Pelvic Abscess Following Ureterotomy of Left Ureter. W. H. McNeil, Jr., New York.—p. 786.
- 116 Circumcision. F. D. Austin, Charlotte, N. C., and T. G. Sharpe, Greenville, S. C.—p. 787.
- 117 Applicability of Desiccation Surgery to Eye Conditions. J. A. Kearney, New York.—p. 788.
- 118 Case of Puerperal Eclampsia. M. Cohen, Montclair, N. J.—p. 789.
- 119 Anilin Poisoning. V. C. Baker, New York.—p. 790.
- 120 Carrel's Method of Treatment of Infected Wounds. G. Loewy, New York.—p. 798.

Pennsylvania Medical Journal, Athens*October, XXI, No. 1*

- 121 Present Status of Drugless Therapy in State of Pennsylvania. J. M. Baldy, Philadelphia.—p. 3.
- 122 Clinical Value of Electrocardiography. S. C. Smith, Philadelphia.—p. 10.
- 123 Acidosis. H. Wilson, Somerset.—p. 20.
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- 125 Transplantation of Tibia for Nasal Deformity. N. P. Stauffer, Philadelphia.—p. 26.
- 126 Treatment of Infection Following Labor, Mature and Premature. P. B. Bland, Philadelphia.—p. 28.
- 127 Management of Digestion in Pulmonary Tuberculosis. J. Daland, Philadelphia.—p. 32.
- 128 Practical Value of Immunologic Methods in Diagnosis. J. A. Kolmer, Philadelphia.—p. 37.
- 129 Anatomy, Physiology and Pathology of Blood Vascular System. F. F. D. Reckord, Harrisburg.—p. 41.

Public Health Journal, Toronto*September, VIII, No. 9*

- 130 Preventive Medicine. G. E. DeWitt, Wolfville, N. S.—p. 211.
 - 131 Epidemiology of Epidemic Poliomyelitis or Infantile Paralysis. A. G. Nicholls, Halifax, N. S.—p. 215.
 - 132 Diagnosis of Anterior Poliomyelitis. C. Miller, Stellarton, N. S.—p. 219.
 - 133 Acute Anterior Poliomyelitis. M. D. Morrison, Dominion, N. S.—p. 223.
 - 134 Venereal Disease Problem. W. H. Hattie, Halifax.—p. 228.
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- 135 Value of Statistics in Public Health Work. M. M. Seymour, Regina, Sask.—p. 245.
 - 136 Medical Supervision of Schoolchildren. H. A. Payzant, Dartmouth, N. S.—p. 251.
 - 137 Some Medicosociologic Problems Arising Out of War. W. H. Hattie, Halifax, N. S.—p. 254.
 - 138 Medical Aspects of Tobacco Habit. D. F. Harris, Halifax, N. S.—p. 259.
 - 139 Conservation of Life. J. J. Cameron, Antigonish, N. S.—p. 263.
 - 140 Sanitation of Factories. P. Ring, Halifax, N. S.—p. 266.

United States Naval Medical Bulletin, Washington, D. C.*October, XI, No. 4*

- 141 Tuberculosis and Military Organization. A. C. Klebs, Washington.—p. 439.
- 142 Diagnosis and Prognosis in Cardiovascular Renal Patients. H. A. Hare.—p. 459.
- 143 Some First Impressions of Virgin Islands, Medical, Surgical and Epidemiologic. C. S. Butler and E. G. Hakansson.—p. 465.
- 144 Training Camp, Naval Reserve Force, Second Naval District. D. N. Carpenter.—p. 475.
- 145 Temporary Barracks at City Park, Brooklyn, Preliminary Sanitary Survey. W. S. Pugh and R. Jansen.—p. 479.
- 146 Organization of Naval Medical Corps, Sixth Naval District. G. W. Calver.—p. 497.
- 147 Present Status of Cerebrospinal Fever with Special Reference to Diagnosis and Control. H. S. Cumming.—p. 504.
- 148 System in Handling Dental Patients Aboard Ship. R. Barber.—p. 515.
- 149 Barium Formaldehyd Method of Disinfection. R. P. Crandall.—p. 519.
- 150 Convenient Device for Testing Vision. W. S. Thomas.—p. 533.
- 151 Simplified Eye Testing Case. R. B. Henry.—p. 533.
- 152 Motor Operating Field Room. E. K. Tullidge.—p. 535.
- 153 Death from Shark Bite. P. F. Prioleau.—p. 539.
- 154 Dermatitis Produced by Matches Carried in Pocket. W. E. Eaton.—p. 540.
- 155 Amebiasis with Constipation. E. A. Vickery and J. J. A. McMullen.—p. 540.
- 156 Multiple Gunshot Wounds Resulting from Deflected Bullets. W. A. Bloedorn.—p. 541.
- 157 Multilocular Cyst. W. L. Mann and F. L. Conklin.—p. 543.
- 158 Impermeable Dressings in Treatment of Burns. J. J. A. McMullen.—p. 544.
- 159 Method of Locating Bullets and other Foreign Bodies by Roentgen Ray. S. Tousey.—p. 544.

FOREIGN

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British Journal of Tuberculosis, London*October, XI, No. 4*

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- 2 Papillary Cutaneous Reaction in Tuberculosis. H. A. Ellis.—p. 151.
- 3 Types of Tubercle Bacilli in Human Tuberculosis. A. S. Griffith.—p. 160.
- 4 Prevention and Cure of Tuberculosis. G. L. Cox.—p. 165.
- 5 Open-Air Industrial Experiment for Tuberculous Cases; Hairmyres Colony, Lanarkshire. N. Bardswell.—p. 169.

British Medical Journal, London*October 6, II, No. 2962*

- 6 Anglo-Russian Hospitals. H. F. Waterhouse, W. D. Harmer and C. J. Marshall.—p. 441.
- 7 *Method of Early Closure of Recent Gunshot Wounds. W. H. Hey.—p. 445.
- 8 *Spread of Infection in Open Bone, and Its Bearing on Treatment of Projectile Fracture. E. K. Martin and G. F. Petrie.—p. 447.
- 9 *Method for Efficient Drainage of Knee Joint. A. W. Mayo-Robson.—p. 450.
- 10 Five Hundred Consecutive Cases of Acute Gonorrhea Treated with Vaccines. N. P. L. Lumb.—p. 450.
- 11 Case of Gonorrheal Keratosis. W. H. Brown and A. M. Davidson.—p. 453.

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- 12 Canadian Army Medical Service. J. T. Fotheringham.—p. 471.
- 13 Etiology of Trench Fever. A. M. Pappenheimer, H. N. Vermilye and J. H. Mueller.—p. 474.
- 14 Method to Facilitate the Isolation of Cholera Vibrio and Other Organisms. A. Castellani.—p. 476.
- 15 Adaptation of Thomas and Jones Splints to Obtain Fixation of Arm in Abducted Position While Patient is Ambulatory. R. B. Osgood.—p. 477.
- 16 Splint for Treatment of Gunshot Wounds Involving Shoulder Joint. J. Campbell.—p. 480.
- 17 *Pneumococcal Meningitis. C. Worster-Drought and A. M. Kennedy.—p. 481.
- 18 Inquest on a Leg. N. Porritt.—p. 483.

7. **Early Closure of Gunshot Wounds.**—Hey brings forward the use of a mechanical aid to excision of the wound, namely, the staining of the track of the missile with a 0.5 per cent. watery solution of brilliant green and, second, the use of a paste as the method of sterilization. The composition of this paste is the following: boric acid, 11 ounces; French chalk, 1 ounce; liquid petrolatum, 8 fluidounces; brilliant green (1:500), 17½ grains. The boric acid and French chalk are first intimately mixed in a mortar, then the liquid petrolatum is worked in, and finally the brilliant green dissolved in rectified spirit. Considerable time and energy are required to avoid a paste with many isolated masses of boric acid. It is kept in jars and used chiefly from large syringes with very wide nozzle apertures or from grease pumps. Departures from the quantities and constituents of this paste have been invariably productive of worse results. If the chalk is omitted it will not adhere to any but the driest and freshest of wounds, and intimate adhesion to the tissues is an essential quality of a paste. No toxic effects have been observed. A strong, firm scar rapidly results; the skin unites well over a cavity such as is left by a pulped tibia. Extensive wounds of the buttock, and wounds complicated by division of large arteries or by fracture of any of the long bones, have been quickly closed. Fractures have been successfully sutured in three to five days, and wounds dividing muscle have been closed by partial primary suture with safety, which must be the outstanding feature of any method. Hey pleads for complete excision of all wounds; without it good antiseptics and pastes are almost useless in quickly healing the broken skin.

8. **Spread of Infection in Open Bone.**—The following conclusions are drawn by Martin and Petrie with reference to the operative treatment of projectile fracture: Some are already well recognized, none are universally practiced. Soft parts killed by the direct effect of the missile require removal. An infected fracture of the shaft of a long bone requires opening to the full extent of solution of continuity. In infected fracture of cancellous bone the superficial debris of smashed trabeculae, etc., requires removal. Solid bruised bone is able to resist infection and may be left. As penetration is at its maximum in the first few days, early opera-

tion is essential, especially in fractures of cancellous bone involving joints. Every artery directly or indirectly supplying a fractured bone is of importance in the defence against infection. In the presence of vascular injury proximal to the fracture, radical measures, such as amputation or resection of a joint may be adopted with less hesitation.

9. Method for Efficient Drainage of Knee Joint.—By means of proper position of the leg Mayo-Robson makes the suprapatella pouch the dependent part of the joint, and by the very simple operation of inserting a tube into the top of the pouch the whole joint can be completely evacuated and purified, and if this is done sufficiently early, a speedy recovery may be anticipated with the joint mobility unimpaired. Two changes of position will make the suprapatellar pouch dependent: (a) the vertical position of the limb at right angles to the body with the patient in the dorsal decubitus, or (b) the prone position of the body with the foot of the bed well raised. In both positions the limb must be efficiently fixed on a splint, as fixation in inflammation of the knee joint is only second in importance to drainage. If for any reason the vertical position is inconvenient or difficult to carry out, the prone position can be adopted, the foot of the bed being raised and the limb slung from above by pulleys and weights for the thigh and leg. As the prone position is irksome if prolonged, the patient, when once the joint has been emptied, may, if necessary, be turned on his back and the prone position adopted for from half an hour to an hour every four hours at first, and later about three times in the day, until the drain can be dispensed with. When once the joint has been thoroughly evacuated of its septic contents, and if needful gently washed out with warm normal saline solution, the synovial membrane of the knee, like the peritoneum, is capable of taking care of itself. Long continued drainage is very seldom required, and usually a movable joint will be obtained.

17. Pneumococcal Meningitis.—Nine cases of pneumococcal meningitis have come under the care of Worster-Drought and Kennedy. In five cases the disease was the so-called primary form; that is, no lesion conceivably due to active pneumococcal infection was discovered elsewhere. Of the five cases, two were infants and two were adults. The adults had had catarrhal colds for three or four days, followed by severe headache, prior to the appearance of meningeal symptoms, while the younger infant had had sudden convulsions. Following the appearance of headache, vomiting occurred in four of the five patients, and delirium rapidly supervened in the two adults. Of the four cases in which meningitis occurred as a secondary infection to a focus elsewhere, in two the primary lesion was a lobar pneumonia, in one middle-ear disease, and, in the last, an empyema of the sphenoidal sinus.

Edinburgh Medical Journal

October, XIX, No. 4

- 19 Pyorrhea Alveolaris. J. H. Gibbs.—p. 219.
- 20 Treatment of Yaws by Salvarsan and Allied Remedies. R. de Boissiere.—p. 226.
- 21 Writer's Cramp and Allied Affections; Their Treatment by Massage and Kinesitherapy. D. Graham.—p. 231.
- 22 Preparation of Dry Specimens for War Office Collection. G. Richardson.—p. 239.

Journal of Tropical Medicine and Hygiene, London

October 1, XX, No. 19

- 23 Case of Localized Gangrenous Vaccinia. A. J. Chalmers and R. G. Archibald.—p. 217.
- 24 Keratoderma Punctata. A. J. Chalmers and A. Kamar.—p. 218.
- 25 Tropical Diseases Met with in Balcanic and Adriatic Zones. A. Castellani.—p. 219.

Lancet, London

October 13, II, No. 4911

- 26 *Investigation into Effects of Cold on Body. N. C. Lake.—p. 557.
- 27 Chemical Affinities of Vibrio Cholera. L. Nicholls.—p. 563.
- 28 *Normal Gundeafness. T. B. Jobson.—p. 566.
- 29 Case of Traumatic Rupture of Heart. G. R. Turner and L. P. Gould.—p. 567.
- 30 Gastric Digestion of Various Foodstuffs After Gastro-Enterostomy. A. A. Wolko⁷ and E. E. Klopfer.—p. 568.
- 31 Case of Compound Fracture of Patella Treated by Wiring; Complete Functional Recovery. J. B. Hance.—p. 569.
- 32 Surging Galvanic Current in Treatment of Paralysis. E. P. Cumberbatch.—p. 570.

- 33 Case of Ruptured Uterus with Unruptured Membranes. H. Shufflebotham.—p. 571.
- 34 Case of Adenocarcinoma of Appendix. J. A. C. MacCwen.—p. 571.

26. Effects of Cold on Body.—Lake summarizes his paper as follows: (1) The temperature, 6 C., must be considered critical in relationship to the effects of cold on the tissues. (2) Degrees of cold below this temperature produce true frost bite and actual damage to tissues. (3) Degrees of cold above this temperature only produce effects secondarily by causing vasomotor paralysis. (4) Nerve blocking does not prevent either the effects of frost bite or of chilling. (5) The use of vasoconstrictors delays the swelling in cases of true frost bite, while in cases of chilling the exudation may be entirely prevented. (6) Satisfactory treatment of trench foot must be directed toward preventing any appreciable rise in capillary pressure. (7) In the production of trench foot cold must be considered the essential factor, other factors being either secondary or subsidiary. (8) Treatment by the use of vasoconstrictors, either intravenously or otherwise, would appear logical and worthy of trial. (9) Treatment by nerve blocking, either regional or central, is also suggested, although, in all probability, it cannot be expected to give good results unless used in conjunction with vasoconstrictors. (10) Prophylaxis consists in using any and every means of preventing congestion of the legs, and in avoiding, so far as possible, variations in the temperature. (11) The question as to whether any surgical procedure, such as temporary occlusion of the arteries, would bring about the desired reduction in capillary pressure is being investigated.

28. Normal Gundeafness.—Jobson endeavored to ascertain what proportion of soldiers exposed to gunfire go deaf, to measure, so far as possible, the amount of deafness produced in a previously healthy ear, to ascertain whether this deafness is temporary or permanent, and to investigate the type of deafness so produced. Sixty soldiers were examined. Many of the cases gave a history of severe or complete deafness for one or more days after exposure in a big "strafe," but almost invariably said they could now hear quite well. The cases were all infantry men, who would not be so close to big gunfire as the artillery. The conclusion of Lake's study was that exposure to gunfire in the present war often produces rapidly a permanent deafness. This normal—if the author may so call it—gundeafness is of a very definite type—a mixed obstructive and nerve deafness. The amount of deafness as shown by a C 2 fork is about ten seconds, aerial conduction, and four seconds of bone conduction.

Medical Journal of Australia, Sydney

September 15, II, No. 11

- 35 Ankylostomiasis in Papua. J. H. Waite.—p. 221.
- 36 Treatment of Syphilis in Australian Army. H. H. Griffith.—p. 223.
- 37 Case of Pericarditis Complicating Pneumonia in Infant. E. A. Tivey.—p. 227.
- 38 Epithelioma of Lip. W. A. Reid.—p. 227.
- 39 Strangulated Hernia in Child Three Weeks Old. J. H. Ingham.—p. 227.

Archives Médicales Belges, Paris

September, LXX, No. 9, pp. 793-896

- 40 *Treatment of Shock. W. H. Bayliss.—p. 793.
- 41 Vincent's Angina with Eruption: Two Cases. P. Nolf, A. Colard and P. Spehl.—p. 802.
- 42 Devices to Correct Paralysis of Hand and Leg. Privat and Belot.—p. 807.
- 43 *Nitrogen Minimum Ration. F. Malengreau.—p. 819.
- 44 The Value of Antitetanus Serum. J. Voncken.—p. 834.
- 45 The Medical Service in the Belgian Schools in London.—Schuermans.—p. 881.

40. Treatment of Shock by Intravenous Injection of Gum Acacia.—Bailiss is professor of physiology at the University College, London. He here discusses shock with subnormal blood pressure from loss of blood. The first indication, he says, is to restore the blood to approximately its normal volume, viscosity and osmotic pressure. Unless the injected fluid corresponds in these three points, it will fail to that extent in its purpose. In Bailiss' experiments on animals he found that intravenous injection of Ringer's fluid did not restore the blood pressure to normal. But with addition of 6 per cent. gum acacia to the fluid the blood pressure returned to normal. This evidently provided for a normal standard

of viscosity in the circulating blood. Army surgeons are finding solutions of gum acacia useful in the wounded when the drop in blood was due wholly or in part to the losses of blood. Bailiss noticed also in his experiments on animals that even the immediate benefit on the blood pressure from the solution of gum acacia surpassed that from ordinary saline solution, while the effect was permanent. The effect of Ringer's solution was quite transient. A 6 or 7 per cent. solution of gum acacia displays the same osmotic pressure as normal blood in parchment osmometers. The walls of the blood vessels, the same as parchment, are impermeable to colloids, and osmosis proceeds alike in both. When the osmotic pressure of the colloidal substances in the blood is diminished by dilution with a salt solution, filtration through the glomeruli occurs more rapidly than normal, so that the physiologic saline injected intravenously has a tendency to be eliminated in the urine, or it infiltrates into the tissues and may induce edema at various points. All who have made experiments on surviving organs perfused with Ringer's fluid have noticed sooner or later a tendency to edema. This does not occur if gum acacia has been added to the Ringer's fluid. Gum acacia at 7 per cent. or gelatin at 6 per cent. seems to conform to the requirements so far as the viscosity and the osmotic pressure are concerned, restoring practically normal conditions in these respects without danger for the animal. A 4 per cent. solution of gum acacia with 0.9 per cent. sodium chlorid gave excellent results in cats, and a 2 per cent. solution has been successfully used in the clinic. Gum acacia already contains calcium and potassium. This is the highest concentration used on man to date of which he knows.

Gum acacia can be easily sterilized by boiling and filtering through cloth; it is superior to gelatin on this account. It is not supposed to contain proteins, and hence anaphylaxis need not be feared. In shock of other origin, the blood may be abnormally concentrated from loss of water and salts. When this is the case, practically normal conditions can be restored by intravenous injection of Ringer's fluid. If the concentration is due to loss of the whole plasma, then the fluid to be injected should correspond in viscosity and colloid osmotic tension to the blood itself. Ringer's solution with 2 or 3 per cent. gum acacia seems to answer the purpose. There might be conditions in which it would be better to use a colloid with less viscosity but higher osmotic pressure, such as dextrin. The effect of hypertonic saline solutions is only temporary as the osmotic balance between the blood and the tissues is so promptly reestablished. Bailiss' experiments on cats with pulmonary edema, following inhalation of asphyxiating gas, confirmed that continuous administration of oxygen is the logical treatment. In the cats, withdrawal of even a small amount of blood reduced the blood pressure so low that death generally followed. Up to a liter of fluid has been found in the lungs in pulmonary edema in gassed soldiers. Intravenous injection of a 2 per cent. solution of gum acacia seems indicated, but as long as fluid is seeping into the lungs, it only adds to the flood unless we can restore the epithelium in the lungs to normal functioning, and oxygen seems the only reliance here. The suffering and dyspnea may persist, however, until the accumulated carbon dioxide has been thrown off by the amplified respiration.

43. The Nitrogen Balance.—Malengreau is professor of physiologic chemistry at the University of Louvain, and in the fourteen pages of this work he discusses the actual significance of the nitrogenous minimum.

Bulletin de l'Académie de Médecine, Paris

October 2, LXXVIII, No. 38, pp. 331-359

- 46 *Notification of Abortions and Miscarriages. P. Bar.—p. 333.
- 47 The Bread Question. (Le pain actuel.) Capitan.—p. 335.
- 48 *Syphilis and Heart Disease. E. Gaucher.—p. 349.
- 49 Extraction of Projectiles from the Heart. R. le Fort.—p. 354.
- 50 *Traumatic Glycosuria after War Wounds. F. Rathery.—p. 356.
- 51 Hibernation of Mosquitoes in Southeastern France. (Anopheles en Dauphiné.) L. Léger and G. Mouriquand.—p. 357.

46. Notification of Miscarriages.—The Académie adopted a resolution at its meeting October 2, in favor of applying to expulsion of every fetus, whatever the age of its intra-uterine

life, the regulations already promulgated in the civil code in regard to notification of stillbirths.

48. Syphilis and Heart Disease.—Gaucher reiterates that the field of syphilis is being constantly enlarged, especially the affections of what he calls the quaternary stage of syphilis. The inefficiency of treatment in this stage is no argument against the syphilitic origin; we cannot cure tabes, although tabes is certainly of syphilitic origin. He calls attention in particular here to lesions of the myocardium and especially mitral lesions for which syphilis is responsible. He describes a typical case of mitral insufficiency accompanied by vague intermittent pains, exclusively muscular and intermittent, the knee jerks abolished. The man had been long treated for "rheumatism" and digitalis given for the mitral trouble, no one suspecting the unmistakable syphilitic origin of the trouble notwithstanding a history of syphilis years before and the present signs of abortive tabes.

50. Glycosuria After War Wounds.—Rathery found glycosuria in 4.17 per cent. of 1,412 wounded soldiers. The range was from 2 to 20 gm. with exceptional cases up to 35 gm. The duration was only for two or three days, except in two cases in which it was respectively two weeks and several months. But it finally disappeared in all. No instance of actual diabetes developing after a war wound has been encountered.

Bulletins de la Soc. Méd. des Hôpitaux de Paris

July 27, XLI, No. 26, pp. 929-985

- 52 Polycythemia; Two Cases. (Maladie de Vaquez.) Yacoel.—p. 929.
- 53 Itching Eruption in Men Tending Sick Horses. G. Thibierge.—p. 933.
- 54 Unimicrobial Typhoid Epidemics. P. Hébert and M. Bloch.—p. 939.
- 55 Mutability of Bacilli of Typhoid Group Cultivated from the Blood. P. Hébert and M. Bloch.—944. Action on Culture Mediums when Mixed. Id.—p. 946.
- 56 *Vaccine Therapy of Typhoid. Ranque and Senez.—p. 950.
- 57 *Differentiation of Diphtheria and Pseudodiphtheria Bacilli. E. G. Aviragnet and Le Soudier.—p. 952.
- 58 Radiography of Rectocolic Lesions with Dysentery. A. Florand and R. Bensaude.—p. 963.
- 59 *Spirochetosis. Manine and Cristau.—p. 977.
- 60 *Attempt at Suicide with Epinephrin. R. Grasset.—p. 981.

56. Vaccine Therapy in Typhoid.—Ranque and Senez report that in forty-six cases in which the vaccine treatment was commenced during the first week of the typhoid, the febrile phase lasted on an average only sixteen days. In a total of 120 cases they were impressed with the rarity of complication, absence of relapses, and the simplification of treatment as in a large number of the cases no other measures were required.

57. Differentiation of Diphtheria Bacilli.—When circumstances demand exact differentiation, cultures on coagulated serum of the true diphtheria bacilli are dry and white, while those of the Hofmann bacillus are moist and yellow. The diphtheria bacilli are slender, with numerous granulations, the rest of the protoplasm of an even and pale tint, not taking or retaining stains well.

59. Meningeal Form of Spirochetosis.—Manine and Cristau report 100 cases with spirochetes in the urine and in some in the spinal fluid also. In 51 cases the liver symptoms predominated, in 10 the pulmonary; in 4 the kidneys; 10 were of a rheumatismal and 10 of a typhoidal type and 11 of the meningeal type. There were 4 deaths in this latter group and one in the typhoidal, but there was no other mortality. In 6 of the 11 meningeal cases the spirochetes were alone and in 5 associated with other germs. There was purpura in 3 in the meningeal group, hematuria in one; extreme opisthotonos for two weeks in one and coma from hypertension in one. Recurrence was frequent; several times the lumbar puncture had to be repeated. Emaciation and anemia were pronounced, and spirochetes were often found in the urine during convalescence. Antimeningococcus serum was injected in three cases while the diagnosis was still dubious, and it unmistakably aggravated the clinical picture. In the other cases lumbar puncture, a fixation abscess and fluid by the rectum, saline with laudanum, and balneotherapy were the reliance.

60. Attempt at Suicide with Epinephrin.—The tuberculous young janitor of a pharmacy drank 15 gm. of a 1:1,000 solu-

tion of epinephrin (adrenalin) and five minutes later 20 gm., and then took some other solid drug marked poison, nature unknown. No special symptoms followed until by the end of the second hour the back of the neck became rigid and in two or three hours there were tetaniform contractions, extreme congestion of the face and intense headache. The pulse was about 120, full and regular; amyl nitrite and venesection brought great relief after withdrawal of over 500 gm. of blood. Emetics were also given, with caffein and camphor, and chloral to quiet the agitation. By the next day the only symptoms were a dull headache and pain in the epigastrium. The dry poison taken had evidently not been absorbed as the gastric mucosa must have been exsanguinated. The case teaches that the first swallows of the epinephrin expel the blood from the mucosa of the alimentary tract and hence no further absorption is possible and an emetic will obviate further danger. In this case the epinephrin did not begin to be absorbed for two hours. Grasset draws further the practical conclusion that in administering epinephrin by the mouth it should be given in minute doses, not over 0.25 or 0.5 mg. By this means 2 or 3 mg. swallowed in the course of the twenty-four hours will have a more effectual action than 10 mg. taken at one time. The phenomena from the congestion are also practically negligible with minute doses. In the discussion that followed, Netter remarked that he gives epinephrin by the mouth, from 3 to 5 drops in a teaspoonful of water. By this technic the epinephrin is absorbed before it reaches the stomach. When diluted with considerable water, it is liable to be modified by the gastric secretions. Josué prefers to give epinephrin subcutaneously in infectious diseases with failing suprarenal functioning. He adds 1 c.c. of the 1:1,000 solution to 250 or 500 c.c. of physiologic salt solution. Addition of 0.01 gm. novocain prevents the injection from being painful. The epinephrin is absorbed so slowly when given in this way, that it amounts practically to fractionated dosage, and it can be kept up for several days, as long as the condition requires it.

Correspondenz-Blatt für Schweizer Aerzte, Basel

September 29, XLVII, No. 39, pp. 1249-1328. *Jadassohn Festschrift*

- 61 *Eczema. B. Bloch.—p. 1250.
- 62 Case of Blastomycosis of the Skin. W. Dössekker.—p. 1257.
- 63 Unusual Localizations of Favus. Du Bois.—p. 1265.
- 64 Bromid Ulcer on Nose. A Guth.—p. 1268.
- 65 Nonmalignant Epitheliomas of the Sweat Glands. E. Hedinger.—p. 1270.
- 66 General Principles for Treatment of Gonorrhea in the Female. P. Jung.—p. 1276.
- 67 Tuberculids of the Face Resembling Rosacea. F. Lewandowsky.—p. 1280.
- 68 Necropsy Findings in Case of Chronic Glanders. W. Lutz.—p. 1282.
- 69 Protecting Pastes for Roentgen Work. G. Miescher.—p. 1286.
- 70 *Neosalvarsan Exanthem Cured with Epinephrin. O. Nägeli.—p. 1291.
- 71 Edema of Epidermis with Mammary Cancer. C. Wegelin.—p. 1298.
- 72 Case of Congenital Absence of Testicles. H. Wildbolz.—p. 1307.
- 73 Peculiarities of Wassermann Reaction with Nontreated Tertiary Syphilis. M. Winkler.—p. 1314.
- 74 Percutaneous Absorption. K. G. Zwick.—p. 1319.

61. **Eczema.**—Bloch remarks that we know today little more about eczema than twenty years ago. As hexamethylenamin generates formaldehyd in the tissues when taken internally, Bloch reasoned that this drug might induce blood-borne eczema in the predisposed. A young physician subject to eczema from formaldehyd externally, took 0.5 gm. hexamethylenamin three times a day and in three days parts of the skin were red and itching. By the end of the week symmetrical areas were covered with typical eczema, most pronounced on the upper arms and shoulders. This experimental eczema gradually subsided on suspension of the drug. This case supplies the hitherto lacking proof that eczema can develop from an internal cause. Our task now is to discover in the metabolism and the body juices the substances which are responsible for the development of eczema. The formaldehyd split off from the hexamethylenamin in the case reported must have been in extremely minute amounts.

70. **Neosalvarsan Eruption Warded Off with Epinephrin.**—Nägeli reports the case of a young man who developed

patches of erythema on the face, with smarting in the left eye, fifteen minutes after an intravenous injection of 0.15 gm. neosalvarsan. The exanthem was of the type of the antipyrin exanthem. It subsided in twenty minutes but returned each time after the neosalvarsan during the following months until it was found that a preliminary intramuscular injection of 1 c.c. of a 1:1,000 solution of epinephrin warded off the exanthem. Unless the interval between the epinephrin and the neosalvarsan had been at least five minutes, the exanthem developed, and the area affected varied inversely with the dose of the epinephrin. Given by the mouth, no effect was apparent. The conjunctiva of the left eye, the cheeks and the brow responded most sensitively to the irritation from the neosalvarsan, as also the areas around pigmented nevi—all very vascular regions. Nägeli also witnessed excellent effects from epinephrin in arresting the disturbances in a severe case of meningeal irritation after neosalvarsan. Milian introduced epinephrin into treatment of the anaphylactoid attacks after salvarsan, resembling the vasodilator disturbances sometimes noted under amyl nitrite. Nägeli further warded off in this way the violent diarrhea to which three patients were subject when taking mercury. After an intramuscular injection of 1 c.c. of the epinephrin solution, the mercury could be given without the otherwise inevitable diarrhea. In other cases the epinephrin proved equally effectual in warding off symptoms of medicinal intolerance. In only one instance did it fail; this patient at the single trial said that his mercury vertigo was worse after the epinephrin. The neosalvarsan exanthem may be due to a pure idiosyncrasy of the skin alone, or the internal organs may share in it, or the latter alone may be affected first and the skin only secondarily from the toxic products generated in them, especially in the liver. As a typical example of the latter, he cites Neisser's arsenophenylglycerin case with a fatal outcome. The first dose had induced only what seemed to be a pure drug exanthem.

Annali d'Igiene, Rome

September, XXVII, No. 9, pp. 549-607

- 75 The Streptothrix in Disease of the Lung. F. Sanfelice.—p. 549.
- 76 Pigment-Producing Bacteria. (Biologia dei cromogeni.) M. Pergola.—p. 552.
- 77 The Haemotrichomonas Gallinarum n. sp. F. Martoglio.—p. 561.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 27, XXXVIII, No. 77, pp. 1041-1048

- 78 Physiologic Treatment of Infected Wounds. E. Bertarelli.—p. 1041.

September 30, No. 78, pp. 1049-1064

- 79 *The Organ of Hearing during the War. F. Brunetti.—p. 1049.
- 80 The Great Question of Proprietary Medicinal Articles. (Specialità medicinali.) E. Villa.—p. 1063.

79. **The Ear During the War.**—Brunetti reviews the various causes liable to injure the organ of hearing during the present warfare. He discusses in particular the injuries from explosions without direct contact, and the detection of simulated or exaggerated deafness in one or both ears. This is particularly difficult when there is or has been hysteric deafness. With this, other stigmata of hysteria must be sought; the reactions to electric tests may be modified. An electric shock alone may cure hysteric deafness. General anesthesia has proved useful in some cases and hypnotism in others, or both together. The areas of hypesthesia in the skin are instructive, as also changes in the visual field and inversion of colors.

Pediatria, Naples

October, XXV, No. 10, pp. 577-640

- 81 *Color Reaction in Pathologic Cerebrospinal Fluid. L. Chiaravalloti.—p. 577; R. Vaglio.—p. 581.
- 82 *Organic Nature of and Calcium Metabolism in Chorea. U. Provinciali.—p. 586.
- 83 Vaccine Therapy for Children. P. Ceppellini.—p. 602. Continuation.

81. **Color Reaction in Cerebrospinal Fluid.**—Chiaravalloti has applied Boveri's color test in thirty cases of various meningeal troubles and normal controls, and expatiates on the simplicity of the technic and the reliability of the bedside findings. [The test was described in THE JOURNAL, June 11,

1914, p. 205.] To 1 c.c. of the cerebrospinal fluid is added 1 c.c. of a 1:1,000 solution of potassium permanganate. If the cerebrospinal fluid is normal, the violet tint persists unmodified for some time. With a pathologic fluid, the tint turns yellowish, and the sooner and more intense the phenomenon, the more pathologic the cerebrospinal fluid. He tabulates the findings with parallel tests in his thirty cases, all confirming the other clinical data.

Vaglio confirms these favorable statements and emphasizes in particular the importance of this simple test when there are dubious symptoms and the cerebrospinal fluid is limpid. In thirteen such cases the albumin content of the fluid was only slightly above normal, but this test revealed its pathologic character, confirmed by the course of the cases. He notes further that the reaction does not seem to be modified by the accidental presence of red corpuscles in the fluid. His technic differs slightly from Boveri's as he uses only 1 drop (0.05 gm.) of a decinormal solution of potassium permanganate for 1 c.c. of the fluid, shaking up the test tube.

82. The Organic Basis of Chorea.—Provinciali reviews the literature on this topic and describes his personal research undertaken to determine whether symptoms of chorea indicate participation of the pyramidal tracts and cerebellum in the meningo-encephalitis which seems to be responsible for chorea. The manifestations of the disease are so multiple and variable that it is difficult to pass judgment on their source and nature. But with extensive compilations of cases it has become evident that the aggregation of certain symptoms, each insignificant in itself, points more and more conclusively to an organic basis. Cerebellar elements in the clinical picture are hinted in over half the cases. Three cases are described in detail with the findings as to metabolism of calcium compared with a normal child, all on a constant diet. In the child of 7 there was little deviation from the normal type, but in the girl of 14, instead of retention of over 30 gm., only 0.918 gm. was retained and nearly 4 gm. eliminated in urine and feces.

Policlinico, Rome

September 16, XXIV, No. 38, pp. 1149-1176

84 *Treatment of Pyothorax. E. Morelli.—p. 1149.

September 23, No. 39, pp. 1177-1204

85 *Practical Value of Exact Coaptation of Nerve Fibers in Anastomosis of Nerves in the Limbs. C. Barile.—p. 1177.

86 Case of Alleged Occupational Cerebral Hemorrhage. A. Ranelletti.—p. 1182.

87 Median Longitudinal Incision of the Patella. P. Nigrisoli.—p. 1185. M. Fasano.—p. 1186.

88 Dentistry for the Combatants. A. Piperno.—p. 1187.

89 The Otorhinolaryngologic Service in the Army. G. Turtur.—p. 1189.

90 Trachoma in the Army. L. Alajmo.—p. 1191.

84. Treatment of War Wounds of the Chest.—Morelli urges the promptest and most complete clearing out of all the blood in the chest, and has devised an apparatus with which the blood is replaced at once by air, thus maintaining the immobilizing compression desired while getting rid of blood, pus, and all secretions. The apparatus for the purpose is a modification of the one devised for thoracocentesis. The illustration shows the two jars with two tubes in the stoppers, connecting tubes, a rubber bulb at one end and a syringe at the other, the aspirating needle connected with the tubing between the jars. The apparatus allows the chest cavity to be rinsed out with a disinfectant if desired. At the beginning of the war, abstention was the rule for chest wounds, but this principle has given way to systematic intervention just as with abdominal wounds. The results are better the earlier it is applied, but mastery of the technic is indispensable.

85. Coaptation of the Special Fibers in Suturing Peripheral Nerves.—Barile discusses the practical importance of Stoffel's method of ascertaining the topography of the nerve fibers and suturing like to like. It has been Barile's experience in a number of cases and in experimental research that only the motor fibers of the paralyzed nerve regenerate in the mixed nerves in the limbs after direct electric tests have been applied. On the other hand, time and experience have abundantly confirmed the superiority of his own technic which ensures a large area of coaptated surface, while the nerve fibers, both sensory and motor are left intact. [His method

was described in THE JOURNAL, Jan. 11, 1913, p. 170.] He protects the nerve with a piece of the membrane from a hen's egg, boiling first in a gauze bag and then tying it around the nerve, fastening the end of the piece to the connective tissue. This membrane shield lasts long enough before it is absorbed for healing to proceed beyond the stage of adhesions to the nerve. For the anastomosis of the paralyzed nerve, to be grafted on the sound nerve, he cuts the peripheral stump end of the paralyzed nerve in swallow-tail shape, and fits it up into the sound stump prepared to receive it. Each of the swallow-tail tips is fastened in place in the sound nerve with a single stitch. The raw surface between the stumps covers a much larger area than with other technics, and the results, he says, have been most gratifying. The egg membrane is proving a reliable means to protect a nerve after it has been released from a constricting bed of cicatricial tissue.

Revista de la Asociacion Medica Argentina, Buenos Aires

August, XXVII, No. 153, pp. 5-224

91 Circinate Degeneration of the Retina. R. Argañaraz.—p. 5.

92 Syphilitic Pancreatitis. C. B. Udaondo.—p. 19.

93 Sarcoma of Brain of Man of Thirty-Six. M. R. Castex and R. Pradere.—p. 30.

94 *Ileosigmoidostomy for Chronic Constipation. A. Ceballos.—p. 48.

95 History of Hygiene in Argentina. E. R. Coni.—p. 66. Continuation.

96 Putrefaction and Antiputrefaction Bacteria in Milk. E. Fynn.—p. 115.

97 *Pancreatic Diabetes. P. J. Hardoy.—p. 123.

98 Successful Removal of Rhinophyma. J. M. Jorge and A. Speroni.—p. 131.

99 *History of Bubonic Plague. A. M. del Pont.—p. 165. Conclusion.

100 *Pulmonary Tuberculosis in Children. J. C. Navarro.—p. 197.

94. Shortcircuiting the Lower Intestines in Treatment of Chronic Constipation.—In the case reported by Ceballos the benefit from ileosigmoidostomy in the young woman was so pronounced that it certainly encourages further trials of this shortcircuiting method in treatment of habitual obstipation. The various other technics for remedying this condition are described with this, and its advantages extolled in cases of constipation for which no cause can be discovered and vagotomy or sympathectomy seems to be responsible.

97. Pancreatic Diabetes.—Hardoy reports a case in a young man of 21 in whom the pancreatic diabetes had rapidly developed. Certain features of the case suggested an inherited syphilitic taint as responsible for the trouble. The diabetes was of the lean type, of rapid development, with high azoturia and glucosuria, and great prostration. Hardoy recalled that hypertony of the sympathetic system has been incriminated by some in the genesis of glucosuria, but tests in this case failed to reveal any sympathetic hypertony. Certain circumstances suggested that although there was no sympathetic hypertony, practically the same effect was realized by hypotony of the antagonist vagus system. Tests for vagotomy gave positive findings, and he tentatively administered pilocarpin to raise the vagotomy level to normal. The effect was marked, amply confirming his premises. As the nervous system became habituated to the pilocarpin, the effect grew constantly less. At this point he began vigorous mercurial treatment, and the sugar disappeared promptly from the urine. To confirm these conclusions anew, he brought on the glucosuria again by a change of diet, and banished it promptly anew with pilocarpin. In conclusion he reiterates that syphilis should always be sought in diabetics. He adds that severe diabetes of the pancreatic type, in the young, is liable to improve remarkably under treatment, which might include pilocarpin.

99. Bubonic Plague.—This instalment brings to a close Del Pont's long historical sketch of bubonic plague through the ages. In Argentina it seems there were 1,635 cases from 1899 to 1913, inclusive. It appeared also in Brazil for the first time in 1899. Rosario in Argentina is still an important focus, 40 cases in and around it being known in 1914. It had the first case of plague in the country, imported from Paraguay whence it spread to Buenos Aires. But the Salta focus became infected, by way of Chili, from the endemic focus at San Francisco. "This," he adds, "is the city that with its commerce scattered the plague along the entire Pacific Coast of America." The data show, he says, that in Argentina the

disease has not been spread by migration of rats but exclusively by the railroads. The disease always appeared first in the grain warehouses, in warehouses where there are goods in sacks and, predominantly, in the vicinity of railroad stations.

Del Pont's study of the plague through 4,000 years shows that it occurs in waves. It spreads rapidly around the world, following the routes of commerce, and then seems to die out simultaneously everywhere, without known cause. The decline cannot be from attenuation of the death-rate as the mortality in the latter part of the epidemic is as high as at first. It cannot be explained either by acquired immunity, as this would require having passed through a mild attack. When the epidemics declined, scattered endemic foci were always left, as at present in Buenos Aires and Rosario, Rio, Para, Pernambuco and Bahia in eastern South America. But such foci usually die out before long all except a very few. These places shelter the virus until it starts another pandemic. In previous ages bubonic plague killed human beings and domestic and wild animals alike, but of recent years it seems to be pathogenic only for man and certain rodents; at least the latter are the only ones that have the disease naturally. But the virulence of the disease has not been modified. Men die of it now just as promptly as in the days of Thucydides or Procopius.

The present epoch is now characterized by a disquieting persistence of the disease in the scattered endemic foci around the world. Many places that had never had a case ten years ago, have now become actual endemic foci on a small scale. The present epidemic seems to be favored by unhygienic conditions, as in the epidemics of previous ages. The prophylactic measures at present in vogue are effectual only in certain circumstances, and they succeed in extinguishing the disease only in certain localities. In the semibarbarous districts they do no good whatever. On the other hand, the most civilized communities escape with relative facility without much in the line of special measures. As Aubert said in 1840, "the plague must be combated not with lazarets but with civilization." The classic foci hitherto have been parts of southern and northeastern Asia, Mesopotamia, Arabia, the Caucasus mountains, and Kissiba in Africa between the lakes Albert and Victoria, but Del Pont's summary shows now many other equally dangerous foci.

100. Special Forms of Pulmonary Tuberculosis in Children.—Navarro describes six cases of chronic pulmonary tuberculosis in children in whom extensive lesions in the lungs did not appreciably debilitate, all presenting the aspect of health. One of the children did not even have a cough. The only constant symptoms were the lack of appetite and the tendency to lassitude. They were usually pale, but one had quite a ruddy complexion. All except one were annoyed by frequent coughing without dyspnea, cyanosis or subjective symptoms. Two of the children were 4 and 5, the others, between 8 and 14. In two, the right or left apex was the seat of the lesion; in the others, the base of the lung.

Semana Medica, Buenos Aires

August 16, XXIV, No. 33, pp. 177-202

- 101 Vaccine Therapy of Diphtheria. (Tratamiento de la difteria por la haptinogenina.) J. Mendez and L. A. Garcia.—p. 177; (El haptinogeno Neumo complemento del tratamiento antidifterico.) M. Ochoa.—p. 204.
- 102 Radium Treatment of Cancer. E. Jonquieres.—p. 202.

Siglo Medico, Madrid

September 15, LXIV, No. 3327, pp. 685-704

- 103 Pathogenesis of Suicide in Dementia Praecox. G. R. Lafora.—p. 686.
- 104 Albumin Reaction in the Sputum in Diagnosis of Pulmonary Tuberculosis. A. J. T. Lopez.—p. 689.
- 105 Hydrogen Dioxid—Lanolin Salve. Sicilia.—p. 692.
- 106 The Aims of Medical Inspection of Schools. M. de T. Latour.—p. 692.
- 107 The Blood Findings in Employees of Gas Works. J. de la Riva-herrera.—p. 693.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

August 18, II, No. 7, pp. 533-612

- 108 *Do Animals Feel Pain? (Voor en tegen proeven op levende dieren, II.) G. van Rijnberk.—p. 533.

- 109 Generalized Mycosis Caused by *Monilia Alcalophilis*. E. E. A. M. de Negri and J. B. Waller.—p. 537.
- 110 Burow's Solution of Aluminum Acetate in Treatment of Wounds. N. Schoorl.—p. 548.
- 111 Etiology of Scroderma. J. Koopman.—p. 553.
- 112 Psychoanalysis. W. L. L. Carol.—p. 561.
- 113 Orbital Abscess with Disease of Lacrimal Sac. G. ten Doesschate.—p. 564.

108. Is There Sensation of Pain in Animals?—Van Rijnberk is professor of physiology at the University of Amsterdam. He here remarks that theoretically it is impossible, and practically it is often difficult, to determine whether a human being is suffering pain, and to determine whether an animal can suffer or does suffer pain is even more difficult. Have animals (all animals? one given animal?) mind, reason, consciousness? Have they (all? a given one?) perceptions comparable to those of man? One person regards all animals as merely automata; another believes that a horse can do examples in arithmetic.

But so far as determination of whether an animal is suffering "pain" or not is concerned, we are exclusively restricted in our judgment to vague signs, such as sounds, movements, and the like as testifying to the presence of pain. We have to bear in mind here that nothing, literally nothing can guarantee to us that in a given case any manifestation which we are accustomed to consider as an expression of pain—nothing can guarantee to us that in reality this manifestation is accompanied by conscious perception.

The extent to which one can be misled by assuming that the apparent manifestations of pain are reliable signs of such, is rendered plain by Norman's angleworm experiments which any one can repeat with an angleworm, a pair of scissors and a little loose dirt. Who is there that has not seen an angleworm curling up and twisting when part has been stepped on or been chopped by a spade? Norman subjected these "pain contortions" to closer analysis, and found that when an angleworm is cut in two with scissors, the tail end writhes and twists as if in agony, but the head end, the supposed seat of the perception of pain, creeps quietly onward. By cutting each half again in two, the part toward the tail begins to twist and writhe while the part toward the head lies quite still or creeps quietly on. Even the front end of the previously twisting tail part, becomes quiet when it is severed anew, while the rear portion continues twisting. Whatever the explanation of these facts can be, it is most certainly evident that the writhing of an angleworm cannot be regarded as an expression of "pain," because that very end of the body where the higher centers are supposed to be located does not share in the manifestations. Similar but not quite identical phenomena are observed with eels and lizards. If the tail of a lizard is suddenly chopped off, the tail begins to jump about, but the body of the lizard soon lies quiet. Here too we see the apparent expressions of pain in the part of the body where we would least expect it. Such facts show how cautious one must be in the interpretation of the supposed objective expressions of subjective sensations in animals.

Even assuming for the sake of argument that all animals possess varying degrees of conscious perception, this does not answer the question as to whether they feel pain. There are numerous grounds for assuming that, at least in man, pain is a function of his highest psychic powers. It seems to be a general rule that the more intense the response in the form of pain to a given injury, the more highly developed the nervous system responsible for the sensation. The civilized man feels pain where the savage would not notice the irritation. In imbeciles and idiots the sensation of pain seems to be rather vague. Applying these data to the whole animal kingdom, the sensation of pain can be regarded as a psychic supplement to the unconscious reflexes, which has been regularly developed in the animal series in response to injurious influences. Each irritation starts in the nervous system a series of more or less effectual reflexes, movements for flight or defense, or secretion of fluids, as of saliva in the mouth, tears to protect the eyeball, etc. For the behavior of an organ or the whole animal in these circumstances it is immaterial whether these useful reactions are associated or not with a conscious sensation of pain.

Supposing that an animal sticks his paw in a flame. The reflex mechanism from his spinal cord draws the paw back out of the flame, and it is immaterial for the paw whether the animal felt pain thereby or not. But for the further existence of the animal it is of the greatest importance whether he can profit by this experience or not. The next time, warned by the sight of the flame, he may keep cautiously out of the reach of the bite of the flame monster. But learning this lesson presupposes the presence of a number of psychic properties and power of reasoning, recognition, memory, association and deduction. In the absence of all these mental processes the sensation of pain would be of no possible use and quite superfluous. There is thus great probability that the (subjective) perception of pain is a later acquirement than the manifest (objective) reaction to injurious stimuli. It forms a sort of psychic by-product, a by-phenomenon of the automatic reflex. And, as a psychic phenomenon, it is closely connected with the development of the mind.

Hospitalstidende, Copenhagen

August 22, LX, No. 34, pp. 813-836

114 *Residual Nitrogen in the Blood with Surgical Kidney Disease. A. Sabroe.—p. 813.

114. Residual Nitrogen in the Blood with Surgical Kidney Disease.—Sabroe remarks that none of the functional tests for the kidneys, with stains, experimental polyuria or determination of the freezing point, have proved unfailingly reliable. They all overlook the vital point that the functioning of the kidneys at a given moment is not necessarily the criterion for their average functional performance. The most reliable information as to the functional capacity of the kidneys seems to be afforded by the urea content of the urine taken from each ureter separately. Positive findings are strong evidence in favor of operability, but the reverse is by no means the case. With surgical tuberculosis, there is always a possibility that the part of the kidney which it is proposed to remove may in reality be the very tissue responsible for the approximately normal functioning. Determination of the residual nitrogen in the blood as a test for the functional capacity of the kidneys, Sabroe declares, is of no clinical value in estimation of surgical kidney affections, as the rise in the residual nitrogen content does not occur until so late in the disease that the clinical findings alone tell the story by that time. This conclusion is based on study of eight patients with tuberculous lesions in the urinary passages, ten with nontuberculous lesions given operative treatment, and eight mixed cases. These twenty-six cases are tabulated with full details, filling thirteen pages, all confirming the disappointing verdict.

Norsk Magazin for Lægevidenskaben, Christiania

April, LXXVIII, No. 4, pp. 393-504

115 *Chorea. II. C. Schiøtz.—p. 393.

116 Nutritional Disturbances in Infants. C. Johannessen.—p. 427.

117 The Normal Peristalsis of the Colon. J. Nicolaysen.—p. 447.

118 Pure Word Blindness. J. Henriks.—p. 452.

119 *Carbon Monoxid Poisoning in Motor Boats. F. Harbitz.—p. 462.

115. Chorea.—Schiøtz concludes from his experience with 211 cases of chorea that it is a neurosis which develops in the predisposed mainly between the eighth and twelfth years in boys, and two or three times as often in girls; usually between the sixth and fourteenth years in girls. There were representatives of all ages under 23 in the total 376 cases tabulated, which includes 165 Danish cases. The inciting causes may be of infectious or toxic nature or emotional stress, but the predisposed age is the period of most active growth. The years closest to puberty are less affected. True chorea has never been observed in animals. The tabulation shows further that the largest number of cases develop in November and the smallest in July. Analysis of 28,754 cases of acute articular rheumatism in Norway, 1907-1913, shows that it affects the sexes about alike. Over 20 per cent. of the cases were in children under 15, consequently we have no ground for calling chorea "childhood's acute articular rheumatism" as some do. Chorea is most prevalent in towns, and among bright, ambitious schoolchildren just at the years when the greatest proportionate demands are being made on

the brain and nervous system, and the metabolic processes are particularly lively.

Treatment is like that for neuroses in general, tranquilizing measures with nourishing food and hygiene. The unmistakable benefit from arsenic may be on account of its checking the metabolic processes in general, so that it acts as a sedative. In the pregnant, besides the intensified metabolic processes, there may be an eventual intoxication, conditions thus comparable to the period of most active growth in children. A compilation of 217 cases of pregnancy chorea shows that in 140 of the women it developed in the first half of the pregnancy. In a further compilation of 224 cases of pregnancy chorea, 106, nearly half of the women, were under 21 and 102 between 21 and 26, leaving only sixteen older than this in the total 224 cases. Youth in the pregnant women is thus a predisposing factor to pregnancy chorea. Possibly roentgenoscopy might show in cases of pregnancy chorea that some of the epiphyses have not yet become united to the shafts of the bones, showing that the period of active growth still persists. Infections, autointoxications and emotional stress may be the source of the reflected irritation in the pregnant as well as in children.

119. Carbon Monoxid Poisoning in Motor Boats.—Harbitz describes several cases of poisoning from leakage of exhaust gas into the small cabin of a motor boat. In one case a party of four young persons went out on a pleasure trip. Two went into the small cabin and shut the door. In half an hour the others entering found the young man dead and the girl unconscious. The air was close in the room but there was no special odor, no smell of gasoline. The young man was a healthy athlete. He was found stretched out with closed eyes; there was no foam at the mouth and he had not vomited, but had voided excreta. Nothing was found to indicate suicide, and the blood confirmed the assumption of carbon monoxid poisoning. The motor was defective and leaky; the exhaust gas contained unusual amounts of carbon monoxid and the arrangements were such that the exhaust gas might have accumulated in the cabin. Women seem to be more resistant to carbon monoxid than men, and the young woman in this case finally recovered. In a series of 360 cases of coal gas poisoning at Paris, man and wife were affected together in nineteen, and the three survivors were all women. Women in an unconscious condition can hold out longer, as their need for oxygen is less.

Four workmen later had a similar accident. All were fasting, and sought shelter from the cold in the small cabin of the motor boat, 2 by 2 by 1.5 meters in size. All were found unconscious, ice-cold, but not cyanotic; respiration was weak and shallow. Their arms were stiff and pressed tight against the body and the jaws closed tight. Some had vomited and defecated, and the urine flowed spontaneously. Under artificial respiration and massage, heat and stimulants, they were revived in the course of a few hours. Two did not regain consciousness until the next morning. All had headache and nausea and were unable to go to work for a few days, but finally all recuperated. In these motor boats a seat was built in entirely around the edge of the boat and formed a closed space. Leakage of exhaust gas into this space thus permitted it to gain entrance into the cabin. Harbitz calls attention in particular to the stiffness of the body in a seated position in all the four men. It seemed to be an actual rigor mortis in the living body. In the fatal cases of carbon monoxid poisoning, the rigor is generally exceptionally intense. Hultkvist recently noticed signs of carbon monoxid poisoning in himself while waiting in his garage for his automobile engine to heat up. A rat exposed close to the exhaust gas died. He warns further that the dangerous gases from a garage may rise. Harbitz describes further the case of Dr. Kildal, 45 years old, who spent the night on his motor boat. It was a covered boat, with a gasoline engine and a portable heater. The latter was lighted for one hour and later for half an hour. In the morning the engineer felt headache and nausea and found the doctor, stiff and cold beside him, the blood showing carbon monoxid poisoning. Harbitz regards the carbon monoxid in the exhaust gas as responsible for these accidents.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 21

CHICAGO, ILLINOIS

NOVEMBER 24, 1917

COMPARATIVE RESULTS OF VARIOUS FUNCTIONAL KIDNEY TESTS

BASED ON A SERIES OF CASES *

B. A. THOMAS, M.D.

AND

J. C. BIRDSALL, M.D.

Professor and Associate, respectively, in Genito-Urinary Surgery,
Polyclinic Hospital and College for Graduates in Medicine

PHILADELPHIA

So long as the chief cause of death following operations on the genito-urinary tract continues to be uremia, just so long will the concern of the up-to-date conscientious surgeon be the determination of the functional efficiency of the kidneys. Disregard for this important matter too often furnishes the mark of distinction between the skilled urologist and the general surgeon, and explains the relatively high mortality rate for urologic operations in the experience of the general surgeon. Investigation recently¹ revealed the alarming statistics that in twenty-six hospitals in this and neighboring states the mortality for nephrectomy and prostatectomy at the hands of general surgeons was 25.9 and 22.5 per cent., respectively, as contrasted with 7.7 and 4.33 per cent. in seven times the number of operations by eight of the world's most noted urologists. In other words, this means that in a large minority of such operations from 75 to 80 per cent. of deaths are avoidable.

Unfortunately, the urologic world has been almost submerged by a plethora of functional kidney tests—good, bad and indifferent. These are divisible into those of elimination and those of retention, and comprise the forty-five given in Table 1, in the order of their appearance.

It is conceded that the most accurate method of determining the kidney function is a quantitative metabolic study. At the same time it is fully realized that in the vast majority of instances such a procedure is not only impracticable, but not infrequently fallible. Thus the profession has turned to, employed, and discarded one after another of the long list of functional tests; nor is the disputed question yet settled as to which is the best.

In the past it has been the practice of urologists in various parts of the world to employ one or more tests in their particular groups of cases, drawing conclusions as to which was the best. Synchronously or subsequently in another quarter of the globe another investigator has reported his researches, relying on one or more other tests in an entirely different group of cases, but nevertheless asserting the discovery of the most reliable test, irrespective of the fact that he may have had little or no experience with the beloved idol of his professional brother. It may be true that there are several tests equally good. On the other hand, the fact may be that one of the host is truly superior to all the rest, not only as to reliability, but also as to practicability.

It occurred to us that more accurate information relative to the comparative value of the functional

TABLE 1.—FUNCTIONAL KIDNEY TESTS

| TESTS OF ELIMINATION | TESTS OF RETENTION |
|------------------------------------|---|
| Total quantity of urine. | Total urinary solids |
| Odor after asparagus (1820) | Normal urinary salts (alkaline chlorids, phosphates and sulphates, and alkaline earths) (excretion) |
| Odor after turpentine (1820) | Urine urea (excretion) (1872) |
| Opium (1857) | Total nitrogen (1883) |
| Mercury (1865) | Cryoscopy (blood, urine) hemorenal index (1898) |
| Iodid of ethyl (1867) | Electrical conductivity (blood, urine) hemorenal index (1903-1904) |
| Potassium iodid (1867) | Wright's excretory quotient (1904) |
| Potassium bromid (1867) | Chlorids (blood, urine) hemorenal index (1907) |
| Indigo (1867) | Urea nitrogen (blood, urine) (1908) |
| Anilin (1867) | Ambard's constant (ureosecretory index) (1910) |
| Turmeric (1867) | Urinary toxicity (1910) |
| Alkaline carbonates (1867) | Acidosis (1910) |
| Fuchsin (1877) | Blood nonprotein nitrogen (1912) |
| Quinin sulphate (1877) | Creatinin (1914) |
| Salicylic acid (1877) | Creatin (1914) |
| Benzoic (hippuric) acid (1879) | Uric acid (1914) |
| Methylene blue (1897) | Indican (1914) |
| Rosanilin (1898) | Phosphates (1916) |
| Phlorizin (1899) | |
| Indigocarmine (1903) | |
| Experimental polyuria (1904) | |
| Diastase (1908) | |
| Phenolsulphonephthalein (1910) | |
| Pepsin (1912) | |
| Uranin (sodium fluorescein) (1913) | |
| Lactose (1913) | |
| Trypanblue (1914) | |

tests might be obtained by subjecting each of a group of patients to all of a series of some of the more reliable, and commonly employed, kidney tests. Accordingly, for the past two years, when not inadvisable, we have carried out painstakingly and impartially the following ten functional kidney tests: indigocarmine, phenolsulphonephthalein, the total nonprotein nitrogen of the blood, the urea nitrogen of the blood and urine, the urine urea by the sodium hypobromite method (Doremus-Hinds ureometer), Ambard's ureosecretory constant of the blood and urine, the creatinin of the blood, and the cryoscopy of the blood and urine.

These ten tests have been selected for study from the extensive list, chiefly because several of them are routine methods and are believed to be the most reliable and practical. A number of others, namely, phlorizin, potassium iodid and lactose, experimental

* From the Department of Genito-Urinary Surgery and the Polyclinic Laboratories, Polyclinic Hospital and College for Graduates in Medicine.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

1. Thomas, B. A.: The Significance of Specialism in Surgery with Reference Especially to Genito-Urinary Surgery, Pennsylvania Med. Jour., 1916, 20, 101.

polyuria, acidosis and chlorids, might have been included, but would probably not have proved more meritorious than those utilized, and would merely have imposed an additional inexcusable ordeal for the patients. Phlorizin has few adherents today. Whether or not the test is too sensitive, grave fallacies or inconsistencies have arisen in the study of both normal and diseased kidneys, rendering the test undependable in the experience of most investigators. Potassium iodid and lactose in conjunction with salt and water possess mainly a clinical interest, and have been utilized for the differentiation of tubular and glomerular nephritis. This is a matter which interests internists rather than surgeons. Moreover, the method lacks universal confirmation. The experimental polyuria test of Albarran has much to recommend it, but is open to the following objections: (1) difficulties with ureteral catheters and accurate collections of the respective urines; (2) unilateral reflex stimulation or inhibition of function, incident to catheterization; (3) the fact that two or three hours is an unjustifiably long time to permit the ureteral catheter to remain in situ; (4) the inability of some patients to drink the required amount of water; (5) occasionally, the failure to produce polyuria by increased water intake, and (6) in slight lesions of the kidneys the inability to detect differences between the two sides. Acidosis and the phosphate and chlorid content of the blood are estimations promissory of much value in nephritis, but as yet possess only clinical and research importance.

TECHNIC EMPLOYED IN TESTS

Indigocarmin.—In the cases furnishing the text of this report, in order to parallel the method of employment of phenolsulphonephthalein, indigocarmin was administered intramuscularly,² although for years in many cases we have injected the dye intravenously and now prefer this method for chromo-ureteroscopy in the unilateral determination of kidney function. The quantitative determinations were made for three hourly intervals, the Duboscq³ or a recently improvised less expensive colorimeter (Fig. 1) being utilized. Due consideration was accorded the onset of elimination and the quantitative output, although greatest reliance was placed on the index of elimination,⁴ that is, the ratio of output for the first and third hours, respectively, taking into consideration the onset and alterna-

tive interval quantitative output, and hence the stability of kidney function.

Phenolsulphonephthalein.—The application of this test varied from that stipulated by Rowntree and Geraghty⁵ in the following respects: The quantitative output was computed for three instead of two hours, and the elimination for the first hour was measured from the time the drug was administered, not from the time it first appeared. It has frequently happened that twenty minutes, a half hour, or even an hour or more, has elapsed following the injection of phenolsulphonephthalein before its appearance in the urine. It has therefore seemed more rational, scientific and accurate to regard the quantitative output for the first hour from the time the drug was administered; otherwise the quantity commonly regarded as eliminated for the first hour comprises, that for the hour after elimination begins, plus the time required for it to appear. The latter is a wide variable in renal disease, and, we believe, should not be disregarded.

Determination of Nonprotein Nitrogen of the Blood.—The method employed for the estimation of the nonprotein nitrogen of the blood is in general that followed by Folin and Denis.⁶

Ten c.c. of blood are withdrawn from a vein and placed in a 100 c.c. volumetric flask containing about 5 drops of a 20 per cent. solution of potassium oxalate. The flask is immediately shaken and filled up to the 100 c.c. mark with methyl alcohol — acetone free. The flask is vigorously shaken and allowed to stand, tightly stoppered, for at least two hours. The fluid is then separated from the coagulum by filtering. From 2 to 3 drops of a saturated alcoholic solution of zinc chlorid are now added to the filtrate, and after a few minutes the mixture is again filtered.

Ten c.c. of the alcoholic filtrate, which are the equivalent of 1 c.c. of blood, are pipetted into each of two thin glass test tubes, about 200 mm. in length and 25 mm. in diameter. Four-tenths gm. of potassium sulphate, 1 drop of a 10 per cent. copper sulphate solution and 1 c.c. of concentrated sulphuric acid—all reagents to be of highest purity—are added to each tube in the foregoing order. The test tubes are then placed in convenient holders and heated over small microburner gas flames until the mixture becomes completely colorless. As soon as the test tubes have become cool, 8 c.c. of distilled water are added.

Aeration of the ammonia is carried out in the following way:

Into each of two 500 c.c. Erlenmeyer flasks are placed 200 c.c. of distilled water, 10 c.c. of fiftieth-normal sulphuric acid and a few drops of the indicator—Congo red. Each flask is now closed with a two-hole stopper having a Folin tube passing nearly to the bottom of the flask.

The apparatus is now adjusted (Fig. 2) in the following order: Woulfe bottle; Flask C, Test Tube D, containing the



Fig. 1.—Colorimeter for the quantitative determination of indigocarmin.

2. Thomas, B. A.: Ueber die Chromoureteroskopie in der funktionellen Nierendiagnostik, Ztschr. f. Urol., 1911, 5, 259; The Value of Chromo-Ureteroscopy in Functional Kidney Diagnosis, Surg., Gynec. and Obst., April, 1911; The Results of Two Hundred Chromo-Ureteroscopies Employing Indigocarmin as a Functional Kidney Test, THE JOURNAL A. M. A., Jan. 18, 1913, pp. 185-188.

3. Thomas, B. A.: The Quantitative Determination of Functional Renal Sufficiency by the Duboscq Colorimeter: Indigo versus Phenolsulphonephthalein, Am. Jour. Med. Sc., September, 1911.

4. Thomas, B. A.: The Role of Functional Kidney Tests and Pre-operative and Postoperative Treatment in the Reduction of Prostatectomy Mortality, THE JOURNAL A. M. A., Nov. 28, 1914, pp. 1909-1915.

5. Rowntree and Geraghty: An Experimental and Clinical Study of the Functional Activity of the Kidneys by Means of Phenolsulphonephthalein, Jour. Pharmacol. and Exper. Therap., 1910, 1, No. 6.

6. Folin and Denis: Jour. Biol. Chem., 1912, 11, 527.

digested mixture, and the acid wash bottle. Between Test Tube D and the acid wash bottle, Flask C' and Test Tube D' are placed as a control. A sufficient quantity of a saturated solution of sodium hydroxid is added to Test Tubes D and D' until a bluish color appears.

By means of suction, air is made to pass through the apparatus slowly at first and then rapidly for from twenty to twenty-five minutes. The apparatus is then disconnected and the contents of Flasks C and C' are titrated against fiftieth-normal sodium hydroxid and the estimation of non-protein nitrogen is made. One c.c. of fiftieth-normal sulphuric acid is neutralized by 0.00028 gm. of nonprotein nitrogen.

Determination of Urea in Urine.—For rapid determination of the amount of urea in the urine, we have made use of the hypobromite method.

The apparatus, Doremus' ureometer, consists of a graduated fermentation tube mounted on a glass foot and graduated arm with glass stopcock for the introduction of urine.

First, urine should be introduced into the graduated arm and the glass stopcock closed, the opening being full of urine. The graduated fermentation tube should then be rinsed free from all traces of urine and the graduated arm filled with urine to the 0 mark. The graduated fermentation tube should now be filled with hypobromite solution.⁷ By means of the glass stopcock, 1 c.c. of urine is permitted to flow slowly into the graduated fermentation tube. The urine will rise through the hypobromite, and the urea will instantly decompose, giving off nitrogen gas. The ureometer indicates either the milligrams of urea in 1 c.c. of urine or the grams of urea per fluidounce of urine.

A twenty-four hour specimen should be collected and mixed, and a specimen of this taken for the test if accurate data are to be had.

Determination of Urea Nitrogen of Blood and Urine.—We use the following method:

Three c.c. of blood are introduced into each of two test tubes of dimensions similar to those employed for the nonprotein nitrogen determination. From 2 to 3 drops of 20 per cent. solution of potassium oxalate are added. The mixture is well shaken and 3 c.c. (of a 0.6 per cent. solution) of acid potassium phosphite, one urease tablet,⁸ which has been previously pulverized, and about 5 to 10 drops of amylic alcohol, the latter to prevent foaming in the aeration process, and then 5 c.c. of distilled water are added. The same apparatus as employed for the nonprotein nitrogen is used, and with the test tubes immersed to the level of the contained mixture, in beakers of water at 50 C., aeration is carried out for from two to three minutes. At the end of this time from 3 to 5 gm. of potassium carbonate are added to each test tube, and aeration is continued for fifteen minutes. In estimating urea nitrogen of the urine, 0.5 c.c. of urine should be used and the same technic employed as described above.

The final estimation is made by titrating the contents of the flask against fiftieth-normal sodium hydroxid, and the computation is made in the same way as for nonprotein nitrogen.

Creatinin of the Blood.—In the estimation of the creatinin of the blood we have used the Duboscq

7. The hypobromite is prepared as follows: One hundred gm. of sodium hydroxid are dissolved in 250 c.c. of distilled water. To 20 c.c. of sodium hydroxid solution, in a 50 c.c. graduated cylinder, 2 c.c. of bromid are added; this is shaken and enough distilled water is added to bring the mixture up to the 44 c.c. mark. This makes the hypobromite solution, and as it does not keep well it should be made up fresh each day.

8. The soy bean urease tablets are put up in this convenient form by the Arlington Chemical Company, Yonkers, N. Y. Each tablet contains sufficient enzyme for a single test.

colorimeter and the following application of Folin's method:

To 6 c.c. of blood in a graduated 50 c.c. centrifuge tube, 5 drops of a 20 per cent. solution of potassium oxalate and enough distilled water to bring the mixture up to the 30 c.c. mark are added. The mixture is then stirred until the red blood corpuscles have become laked. Then 1 gm. of picric acid is added and the mixture again stirred at intervals with a glass rod until it becomes a light yellow. The tube is then centrifuged and the supernatant fluid filtered. To 10 c.c. of the filtrate is added 0.5 c.c. of 10 per cent. sodium hydroxid, and a similar amount of 10 per cent. sodium hydroxid is added to 10 c.c. of standard creatinin in saturated picric acid. The reading is then made by means of the Duboscq colorimeter exactly at the end of ten minutes after the addition of the sodium hydroxid.

The creatinin standard solution is made up after the method of Benedict:⁹ fifteen mg. of creatinin are dissolved in 15 c.c. of tenth-normal hydrochloric acid, and 1 c.c. of the mixture is diluted up to the 100 c.c. mark with saturated picric acid solution. Ten c.c. contain 1.5 mg. of creatinin.

Estimation of the Ambard Quotient.—Ambard's quotient, or the ureosecretory constant, resulted from a series of studies¹⁰ of the laws governing the concentration of urea in urine.

Ambard's First Law: By experimentation Ambard found¹¹ that if the kidney excreted urine which maintained a constant urea concentration, its urea output during any given time varies as the square of the concentration of urea in the blood of any given person.

C=grams of urea per liter of urine.
Ur=grams of urea per liter of blood.
V=amount of urine excreted in twenty-four hours.
Vxc=urea output in twenty-four hours.

Constant = $\frac{Ur}{\sqrt{c}}$ provided the urine has a constant concentration.

Ambard's Second Law: By further study¹² Ambard found that variations in the concentration of the urea

in the urine altered the relation between the rate of urea excretion and the urea concentration of the blood. After many examinations Ambard concluded (second law) that when a urine of variable concentration is excreted, if the blood urea remains at a constant concentration, the urea output for any given time will be inversely proportional to the square root of the urea concentration in the urine. Twenty-five gm. of urea per liter D_{25} was adopted as the standard concentration of urea in urine. D_{25} equals $\frac{D \times \sqrt{c}}{5}$.

Ambard's third law states that when the urea concentration of the blood and of the urine varies in direct proportion to the square of the urea concentration in the blood and in inverse proportion to the square root of the urea concentration in the urine, the ureosecretory constant = $\frac{Ur}{\frac{D \times \sqrt{c}}{5}}$ or $\frac{Ur}{D}$.

Estimation of Ambard's constant in a case of prostatic hypertrophy²⁵:

Amount of urine collected for one hour = 60 c.c.; V = $60 \times 24 = 1,440$ c.c.—urea per centimeter in urine = 20 per

9. Benedict: Jour. Biol. Chem., 1914, 18, 183.

10. Ambard: Etude sur les concentrations urinaires, Arch. internat. de physiol., 1909, 8, 437.

11. Ambard: Rapports entre le taux de l'urée dans le sang et l'élimination de l'urée dans l'urine, Comp. rend. Soc. de biol., 1910, 69, 411.

12. Ambard: Rapports de la quantité et du taux de l'urée dans l'urine, la concentration de l'urée du sang étant constante, Compt. rend. Soc. de biol., 1910, 69, 506.

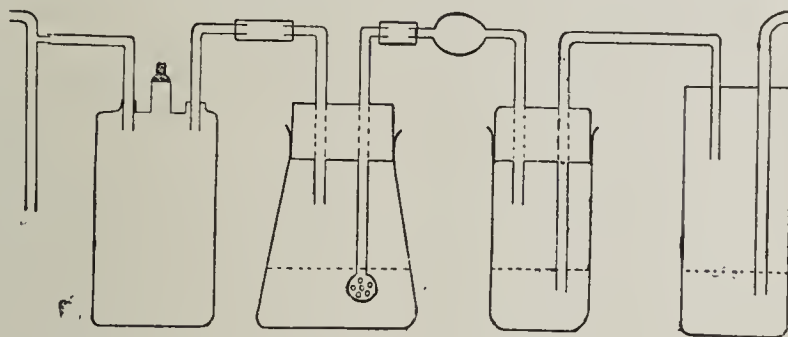


Fig. 2.—Arrangement of apparatus for aeration in nitrogen determination.

liter. Urea output in urine = $1,440 \times 20$ per cent. = 28.80 (D).

This amount corrected for concentration of 25 per cent. = $28.80 \times \frac{\sqrt{20}}{5} = 28.80 \times 0.88 = 25.34$ —.

Urea estimation of the blood = 0.514 gm. per liter.

Ambard's constant = $\frac{U_r}{\sqrt{D_{25}}} = \frac{0.514}{\sqrt{25.34}} = \frac{0.514}{5} = 0.1$.

The normal constant has been found to vary between 0.06 and 0.08.

Cryoscopy.—The Beckmann cryoscope, necessitating the preliminary determination each time of the lowering of the freezing-point of distilled water, was employed. The details of cryoscopy need not be given, since in our experience the δ blood and the Δ of the urine have been of all the tests the least reliable. Aside from comparative tests on the urines from each kidney separately, cryoscopy, as a test of kidney efficiency, is of minimal value.

COMPARATIVE RESULTS OF TESTS

In order better to display the comparative results of these various functional kidney tests, they have been tabulated in a number of exemplary cases, normal and pathologic, the latter including mostly retention of urine, due to prostatic or vesical orifice obstruction, or to urethral stricture, with a few nephritics and other renal diseases, mainly surgical.

In Table 2, we enumerate a few absolutely normal ambulatory patients who have been subjected to two or more of the functional tests. The number of cases is small, but we believe sufficient to permit judgment as to the results for the functional tests studied. For indigocarmin this was found to be from five to twelve minutes¹³ for onset of elimination; from 18.45 to 24.5 per cent. for quantitative output for three hours, with an index of elimination of from 2.9 to 6.7. For phenolsulphonephthalein the respective figures were nine to fourteen minutes, 38.19 to 77.99 per cent. and 1.6 to 16.1. It will be observed that phenolsulphonephthalein was not eliminated as early as indigo, that there was greater variability in quantitative output and extreme variability as to index of elimination, the substance apparently not lending itself well to this method of determination, at least for hourly periods. In this connection the recent animal experimental work of Kendall¹⁴ is of paramount importance. He finds that the phenolsulphonephthalein output is, fundamentally, the ratio between its rate of reduction and the supply of oxygen in the body, and in any given case is dependent on so many factors that its localization effects in any one organ are impossible. If this work is substantial clinically, it will explain many of the singular results heretofore obtained from the employment of this drug as a functional kidney test.

In normal persons the total noncoagulable nitrogen of the blood varied from 25 to 31 mg., and the blood urea nitrogen from 10 to 15 mg. per hundred c.c. The urine urea nitrogen, on the other hand, varied from 58 to 210 mg. per hundred c.c., and in our experience presented nothing of value over the Doremus ureometer method with sodium hypobromite, in which the findings were from 9 to 17 mg. per cubic centimeter. Correspondingly, the ureosecretory index of Ambard showed results of from 0.03 to 0.09. It will be observed that of the retention tests employed,

the noncoagulable nitrogen and the urea nitrogen of the blood showed the greatest uniformity of results and ran a close parallelism. Our results, therefore, do not support the contention of Smith¹⁵ that Ambard's constant or McLean's modification is a more reliable index as to renal involvement and prognosis than is the determination of the blood urea nitrogen alone. It has been maintained by Addis and Watanabe¹⁶ that certain functional tests—as phenolsulphonephthalein—fail to reveal the latent deficiencies in the kidney function, whereas experimental urea may suffice to do this.

We have invariably obtained high figures for creatinin in normal persons, namely, from 3.2 to 4.82 mg. per hundred c.c. of blood. This has been a great disappointment in view of the definite normal and abnormal values and emphatic diagnostic and prognostic claims stipulated by Myers and Lough.¹⁷

The normal values for cryoscopy have been so variable, namely, from -0.45 to -0.51 degrees for δ and -0.59 to -1.39 degrees for Δ that we have been unable to place much reliance on the results. Therefore, compared with simpler tests, even with respect to the separately catheterized urines of each kidney, in comparison with the molecular concentration of the blood, cryoscopy of the total urine or of the blood alone is, or should be, obsolete. Factors, such as water, diet, polyuria and anemia, materially affect the cryoscopic determinations which, associated with the technical disadvantages, render the method useless.

The pathologic cases subjected to a comparative study of the various functional tests are presented in Tables 3, 4 and 5. Table 3 consists of cases of retention of urine. Of the seventeen cases studied, eleven were due to prostatic hypertrophy, three to prostatitis and seminal vesiculitis, and one each to obstructive contracture of the sphincter vesicae, stricture and carcinoma of the prostate. In all cases operation was successfully performed save in Cases 15 and 16, and organic disease contraindicated surgical intervention in these two cases. The first patient died in a few days of pyelonephritis, and the second case was so complicated by hypertension, myocarditis and dilatation that the patient died a month later. A review of this table reveals the following notable features: The onset of elimination of indigocarmin was noted in from eight to 100 minutes, while phenolsulphonephthalein appeared in the urine in from nine to ninety minutes. In five patients indigo, and in two patients phenolsulphonephthalein, did not appear for an hour or more after injection. Thus we emphasize that this period is not negligible in the quantitative estimation of either of these substances, so far as the first hour's output is concerned, and insist for the best and most reliable data relative to kidney function, that the quantity for the first hour should be timed from the moment of injection rather than from the onset of its elimination. The quantities eliminated for three hours varied from 2.53 to 34.33 per cent. for indigo and from 5.85 to 90.09 per cent. for phenolsulphonephthalein. The indexes of elimination of the two substances suggest a parallelism, but the results have not been so reliable in the case of phenolsulphonephthalein as with

15. Smith, R. L. I.: Renal Function in Nephritis, THE JOURNAL A. M. A., Jan. 27, 1917, pp. 278-280.

16. Addis and Watanabe: A Method for the Measurement of the Urea Excreting Function of the Kidneys, Jour. Biol. Chem., 1916, 28, 251.

17. Myers, V. C., and Lough, W. G.: The Creatinin of the Blood in Nephritis: Its Diagnostic Value, Arch. Int. Med., October, 1915, pp. 536-546.

13. Obtained by voluntary urination every few minutes; it undoubtedly would have appeared earlier if tested by continuous catheterization.

14. Kendall, E. C.: The Fate of Phenolsulphonephthalein when Injected into the Animal Organism, THE JOURNAL A. M. A., Feb. 3, 1917, pp. 343-345.

indigo. The index of indigo elimination has been extraordinarily trustworthy, and as a guide to kidney efficiency and operability has proved itself *par excellence*, the best at our command. Almost exclusive reliance on the index as an indication of the stability of kidney function in cases of prostatic hypertrophy during the last three years has been rewarded with recovery in every case of prostatectomy. In Case 3, in spite of an indigo index of 0 three weeks before a minor operation, the patient recovered. It will be observed, however, that the index for phenolsulphonephthalein immediately before operation was in the positive phase and the repetition of the indigo test was thought to be unnecessary. Case 15 showed the indexes for both indigo and phenolsulphonephthalein in the negative phase. Operation was not to be considered, and the patient died in a few days. Case 16 illustrates well the fact that the renal function is not the only consideration relative to operability. The patient was the victim of marked myocarditis with dilatation and hypertension, and died a month after his examination.

The total noncoagulable nitrogen varied from 22 to 106 mg. In eleven of the thirteen successful prostatectomies shown in this table, the nonprotein nitrogen exceeded the normal values found in Table 2, and in the cases of the patients who died from a few days to a few weeks after the functional tests were performed, the values for nonprotein nitrogen were no higher than in the cases of several of the patients successfully operated on.

The findings for blood urea nitrogen ranged from 8 to 74 mg. and closely paralleled the results of noncoagulable nitrogen.

The urine urea nitrogen results varied from 20 to 360 mg. per hundred c.c. and permit of no deductions of value; indeed, in comparison with the simple Doremus method, with findings from 2 to 30 mg. per cubic centimeter, the advantage is strongly in favor of the latter, although it is universally admitted that the sodium hypobromite method is susceptible of erroneous results.

It was hoped that Ambard's constant or quotient might furnish a more reliable index of renal efficiency than either the blood or urine urea separately. Unfortunately, this has not been true. In six of thirteen patients successfully operated on, the ureosecretory index was so high that operative intervention might be said to have been contraindicated. We agree, therefore with Jonas and Austin¹⁸ and question whether the original formula¹⁹ or McLean's²⁰ modification is truly the expression of the physiologic law underlying the relation between the urea concentration of the blood and urine and the rate of urea excretion.

Our results with creatinin have varied from 2.2 to 5.5 per hundred c.c. of blood. In a number of the patients successfully operated on the findings were higher than in a few patients who died shortly after the determinations.

The cryoscopic readings varied for the blood from -0.38 to -0.57 degrees; for the urine from -0.16 to -1.45 degrees. The results were such as to stamp this method as worthless so far as the proper treat-

ment of such cases as are shown in Table 3 is concerned.

Table 4 comprises eight cases of nephritis—two of acute parenchymatous, three of chronic parenchymatous, two of chronic interstitial and one of chronic diffuse—studied with respect to the several functional renal tests. It will be noted that in the cases of acute and chronic parenchymatous nephritis, the quantitative output of both indigo and phenolsulphonephthalein was high, and also that almost without exception the indexes of elimination were in the positive phase. Contrasted with this it will be observed that in the chronic interstitial type of the disease, although the quantity eliminated for three hours was variable, the indexes of elimination were constantly in the negative phase. The noncoagulable blood and the urea nitrogen range from 42 to 98 mg. and from 14 to 25 mg., respectively. The urine urea determinations per hundred c.c. with urease or by the Doremus method were so variable as to be valueless. However, it is significant to note that the Ambard quotient in the cases of parenchymatous nephritis was uniformly high, above the normal, while in the cases of chronic interstitial and diffuse nephritis it was constantly low, below the normal. Apparently, this method may be utilized for the differentiation of parenchymatous and interstitial nephritis, and would seem to be more valuable in this respect than the determination of blood urea nitrogen or total nonprotein nitrogen alone, although as a matter of fact it furnishes no more information than is supplied by the index of elimination of indigocarmine or possibly phenolsulphonephthalein.

The values for creatinin vary from 3.21 to 5.4 mg., and are uniformly high. Improvement has occurred, since the determinations, in the general health of all patients, excepting Patient 4, who died recently.

The results of cryoscopy both of the blood and of the urine present nothing noteworthy, and may be disregarded in a study of nephritides.

In Table 5 we present eighteen pathologic cases, mostly prostatics studied only with indigocarmine and phenolsulphonephthalein, and although the findings demonstrate nothing not already shown in the previous tables, we believe the results to be of sufficient interest to warrant consideration, in view of the popular but unfounded preference for phenolsulphonephthalein as a functional kidney test. It will be observed that the parallelism existing between the results of the two substances is most striking, particularly with respect to the indexes of elimination. Discrepancies exist in only four instances, namely, Cases 3, 8, 11 and 15, and in the last the negative index for indigo was known to be due to improper collection of the hourly specimens of urine. For similar reasons, fallacious indexes for both indigo and phenolsulphonephthalein were obtained in Cases 12 and 17. In Case 3, the failure of phenolsulphonephthalein to appear for two hours after injection is inexplicable, unless the recent experimental work of Kendall is substantiated. In Cases 8 and 11 the disagreement between the indexes for indigo and phenolsulphonephthalein on the one hand, and the clinical conditions and subsequent states of the patients, on the other hand, furnishes further support to the belief that phenolsulphonephthalein does not lend itself so well as indigo to this method of determination. Finally, attention is called to Cases 6 and 11 in support of former assertions to the effect that the index of elimi-

18. Jonas and Austin: The Value of the Ambard Quotient in the Estimation of Renal Function, *Am. Jour. Med. Sc.*, October, 1916, p. 560.

19. Ambard and Weill: Les lois numériques de la sécrétion rénale de l'urée et du chlorure de sodium, *Jour. de physiol. et de path. gén.*, 1912, **14**, 753.

20. McLean: The Numerical Laws Governing the Rate of Excretion of Urea and Chlorides in Man, *Jour. Exper. Med.*, 1915, **22**, 212.

nation of indigocarmin is a truer gage of renal function of a person than is merely the quantitative output for two hours, particularly if this hourly estimation ignores the period from the time of injection until the substance appears in the urine. In Cases 9 and 10, in which death followed prostatectomy, it is worthy of note that the indexes for both indigo and phenolsulphonephthalein were in the negative phase and contraindicated operation, in spite of the relative satisfactory quantitative outputs for the respective substances.

CONCLUSIONS

1. The analysis of the results of the several functional kidney tests employed in this study emphasizes our belief that of those utilized none possessed virtues superior to indigocarmin, not excepting the tests of retention.

2. Indigocarmin, in our experience, has been more trustworthy and practical than phenolsulphonephthalein.

3. In cases which may require an additional functional test for confirmatory judgment, phenolsulphonephthalein, total nonprotein nitrogen or urea nitrogen of the blood may be utilized.

4. Ambard's quotient was of questionable utility so far as the differentiation of nephritis is concerned, and possessed no actual advantage over indigo or phenolsulphonephthalein.

5. Cryoscopy of the whole blood and urine is valueless. If unilateral values are desired, ureteral catheterization is necessary and may be obviated by recourse to more modern and practical tests.

6. Creatinin of the blood and urine urea nitrogen either per hundred c.c. by the urease or by Doremus' sodium hypobromite method demonstrate results so variable as to be unreliable.

7. Irrespective of the finer medical aspects of renal function, the differentiation of glomerular and tubular nephritis, the detection of renal disease in its incipency, etc., the best functional kidney test today is indigocarmin, at least for the surgeon, because it is not only the most practical test, but it is unsurpassed in reliability, whether employed for unilateral determination by the method of chromo-ureteroscopy or for total function through reliance chiefly on the index of elimination.²¹

116 South Nineteenth Street.

21. The remaining article of this symposium, by Drs. Krotoszyner and Stevens, and the discussion will appear next week.

Occupational Training for the War Cripple.—It is the general consensus of experience that the decision by the man to undertake a course of training must be a voluntary one. Of course, he may be retained in the military organization and detailed to trade classes in the same way as he is detailed to guard duty, but this would not make for successful results. The unwilling and rebellious pupil learns but little, the earnest and ambitious one makes rapid progress. The man must be persuaded, therefore, to take up instruction; the future advantages of being a trained workman in some skilled trade should be pointed out, and the practical arrangements to be made for him during the course of instruction carefully explained. There is no royal road to success in this effort, but after gaining the soldiers' friendship and confidence, a patient persistence will win the battle. If a competent visitor has been in touch with the man's family during his absence at the front, the members of the home circle can be easily convinced of the wisdom of his reeducation; this will make all the simpler persuasion of the man himself.—Douglas C. McMurtrie: *The War Cripple*, Columbia War Papers.

RECURRENCE AFTER OPERATIONS ON THE BILIARY PASSAGES *

DANIEL N. EISENDRATH, A.B., M.D.

CHICAGO

One of the reasons for the rapid growth of many a modern commercial enterprise is the exchange of experience at frequent cabinet meetings of the heads of departments, as to the cause for success or failure in their respective spheres of activity. We can profit by following such a method because the time has arrived when a discussion of the reasons why a certain percentage of our operations on the biliary passages is not successful is necessary. It is to this group of recurrence cases that we must devote our investigative energy in order to lessen their number. Statistics are of little value as to the percentages of satisfactory and unsatisfactory results unless practically all of the patients operated on have been actually examined at intervals for a number of years by the surgeon himself, and this is rarely possible. Recurrences may take place, as I shall presently show, many years after the original operation, and the patient may have been operated on by another surgeon long after the first operator considered the case as cured. A far more valuable contribution, it appears to me, would be for each one of us to report in the future, as Deaver¹ has recently done, the recurrence cases in which we have either actually operated or otherwise diagnosed. In this way the cases in which we have operated primarily can be studied, and a profitable discussion will result as to the causes of our failures.

My object is to follow out such a plan, and after a review of our present knowledge of the varieties of recurrences, to report a series of personal observations and suggestions as to their possible avoidance in the future.

DIVISION OF RECURRENCES

The most convenient classification of recurrences is into true and false. By true recurrences, we mean that an actual reformation of calculi has taken place as the result of the persistence or the recrudescence of a former infection.

TRUE RECURRENCES

In the early history of gallbladder surgery, reformation of calculi around foreign bodies like silk sutures was observed. Floercken² has collected eight instances of this form of true recurrence, but at the present time this need not be considered.

The question as to whether calculi can reform in the gallbladder has been greatly cleared up by the work of Aschoff and Bacmeister³ which has been confirmed by Ehrhardt.⁴ They found that the so-called glands of Luschka are in reality clefts in the wall of the gallbladder lined by epithelium. In the normal viscus they do not penetrate beyond the muscular coat; but in pathologic gallbladders they are found to extend to the serous coat, are greatly dilated, are filled with the products of inflammation, and are the cause of reinfection after cholecystostomy. At times, cholesterol calculi in the process of formation have been

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Deaver: *Illinois Med. Jour.*, June, 1916.

2. Floercken: *Deutsch. Ztschr. f. Chir.*, 1908, **93**, 110.

3. Aschoff and Bacmeister: *Die Cholelithiasis*, Jena, 1909, and also numerous references in Riese's article in *Ergebnisse zur Chirurgie und Orthopädie*, 1913, **7**.

4. Ehrhardt: *Arch. f. klin. Chir.*, 1907, **83**, 118.

found in these crypts or glands of Luschka (Fig. 1), and thus one can readily explain the reformation of calculi after cholecystostomy by the extrusion of these minute calculi into the lumen of the gallbladder, thus serving as a nucleus for the formation of larger calculi.

Whether or not true reformation of calculi takes place in the common or hepatic ducts is at present an open question. The subject of intrahepatic cholelithiasis is a comparatively new one. Although Cruvelhier⁵ in his atlas has an excellent illustration of this condition, the subject did not attract much attention until the appearance of the article by Beer,⁶ who found it in six of seventy-two cholelithiasis cases (8.3 per cent.) at necropsy. In five of these, there were also common duct stones present, and in one they were present, in addition, in the gallbladder. Courvoisier⁷ in 1890 had collected fifty instances, and Körte,⁸ in 1889, said it might play an important part in prognosis after gallbladder operations. Lewisohn,⁹ Jenckel,¹⁰ Riese,¹¹ Quénu,¹² Deaver,¹² Kehr,¹³ and I¹⁴ have since observed the condition clinically. In one of my own cases this intrahepatic cholelithiasis was undoubtedly the cause of a recurrence (Fig. 4 of former article).

Taking all of these observations into consideration, we are justified in saying that a true reformation of calculi can occur in the gallbladder; a number of apparently authentic cases of this kind have been reported by Stanton¹⁵ and others. In regard to the true reformation of calculi in the common or hepatic ducts after removal of the gallbladder, there is much doubt. Cases in which calculi are found in these ducts at secondary operations even after previous drainage and removal of calculi¹⁶ are in all probability due to the descent of calculi from the intrahepatic bile passages, a fact which must be borne in mind in our prognosis of common or hepatic duct cases even when no calculi were found at the first operation.



Fig. 1.—Section of gallbladder wall in case of chronic cholecystitis showing dilated crypts of Luschka (L) (Aschoff) which are the source of reinfection.

FALSE RECURRENCES

Under false recurrences I include: (1) overlooked calculi; (2) adhesions; (3) chronic pancreatitis; (4) persistence or recurrence of original infection; (5) strictures; (6) fistulas (internal or external); (7) faulty technic, for example, suturing gallbladder to the abdominal wall or insufficient removal of cystic duct, permitting the formation of a dilated stump,¹⁷ with possible true reformation of a calculus in same; (8) incorrect diagnosis, for example, tabes and spinal tumors; (9) coexistence of two conditions, for example, ureteral calculus (see my own recurrence cases); (10) contraction of the ampulla of Vater, and (11) cancer of head of pancreas.

Persistence of infection, overlooked calculi and chronic pancreatitis constitute the majority of all causes of recurrence in my own experience, as well as in that of others who have written on this subject. Time will not permit of detailed consideration, but I have been more and more impressed with the fact, as my experience increases, that no surgeon who does not

possess a thorough knowledge of the pathology of infection in the biliary tract can hope to progress in this field. The period has passed during which a surgeon who possesses only sufficient technical knowledge to drain or even to remove a gallbladder should operate in these cases.

PERSISTENCE OR RECURRENCES OF INFECTION

The fact that the calculi¹⁸ are the result and not the cause of the infection is not so generally understood as it deserves to be. It is beyond the province of this paper to discuss the indications for cholecystectomy, but microscopic examination of the gallbladder after removal, in cases of persistence or recurrence of in-

fection, clearly demonstrates the fact that every attack causes serious changes in the normal contractility and elasticity of the gallbladder which favor stagnation and provide ideal conditions for reinfection. The studies of Aschoff and others on thousands of gallbladders removed at operations clearly demonstrated the fact that the recurrence of persistence symptoms

17. Floercken (Deutsch. Ztschr. f. Chir., 1912, 113, 604) found a dilatation of the cystic duct the size of a plum three years after cholecystectomy, and a brown calculus embedded in the wall of the dilatation and none elsewhere. In one of my cases (Case 657 of recurrences) two years after operation the cystic duct formed a pseudogallbladder 1 inch long, the size of an almond, containing a calculus the size of a millet seed (Fig. 2). Von Haberer and Clairmont (Arch. f. klin. Chir., 1904, 73, 697) confirmed the work of deVoogt (Nederl. Tijdschr. v. Geneesk., 1898, 43, 236), and Oddi (Centralbl. f. Chir., 1889, No. 8) found that a dilatation of the cystic duct stump followed removal of the gallbladder in dogs (Fig. 2).

18. Naunyn was of the opinion that stagnation alone sufficed to explain the origin of gallstones, but Aschoff and every one else who has investigated the subject believes that infection is essential. Aschoff believes that aseptic cholesterin calculi may be present in the gallbladder for a long time, but that as soon as infection supervenes, the so-called secondary calculi are formed.

5. Cruvelhier: Reproduced in Moynihan's Book on Gallstones, 1904.

6. Beer: Arch. f. klin. Chir., 1904, 74, 115.

7. Courvoisier: Beitr. z. Chir. d. Gallenwege, 1890.

8. Körte: Zentralbl. f. Chir., 1889, 15.

9. Lewisohn: Ann. Surg., 1916, 63, 535.

10. Jenckel: Deutsch. Ztschr. f. Chir., 1910, 104.

11. Riese: Verhandl. d. Freien Verein. d. Chir., Berlin, 1904.

12. Quénu and Deaver: Rev. de chir., 1914, 49, 105.

13. Kehr: Neue Deutsch. Chir., 1913, 8.

14. Eisendrath, D. N.: Overlooked Common Duct Stones, THE JOURNAL A. M. A., March 31, 1917, p. 968.

15. Stanton (Ann. Surg., 1915, 61, 226) reports one case of his own and has collected all of the published instances except those of Deaver (Surg., Gynec. and Obst., 1913, 17, 667), who removed 100 calculi from the gallbladder and two years later 200 more. Kehr has seen true reformation only three times in 2,000 operations. Under recurrence cases, I report several examples of apparently true reformations.

16. One can easily overlook common duct calculi at the first operation, especially if any small calculi were present. The escape of these through the T-tube is one of the great advantages of common duct drainage.

is due to the retention of infected secretion in the crypts of Luschka (Fig. 1), or even reformation of cholesterol calculi in them. Again, in many cases it is impossible to remove all of the crystalline detritus which we so often find on opening the gallbladder,¹⁹ and if infection persists it is easy to see how recurrences can take place.

The question of recurrence of infection symptoms after common duct operations, even without the presence of calculi, is one that deserves further study in the near future, and must be borne in mind when one is making a prognosis after common duct operations.

OVERLOOKED CALCULI

Any one familiar with anatomy can readily understand how it is possible to overlook small calculi which lie beneath a fold of mucous membrane at the neck of the gallbladder or within one of the pocket-like tortuosities of the cystic duct (Fig. 2). I have frequently found such calculi in the examination of the specimen (after removal of the gallbladder and cystic duct) which I feel confident would have been overlooked.

The presence of many small calculi in the gallbladder, associated as it has been so frequently in my own experience with calculi in the common duct, seems to me to be an indication for cholecystectomy with removal of the entire cystic duct, which we must add to our other indications for this operation.

In a previous communication,¹⁴ the subject of overlooked common duct calculi was discussed. Further experience has strengthened the opinions expressed in that article.

During the past five years, in the course of a large number of operations on the biliary passages, I have explored the common and hepatic ducts in thirty-four cases in which palpation was negative. In eleven of these (32.3 per cent.) calculi were found on exploration in spite of negative palpation.²⁰

The chief indication for opening the common duct in eight cases in spite of negative palpation was the

presence of many small calculi in the gallbladder. In all of the eight cases of positive exploration after negative palpation the number of calculi in the gallbladder varied from twenty to three hundred.

In three cases the common duct calculi were the size of a pea, faceted, and fifteen in number. In the majority of the eleven cases the calculi were found in the supra-ampullary portion of the common duct, which is so difficult to palpate through the duodenum. In two cases a number of small calculi of the same size and composition as those in the gallbladder and common duct were either found in the hepatic duct or escaped in a perfect shower from this duct while the edges of the opening in the common duct were retracted. In one of these patients there has been a recurrence of symptoms in spite of a cholecystectomy and choledochostomy with removal of calculi from the common duct. In one case symptoms of cholangitis recurred three years later, and death was due to this cause.

The indications for opening the common duct were the same²¹ as those first emphasized by Kehr²² to which I have added the recurrence of symptoms of cholangitis after previous operations on the gallbladder or common duct.

That common duct and hepatic calculi are so frequently overlooked is due to several causes. First, choledochostomy is considered to be a far more difficult operation and accompanied by a much higher mortality than it deserves to be, and this deters many competent surgeons from doing as thorough an operation as they ought to do. Second, we are accustomed to be content with palpation of the supraduodenal portion of the common duct, and unless this is positive or there are definite obstruction symptoms, one

is apt to omit further operative interference. Third, recent articles²³ and my own experience reveal the fact that we must change our views in regard to the symptomatology of common duct calculi. There is a group of cases which I have termed the silent common duct calculi which show none of the symptoms hitherto thought characteristic of calculi in this location. In nine of my own cases in which no previous operations had been performed the principal symptoms were: 1. Pain, for months to years not to be distinguished from that due to the gallbladder. 2. Icterus, slight and

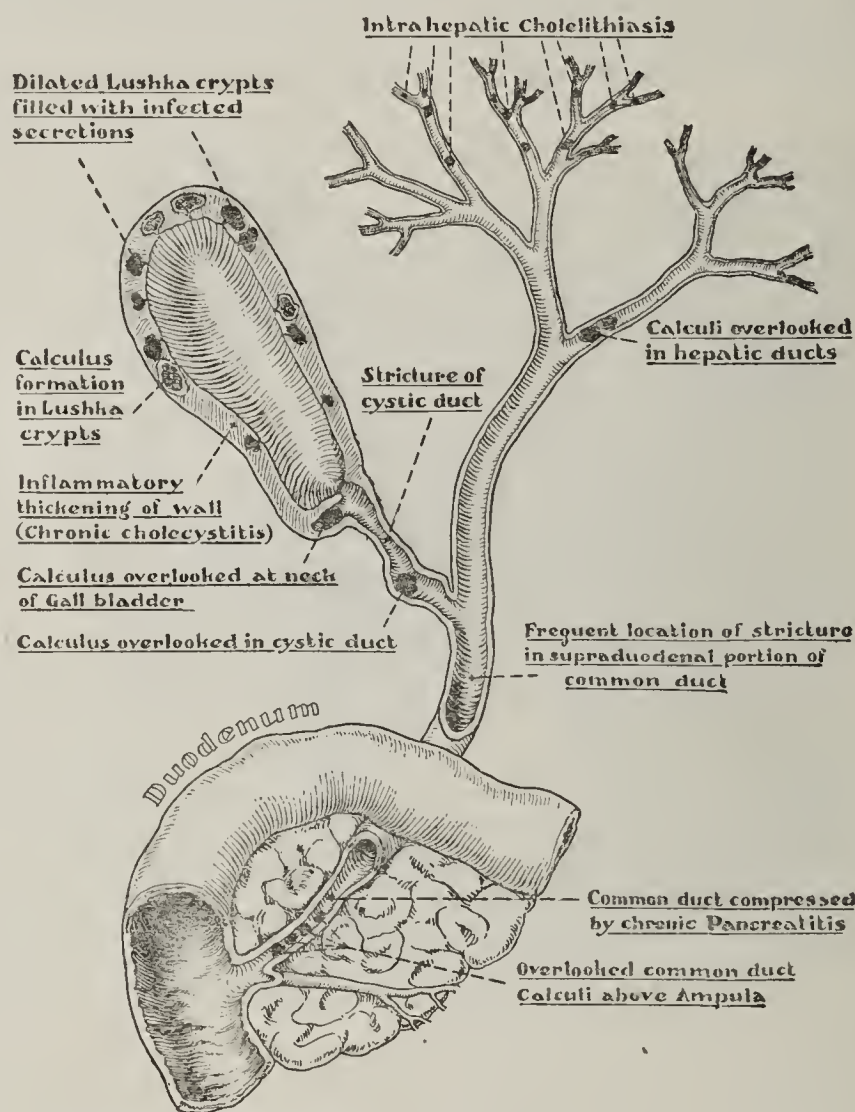


Fig. 2.—Diagrammatic representation of the more frequent causes of recurrence after operations on the biliary tract.

19. The same thing holds true for the common duct, and some of the cases of recurrence after drainage and removal of calculi are accompanied by the constant discharge of such crystalline debris from the T-tube. One can readily see how a recurrence of symptoms can occur if sufficient of this material collects in the common duct. A study of 276 common duct cases by Brünig demonstrates that one can have symptoms of severe cholangitis without the presence of calculi, and that these may persist after drainage of the common duct.

20. I may be criticized for being unable to palpate calculi in the common duct; but when one considers that the greater portion of the duct must be palpated through the entire thickness of the duodenum and that the majority of the calculi were not larger than a pea and were embedded in thick bile, as a rule, I can readily see why they have escaped detection by others as well as myself in the past. Kehr (Arch. f. klin. Chir., 1912, 97, 301), in 46 per cent. of thirty-six cases in which palpation of the common duct was negative, found calculi either in the hepatic ducts or the retroduodenal portion of the common duct.

21. These indications are: (a) presence of many small calculi in the gallbladder or cystic duct; (b) chronic pancreatitis (cX) thick walled, dilated common duct, and (d) when patients whose gallbladders have been previously removed are reoperated on, if the common duct is dilated or thick walled, and there have been symptoms of cholangitis (icterus, chills, etc.).

22. Kehr: Arch. f. klin. Chir., 1912, 97, 301.

23. Kehr: Neue deutsch. Chir., 1913, 8. Moynihan: Gallstones, 1904. Brünig: Deutsch. med. Wchnschr., 1912, No. 33.

only during attacks of pain in three cases. In two cases there had been distinct icterus during the attack. In the remaining four cases there was no icterus at any time. 3. Chills and fever, present in only two cases of the nine. 4. Variation of the common duct in size from a little finger to a thumb. 5. Hardness

and enlargement of the pancreas in only three of the eleven cases.

As our knowledge of intrahepatic cholelithiasis increases, we are better able to understand why recurrences take place even after drainage of the common duct and removal of calculi. In one of my cases, calculi similar to those of the first operation were found at the second opening of the common duct, and this has been the experience of Deaver, Mixer and others.

When one has

reason to suspect the presence of many calculi within the liver, prolonged drainage is our only method at the present time in order to lessen the chances of recurrence.

PANCREATITIS

Whether or not infection of the pancreas occurs as does that of the gallbladder in many instances by the hematogenous route is still under investigation. The close relation of the lymphatics (Fig. 3) of the biliary tract to those of the pancreas readily explains its involvement. The more chronic indurative forms of pancreatitis with resultant compression²⁴ of the common duct plays an important part in favoring stagnation of the secretory current in the bile ducts. In Deaver's series¹² of forty-two recurrences in 1,031 operations, chronic pancreatitis was the cause in five, a little over 10 per cent.

ADHESIONS, STRICTURES AND FISTULAS

"Adhesions" is often a diagnosis under which sins of omission are hidden, and should not be made until a thorough roentgenographic examination has been made. There are as a rule fewer adhesions after cholecystectomy, but even here one is often surprised to find a broad surface of the duodenum adherent to the carefully sutured gallbladder bed.

The longer a calculus lies impacted in the neck of the gallbladder or cystic, hepatic or common ducts, the greater is the danger of ulceration, with subsequent formation of a stricture. This is a strong argument for early and radical operation if the patient is not too septic. Fistula formation after operation is a rarity, since removal of the gallbladder is being

employed as a routine measure by the majority of operators.

FAULTY TECHNIC

If only drainage of the gallbladder is performed, the method of anchoring the fundus to the parietal peritoneum should be discarded. It leaves a long tube fixed at both ends whose muscular contractions are greatly interfered with. Dropping the gallbladder back after insertion of a tube into its fundus is the most rational procedure.

The increasing frequency with which we find a dilated stump (Fig. 4) of the cystic duct, often containing one or more overlooked calculi, is the strongest plea for removal of the entire cystic duct close to the common duct,²⁵ during cholecystectomy.

INCORRECT DIAGNOSES AND COINCIDENCE OF TWO CONDITIONS

Coincident with the perfection of our methods of diagnosis, we find that many patients primarily operated on under the diagnosis of cholecystitis are in reality suffering from spinal lesions with referred pain, or tabetics whose visceral crises were interpreted as being genuine gallbladder attacks.

I have recently observed a patient with a gangrenous cholecystitis with many calculi who returned one year after a cholecystectomy with severe right upper quadrant pain which roentgenographic examination revealed to be a right ureteral calculus close to the kidney as the cause of the recurrence.



Fig. 3.—Relation of lymphatics of biliary tract to those of pancreas. Arrows indicate direction of flow of lymph from gallbladder and common duct to lymphatics of pancreas. Note relay lymph nodes at neck of gallbladder, along common duct and upper border of pancreas. (After Franke.)

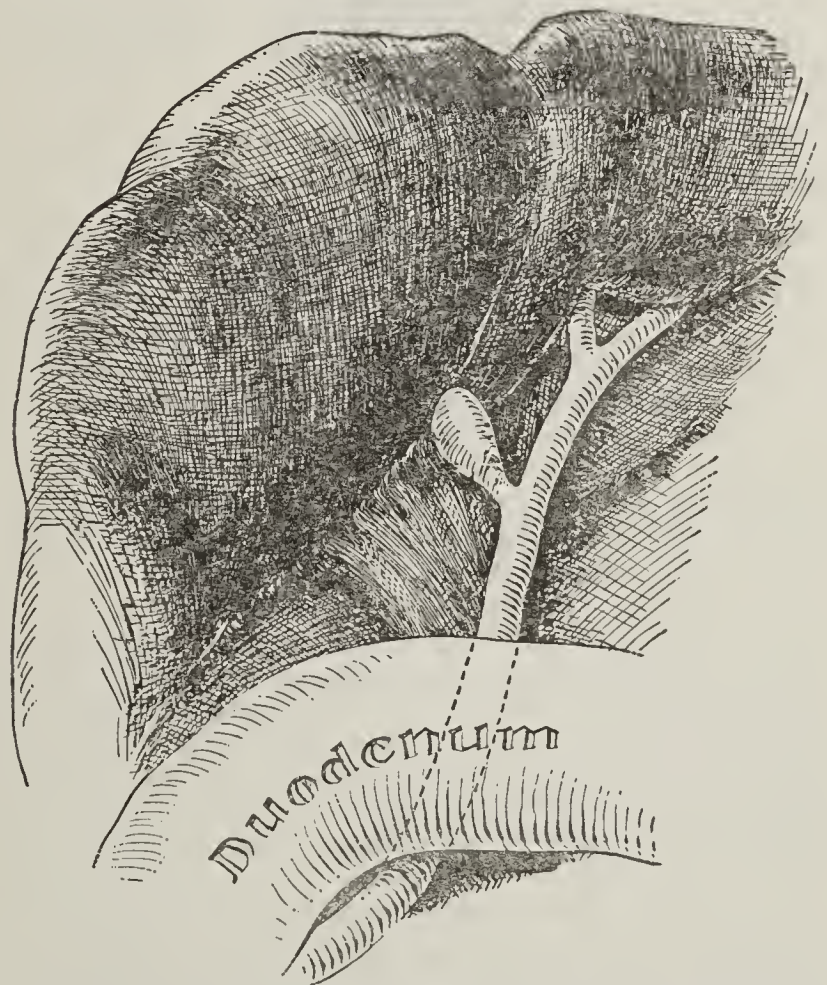


Fig. 4.—Condition found two years after cholecystectomy. Stump of cystic duct dilated to form new gallbladder. Latter contained small calculus.

TECHNIC OF CHOLEDOCHOSTOMY

I believe that drainage of the common duct has every advantage over primary suture as advocated by Crile.²⁶ He compares the common duct to a rubber

24. I have operated in cases resembling in every respect obstruction of the common duct by calculi, which were due to compression of the intrapancreatic portion of the duct by a chronically indurated pancreas.

25. Under technic I refer to the anomalies of the mode of union of the cystic and hepatic ducts which must be borne in mind.

26. Crile, G. W.: Drainage Versus Immediate Suture of the Common Duct, THE JOURNAL A. M. A., May 2, 1914, p. 1373.

tube with both ends patent, but he does not take into consideration the inflammatory swelling of the pancreas which invariably accompanies common duct infection and thus obstructs the exit of the infected bile through the ampulla.

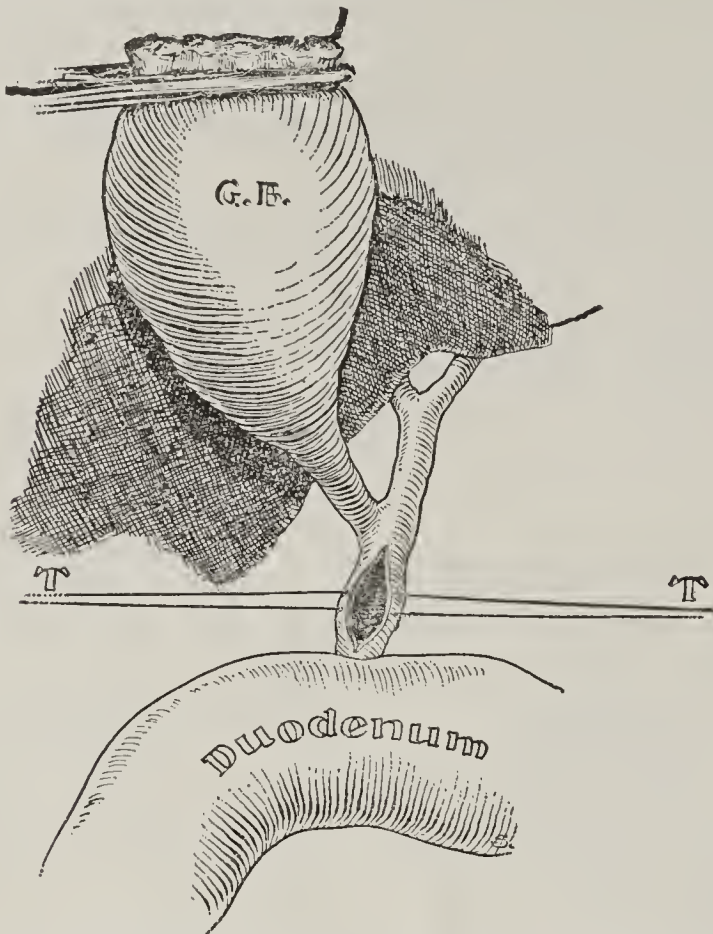


Fig. 5.—Supraduodenal choledochostomy. Edges of incision in common duct pulled apart by traction sutures (T, T) preliminary to exploration of common and hepatic ducts.

The steps of the technic which I employ are best understood by a study of Figures 5, 6 and 7.

STEP 1.—The incision to expose the gallbladder extends from the angle formed by the ensiform process and costal arch downward through the inner third of the right rectus muscle to a little above the level of the umbilicus. The patient's lumbar region has been previously elevated by the device attached to the operating tables in common use. This incision not only permits the most perfect exposure of the common and hepatic ducts as well as the gallbladder, but also enables one directly to inspect the stomach and duodenum. It is surprising how close to the abdominal wall such an incision brings the principal bile passages.

STEP 2.—After the stomach and duodenum have been inspected, the gallbladder is examined; and if calculi are contained therein, these are removed by the generally accepted method of an incision through the fundus of the gallbladder after its contents have been aspirated with the trocar and rubber tube attached to a 3-ounce metal syringe.

STEP 3.—To expose the bile ducts, the fundus of the empty gallbladder is grasped by a long-bladed artery forceps and an assistant is instructed to make gentle traction in the direction of the right shoulder. This procedure also pulls the right lobe of the liver in the same direction, as first suggested by Mayo-Robson. The neck of the gallbladder, and the cystic, hepatic and common ducts are now exposed. If these structures are enveloped in adhesions, the exposure obtained enables one to separate and ligate the adhesions and to cover with suture raw surfaces by sight and not by touch. A very important detail in securing a good view of the common duct is to have the proper retraction not only of the gallbladder and right lobe of the liver, but also of the stomach, transverse colon and of the omentum, toward the left and in a downward direction. Such retraction is best secured (a) by the use of the Deaver and Kelly retractors, (b) by not packing too much gauze into the abdomen, and (c) by instructing the assistants (preferably only two being employed) only to

keep up firm retraction and not to relax their grasp from time to time, thus permitting the viscera mentioned to drop into the field and cover the common duct.

STEP 4.—In the surgery of the common and the hepatic ducts I prefer to employ instruments and suture material as fine as those used for eye operations in opening the common duct. The hepatoduodenal ligament is first identified as marking the right border of the envelope of peritoneum covering the common duct, portal vein and hepatic artery. Retraction of the structures (especially the duodenum) around the common duct permits the latter to be readily seen, covered by a thin layer of peritoneum which is divided by fine scissors, and the opening thus made is widened by spreading it with blunt-bladed curved scissors. Two traction sutures of very fine (00) catgut are inserted (Fig. 5) with an extremely small needle (such as is used for eye work) through the wall of the common duct in its supraduodenal portion. There are a few small veins which run parallel to the duct, and occasionally an anomalous small artery which passes transversely across the front of the duct. Bleeding from both of these vessels is easily controlled by a transfixion ligature. The duct is now incised with fine, preferably angular, scissors for a distance of one-fourth to one-half inch. It is a wise precaution before opening the common duct to place a gauze sponge into Morison's pouch over the right kidney. The opened common duct is now examined with a common duct spoon in an upward direction into the hepatic ducts and then downward as far as the ampulla until one feels certain that no calculi have been overlooked. A flexible probe is finally passed through the papilla in order to be sure that the lower end of the common duct is not obstructed.

STEP 5.—In drainage of the common duct I prefer the T-shaped rubber tube first used by Kehr, which is now employed in this country by Deaver and others, including myself. The opening in the common duct is closed around this tube with the same size chromic catgut (Fig. 7) which was employed in the traction sutures described in Step 4. The tube itself (whose horizontal limbs should project only about one-fourth inch beyond the vertical portion) is held in place with a plain catgut suture.

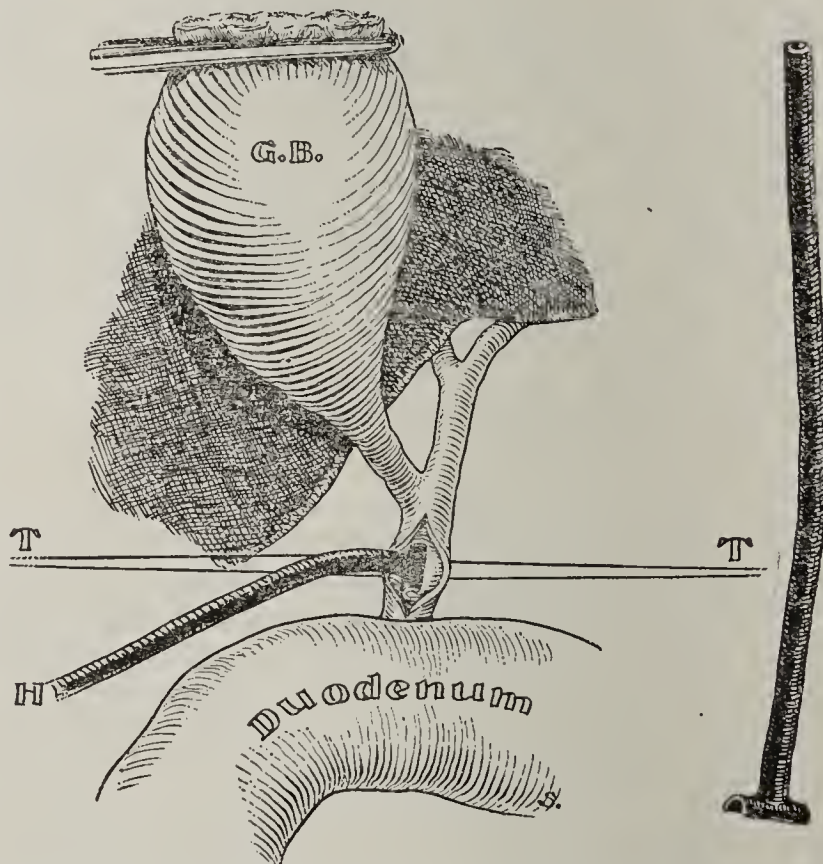


Fig. 6.—T-tube (H) being inserted into supraduodenal portion of the common duct through incision shown in Figure 5. The edges of the incision are pulled apart by traction sutures (T, T). Note on the right of picture how horizontal limbs of T-tube are only one-fourth inch long and how half of circumference of horizontal limb has been removed.

STEP 6.—I prefer to do the cholecystectomy if one has decided that the pathologic changes in the gallbladder demand its removal, after the common duct exploration and drainage, because the gallbladder is a very convenient tractor for

the common duct. Kehr reverses the steps by first removing the gallbladder and cystic duct close to the common duct, and then enlarging the cut end of the stump of the cystic duct so as to make an opening in the common duct large enough to explore both the latter and the hepatic duct, introducing his T-tube through the same opening.

The technic of cholecystectomy requires no special description. I first carefully separate the neck of the gallbladder and cystic duct from the common duct before ligating the cystic artery, which runs as a rule along the upper border of the cystic duct. The latter should be ligated as close (Fig. 8) as possible to the common duct in order to avoid the formation of a gallbladder in the dilated stump of the cystic duct. The careful separation just mentioned enables one to avoid injury of the common duct if, as frequently occurs, the diverticular-like enlargement at the neck of the gallbladder is adherent to the common duct, or if any of the anomalies in the course of the bile ducts described in another article²⁷ are present.

A small rubber tube is sutured with plain catgut down to the ligated stump of the cystic duct to take care of a possible leakage. Three strips of gauze 2 inches wide are placed around the common duct T-tube, one of these strips being placed well down into Morison's pouch over the right kidney.

The gauze strips are pulled out at the end of eight days, and a single narrow one put in their place. The T-tube is allowed to remain from fourteen to twenty-one days,²⁸ and can be easily removed at that time; it will do no harm if it remains even longer. In nearly forty choledochostomies I have never encountered a case in which the tube could not be removed by employing gentle traction, and have never seen a common duct fistula follow its employment. I usually clamp the tube at the end of five or six days if too much bile is escaping into the dressing.

SECONDARY OPERATIONS BY THE AUTHOR FOR CASES OF RECURRENCE

1. *Persistence of Infection After Cholecystostomy*.—CASE 1 (766).—Cholecystostomy for cholecystitis without calculi had been performed by another surgeon. There was recurrence of acute symptoms fourteen months later. A much thickened gallbladder was found anchored to the abdominal wall. Cholecystectomy was followed by complete cessation of symptoms.

CASE 2 (1448).—Drainage and removal of a large calculus had been performed in 1910. There was persistence of pain, and then hyperacute symptoms of sepsis in 1916. Removal of thick walled gallbladder and drainage of common duct containing only tarry bile was of no avail. A toxic condition due to persistence of intrahepatic infection (cholangeitis) existed many years, with resultant hepatic insufficiency, and was the direct cause of death.

CASE 3 (1431).—Cholecystostomy for cholecystitis without calculi had been performed by another surgeon in 1908. There were no symptoms until 1915, when a typical acute attack occurred. There was a very thick gallbladder with an area of gangrene at the neck, where a large calculus was impacted. Removal of the gallbladder was followed by absence of further symptoms.

CASE 4 (314).—Two oval calculi, each 1 inch long, had been removed, and the gallbladder drained after suturing it to the abdominal wall, by another surgeon in 1896. There were no symptoms until 1908, when a sudden onset of severe pain occurred over the former incision. A secondary cholecystostomy was performed, with removal of two stones the size of marbles from a very rigid gallbladder. This is probably a true recurrence.

2. *Biliary Fistulas Due to Obstruction of Neck of Gallbladder*.—CASE 5 (323).—There had been hydrops of the gallbladder with a large stone at the neck. Drainage and removal of the calculus had been done by another surgeon. Ulceration

at the neck, where the stone had lodged, was noted at this first operation in June, 1915. A secondary cholecystectomy for persistent biliary fistula was performed. The fistula was due to a stricture at the neck of the gallbladder. Complete recovery followed.

CASE 6 (618).—Cholecystostomy for cholelithiasis had been performed in 1906. A biliary fistula persisted until 1910. I performed a secondary cholecystectomy for very thick walled gallbladder with stone impacted in the cystic duct. There were no recurrence symptoms after the second operation.

3. *Persistence of Infection After Cholecystectomy and Drainage of Common Duct*.—CASE 7 (895).—The first operation had been performed in 1912. This consisted of a cholecystectomy for a much thickened gallbladder containing many small calculi and showing acute supervening or chronic changes. The common and hepatic ducts were negative to palpation, but were opened because they were greatly dilated, and because of many small calculi being found in the gallbladder. Nine calculi ranging in size from a pinhead to a pea were found in the common duct, and a small number of similar ones were found in the hepatic duct. T-tube drainage of the common duct was done for four weeks. There was recurrence of symptoms one year later in the form of severe colicky pains and jaundice.

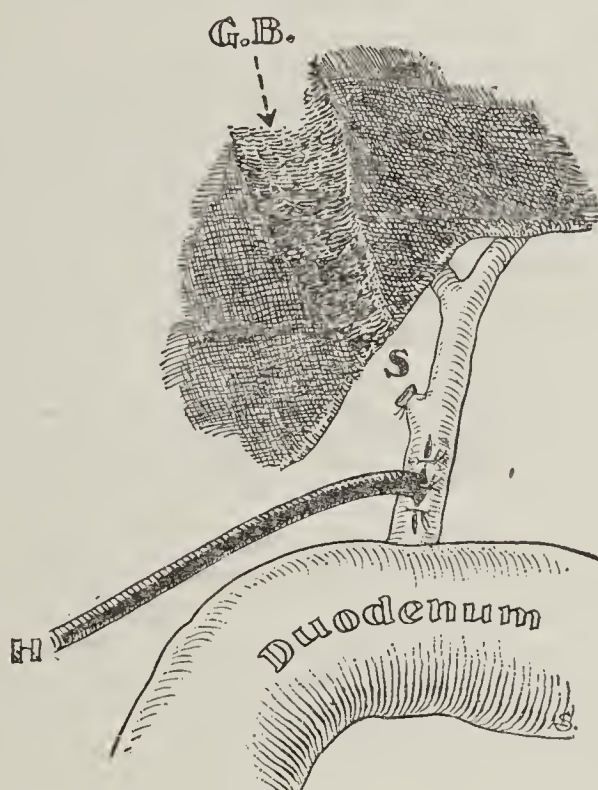


Fig. 7.—Appearance at completion of operation. Note liver bed from which gallbladder (G. B.) has been removed; also observe how close cystic duct (S) is ligated to common duct; and also T-tube (H) inserted into common duct.

The second operation was performed in 1915. Icterus and sepsis were the principal symptoms. The common duct was the size of two adult thumbs and was negative to palpation, but it contained a large amount of sandy detritus and small pigment calculi, as found in the previous condition. Septic symptoms were not relieved by drainage of the common duct, and the patient died a week later of septic pulmonary and enteric complications.

CASE 8 (280).—There was a history of many years of recurrent attacks of pain and icterus. The first operation was performed in January, 1916. A thick walled gallbladder contained hundreds of small calculi and was removed. The common duct was negative to palpation, but fifteen calculi of the same size as those in the gallbladder were found lying in thick tarry bile just above the ampulla. There was no recurrence of symptoms for nine months, then severe pain and slight icterus appeared and have continued at intervals. Secondary operation was refused.

4. *Overlooked Common Duct Stones*.—CASE 9 (657).—Cholecystectomy by another surgeon had been performed in 1910 for a small hard gallbladder containing two large calculi. Fragments of calculi and sandy detritus were found in the cystic duct. There was recurrence of pain and icterus

27. Surgical Clinics of Chicago, August, 1917. The cystic duct, instead of emptying into the hepatic duct at an acute angle, may (a) run parallel to it for a variable distance, (b) wind around it, or (c) may empty into its posterior wall.

28. Deaver strongly advocates prolonged drainage. He has left the T-tube in one patient for over three years.

two years later. At a second operation in 1912 the cystic duct was found dilated, forming a pseudogallbladder 1 inch long containing a calculus the size of a millet seed. The common duct was much dilated and negative to palpation, but two bean-sized calculi were found. The pancreas was very hard and lobulated. There were no further symptoms.

CASE 10 (1426).—Cholecystostomy and negative exploration for calculi in the gallbladder had been performed by another surgeon in 1913. There was recurrence of symptoms eighteen months later (pain and icterus). At a secondary operation a much thickened but empty gallbladder was removed. The common duct was negative to palpation, but a stone the size of a navy bean was found. The pancreas was soft. There was no further recurrence.

CASE 11 (1454).—The first operation by another surgeon had been performed in June, 1916. This was a cholecystostomy with removal of a large number of small calculi. The second operation was in December, 1916, a cholecystectomy by the same surgeon for biliary fistula due to overlooked stone in the cystic duct. There was recurrence of symptoms four weeks later (fever, icterus, pain). At the third operation in January, 1917, all the bile ducts were found much thickened and dilated. One calculus the size of a bean was firmly impacted in the papilla of Vater, and there were two smaller ones proximal to it. There was no recurrence of symptoms.

5. *Recurrence Due to Common Duct Injury During Cholecystectomy.*—CASE 12 (1219).—Cholecystectomy had been performed after the removal of two calculi the size of marbles from a gallbladder showing many abscesses in its wall. Accessory cystic artery crossing behind the hepatic duct was overlooked with resulting severe bleeding and some narrowing of the hepatic duct during ligation of the vessel. The operation was followed by severe chills, fever and icterus. At a second operation, four weeks later, several small abscesses were found in the liver. The patient recovered from all cholangitis symptoms except icterus, which has persisted. In this case the septic condition of the gallbladder favored liver infection after the hepatic duct had been narrowed.

6. *Recurrence After Cholecystectomy Due to Extrabiliary Causes.*—CASE 13 (1303).—Cholecystectomy had been performed for gangrenous cholecystitis with many calculi in the gallbladder. The patient returned ten months later with severe colicky pain in the right upper quadrant, which was found to be due to a calculus impacted in the upper portion of the right ureter.

30 North Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. W. WAYNE BABCOCK, Philadelphia: I would emphasize the value of cooperation between surgeons. Much good would be accomplished by observance of a rule that every surgeon should report back to the original operator the results he finds when the patient comes for a secondary operation. We know some of the bad results when our patients return to us. We know perhaps more of results of other surgeons, because the tendency is for our patients to go to others and the patients of others to come to us. If, therefore, we might have a surgical clearing house, or some method by which we could compare results, it certainly would be of special value in a subject so important as this.

There is no pathologic condition in the abdomen which is permitted to continue as many years without treatment as gallbladder disease. In the first stage of gallbladder disease, that before the formation of stones, there is one operation to be performed—cholecystectomy. From a study of Dr. Eisendrath's cases and those of others it will be found that there are then practically no recurrences. The second stage, in which stones have formed in the gallbladder, likewise is to be treated, for the most part, by cholecystectomy. In the first stage our mortality should be under 1 per cent.; in the second stage, not over 3 to 5 per cent. in the best hands. In the third stage, that of terminal complications, conditions

are different; patients are older; there has been an interval of from twenty to thirty years from the inception of the cholecystitis to the operating table and the mortality exceeds 15 per cent. In this stage cholecystostomy, cholecystectomy and, especially, anastomotic operations must be considered.

DR. JOHN B. DEEVER, Philadelphia: Dr. Eisendrath has called attention to a valid cause for the reformation of stones after a cholecystostomy by the persistence or recrudescence of infection lodged in the minute glands of Luschka. All of the eleven recurrent cases (in about 200 gallstone operations) in my experience at the German Hospital, Philadelphia, during 1916 and up to the present took place after a primary cholecystostomy. Gallstones had reformed in the gallbladder in two of the cases, and in one case stone was found in the common duct; in another case, in addition to stone in the gallbladder, sandy bile was found in the hepatic duct, where it had caused occlusion of the lower part of that duct. This patient had undergone a cholecystostomy four years previously at another hospital and a choledochostomy had been performed by me two years prior to this meeting. The recurrence of symptoms in the other case was due either to adhesions or to dilatation of the common duct (one case).

Dr. Eisendrath referred to two cases in which incision of the common duct, with retraction of the edges of the wound in the duct, was followed by the escape of a shower of small stones from the common duct. I have seen this in numerous cases of cholangitis, pancreatic lymphangitis and chronic pancreatitis the result of long-standing gallstone disease. The establishment of permanent drainage in these cases has proved of marked benefit.

Pancreatic or peripancreatic lymphangitis I believe to be an important factor in causing the reappearance of symptoms in these gallstone cases.

The anatomic relationship between the lymphatics of the gallbladder and those of the pancreas, as has been shown by injection of the former through the latter, and the chain of lymph glands to the number of five or six along the cystic and the common ducts, easily explain how an infected gallbladder can play havoc with the pancreas, one of the most important organs in the body, not only because of its digestive function, but also because of its influence on the functions of other glands with an internal secretion. It is therefore of the utmost importance for the medical man not to dilly-dally with cases presenting symptoms of biliary infections, but to send them early for operation. Pancreatitis is the cause assigned for recurrence of symptoms in fully 10 per cent. of the patients who have come to me for reoperation. This is explained by the close anatomic connection between the common duct and the head of the pancreas, the latter when enlarged obstructing the duct.

DR. E. MACD. STANTON, Schenectady, N. Y.: During the past ten years in collecting data on the end-results following gallbladder disease I have found that the actual facts, so far as I have been able to ascertain them, do not bear out a number of the conceptions vigorously maintained by many surgeons prominent in this work. It has been asserted that so-called cholecystitis without stones is a forerunner of gallstone disease; and that gallstones themselves are the results of an infection of the biliary tract by micro-organisms.

The latter assumption is, I believe, based on insecure data. The patients uncured of cholecystitis following cholecystostomy do not develop stones in a proportion greater than would be expected from the increasing age of the patients. The incidence of gallstones bears little if any distinct relation to demonstrable preexisting infection, but, on the contrary, does bear a distinct relationship to certain broad factors of sex and metabolism which point strongly to the assumption that the cholesterol-lipoid metabolism hypothesis of Ashaff, so well stated recently by Rothschild, is approximately the correct explanation of gallstone formation.

The actual available data show conclusively that so-called cholecystitis without stones and gallstone disease are etiologically as well as pathologically distinct and separate conditions. The symptoms in both diseases are similar, but the factors governing the end-results are different and, until we learn to separate the two groups whenever we attempt to

estimate end-results, we shall continue to have confusion in our ideas on the subject. Cholecystitis without stones is not cured by cholecystostomy, but I want to emphasize that the end-results following gallstone operations bear no definite relation to the amount of infection in the gallbladder present at the time of the operation. Infection does occur frequently as a complication of gallstones, and this infection may greatly increase the dangers and difficulties of the operation, but provided all stones are removed and there be no coincident duct strictures, the complicating infection of itself clears up promptly and has little demonstrable influence on the end-results.

SACRO-ILIAC JOINTS IN OBSTETRICS AND GYNECOLOGY *

JENNINGS C. LITZENBERG, B.S., M.D.

Fellow of the American College of Surgeons
MINNEAPOLIS

There has been so much discussion during the last decade about the sacro-iliac joints and kindred orthopedic conditions causing sacrolumbar backache, that it ought to have been sufficiently impressed on the profession that pain in this region might be due to a condition in the back itself; yet many women are unrelieved of their suffering during pregnancy, are submitting to endless local gynecologic treatments, and are undergoing useless pelvic operations because they have never had their backs examined.

Many of these women, who have been "going the rounds" of physicians' offices, have a sacro-iliac affection as their sole trouble, or as a result of their pregnancy or gynecologic condition. The fact that I have seen many of them overlooked is my only apology for again laying stress on such a common symptom as backache.

The anatomy of these joints is still a subject of contention; Goldthwaite and Osgood,¹ Meisenbach,² Albee and others agree that the sacro-iliac articulation is a "true joint, having all the common joint structures, and naturally subject to the same diseases and injuries as other joints" (Goldthwaite).

The opponents of this idea aver that the articulation is a synchondrosis, immovable except under pathologic conditions. However, all agree that there is physiologic mobility during pregnancy.

When one sees a gynecologic case with the same symptoms as he finds in the demonstrable relaxation of pregnancy, and yielding to the same treatment, he may be justified in considering them the same thing.

Movement of these joints during pregnancy is amply proved by the enlargement of the inlet in the Walcher³ position and of the outlet by the exaggerated lithotomy position, neither of which increases could occur unless the sacro-iliac joints permitted movement of the sacrum on the ilia. This has been recognized for years.

Cantin,⁴ in 1899, demonstrated mobility in 98 per cent. of 500 cases, in 15 per cent. of which there were symptoms.

Snelling,⁵ in 1870, called attention to the significance of these relaxations, and said: "Relaxation of the pelvic articulations becomes apparent suddenly

after parturition or gradually during pregnancy, permitting a degree of mobility which hinders locomotion and gives rise to most peculiar distressing and alarming sensations." His warning, given forty-seven years ago, has not been generally heeded.

The first case that called Goldthwaite's¹ attention to relaxation of the pelvic joints was due to pregnancy. Even the numerous articles and abundant discussion started in 1905 by the paper of Goldthwaite and Osgood have not been sufficient to make the profession realize that every woman with a backache should have her back examined.

The results of relaxation in pregnancy vary from simple backache or even less than a definite ache, only slight discomfort, to an inability to move without the most intense suffering.

Most women, except in the very severe cases, believe backache to be a necessary part of pregnancy and to be endured with womanly fortitude. I fear that too many physicians think the same thing.

I shall not attempt to report in detail a long series of cases, but will confine myself to giving the essential points in a few cases which illustrate some phases of the subject. The milder cases give only moderate discomfort, which, however, on account of the constant prolonged irritation during pregnancy, give rise to nervous symptoms and are a large factor in the neurasthenia of pregnancy. I have seen a properly fitted combination maternity corset, abdominal support and sacro-iliac belt change an irritable neurasthenic, bemoaning her pregnant state, into a happy, contented, prospective mother.

REPORT OF CASES

CASE 1.—This illustrates the extreme disability of pregnancy. Mrs. G. was eight months' pregnant, and was unable to walk without assistance; her figure bent in an attempt to protect the painful joint. Examination revealed left sacro-iliac relaxation, which was immediately relieved by tightly strapping the pelvis. She walked out of the office unassisted, erect and smiling.

CASE 2.—This illustrates how pregnancy may initiate sacro-iliac trouble and be aggravated by subsequent pregnancies, and finally how trauma may cause almost total disability. Mrs. B. had pain in the back during her first pregnancy, had been fairly comfortable after her delivery, but had to wear a belt to insure complete relief; the difficulty returned during her second pregnancy, and now in her third I had advised wearing the belt to avoid trouble. In an automobile accident she was rendered almost entirely incapable of movement on account of the sacro-iliac pain. By substituting adhesive straps for her belt she was made more comfortable, but was not free from pain. After delivery she began to improve, and in a few months could go without her belt.

CASE 3.—This case illustrates how easily a traumatic injury to the sacro-iliac joints may occur during pregnancy. Mrs. McC. went to the telephone; a rug slipped from under her as she arose, and in her attempt to regain her balance she was suddenly seized with a sharp lancinating pain in the back and fell to the floor. She found that she was unable to move, and had to be assisted to bed. When I saw her a few hours later I found an extremely painful left sacro-iliac joint, which was greatly relieved by strapping. I sent a trained corsétière to fit her with a combination maternity corset and sacro-iliac belt. This corsétière, who is a sufferer from sacro-iliac relaxation, wears a belt constantly, which she put on the patient to test her needs. The belt gave her so much comfort that she refused to give it back, and continued to wear it till her own was made. She had gone through two previous pregnancies without any backache.

CASE 4.—This case illustrates the trouble first appearing in the puerperium. Mrs. S. had gone through her pregnancy comfortably. In the night of the first day after her delivery

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Goldthwaite and Osgood: *Boston Med. and Surg. Jour.*, May 18, 1905.

2. Meisenbach: *Surg., Gynec. and Obst.*, May, 1911.

3. Walcher: *Centralbl. f. Gynäk.*, 13, 5892.

4. Cantin: *Thèse de Paris*, 1899.

5. Snelling: *Am. Jour. Obst.*, 11, No. 4.

she was suddenly awakened by a sharp excruciating pain in the back when she attempted to turn over in bed. When I saw her in the morning she had a very tender right sacro-iliac joint. Her pelvis was tightly strapped, followed by immediate, complete and permanent relief.

CASE 5.—This was another case in which my attention was first called to backache during the puerperium. A couple of days after the delivery of Mrs. D., the nurse reported that the patient could not sleep on account of backache, which on examination proved to be a tender right sacro-iliac joint, which was relieved by strapping. When explaining the condition to this patient, I remarked that many women had the same condition during pregnancy and often would not complain when they could just as well be relieved. She said, "That is my case; I have had this pain almost all the time I have been carrying my baby, but I thought it was a necessary part of my condition and I did not want to appear 'babyish'." I now question all of my patients about backache, and thus save much unnecessary suffering, for if one waits for complaints, he will discover only the bad cases.

CASE 6.—This illustrates the neglected case with final relief. Mrs. M. had characteristic symptoms of sacro-iliac relaxation during pregnancy. She was strapped with adhesive plaster, which gave her instant relief, but the adhesive was badly applied, resulting in blisters which provoked her, and she refused further treatment by belt or corset. She went through an uncomfortable pregnancy and puerperium. She resented any suggestion of treatment addressed to the pelvis, and went to an osteopath; receiving no relief, however, she finally returned, thinking she might have recurrence of a uterine misplacement, for which she had been treated. Nothing abnormal was found in the pelvis, and I reiterated my former diagnosis and insisted that she go to an orthopedist, which she did and was completely relieved with a 1 inch inelastic belt about the pelvis.

Injuries to the pelvic joints during delivery occur but are not within the intended scope of this paper.

The increasing size of the abdomen during pregnancy, like the pendulous abdomen, throws the center of gravity forward, to overcome which the back muscles are put on a strain, and the lumbar curve is increased, thus throwing the upper part of the sacrum forward. This attempt to restore equilibrium, being necessarily continued over a number of months, often results in sacro-iliac or muscular strain.

Every pregnant woman is a potential sacro-iliac patient. This is proved by the known relaxation, the demonstrable mobility in 98 per cent. of cases (Cant⁴), and the fact that injury occurs more easily during pregnancy than at any other time. Stooping, lifting a child, a misstep, turning over in bed, or even normal movements, as arising from a chair, may precipitate a painful or even disabling condition. In my series of over 500 cases, 10 per cent. suffered enough to complain; and since I have inquired more carefully, I find that more than 20 per cent. acknowledge backache. For these reasons I believe every pregnant woman should wear a proper abdominal, back and pelvic support.

GYNECOLOGY

Retroversion, tumors and inflammatory processes in the pelvis not only cause pain in the pelvis but are so frequently accompanied by backache that this symptom is too commonly looked on as a pathognomonic sign of pelvic disease. It is, however, true that pain in the back directly referable to the sacro-iliac joints is often cured by correction of the gynecologic condition by operation or otherwise; on the other hand, it may work in just the opposite way, and the pelvic symptoms may be entirely due to sacro-iliac inflammation or relaxation, as I have repeatedly shown, by a disappearance of all pelvic tenderness by immobiliza-

tion of the sacro-iliac joints. One must endeavor, therefore, to determine which is the primary trouble and address the treatment to that, which is not always easy. And again their interdependence is so close that neither seems to be more cause than effect, a true sacro-iliac and a real pelvic pathologic condition coexisting and each making the other worse, acting as it were in a vicious circle, the relief of one benefiting the other, but a cure of the patient resulting only when both are separately attacked.

The point, however, which I wish to emphasize is not the one so commonly recognized that backache is a symptom of pelvic disease, but the converse, that the backache may be an entity in itself; and not only that, but it may by referred sensations even simulate pelvic disease.

As Moore⁶ says:

In these cases all the pelvic organs are tender, presumably due to some intrapelvic condition; they have ovaries and tubes removed, are curetted, tamponed and douched without relief, and gradually drift into a neurasthenic condition of semiinvalidism. All of these cases should be cured or improved by proper treatment.

When one understands the distribution of the sacral plexus and the close proximity of some of the branches, especially the lumbar cord, to the joint, it is not difficult to understand how sacro-iliac disturbances could result in tenderness and pain referred to the pelvic organs.

CASE 7.—This case illustrates the type of patient that has pelvic symptoms with no pelvic disease whatever. Mrs. P. came to the office complaining of backache and indefinite pelvic discomfort. She had had the condition ever since the birth of her first baby. She had "doctored for female trouble" for years, and had had tampons and every other conceivable topical application. A pelvic examination revealed a normal condition. The sacro-iliac joint was very tender on palpation. When I told her I could find no female trouble at all she looked very skeptical, if not disgusted, which feeling, however, quickly disappeared after I had strapped her pelvis; for this was one of those spectacular cases in which the patient gets immediate relief. Here was a patient who had been maltreated for years, had spent large sums of money, and endured great suffering, all for the lack of knowledge by her many physicians that backache may be due to something else than pelvic disease, the lack of complete examination and the neglect of well established diagnostic and therapeutic measures. She left the office without pain, wore the straps for a few weeks, never had a return of the pain, and somewhat to my surprise did not need a permanent belt.

CASE 8.—This case illustrates two phases of this subject: first, that her symptoms, which she thought pelvic, were in the sacro-iliac joint; and second, that the condition of the joint was due to a remote condition, that is, focal infection. Mrs. L. was the mother of one child, aged 7 years. Several months before consulting her brother, who was a physician, she had noticed backache and more or less pain and heaviness in the pelvis. I was asked to examine her to find out what was the matter in the pelvis. I found nothing abnormal except some tenderness. On account of the pain in the back I examined the sacro-iliac joints, one of which was found quite tender. I thought the whole trouble was in the sacro-iliac joints. The pelvis was strapped with great relief, which, however, was not complete. In further search for the cause, roentgenoscopy revealed the focal infection of the teeth. Rapid improvement followed removal of all the offending teeth.

Young⁷ says:

Impairment of the sacro-iliac joints frequently invites disaster by offering fruitful field for the invasion of infecting processes.

6. Moore, S. B.: Virginia Med. Semi-Month., March 10, 1911.

7. Young, J. K.: Am. Jour. Med. Sc., 1912, 144, 96.

It is a far cry from pelvis to mouth, but well illustrates where we may be led if we follow our cases through a complete study instead of jumping at conclusions because the patient refers her pains to certain organs.

Much of the backache occurring during menstruation is in the sacro-iliac joints, owing possibly to congestion or relaxation at this time. Sometimes the relaxation is "so marked as to seriously interfere with locomotion." Wearing a sacro-iliac belt during menstruation often gives great relief.

In a series of more than 500 cases, many other reports could be given to prove the one point on which I wish to place emphasis, that backache and even definite pelvic symptoms may be entirely due to lesions in the sacro-iliac joints, or kindred orthopedic conditions.

However, when one is laying stress on a particular condition, one must avoid giving the impression that one believes it to be the sole factor.

I hope I may not fall into the obsession of believing that the sacro-iliac joints are the only cause of backache, even in the sacral region. I ought not, for I have seen many cases with other orthopedic conditions as the cause of this particular symptom, for example, shortening of one leg, flatfoot, lesions in the lumbar sacral joint, spinal curvature, muscle strain due to faulty attitude, and rupture of aponeurotic and muscle fibers.

CASE 9.—This case will illustrate how we may fall into such an error. Mrs. F. had been in a runaway accident fifteen years before I saw her. This was followed by severe backache, which disappeared in a few weeks and did not return until three years before, when she was suddenly taken with a "stitch" in her back when she stooped over to pick up a bottle of water, and could not straighten up. This was diagnosed as sacro-iliac subluxation, and so treated with some relief. I was asked after she had undergone three years of unsuccessful treatment to see if there was anything in the pelvis to account for the condition; examination revealed nothing. As most uncured patients do, she went from physician to physician and from specialist to specialist. Finally a diagnosis of separation of muscular attachments near the sacro-iliac joints was made by a prominent orthopedist, who gave her the greatest relief she had experienced by building up the shoe on the affected side and readjusting her corsets.

It behooves the obstetrician and gynecologist to remember that not all lower backaches, even with pelvic symptoms, are due to pelvic disease; the surgeon should recollect that they do not necessarily mean visceroptosis, dilated large intestine, appendicitis or genito-urinary affections; and the general practitioner, that the neurasthenic may have a real basis for her nervous symptoms in her back itself.

As Dunlop⁸ says, the symptoms may be so vague or referred to so many places as to suggest the neurasthenic. He reported one case in which there were pains referable to the pelvic organs, appendix and genito-urinary organs. Even intestinal stasis was considered, and yet the patient was cured of all these by proper immobilization of the pelvic joints.

There is not time in this paper to take up the points of diagnosis. In differential diagnosis and treatment we must work in close conjunction with the orthopedist.

The principles of treatment are simple, calling in the main only for immobilization of the joints by adhesive straps, sacro-iliac belts or special devices, the application of which is described in orthopedic works.

Every pregnant woman, I believe, is a potential sacro-iliac patient. Therefore, I urge that she should be fitted to a specially designed maternity corset, which is a combination of abdominal support, sacro-iliac belt and corset back. It is so constructed as to get well under the abdomen, and really support it; it is provided with straps which may be tightened about the pelvis without constricting the abdomen; it has also a sacral pad, a high steeled corset back which gives the accustomed support to the back, and the whole is designed to correct faulty attitude and take the strain off the back muscles and sacro-iliac joints.

In the simple backaches of pregnancy or gynecology, I first use adhesive straps or the 1 inch inelastic belt for diagnostic purposes and to be worn till the maternity apparatus is fitted and made.

These simple devices usually suffice, but the more extreme cases often tax the skill of even the best trained orthopedists, with whom we must work in the closest conjunction.

The general practitioner can successfully treat most of the cases with adhesive straps, or the 1 inch inelastic belt tightly buckled about the pelvis over the ordinary corset, or by the sacro-iliac belt.

SUMMARY

The sacro-iliac joints are certainly movable during pregnancy, and while usually fixed in the nonpregnant state, may be movable under certain conditions.

This normal relaxation makes these joints very vulnerable; they are often the cause of discomfort, pain, displacement and even disability. Every pregnant woman is a potential sacro-iliac patient and should have her pelvis supported and faulty attitude corrected by a properly adjusted maternity corset.

Gynecologic affections may cause pain in the sacro-iliac region, and sacro-iliac lesions alone may simulate pelvic pathologic conditions; therefore every woman with sacrolumbar backache should have her back examined to make sure whether a pelvic or back trouble is the cause of the symptoms, or whether the two are coequal factors. The treatment of neither can be wisely decided until the exact rôle the other may play has been determined.

119 Institute of Anatomy, University of Minnesota.

ABSTRACT OF DISCUSSION

DR. EDWARD REYNOLDS, Boston: I am confident that the long continued controversy among the orthopedists as to the cause of sacro-iliac backache, to which the essayist refers, is due to the failure of both sides to appreciate that there are several predisposing causes which produce much the same symptomatology, and temporary relief is often obtained from the same mechanical treatment. I think these backaches may be due to (1) actual looseness of the sacro-iliac joints; (2) to inherent skeletal disproportion, causing faulty posture, and (3) to intra-abdominal lesions which cause similar faulty posture. All these lesions create the same secondary disturbance, and, consequently, the same symptoms, since the symptoms are always the result of the secondary lesion, an overstrain and usually a consequent exudate in the lower part of the erector spinae muscles. The case is further complicated by the fact that any two, or sometimes all three, of the same lesions may be present in the same case, but the controversy has become so heated that neither side is ready to admit that the other may be partly right. The cases which the orthopedists see usually belong to one of the two first classes, while those which the gynecologist sees almost always belong to one or both of the two latter classes. The diagnosis between the underlying lesions rests necessarily on physical examination, both gynecologic and orthopedic, and

8. Dunlop: Virginia Med. Semi-Month., May 12, 1911, p. 66.

difficult cases often demand consultation, and perhaps conjoint treatment, between experts in the two lines. I am in the most hearty sympathy with the reader's position that backache should be investigated in every case from both points of view, and also that it is not a difficult thing for a gynecologist to learn the orthopedic examination and so fit himself for a differential diagnosis in most cases.

DR. ROBERT L. DICKINSON, Brooklyn: I have had the good fortune to have in my office a colleague who has trained me to know the loose joint and the faulty attitude. Like the reader of the paper, I have long practiced strapping and belting the joints and have secured a large amount of comfort from a very slight procedure. Therefore, I think no more important point has been made than that of the necessity of the routine examination of the sacro-iliac joints. The procedure of Goldthwaite, by which the patient lies full weight on the back and the leg is thrown forward with no flexion of the knee, will develop it in most cases. The method of Truslow, with the patient erect and a stethoscope over the joint to detect the sound is also a method of value. Dr. Reynolds also has lent symmetry to the discussion by insisting that we study attitudes both during pregnancy and in the gynecologic patient. The truth lies in neither of these completely. We must correct false attitudes and may thus cure backache, otherwise incurable, with a properly adjusted corset; or a weak back may be strengthened by muscular development.

DR. ISADORE L. HILL, New York: I feel that Dr. Litzenberg is to be thanked and congratulated for taking up for study and discussion one of the minor ailments of pregnancy. If any branch of obstetrics at present is neglected it is the study of these minor inconveniences. Although the woman is safeguarded against oversight with reference to her pelvis, which results in the necessity of serious measures at the time of her labor, for the most part women are still accepting the general attitude that pregnancy is an uncomfortable condition of necessity, and I think obstetricians are apt to neglect the smaller matters which it is possible to relieve.

DR. JENNINGS C. LITZENBERG, Minneapolis: I used the expression sacro-iliac and allied orthopedic conditions. That was simply an expression for giving in a sentence what would take a book to cover, and which Dickinson, Reynolds, Lovett and others took several years to work out. Every woman with a backache should have her back examined. This is not done. My sole object in bringing up this question was to emphasize a neglected minor condition, and if you will look at your programs you will see that the last sentence in my paper is a plea for more attention to minor symptoms. It is not, however, from the patient's standpoint a minor symptom. Why do we always emphasize the big thing? The discussion has fully justified me in bringing before you this little question of lower backache. I did not take any time to go into the diagnosis or treatment. Two or three have asked me how I applied these straps. They must be so placed that they are below the anterior superior spines and above the trochanters and applied tightly. This will give the necessary support and relief. We must correct faulty attitudes caused by pendulous abdomens, both in the pregnant and nonpregnant, by the high back corset. If I shall have succeeded in having the backs examined of some of the thousands of women who have backache, I shall be satisfied.

Ophthalmia Neonatorum.—The proportion of pupils blind from ophthalmia neonatorum in thirty-one state schools for the blind in 1916-1917 was, among a total of 2,961 pupils, 742, or 25 per cent. During those years the number of new admissions were 558, 109 of whom, or 19.5 per cent., were blind from ophthalmia neonatorum. Among the pupils in classes for the blind in the public school systems of Chicago, Detroit, Jersey City, Milwaukee, New York City and Racine, Wis., a total of 375 blind, there were 54, or 14.4 per cent., blind from ophthalmia neonatorum. This information has been tabulated in detail by the National Committee for the Prevention of Blindness.

BREATH SOUNDS IN INCIPIENT TUBERCULOSIS *

H. A. BRAY, M.D.

RAY BROOK, N. Y.

Alteration of the respiratory murmur is usually regarded as the initial, or among the initial, physical signs of early tuberculosis. A diversity of opinion exists, however, concerning the incidence of the various respiratory alterations and their relative value in diagnosis. Some authorities agree that the granular type of inspiratory murmur is the initial manifestation of the incipient lesion; others emphasize the prolonged high-pitched expiration as indicating early involvement, while still others attribute only slight significance to either of these changes. This confusion may be ascribed in part to the difficulty in distinguishing true pathologic changes in breath sounds from those variations which occur normally.

The present work was undertaken to determine, if possible, the clinical importance of altered breath sounds in pulmonary tuberculosis with the hope that any knowledge thus obtained might facilitate an early diagnosis. To this end a study has been made of the frequency and character of the respiratory changes in 124 cases of incipient disease confined to one or both apexes, and of the comparative significance of such changes when considered both alone and in conjunction with other physical signs and diagnostic procedures.

Although previous studies include a description of the breath sounds over the entire chest, the observations here recorded are restricted to the apex of the lung (a term herein employed to include that part of the lung above the second intercostal space in front and the spine of the scapula behind). This plan was adopted, because early in the present investigation it was discovered that a detailed study of the breath sounds over the entire chest subjected the patient to an undesirable physical strain. Furthermore, the apexes of the lung are particularly adapted for a study of this kind, since in tuberculosis the initial physical changes occur in these areas in approximately 90 per cent. of all cases. Finally, by confining the study to patients presenting only apical involvement, other conditions, which in themselves might alter the character of the breath sounds at the apex, were excluded and a more accurate idea of the modifications of the vesicular murmur in incipient disease was made possible. Among the conditions thus excluded are tuberculous involvement in parts of the lung other than the apex, spinal curvatures, deformities of the thorax, obstruction of the upper air passages, tumors of the mediastinum, marked deviations of the trachea, etc.

In the present investigation the following method was adopted: The entire chest was first auscultated superficially for the purpose of determining the normal vesicular murmur peculiar to the individual, a requisite for the correct interpretation of pathologic variation in breath sounds. Following this an attempt was made to locate the site of the lesion at the apexes from a study of the respiratory murmur during quiet then during slightly exaggerated, and finally, forcible breathing, the patient breathing orally and noiselessly and maintaining as far as possible the normal ratio between inspiration and expiration. These findings

* From the New York State Hospital for Incipient Pulmonary Tuberculosis.

were then compared with the results of a complete physical examination, including the use of the roentgen ray and the fluoroscope. By studying the breath sounds before the other physical signs were elicited, and without knowledge of the roentgen ray and fluoroscopic findings, the examiner was uninfluenced by facts that might tend to color his interpretation of alterations in the respiratory murmur. Previous work had suggested the advisability of this plan.

Certain observations in physical diagnosis made by me in the course of previous work have been applied to the present study because of their aid in determining more precisely the value of respiratory alterations in tuberculosis. The application of these principles in this study helps to explain the discrepancies that exist between the present findings and those of previous observers.

These observations are as follows:

1. The employment of diaphragmatic breathing is an effective measure in differentiating granular breathing from those extrapulmonary sounds which simulate this type of breathing.

2. The observation of the time interval and force of the respiratory act is essential for the accurate differentiation of physiologic alterations in the duration and intensity of the respiratory murmur from those of pathologic origin.

TABLE 1.—FORTY-SEVEN CASES OF INCIPIENT TUBERCULOSIS PRESENTING A LESION AT THE RIGHT APEX

| | |
|---|----|
| Granular breathing | 1 |
| Weakened breathing | 5 |
| Increased vesicular | 3 |
| Cog-wheel | .. |
| Prolonged expiration | 20 |
| Bronchovesicular | 6 |
| No change in respiratory murmur | 12 |
| Total | 47 |
| Breath sound changes at the normal left apex | 8 |
| Weakened breathing | 2 |
| Increased vesicular | 4 |
| Prolonged expiration | 1 |
| Bronchovesicular | 1 |

3. The lungs glide beneath the ribs during respiration is important in correlating pathologic conditions any given area is considerably greater than that represented by the bell of the stethoscope. This observation is important in correlating pathologic conditions with alterations in the respiratory murmur.

The present study comprises 124 cases classified as incipient according to the classification adopted by the National Association for the Study and Prevention of Tuberculosis. Tubercle bacilli were demonstrated in the sputum of approximately 24 per cent. of the cases. A comparison of the breath sound changes in the sputum-positive and sputum-negative cases failed to reveal any distinct differences, and for this reason they have been grouped together in the accompanying tables.

In eighty-one instances the lesions were unilateral, occurring at the right apex in forty-seven, and at the left apex in thirty-four. In the remaining forty-three cases the lesions were bilateral, slightly more extensive at the right in twenty-six, and at the left in seventeen.

The results of the study of the breath sounds in the 124 cases with apical involvement are presented in the tables. In those cases exhibiting more than one alteration in the vesicular murmur over an apex, only the most marked alteration has been noted.

Of the forty-seven cases of early disease with a lesion at the right apex, thirty-five, or 74.4 per cent.,

presented respiratory alterations, while twelve, or 25.6 per cent., gave no evidence of respiratory change. In eight instances the character of the breath sounds at the left apex suggested a lesion in this area, although further physical examination, the roentgen ray and the fluoroscope did not confirm this suspicion. Among the thirty-five cases exhibiting respiratory alterations, the inspiratory murmur was most affected in nine instances, the expiratory in twenty, and in the

TABLE 2.—THIRTY-FOUR CASES OF INCIPIENT TUBERCULOSIS PRESENTING A LESION AT THE LEFT APEX

| | |
|--|----|
| Granular breathing | 1 |
| Weakened breathing | 10 |
| Increased vesicular | 6 |
| Cog-wheel | 1 |
| Prolonged expiration | 4 |
| Bronchovesicular | 2 |
| No change in respiratory murmur | 10 |
| Total | 34 |
| Breath sound changes at the normal right apex... | 9 |
| Weakened breathing | 2 |
| Increased vesicular | 1 |
| Prolonged expiration | 4 |
| Bronchovesicular | 2 |

remaining six instances, the inspiratory and the expiratory murmur were about equally affected. In other words, in disease at the right apex, the expiratory murmur is altered more frequently than the inspiratory.

Of thirty-four cases of early involvement at the left apex, the findings were positive in twenty-four instances, or 70 per cent., and negative in ten instances, or 30 per cent. Respiratory changes suggesting a lesion at the normal right apex were noted in nine instances. Among the twenty-four positive cases exhibiting respiratory alterations, the inspiratory murmur was affected in eighteen instances, the expiratory in four instances, and in the remaining two instances both were equally affected. The respiratory variations at the left apex in contrast to those at the right are predominantly inspiratory in character.

In the forty-three cases in which the disease was bilateral, changes in the breath sounds suggested the presence of a lesion at both apexes in nine, at the right apex alone in fourteen, at the left apex alone in eleven, and in the remaining nine no changes in the breath sound were noted.

An analysis of the respiratory variations in forty-three cases presenting bilateral apical disease shows, as in those with unilateral involvement, that at the

TABLE 3.—FORTY-THREE CASES OF INCIPIENT TUBERCULOSIS PRESENTING A BILATERAL APICAL LESION

| | Right Apex | Left Apex |
|---------------------------------------|------------|-----------|
| Granular breathing | 1 | 0 |
| Weakened breathing | 3 | 5 |
| Increased vesicular | 2 | 8 |
| Cog-wheel | 1 | 1 |
| Prolonged expiration | 12 | 4 |
| Bronchovesicular | 4 | 2 |
| No change in respiratory murmur | 20 | 23 |
| Total | 43 | 43 |

right apex the expiratory, and at the left apex, the inspiratory murmur is most frequently altered. In approximately 50 per cent. of the cases in this group, no respiratory alterations were detected, a fact explained largely by the absence of a normal standard for purposes of comparison.

The results of the present study do not agree in certain essentials with those of previous observers, notably in the large proportion of cases (approximately 40 per cent.) in which the findings resulted negatively, and also in the difference in the incidence

of the various respiratory modifications as observed at the right and the left apex.

COMMENT

Granular Breathing.—Granular breathing, or one type of the *rauhes Atmen* (rough breathing) of the Germans, is regarded by most observers as one of the earliest respiratory alterations in tuberculosis (Grancher, Minor, Turban, Sahli, Otis, Pottenger and Fishberg). For the satisfactory demonstration of granular breathing at the apex, the muscles in this region must be in a state of relaxation, because their active contraction may at times produce sounds indistinguishable from granular breathing, and thus lead to confusion in diagnosis. This requisite is obtained by means of abdominal breathing. In this type of breathing, respiration is conducted solely by the piston-like excursions of the diaphragm, the thorax is fixed, and the muscles in the region of the apex are relaxed.

Abdominal breathing, therefore, represents an efficient method for the elimination of those extrapulmonary sounds which arise in the contracting muscles and which simulate granular breathing. On the other hand, if the granular type of respiratory murmur is heard during abdominal breathing, one is justified in concluding that the vesicular murmur has undergone a definite pathologic alteration.

The value of abdominal respiration in the detection of granular breathing is illustrated by the fact that in a series of cases previous to its employment, the incidence of this sign in early tuberculosis was about 18 per cent., while subsequent to its use only three cases in the present series, or 2.81 per cent., exhibited this sign.

Changes in the Duration and Intensity of the Respiratory Murmur.—Since physiologic variations in the duration and intensity of the vesicular murmur may be confused with those of pathologic origin, a knowledge of the factors responsible for such variations in health is essential for the correct interpretation of their occurrence in disease. When the volume of air inspired in a given unit of time is maintained, the intensity of the murmur remains unaltered. Thus, if on successive respirations the air intake is 500, 1,000 and 1,500 c.c., and the time interval occupied by the respiratory act is one, two and three seconds, respectively, no change occurs in the intensity of the respiratory murmur, since the air intake in a given unit of time (500 c.c. in one second) is the same in each instance. The depth of the respiration, however, is altered, as is the duration of the respiratory murmur. The view expressed by certain observers, among others Sahli¹ and Barker,² that intensity varies with the depth of respiration, is therefore open to question. Variations in the intensity of the respiratory murmur are due to differences in the volume of air intake in a given unit of time. The greater the volume the more intense the murmur, and vice versa. In other words, the duration of the vesicular murmur, more especially the inspiratory phase, depends on the time interval occupied by the respiratory act, the intensity on the force of the respiratory act. Variations in the force of the respiratory act may also alter the character of the respiratory murmur in the region of the apexes, a fact that increases the difficulties of diagnosis.

Normal variations in the duration and intensity of the vesicular murmur may be determined by observing

the movements of the chest and abdomen and noting the time interval and force of the respiratory act. The detection of such physiologic variations is essential for the correct interpretation of similar alterations occurring with pathologic conditions.

As the movements of the chest during respiration are greater in front than behind, the examiner will find it advantageous to select the front of the chest when making such observations. By the adoption of this procedure, variations in the duration and intensity of the respiratory murmur have been reduced approximately 20 per cent. as compared with those obtained during a previous study of this sign.

In the present study the vesicular murmur was either weak or intensified, with corresponding changes in its duration in sixteen of the ninety instances of disease at the right apex, and in thirty-two of the seventy-seven instances of disease at the left apex.

Prolonged Expiration.—Prolonged expiration, first advanced by Jackson of Boston in 1833 as a sign of tuberculosis, is generally regarded as one of the first alterations in the respiratory murmur to appear in early tuberculosis. In ninety instances of disease at the right apex, prolonged expiration was the most frequent sign, occurring in thirty-two instances, or approximately 35 per cent.; while in seventy-seven instances of disease at the left apex, this sign was present in only eight instances, or approximately 10 per cent. At the left apex the changes in the expiratory murmur, as compared with those at the right apex, were not marked.

Physiologic prolonged expiration is invariably more marked at the right apex, and in some instances may be entirely confined to this region. According to Bandelier and Roepke,³ it occurs at the right apex in 33 per cent. of healthy adults. The relative frequency and more pronounced character of physiologic prolonged expiration at the right apex and the inability on my part to differentiate with accuracy such alterations in the respiratory murmur from those of pathologic origin explain, in part at least, the high incidence of this sign at the right apex.

Prolonged expiration more marked at the left than at the right apex, on the other hand, forms one of the most trustworthy physical signs associated with disease at the left apex. Infrequent in early disease, its incidence increases with the advance of the disease.

In thirty-one instances of moderately advanced disease in which expiration was more pronounced at the left than at the right apex, the left apex exhibited a definite lesion in thirty instances, while in only one case was no evidence of a lesion demonstrable.

Bronchovesicular Breathing.—Bronchovesicular breathing occurred in ten of the ninety instances of disease at the right apex, and in four of the seventy-seven instances of disease at the left apex. Bronchovesicular breathing and prolonged expiration, because of their close similarity to each other, are frequently confused. In their differentiation the personal equation is an important factor. This point should be borne in mind in studying the present statistics.

For the correct interpretation of breath sound change, a knowledge of the movements of the thorax and lungs during respiration is important. It is generally assumed that no change occurs in the position of the auscultated field during respiration. For instance, the pathologic basis for one type of

1. Sahli: *Klinische Untersuchungsmethoden*, Ed. 5, 1908, p. 296.

2. Barker: *Monographic Medicine*, 2, 518.

3. Bandelier and Roepke: *Die Klinik der Tuberkulose*, Ed. 3, 1914, p. 69.

bronchovesicular breathing is explained by Turban as due to superficial aerated lung tissue overlying an area of partial or complete consolidation. The air current first impinging on the consolidated tissue gives rise to the bronchial quality, and later the expansion of the superficial air-containing lung produces the vesicular quality.

This explanation of bronchovesicular breathing presupposes that the lung is more or less a fixed and immobile organ, a view in accord with current ideas. That the contrary is true, however, and that the lung exhibits considerable movement on respiration, may be illustrated by the following procedure: If the bell of the stethoscope is placed over the lower margin of the lung and the patient directed to take a deep inspiration, at the height of inspiration the lower margin of the lung is no longer beneath the bell of the stethoscope, but may be 2 inches or more below it, depending on the fulness of inspiration. In other words, the lung glides beneath the stethoscope during respiration, and the area of lung auscultated over a given point in the thorax is therefore considerably larger than that represented by the bell of the stethoscope. The area of lung auscultated varies also with the type of respiration. This is illustrated by observing the movement of an isolated shadow in the lung by the aid of the fluoroscope and noting the difference in the position of the shadow with relation to the neighboring rib during thoracic and abdominal breathing. Clinically this change in the lung movement is shown by the striking variation that may occur in the size of the râle area in certain cases on abdominal and thoracic breathing. With the fact in mind that the lung glides beneath the ribs, bronchovesicular breathing may be explained by the presence of contiguous areas of consolidated and air-containing lung, which alternately pass across the auscultated field during respiration.

Furthermore, in the interpretation of the respiratory modifications other than bronchovesicular, and in those studies conducted for the purpose of correlating the physical signs and the roentgen-ray findings with those discovered at necropsy, the relative movements of the chest wall and the lung require consideration.

A striking feature of the data presented is the relatively large number of negative findings. Of the ninety instances with involvement at the right apex, the examinations were positive in fifty-eight and negative in thirty-two, while at the left apex in seventy-seven instances, the findings were positive in forty-four and negative in thirty-three. Among the cases presenting respiratory alterations, in many instances the variations deviated so slightly from the normal that the sign could be termed indefinite and merely suggestive. Of the eighty-one instances of unilateral disease, alterations of the respiratory murmur over the healthy apex occurred in seventeen, or 21 per cent.

The selection of the apexes for the present study and the difficulty encountered in this region in differentiating physiologic from pathologic changes in the breath sounds may explain the reason for the comparatively large number of cases in which the study of the breath sounds alone failed to prove of diagnostic value.

Finally, the present study indicates that expiratory alterations predominate at the right apex, while at the left apex the inspiratory murmur is most frequently affected, an observation which, if verified, would afford a reasonable explanation why certain observers have emphasized expiratory and others inspiratory

alterations in the respiratory murmur in early diagnosis.

CONCLUSIONS

1. Abdominal breathing is an effective method for the differentiation of granular breathing from those extrapulmonary sounds simulating this type of breathing.

2. The observation of the time interval and force of the respiratory act is essential in the differentiation of physiologic from pathologic alterations in the duration and intensity of the respiratory murmur.

3. The lung glides across the auscultated field during respiration.

4. Variations in the force of the respiratory act may alter the character of the respiratory murmur in the region of the apexes.

5. Expiratory alterations predominate at the right apex, inspiratory at the left apex.

6. Prolonged expiration, when more pronounced at the left than at the right apex, is a reliable sign of disease at the left apex.

7. Bronchovesicular breathing may be explained by contiguous areas of consolidated and aerated lung that alternately glide beneath the stethoscope during respiration.

8. The frequency with which alterations in the respiratory murmur occur over the healthy apex in unilateral disease deserves attention.

9. Physiologic respiratory modifications interpreted as pathologic represent the most frequent error in the physical examination in early tuberculosis.

10. A study of the breath sounds in early disease is often difficult and misleading, and for this reason should not be unduly emphasized in diagnosis.

CERTAIN FACTORS IN THE ETIOLOGY OF GALLSTONES

ON THE BASIS OF THEIR CHEMICAL COMPOSITION

JACOB ROSENBLOOM, PH.D., M.D.

PITTSBURGH

The fundamental work of Aschoff and Bacmeister¹ has shown that gallstones are to be classified, as regards their chemical composition, into the following groups:

1. Pure cholesterol stones.
2. Stratified cholesterol-calcium stones.
3. Cholesterol-pigment-calcium stones.
4. Composite stones, composed of cholesterol and a mantle of cholesterol and calcium.
5. Bilirubin-calcium stones, usually found in the bile passages of the liver.
6. The very rare calcium carbonate stones.

The studies of Rothschild² and of Henes³ have drawn attention to the possible importance of states of hypercholesterolemia in relation to the formation of the cholesterol gallstones.

These studies, together with those of Aschoff,⁴ and

1. Aschoff and Bacmeister: *Die Cholelithiasis*, Jena, 1909; *Beitrag z. path. Anat. u. z. allg. Path.* (Ziegler's), 1908, **44**, 528.

2. Rothschild: *Beitr. z. path. Anat. u. z. allg. Path.*, 1914, **60**, 66; 1915, **60**, 227. Aoyama: *Deutsch. Ztschr. f. Chir.*, 1914, **132**, 234. De Langen: *Presse méd.*, 1916, **24**, 332.

3. Henes: *Deutsch. Arch. f. klin. Med.*, 1913, **3**, 122; *The Value of the Determination of the Cholesterol Content of the Blood in the Diagnosis of Cholelithiasis*, *THE JOURNAL A. M. A.*, July 11, 1914, p. 146; *Surg., Gynec. and Obst.*, 1916, p. 91.

4. Aschoff: *München. med. Wchnschr.*, 1906, **53**, 1847; 1913, **60**, 1753.

of Chauffard,⁵ and others of the French school,⁶ have produced a reaction against the former explanation of Naunyn⁷ as to the pathogenesis of gallstones. Naunyn concluded that the cholesterol of the bile is neither a product of general metabolism nor a specific secretion product of the liver, and that the chief source of the cholesterol in gallstone formation was from the degenerated and desquamated epithelial cells of the gallbladder and bile tracts. Aschoff and the French observers, however, finding no abundance of cholesterol in the wall of the gallbladder, do not accept this origin.

They believe that in the formation of gallstones the first step is the formation of a pure cholesterol stone without an inflammatory cause, owing to an actual increased excretion of cholesterol by the liver, or an excess of cholesterol in the blood, or because of resorption of solvent substances from stagnating bile. These primary cholesterol stones then produce an inflammation and occlusion, leading to the formation of the common mixed stones.

Rovsing⁸ has also shown that Naunyn's conclusions cannot be accepted. He asserts that recent research seems to have established that, just as the urine becomes abnormally concentrated during the course of

in 320 cases at Rovsing's clinic between 1899 and 1914 showed that the organ was entirely sterile in fully 54 per cent., without a trace of infectious processes. The proportion in aseptic cases showing the different types of gallstones ranged from 52.7 per cent. of fifty-five cases in which a single large stone was found, to 77 per cent. of twenty-seven cases presenting the small mulberry-shaped stones. These findings demolish entirely Naunyn's theory that gallstones are deposited in consequence of an infectious process. Other data cited also disprove this, especially the fact that the symptoms of cholecystitis always follow, never precede, the gallstone formation. When the pigment and calcium are precipitated from abnormally thick bile, the resulting concretions may or may not irritate the gallbladder and ducts enough to set up inflammation. Rovsing reviews all the theories proposed concerning the pathogenesis of gallstones and shows the fallacies of each, while he expatiates on the way in which all the phenomena connected with cholelithiasis are logically explained by precipitation as the result of thickening of the bile under some temporary condition inducing transient inspissation.

This paper contains the results of analysis of the stones removed by operation in fourteen cases of diag-

ANALYSIS OF GALLSTONES REMOVED BY OPERATION

| Case No. | Weight of Stones, Gm. | Water Per Cent. | Calcium Oxid Per Cent. | Cholesterol Per Cent. | Nitrogen Per Cent. | Remarks |
|----------|-----------------------|-----------------|------------------------|-----------------------|--------------------|--------------|
| 1. | 4.4697 | 4.7 | 0 | 61.2 | 0 | No infection |
| 2. | 0.5980 | 5.7 | 90.2 | trace | 0.16 | Typhoid |
| 3. | 0.4345 | 2.5 | 78.1 | 0 | 0.24 | Typhoid |
| 4. | 3.7730 | 8.3 | 90.3 | trace | 0.17 | Typhoid |
| 5. | 14.5028 | 30.8 | 0 | 64.2 | 0 | No infection |
| 6. | 4.2196 | 17.7 | 72.6 | 5.4 | 0.10 | Septicemia |
| 7. | 0.3002 | 47.4 | 34.1 | 0 | 0 | Typhoid |
| 8. | 1.2305 | 3.9 | 7.6 | 80.2 | 0.05 | No infection |
| 9. | 17.6280 | 5.2 | 0 | 93.8 | 0 | No infection |
| 10. | 2.7400 | 4.1 | 0 | 89.2 | 0.02 | No infection |
| 11. | 1.2646 | 1.9 | 35.2 | trace | 0.06 | Pneumonia |
| 12. | 0.2670 | 0.5 | 30.4 | 0 | 0.18 | Paratyphoid |
| 13. | 2.3230 | 0.8 | 0 | 93.8 | 0 | No infection |
| 14. | 0.7996 | 5.0 | 78.2 | trace | 0.14 | Typhoid |

a febrile disease, the bile is liable to become less fluid. In the inspissated bile, precipitation is liable to occur and the elements thus thrown down may agglomerate into concretions. Among the facts on which he bases this assertion are the results of Boysen's chemical study of the gallstones found in 200 cadavers with cholelithiasis. The young, freshly deposited gallstones, and likewise the nucleus of all other kinds of biliary concretions, he found consisted of bile pigment and calcium, "pigmentkalk," as he calls it. Other elements of the bile are precipitated on this nucleus or are drawn in by osmosis, especially cholesterol. The conditions during pregnancy and during a febrile disease are liable to favor this inspissation. The concretions resulting from it are all of about the same age, confirming the transient nature of the cause producing them and explaining why new ones do not develop after the crop has been removed. Boysen found invariably that the gallbladder was sound when the gallstones were of the small, primary bile-pigment calcium type.

A still more conclusive argument in favor of this assumption of the origin of gallstones is that systematic bacteriologic study of the gallbladders removed

nosed cholelithiasis. A careful history as to previous infectious disease was taken. The cholesterol was estimated by the method of Windaus.⁹ The calcium was estimated by McCrudden's¹⁰ method after ashing and extracting the ash with hydrochloric acid.

It may be seen from the accompanying table that in every case with a previous history of an infection the gallstones were chemically composed of calcium salts, while in those cases without a previous history of infection the gallstones were composed of cholesterol.

Mignot¹¹ and also Rosenow¹² have shown the relation of infection to the formation of gallstones. Rosenow found an almost complete absence of bacteria in four pure cholesterol stones, which seems to bear out the data contained in this paper, showing that the cholesterol gallstones are possibly not due to a previous infection. Churchman¹³ has reported a case of acute typhoid cholecystitis with large amounts of calcium soap in the gallbladder, which also seems to show that the calcium stones are more apt to be due to an infectious process.

5737 Forbes Street.

5. Chauffard: Leçons sur la lithiase biliaire, Paris, 1914.
6. Grigaut: Le cycle de la chloesterinémie, Paris, 1913. Laroche and Flandin: Compt. rend. Soc. de biol., 1912, 72, 660.
7. Naunyn: Cholelithiasis, 1896, München. med. Wehnschr., 1898, 45, 1293.
8. Rovsing: Hospitalstid., 1915, 8, 249.

9. Windaus: Ber. d. deutsch. chem. Gesellsch., 1909, 42, 238; Ztschr. f. physiol. Chem., 1910, 65, 110.
10. McCrudden: Jour. Biol. Chem., 1911, 10, 187.
11. Mignot: Arch. gén. de méd., 1898, 2, 129; 263.
12. Rosenow, E. C.: Bacteriology of Cholecystitis and Its Production by Injection of Streptococci, THE JOURNAL A. M. A., Nov. 21, 1914, p. 1835; Jour. Infect. Dis., 1916, 19, 527-556.
13. Churchman: Johns Hopkins Hosp. Bull., 1911, 22, 223.

THE REDUCTION OF GASTRIC
ACIDITY

PRELIMINARY ACCOUNT OF METHODS

EDMUND JACOBSON, M.A., PH.D., M.D.
CHICAGO

It is generally admitted that the hydrochloric acid of the stomach comes from the sodium chlorid of the blood and that the body gets its chlorids from food and common salt. To do away with hyperacidity or hypersecretion what means is more logical and direct than to shut off the food supply of chlorids? Clinicians often take a first step toward this when they tell their patients with ulcer to avoid the use of salt. About six months ago my attention was drawn to the question when a patient returning to the use of salt had a marked increase of acid.

Dogs have been given food deprived of salts, and in most cases the gastric juice has fallen off in strength or amount. The work of Cahn, Wohlgemuth, Pawlow, Dastre and Frouin is convincing in this connection, although Pugliesse writes to the contrary. Usually the animal did not thrive on the diet poor in salt. One writer (Forster) who had fed his animals on food of this sort announced that they died more quickly than if they had been utterly starved! These findings made a profound impression: the absence of salt was blamed for the speedy death. Although the chemist Bunge protested that the death was due not to lack of sodium chlorid but to certain other deficiencies of the diet, and although one of his associates, Luinin, actually added this salt to the same diet and found that the animals still could not live on it, the impression remained current that experiments had conclusively shown that a diet quite lacking in sodium chlorid brings early death.

It may be admitted that food without inorganic salts will not keep up life. In treating hyperacidity we do not demand an absence of all inorganic salts, or even of the element sodium; we demand the absence only of chlorin. When the salts containing chlorin are removed from food, other inorganic salts also are removed; but later these other salts may be returned to the food, and the difficulty thereby obviated. So far as I know, no one has attempted to prepare a diet, well balanced and unobjectionable save that it lacked the single element chlorin, to discover whether the organism could get along on this diet and whether it would reduce the gastric acidity. Perhaps we should still find that "a very far going deprivation of chlorin may lead to general disturbances—which vanish after subcutaneous or rectal injections of large quantities of physiological salt solution," as Strauss warns. This is worth testing again. Even if untoward symptoms should arise and prove that the removal of chlorids can be carried too far, it is conceivable that a limit might be found at which favorable clinical results are achieved but beyond which one should not go.

Any diet used for the purposes in question must not be lacking in those elements essential to life sometimes called "vitamins." Early workers apparently did not know this. Luinin, as has been stated, deprived food of mineral constituents and found that his animals could not live on it even after sodium chlorid had been added; and so he went farther, restored the other inorganic salts, but still found that the animals could not live on the diet, although they did not die so early. However, the animals got along on milk alone. This

point puzzled Bunge. "It is a noteworthy fact," he says, "that although animals can live on milk alone, yet if the constituents of milk which according to the present teaching of physiology are necessary for the maintenance of the organism are mixed together, the animals rapidly die." Today we might reply to this riddle that the constituents of the milk used failed to include vitamins—elements present in whole milk and essential to life. From all of this we learn to use diets well balanced in protein, fat and carbohydrate, lacking not in vitamins or inorganic salts or sodium, but only in chlorin.

Obviously there is need of more tests on man. Vincent announced in 1904 that a number of his patients with hyperchlorhydria had obtained real benefit from a diet poor in salts, and he did experiments to prove the point. Laufer confirmed his results, and more recently Enriquez and Ambard have published observations and warmly recommend this treatment for hyperacidity under certain indications. On the other hand, Leo gets discouraging results, while the experience of H. Strauss makes him very pessimistic. The latter warns that even after a prolonged salt-free diet — when the urine no longer has more than a trace of chlorids — the tissues persist in holding on to a supply of chlorin, which they furnish to the gastric glands, so that secretion of acid continues.

Here is a real difficulty. But perhaps it has been exaggerated. New methods may make this clear. Aspirations made every half hour or so for a period of hours will tell us about the total amount and strength of secretion for this time; we can compare the results obtained in this way before and after the chlorin-free diet. The curve of secretion thus obtained might show a lessening of secretion caused by the diet which would not be revealed by the older method of testing with a single daily aspiration. Furthermore, we can take special steps to meet the difficulty. Linoissier early pointed out that the favorable results with dogs were aided by drawing off the juice, thus ridding the system of chlorin. In man the gastric juice is conserved and resorbed in the intestine, and the same dose of salt can be used again indefinitely for the secretion of gastric juice. We must seek to promote elimination of chlorids by giving plenty of potassium salts (Bunge), avoiding the use of sodium bicarbonate, which decreases elimination (Goldberg and Hertz), by frequent aspiration, and by giving plenty of water (Rulon and Hawk). But if excess of water increases the gastric secretion, as they suppose, it may prove better to restrict the use of fluids.

The method of attack, then, is to use a diet well balanced save for lack of chlorin. The foodstuffs should be either naturally poor in this element or freed of it by boiling. To season his food the patient is given a special inorganic salt mixture of about the same proportions as found in milk by Bosworth and Van Slyke, except that calcium lactate is substituted for calcium chlorid. As these salts are also acceptable to patients with nephritis who are on a salt-free diet as seasoning in place of common salt, the following formula is given:

| | Gm. |
|-------------------------------|-----|
| Dicalcium phosphate | 58 |
| Monomagnesium phosphate | 34 |
| Dipotassium phosphate | 77 |
| Potassium citrate | 17 |
| Sodium citrate | 74 |
| Calcium lactate | 4 |

Mix and pulverize.

Important articles are fresh meat, potatoes, oatmeal, carrots and cauliflower, cut fine and then boiled for hours with several changes of the water; stewed apples, prunes and apricots; very weak tea and coffee; butter freed from salt by washing fine particles thoroughly in running water; one egg and about 50 c.c. of milk or cream per day, but no more. Distilled water is used for drinking, but if need be, tap water may be used for cooking if the chlorin content is low, as in Chicago.

Choice among the foregoing articles of course will vary with the nature of the disorder, the complications and the stage of treatment. Solid food may be hashed or mashed before serving. In some cases it might be well to begin with a period of starvation, following with the special diet; and later during convalescence the amount of milk and cream might be increased.

A sample diet for a day might be as follows: (The amounts of each article readily can be arranged to meet the caloric requirements of the individual.)

Breakfast.—Oatmeal gruel with sugar and a little cream; apple sauce; very weak coffee with sugar and cream.

Dinner.—Fresh meat, boiled and hashed; potatoes, boiled and mashed; carrots likewise; special salt-free butter; orange juice diluted and sweetened.

Supper.—One egg, raw, boiled or poached; boiled rice; purée of prunes; very weak tea with sugar and cream.

It is apparent that for gastric ulcer additional treatment may be needed, such as rest in bed, aspiration, and the administration of bismuth and alkalies, including calcined magnesia; but potassium bicarbonate will take the place of the sodium salt if it is sought to increase the excretion of sodium chlorid.

For the test meal either the Ewald or, better, several hundred c.c. of sugar solution, weak tea, or plain water may be given. The acidities are determined by titration, and the chlorids in the juice and daily urine are estimated by the McLean and Van Slyke method.

This preliminary account of work which has been under way since about May 1 is published in the hope that these principles and methods may interest others. The so-called "salt-free" nephritic diets of hospitals as a rule cannot be adapted for treating hyperacidity under this principle. A sample of "salt-free" bread from one hospital was found to contain a relatively high percentage of sodium chlorid. According to results with dogs, it is anticipated that about ten days or more of dieting may be required before a reduction of gastric acidity may begin to appear.

30 North Michigan Avenue.

INTESTINAL OBSTRUCTION, COMPLETE AND INCOMPLETE *

JOHN WILLIAM DRAPER, M.D.

Fellow of the American College of Surgeons

NEW YORK

A complete obstruction of the bowel near to the stomach usually causes death in man and in the lower animals in less than 100 hours. A similar obstruction in the aboral portion of the intestine may not cause death for a week. An incomplete obstruction at any point in the intestine causes symptoms that differ from the complete form only in degree. Problems connected with obstruction are among the most interesting and important in medicine. What is the toxic agent which, with tachycardia and convulsions, but without elevation of temperature, destroys life so speedily in duodenal obstruction, leaving no discoverable trace at necropsy? Is it a product of bacterial infection, or is it due to perversion of the great glandular system of the alimentary canal? Is it analagous to the death caused by the removal of the parathyroid or other glands? Does the mere blocking of the intestine in this, biochemically the most active portion of the canal, amount to an actual severance of an interglandular relationship that is not compensated for through the blood vessels or other channels, an ancient and potent interaction that is necessary to the maintenance of life and for the continuance of which an open intestine is necessary? Why is it that the nonprotein nitrogen and other components of the blood increase enormously after duodenal obstruction, while no such change is noted in ordinary bacterial infection? Is a proteose similar to that described and isolated by Whipple the cause of death, or is the toxic substance, like prosecretin, of so delicate, evanescent and unstable a character as to defy detection by test tube analysis? If so, is not this an example of the truth of Haldane's recent assertion that we are emerging physiologically from a materialistic to a vitalistic basis of research? What is constipation if not a protective symptom analogous to abdominal rigidity which seeks to give surgical rest when and where needed? What relationship, if any, can be shown to exist between the well known chronic symptoms of intestinal toxemia and the little known but much dreaded symptoms of duodenojejunal obstruction? Why do certain of these chronic toxemics improve when the diseased and often pigmented cecocolon is removed? Is it possible to find any efficient medical treatment until some of the foregoing questions are answered? If surgical, is a given case to undergo resection or some form of anastomosis? What is to be expected of the different forms of anastomoses that produce partial exclusion? May there be recognizable hereditary structural changes predisposing to the occurrence of such chronic sub-obstruction as one often sees clinically in the chronic intestinal invalid? If so, may one utilize some such type of classification as that of Bryant—herbivores, carnivores and neutrals to aid in the diagnosis and care of these cases?

These are some of the engrossing problems which confront the student of atypical conditions in the alimentary canal. Some of them are answerable. Many are still open to free discussion. Of the remainder we frankly know little or nothing. It is axiomatic,

* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

Comparison of Salvarsan and Japanese Salvarsan Substitutes.—In Japan various substitutes for salvarsan and neo-salvarsan have been placed on the market under such names as arsaminol, sodium arsaminol, ehamisol, neoehamisol, tanvarsan, neotanvarsan and arsemin. These Japanese preparations were tested pharmacologically on rats and dogs, and also compared with control experiments, using Ehrlich's old salvarsan. Clinical tests were also made in syphilitic cases. The workers, K. Dohi, H. Nakano and T. Kambayashi (Japanese Medical Literature, 1917, 2, Part 2, p. 9, through Chemical Abstracts, Nov. 10, 1917, p. 2934) state that: "The toxicity of all preparations was noticeably less than the German one, although the possibility is allowed that the latter may have changed somewhat with age. The Japanese preparations seemed to have fully as much value as the original and yet lacked much of the reaction that usually accompanies the injections of the latter."

however, that no treatment, either medical or surgical, can be of real value unless it is based on a greater knowledge than we at present possess. Researches, therefore, into the physiologic pathology of the alimentary canal are evidently of the utmost importance.

Turning to a brief consideration of these questions, I may state that in a paper published eleven years ago from the Laboratory of Experimental Surgery at Columbia,¹ I related a series of experiments made during the previous years as a result of which we had concluded that neither shock nor the absorption of food products nor bacterial infection had anything whatever to do with death in duodenal obstruction. I found that by placing a triangular ligature between the stomach and the small intestine just aboral to the point of total obstruction, this ligature would produce drainage in about seventy-two hours, and that there was a very constant line, which I referred to as the lethal line of the duodenum, oral to which obstructions were fatal under the conditions indicated, but harmless if made aboral to it. From this, and from the fact that necropsies, most carefully and repeatedly made, failed to demonstrate any lesion whatsoever save capillary dilatation of the terminal colon and occasionally of the stomach and liver, I "determined that death was due to some more subtle factor than those considered . . . that there might be a relation between this form of intoxication, if such it be, in dogs, and the so-called tetany of human beings; that the question seemed to have resolved itself now into a determination as to whether death is due to an intoxication resulting from a disturbance of the balance of the secretions which pour so plentifully into the intestine in this particular region; . . . whether secretion or other secretions from the duodenum itself had anything to do with the cause of death."

In a paper published one year later,² quoting Wilms, I noted that death from duodenal obstruction subvenes with extreme rapidity, and that up to that date all patients were believed to succumb to toxic absorption, resulting from the decomposition of intestinal and stomach contents. Starvation and lack of absorption of water, which in those early days had already been thought by some to be a factor and which have latterly been brought into great prominence, notably by the valuable researches of Hartwell and Hoguet, were looked on as "hardly to be considered when one reflects that absorption of water takes place almost entirely in the colon, and can therefore not be materially influenced by the position of the obstruction in the small gut." Observations that we have made show conclusively that putrefaction has nothing whatsoever to do with the cause of death in intestinal obstruction.

In 1914, in a paper³ based on researches made in the Surgical Research Laboratories of the Mayo Clinic and New York University, I concluded with Schultz that the power of the liver to pair camphor and glycuronic acid is impaired after duodenal obstruction. This is presumably an evidence of impaired liver function. It is, however, not reflected in the histologic appearance either grossly or microscopically.

The decrease in the water-content of the tissues in duodenal obstruction is about the same as obtains after salivation by

pilocarpin for four days or after fasting for seven. As this decrease produced no visible change in either case before euthanasia, it is reasonable to believe that it produces none in intestinal obstruction. The loss is 10 per cent. The duodenal obstruction (death) undoubtedly arises from an interference with cellular reactions of the intestinal epithelium. The resulting toxins undoubtedly are at least in part eliminated from the stomach and colon.

I reported also the increase of nonprotein nitrogen in duodenal obstruction, concluding that all recent studies "point to aberrant activity of the duodenal and probably pancreatic cells; that the old hypothesis that the toxin is of bacterial or food decomposition origin may be discarded; that dehydration is of no greater importance in this than in other toxemias; that there is an important ratio between the toxicity of the intestinal epithelium and its digestive power; that the intricate syndrome autotoxemia in man will be better understood when we know the cause of death in duodenally obstructed dogs."

Through the courtesy of Professor Gettler of the department of chemistry, New York University, I am now able to report further studies in the chemical picture of the blood in duodenal obstruction in dogs, and to contrast it with his well known studies along this line in human intestinal toxemias and in infections. Thus a great deal of evidence has accumulated in the

CHEMICAL BLOOD PICTURE IN COMPLETE DUODENAL OBSTRUCTION *

| | Before Operation | Hours After Operation | | | |
|------------------------|---------------------|-----------------------|-----------|-----------|-----------|
| | | 24 | 48 | 72 | 96 |
| | Per Cent. | Per Cent. | Per Cent. | Per Cent. | Per Cent. |
| Nonprotein nitrogen... | 44 | 70 | 102 | 92 | 136 |
| Urea nitrogen | 18 | 48 | 70 | 65 | 112 |
| Creatinin | 0.1 | 0.4 | 0.9 | 0.3 | 0.5 |
| Uric acid | 0.7 | 0.9 | 2.5 | 21.5 | 15.7 |
| Sugar | 125 | 110 | 111 | 143 | 150 |
| Alkaline reserve | 67 | 68 | 55 | 52 | 50 |

* Dog 209, Department of Chemistry, New York University, May, 1917. No infection; no elevation of temperature; average pulse, 150; tremors; death, one hundred and tenth hour.

past fifteen years pointing to the accuracy of my hypothesis that death in duodenojejunal obstruction is not due to any form of bacterial action whatsoever, or to toxins derived from the food, but to a disturbance of the hormone or enzyme producing activities of the intestinal epithelium and the consequent production of toxic bodies that cannot be isolated by ordinary chemical analysis—in other words, that death is caused by conditions analogous to those induced by removal of the parathyroids or other glands. If this is true, and if my failure to corroborate Whipple's efforts to prove that a proteose is the cause of death is not due to inaccuracies, then the evidence points more than ever to the gland perversion or inhibition theory already referred to.

TECHNICAL STUDIES IN DOGS

Investigations with a view of determining the best technic for developmental reconstruction (right side colonic resection) were conducted by resecting 10 cm. oral and 10 cm. aboral, using the ileocecal valve as the dividing line. Three forms of anastomosis were used, "end to end"; "end to side" and "side to side." The majority of the animals developed a semisolid or watery stool after operation. Stools became normal in seven days, on an average. From a technical standpoint, lateral anastomosis was the easiest to perform. Although it was the most difficult and showed the greatest mortality, end to end anastomosis gave the best postoperative results. Dilatation of the oral end of the intestine was noted both in lateral and in end to

1. Draper, J. W.: Observations upon Form of Death Resulting from Certain Operations upon the Duodenum and Jejunum, Surg., Gynec. and Obst., May, 1906.

2. Draper, J. W.: Is Death in High Intestinal Obstruction Due to the Absorption of Bile? (Rockefeller Institute Fellowship Research), Ann. of Surg., October, 1907.

3. Draper, J. W.: Studies in Intestinal Obstruction, THE JOURNAL A. M. A., Sept. 26, 1914, p. 1079.

side anastomosis. The "end to side animal" vomited postoperatively for several days, and was the worst as regards vomiting. There was less vomiting after the end to end anastomosis. Roentgenoscopy was applied to all animals within two and a half to three hours after the bismuth meal given before and after operation.

Roentgenoscopic interpretations:

Best results—end to end—no effect as regards delay, local or reflex.

Moderate results—end to side—moderate delay in stomach; no anastomotic delay.

Worst results—lateral—marked delay in stomach (reflex), slight at anastomosis.

Prof. George Wallace of New York University kindly directed for me the intravenous introduction of a chemical residue derived from the treatment (Whipple's technic) of 1,000 c.c. of proximal loop fluid from duodenally obstructed dogs by Professor Gettler, department of chemistry. We were unable either to cause the dog's death by intravenous injection of the entire amount collected, or to show any reaction whatsoever. Dr. Stark made the obstructions and collected the fluid.

SUMMARY

Our experiments on animals have led us to believe that death in high intestinal obstruction is due to a perversion of enzymal function. The symptoms are so fulminating in character as compared with those of obstructions aboral to the point of maximum physiologic enteric activity that until recently they have received far more attention both experimentally and clinically than those of the caudad obstructions.

This is true of both complete and incomplete types. It is the purpose of this paper to correlate the two and to show not only the close relationship which actually exists but also to point out the great importance of experimental surgery to clinical progress.

It is natural, after all, to expect that in a segment of the intestine so highly specialized as the duodenum, perversion of function should rapidly reach a climax. Here the most complex functions of digestion are consummated with rhythmic precision. It is not surprising that so gross an insult as must attend obstruction must be followed by violent biochemical reactions. A marked acidity of the gastric contents causes the pancreatic juice to be poured out, and initiates peristalsis in the gallbladder. Very high acidity causes a marked flow of bile. On the other hand, the cecocolon bears such a close resemblance to the stomach both functionally and mechanically, and these characteristics are so gross as compared with those of the duodeno-jejenum that they necessarily do not react so actively to interference. Embryologically they have practically the same developmental history. Until recently the cecocolon has received only limited study as compared to the stomach. This, too, is natural, both because of the nearness of the stomach to the duodenum, gallbladder and pancreas, and because many of the lesions of the colon are at first referred to the stomach. Only a few years ago Moynihan in his classic work on duodenal ulcer gave what he considered a typical picture of duodenal ulcer symptomatology which was thought to be pathognomonic, but which we now know can be caused by a chronic appendix, an elbow adhesion, a gallbladder, a long sigmoid or other lesions. He later admitted that it is almost impossible in some cases to differentiate intra-abdominal lesions through

a study of their subjective symptoms alone. It is necessary to have a clear understanding of comparative embryologic pathology in order to appreciate the conditions often encountered when the human abdomen is opened. One is surprised to hear frequent and bizarre efforts to explain by mechanics atypical variations in the sigmoid that have a patent embryologic origin. The sigmoid and the cecum are two of the most variable organs in the body, and the esoteric stomach symptoms that arise are due to the variations rather than vice versa.

The intestine is developed by buds. This permits of wide variations in type. The primitive intestine is a good deal like that of the fish, two loops lying side by side. Like other theories that are mechanical in basis, the mechanical rotation of the intestine is now set aside, and it is shown to be a well ordered and systematic process depending on accommodation to existing conditions and regulated by intra-abdominal pressure. In the embryo the liver is so large that very little room is left for the intestine, and all the bowel, except its beginning and end, develops for a period outside the abdomen.

Now, as the liver fails to keep pace with the growth of the abdomen, the pressure within is diminished and the intestine gradually recedes within, until finally the primitive cecum and transverse colon accept the place allotted to them and gradually recede to a resting place over the duodenum and in contact with the kidney—the so-called second position. Here it remains until after birth, when it usually migrates toward the iliac fossa. During the process of rotation and subsequent migration, many irregularities may arise, which account for much adult pathology. Notable among these we may mention frequent delamination of the peritoneum and failure of fusion. My colleague, Jerome Lynch, has given much thought to these conditions. We believe that adventitious membranes are not in themselves harmful, but if, as a result of failure of fusion, partial obstructions periodically supervene, resulting in atrophy and pigmentation, as observed by our colleague, McFarland, in fresh cecal tissue, then those adventitious membranes are converted from normal peritoneum to connective tissue bands. Every one is aware that should this process continue, contracture follows and the typical elbow deformity previously described by us is inevitable. Furthermore, we are of the opinion that the dividing of normal extraneous peritoneal bands very often may precipitate what I have just described.

These physiologic and embryologic considerations help us to realize that, while there are great variations in the alimentary canal, it must be considered as a whole and that throughout it is subject to the same fundamental laws. What is true of one part is in a limited and discretionary sense true of the rest, and this, in spite of the singular analogies between the gastric and colonic ends, which are purely mechanical, as contrasted with the duodenojejenum, which is almost wholly biochemical in action.

Thus, one is tempted to hazard the hypothesis that the syndrome in man called intestinal toxemia is really a subacute or chronic manifestation of the acute duodenal toxemia observed in obstructed dogs, modified perhaps in many ways by the toxins of a secondary bacterial infection. I have been forced to a favorable consideration of this hypothesis by an exhaustive study of twenty-nine cases of developmental reconstruction of the colon in which the right

colon has been removed either by my colleague, Jerome M. Lynch, or myself, and recently reported by me.⁴ Satterlee, Smythies, Einhorn and others have repeatedly noted that marked constipation can occur without the symptoms of toxemia, and it is evident that constipation is a protective symptom. We are miserable and stupid when constipated, but not because of the protective symptom constipation. We are constipated because of intra-enteric glandular disturbances similar to, but less severe than, those which occur in a duodenally obstructed dog.

That bacterial toxins serve to complicate the syndrome of autotoxemia is not to be questioned, particularly in view of the researches of Satterlee, who has achieved such marked results in otherwise hopeless cases through the injection of autogenous colonic vaccines. His recital of a fatal case of intestinal obstruction that produced such marked muscular spasm as to be mistaken for tetanus is a valuable addition to the literature. In Robert Brown's case of cecosigmoidostomy, which was afterward cured by the developmental reconstruction of the colon, the patient suffered from typical tetanoid seizures in the hands until relieved by operation.

Thus, our human and experimental animal studies continue to support the nonbacterial biochemical theory as to the cause of death in obstruction, and also to yield additional evidence that the symptoms of human autotoxemia have a common origin with those of a duodenally obstructed dog.

ABSTRACT OF DISCUSSION

DR. JOSEPH C. BLOODGOOD, Baltimore: Dr. Draper was one of the first to call attention to duodenal death as a definite thing. I have seen duodenal death; I have had a case of it; at least, I thought it was duodenal death, and I performed an exploratory operation on the woman. I have seen postoperative duodenal death after a plastic operation for pyloric stenosis when obstruction was not there; and when the stomach had been resected and a gastro-enterostomy performed, it showed a kink and the duodenum closed in both ends. I have had two such cases in my own practice. I always think of it when I resect a stomach, and always try, if I must resect a stomach, to reestablish the continuity by suturing the duodenum to the stomach. There must be some experimental work along this line, and any man who devotes his time and labor to this work is one we should encourage in every way. I do not see much hope for the clinical side. I have the impression that it is one of the peculiar problems the progress of which must come from the experimental side.

Dr. Draper said he did not read the chemical part of his paper. This is really a discussion in embryology; but few medical students can discuss these matters intelligently. One of our greatest teachers has brought out the fact that in the medical curriculum we have exaggerated biology, while chemistry and physics are not given their proper place. There are few of us who can think in terms of chemistry, although we have had some chemistry. We have anatomic vision, pathologic and bacteriologic vision, but when it comes to chemistry in our profession, it is made conspicuous by its absence, except in a very few. One of the important things in changing the medical course today is the emphasis of chemistry and physics.

DR. JOHN BRYANT, Boston: In 1910-1912 I had a very intimate experience with what medicine and surgery could do at that time for the chronic intestinal invalid. This experience was not wholly satisfactory; therefore, I concluded to make some personal investigations. As a result of my post-mortem work I published a provisional classification of human types. This classification extended to man the use of

the terms carnivorous and herbivorous as commonly understood in comparative anatomy.

There is a general impression, based doubtless in part on current textbooks of anatomy, that the human viscera are made on one model. This is not so. The intestine, for example, may be 10 or 40 feet long, but as in the lower animals, so in man, a short intestine tends to go with the long body form and a long intestine with the wide body form at a given height. All this affects the disposition and function of the viscera.

Dr. Lewis has reported from Worcester, on the basis of my classification, a series of 500 schoolchildren in whom only 10 per cent. were of a textbook normal build. In every ten of these children there was one normal to three of the wide or herbivorous type and six of the thin or carnivorous type. This was certainly a considerable variation on either side of the so-called normal, and was associated with definite variations in mentality.

Treatment of the chronic intestinal invalid must be approached simultaneously from three different points of view—mental, medical and orthopedic. Mental peculiarities must be considered, diet must be regulated, and with these must be employed reconstructive orthopedics.

In the practical matter of diet, I have found that though many invalids cannot take eggs, meat and fish for more than a few days consecutively without getting some sort of reaction, they may, on the other hand, often do well if the use of these three articles is restricted to two or three days in the week. They need the stimulus from these foods, but must get it through an alternating diet.

DR. JEROME M. LYNCH, New York: In listening to the discussion on constipation in this section I noticed that a great many men confounded constipation and autointoxication. Now, it does not follow by any means that because a patient is constipated that he is autointoxicated, or that because he has autointoxication he is constipated. It does not always follow that because a man or woman is not of normal type that that patient does not suffer from intoxication. I have noticed recently a great many women of the male type who suffer from a very marked type of autointoxication. In making experiments in ileocecal insufficiency I have become rather convinced that it is not really a surgical but a medical condition, for the sphincter can be closed by epinephrin. It is really remarkable how few men study a subject before applying a remedy. If the question of ileocecal insufficiency had been studied from the physiologic standpoint before it was studied from the medical and surgical or therapeutic standpoints, it would be seen that the problem was a question more of internal secretions than a mechanical one. Yet, I have heard one of our foremost roentgenologists say that it is entirely a mechanical problem. In 1822 a man named Goode drew attention to the fact that the ileocecal valve (so called) was not really a valve, but that it was a muscle, and one hundred years afterward, we have exactly the same problem presented to us showing that, notwithstanding the fact of the very wonderful studies of Elliott and other men, we have made very little advance.

The question of intestinal obstruction, both of the oral and aboral end, is interesting. The oral has received a good deal more careful scientific study than the aboral; the complete more than the incomplete. Dr. Bloodgood has done much pioneer work on the colon. I have done only thirty developmental reconstructions, as it has taken a long time to find out the type of case in which operation should be performed, and long, careful postoperative study extending over several years seems the best and only basis for decision. Draper and I are convinced that the symptoms of complete duodenal and incomplete colonic obstruction have a common origin in an interference with the internal secretions of the gut and its derivatives, the liver and pancreas, with secondary bacterial infection. These disturbances have been rightly called autointoxication, but it is a gross mistake to suppose that they are caused simply by absorption of decomposed food. This is supported by the studies of Boldireff on the periodic functions of the gut. The attendant constipation and diarrhea are probably protective rather than provocative. In the advances of the physiologic surgery of the gut we should

4. Before the 1917 meeting of the American Society of Gastro-Enterology.

never forget its debt to Mr. Lane, whose work, already superseded, gave the original impetus and placed us where we stand today.

DR. JOHN W. DRAPER, New York: I should like to add, in support of what Dr. Lynch has just said, that we have very interesting proof, I think, of the statement that constipation does not mean intoxication. We have usually performed a lateral anastomosis in removing the right side of the colon, and as just said, that results in a great deal of delay at the point of anastomosis. Nevertheless, in these cases the patients are often relieved of this intricate symptomatology which we call autotoxemia, although they are thoroughly constipated at the point of anastomosis, often for 100 hours, and it does not appear to interfere with their well-being. Constipation is a protective symptom and patients are constipated because they are autotoxemic, not vice versa.

TEN YEARS' EXPERIENCE WITH THE GRADING OF MILK

HENRY FIELD SMYTH, M.D., DR.P.H.

Instructor in Hygiene and Bacteriology, Laboratory of Hygiene, University of Pennsylvania; Acting Secretary, Board of Health of Radnor Township, Delaware County, Pa.

WAYNE, PA.

In 1907, the board of health of Radnor Township, Delaware County, Pa., formulated a set of milk hygiene rules for producers of milk to be sold in the township, and as these rules have now been in force for ten years their effect on milk production and milk producers can be well seen.

Radnor Township is a distinctly rural community of the better class, consisting of the combined villages of Wayne and St. Davids, about 15 miles from Philadelphia on the main line of the Pennsylvania Railroad, having about 6,500 inhabitants and surrounded by a district of farms and country estates. It includes also a portion of Rosemont with several smaller settlements. The milk rules of the board of health govern not only milk produced in the township, but also all milk brought into the township for sale, the dairies producing such milk being subject to the board's inspection. No producer can register as a retailer or wholesaler of milk in the township unless he first files a certificate of health for his cattle signed by a competent veterinarian recognized by the board, and these certificates must be renewed every six months.

This paper does not attempt to give all the milk rules of the board, but gives only those referring directly to classification. These rules include a system of classification and grading of dairy farms which has so far given excellent results. The board from the first has recognized six classes or grades of milk. These grades are based on a combination of the use of the dairy score card, giving the results of a sanitary inspection of the dairy, the cows and the milk handlers, and of an examination into the methods employed, and the degree of cleanliness found; also on a frequent bacteriologic and chemical testing of samples collected at the farms and from the milk wagons at irregular intervals.

Class A milk must have a bacterial colony count of not over 10,000 per cubic centimeter, with no disease-producing organisms or peptonizers, and must come from tuberculin tested cattle with a dairy scoring of not less than 90 out of a possible 100 points on the score card, which entitles to the rating of an "excellent dairy."

Class B milk must have a bacterial colony count of not over 100,000 per cubic centimeter with no disease-producing organisms or peptonizers, and must come from healthy cattle with a dairy scoring of not less than 80, which is required for the rating of a "good dairy."

Class C milk must have a bacterial colony count of not over 500,000 per cubic centimeter with no disease-producing organisms, and must come from healthy cattle with a dairy scoring of not less than 70, which is rated as a "fair dairy."

Class D is pasteurized milk having a bacterial colony count of not over 1,000,000 per cubic centimeter before pasteurization and not over 50,000 per cubic centimeter after pasteurization with no disease-producing organisms.

Class E includes all raw milk with a bacterial colony count of over 500,000 from dairies with a score card under 70.

Certified milk from farms having the certificate of the Philadelphia Pediatric Society forms the sixth class, and is practically of the same grade as Class A milk.

The grading of dairies is done by the milk hygiene agent of the board, a trained veterinarian, and the bacteriologic and chemical examinations are made by the state livestock sanitary board laboratory and a commercial laboratory in Philadelphia, samples being collected and shipped by the milk hygiene agent or the health officer. Reports are made to the board quarterly, the classification in such reports being based on three or more surveys and milk examinations during the quarter. In case less than three surveys have been made, and this happens only with the new producers, the dairy is reported as unclassified. These quarterly reports are published as news by the local weekly paper, and many consumers are influenced thereby in the choice of a milk dealer.

The score card used in Radnor Township is the card recommended by the United States Department of Agriculture, with some modification to adapt it to local conditions. This card aims to place special emphasis on cleanliness and common sense in the handling of milk rather than on any special elaborate or expensive equipment or buildings. It has been found more than once that a careful, cleanly dairyman can produce excellent milk in an old fashioned country barn. On the other hand, there is abundant evidence that the best, most elaborate and expensive of dairy barns and equipment and the finest pedigreed stock will not insure a good rating without constant care and intelligent supervision. The grading of milk also includes consideration of milk temperature at dairies, in milk depots and on wagons, and an inspection of milk depots.

Table 1 gives a summary of the January reports for the ten years and shows very little change in the certified or pasteurized classes, but very interesting results in Classes A, B, C and E, illustrating the effect of continued inspection and publicity on milk producers as a whole. The sudden decrease in the number of producers in Class E seen in 1916 and their elimination in 1917 is due to the fact that in 1915 the board decided to prohibit the sale of Class E milk unless clearly labeled as "cooking milk," and after due notice this rule began to be enforced in April, 1916. As will be seen, this resulted in all of the Class E producers who would not or could not improve conditions going out of business. Of the eighteen producers in this

class, in 1915, one half, or nine, when they found it necessary, succeeded in moving up into Class B or C, while the other nine simply stopped producing milk for sale.

Table 2 lists only Classes A, B, C and E, and gives the percentage of each in the total for each year and shows clearly a gradual and steady improvement from

TABLE 1.—CLASSIFICATION OF MILK IN RADNOR TOWNSHIP *

| Class | January | | | | | | | | | |
|---|---------|------|------|------|------|------|------|------|------|------|
| | 1908 | 1909 | 1910 | 1911 | 1912 | 1913 | 1914 | 1915 | 1916 | 1917 |
| Certified class, having certificate from Philadelphia Pediatric Society | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 |
| Class A, excellent dairy; sanitary score 90-100; bacterial colony count not over 10,000 per cubic centimeter; tuberculin tested cattle..... | 1 | 1 | 0 | 2 | 2 | 2 | 2 | 2 | 3 | 5 |
| Class B, good dairy; sanitary score 80 or over; bacterial colony count not over 100,000 per cubic centimeter..... | 9 | 8 | 6 | 6 | 7 | 10 | 8 | 19 | 18 | 17 |
| Class C, fair dairy; sanitary score 70 or over; bacterial colony count not over 500,000 per cubic centimeter..... | 10 | 19 | 22 | 25 | 29 | 23 | 22 | 8 | 20 | 17 |
| Class D, pasteurized; bacterial colony count not over 1,000,000 per cubic centimeter before and not over 50,000 after pasteurizing | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 |
| Class E, poor dairy; sanitary score under 70; bacterial colony count over 500,000 per cubic centimeter | 29 | 20 | 19 | 18 | 15 | 17 | 19 | 18 | 9 | 0 |
| Not classified | | | | | | 3 | 1 | 2 | 4 | |
| Total..... | 52 | 51 | 50 | 54 | 56 | 58 | 57 | 53 | 59 | 43 |

* Based on the last three sanitary examinations of milk and the bacteriologic and biochemical tests of milk.

year to year. In the beginning there were over 59 per cent. of poor dairies, over 20 per cent. of fair, over 18 per cent. of good, and less than 3 per cent. of excellent dairies. A change was seen the first year in a lessening of Class E to under 42 per cent., with a corresponding increase of Class C to over 39 per cent. No very marked change is seen in the better classes until 1915, when, under the stimulus of the new rule, Class B increased from under 16 to over 40 per cent., while Class C dropped to under 18 per cent. In 1916, Class B lost one to Class A, but Class C increased from 17 to 40 per cent. at the expense of Class E, which dropped from over 38 to 18 per cent. In 1917, Class A gained two from Class B, and Class B increased from 36 to over 43 per cent, partly from Class C and partly from Class E. Class C showed a further increase from Class E, which was entirely eliminated. An added inducement for the higher class of producers was the fact that Class A milk has always brought about 2 cents a quart more than other milk, which the board feels is justified by its inspection and tests. For the first five years there was a steady lessening in the numbers of Class E, with a corresponding increase in Class C; but then through carelessness there was a change for the worse, and it was halted only by the introduction of the new rule requiring labeling of Class E milk.

The decrease in the total number of dairies in 1917, as seen in Table 1, is due not entirely to the strict enforcement of rules, but also to the general economic situation. The high cost of materials, feed and labor has resulted, not only here but throughout the state generally, in discouraging many farmers from producing milk. This condition is probably less marked in Radnor Township than in many places, since, owing

to the careful supervision of the milk supply, the consumers are more ready to pay a fair price for milk. When this work was begun, milk sold for from 5 to 8 cents a quart, while now few producers get less than 12 cents.

The results here shown were obtained not by the adoption of milk grading alone, but by constant intelligent supervision on the part of the milk hygiene agent. The aim of the board was not so much to do police work and punish delinquents as to do missionary work and encourage the dairymen to be constantly improving conditions. It has seldom been necessary to prosecute delinquents, and, after the first natural opposition to a new plan, the dairymen have come more and more to welcome the visits of the milk hygiene agent and to look to him for advice and help in planning improvements. In 1916, our agent received forty-seven requests for such advice and help. The majority of these were during the poliomyelitis epidemic. Also, consumers frequently ask him for advice in the selection of a dairy.

Strict impartiality is essential to success in dairy grading. Among the milk producers in Radnor Township are some wealthy gentlemen farmers with whom dairying is a hobby, and these receive the same treatment as the poorest farmer with only a few head of cattle. It occasionally happens that, on account of carelessness in the dairy, one of these farms is summarily removed from the excellent or good class to the fair or even poor class. On two occasions one of these dairies, not the same one each time, has been forbidden to sell milk at all until conditions were improved.

This brief paper will show what may be done in a rural community to improve the milk supply by the grading of milk producers, if accompanied by constant intelligent supervision and frequent examinations. Mild rules will not enforce themselves, however, and constant watchfulness is needed; but the Radnor

TABLE 2.—PERCENTAGE OF MILK PRODUCED IN RADNOR TOWNSHIP IN CLASSES A, B, C AND E, BASED ON TOTAL OF THESE FOUR CLASSES *

| Year | Producers in Four Classes | Percentage in Each Class | | | | Total per Cent. |
|------|---------------------------|--------------------------|---------|---------|---------|-----------------|
| | | Class A | Class B | Class C | Class E | |
| 1908 | 49 | 2.0 | 18.4 | 20.4 | 59.2 | 100 |
| 1909 | 48 | 2.0 | 16.7 | 39.6 | 41.7 | 100 |
| 1910 | 47 | 0.0 | 12.8 | 46.8 | 40.4 | 100 |
| 1911 | 51 | 3.9 | 11.8 | 49.0 | 35.3 | 100 |
| 1912 | 53 | 3.8 | 13.2 | 54.7 | 28.3 | 100 |
| 1913 | 52 | 3.9 | 19.2 | 44.2 | 32.7 | 100 |
| 1914 | 51 | 3.9 | 15.7 | 43.1 | 37.3 | 100 |
| 1915 | 47 | 4.3 | 40.4 | 17.0 | 38.3 | 100 |
| 1916 | 50 | 6.0 | 36.0 | 40.0 | 18.0 | 100 |
| 1917 | 39 | 12.8 | 43.6 | 43.6 | 0.0 | 100 |

* Calculated to nearest tenth per cent.

board feels that time and money spent in this work is well worth while, and would regret very much to be obliged, for any reason, to discontinue this work.

Insect Transmission of Disease.—Dr. L. O. Howard in a recent address before the Washington Academy of Sciences gave some statistics as to the number of insects which stand in etiologic relation to various diseases. Up to the present, discoveries have been recorded of the carriage of 226 different disease organisms to man and animals. An important recent discovery is that of the transportation by wind of the body louse, which is the carrier of typhus fever. In the *Bulletin* of the Pasteur Institute, Paris, for Dec. 15, 1916, there was a review of seventeen papers on the louse in connection with disease by authors of seven different nations.

AN ADDITIONAL CASE OF
SPOROTRICHOSIS*

EDWARD H. McLEAN, M.D.

OMAHA

Although sporotrichosis has been known only since 1898 a considerable volume of literature has been published, and a constantly increasing number of cases is being reported. While the cases reported in America are still less than a hundred, this seeming rarity in its occurrence is due more probably to the fact that the condition is usually not recognized clinically. It often closely resembles syphilis, and the prevalent idea that a circumscribed, punched-out ulcer that refuses to heal should be strongly suspected as being caused by syphilitic infection has led to the treatment of the condition with iodids, with resultant cures. The case is usually diagnosed as one of cutaneous syphilis, on account of the disappearance of the lesions under the iodid treatment. Though discovered first in America, the clinical bacteriologic aspects of this disease have been worked up most thoroughly in France, and there is a large amount of French literature on the subject. De Beurmann and Gougerot have contributed most largely to our knowledge of this condition. For a full description of the clinical and pathologic findings, with special reference to the various clinical types, the reader is referred to the article by De Beurmann.¹ The disease is most widespread in the organs it attacks, but so far only the cutaneous types have been described in the United States. Several species of the sporothrix are described in the literature, the most common being *Sporothrix beurmanni*, but an attempt to classify an organism which has been isolated, guided by the published descriptions, makes one agree with Meyer and Aird² in their conclusion that *Sporothrix schenckii* and *beurmanni* are of the same species, which is best called *Sporothrix schenckii-beurmanni*.

REPORT OF CASE

The case of sporotrichosis that is responsible for this note occurred in a patient from Winner, S. D. He was a Russian laborer, aged 33 years. He appeared at the dispensary of the Creighton Medical College for treatment. He gave the following history: About three weeks before appearing for treatment the patient noticed a small nodular swelling in the neck below the left ear. It was only slightly tender. Soon there appeared on the left side of the face from the bridge of the nose to the angle of the mouth, several similar swellings. These gradually became soft but caused only very slight pain. He complained of attacks of epistaxis and obstruction to nasal breathing. The patient stated that he had been caring for horses for the past few months, and that about four weeks before he became sick, the horses had been affected with a throat condition that he thought was glanders, though a clear history of the affection of the horses could not be obtained.

The patient knows of no injury that he received that might have served as a point of entry for the sporothrix. The rest of the history is irrelevant.

Physical examination showed a patient apparently in good health. Below the left ear in the neck was a subcutaneous nodule about 1 cm. in diameter. There was moderate edema of the left eyelids. On the left side of the nose in the skin and involving the subcutaneous tissue was a swelling 3 cm. in diameter. It was soft in the center with an indurated periphery. Close to this on the side of the face were two similar nodules. They were about 2 cm. in diameter, hard at first but softening in the center in three or four days. After a few days similar nodules occurred at the angle of the mouth, and there appeared a submaxillary lymph node about 1 cm. in diameter. The nodules were purplish-red, elastic, with fluctuating centers and indurated edges, and were only slightly tender.

A clinical diagnosis of glanders was made and the patient was sent to the bacteriologic laboratory for cultures. The fluctuating lesion on the side of the nose was aspirated and about 1 c.c. of thick gelatinous pus obtained. Smears of this failed to show organisms. The pus was inoculated onto Loeffler's coagulated serum medium, blood agar, glycerin agar, and 2 per cent. glucose ovarian cyst broth. On the fourth day there appeared on the Loeffler's medium scattered small white colonies which later became thickly wrinkled and leathery. In the broth there were tiny white cotton-like

flakes lying on the bottom, with clear supernatant fluid. Smears from the solid mediums showed large numbers of oval spores with an occasional thread of mycelium. Some of the masses fished from the broth were tangled balls of mycelium which were divided by septa. In the meshes were numerous spores, some of which were attached to the sides of the mycelium by a fine stem. The organism stained deeply with the usual dyes and was Gram amphophile. The spores contained an eccentric and nonstaining refractile body. Subsequent transfers of the organism showed the best growth on

2 per cent. glucose agar. The growth in transplants appeared in forty-eight hours, at first as isolated white colonies, which later became thickened and leathery, and in from ten days to two weeks began to develop brown or black pigment. The growth tended to penetrate the surface of the medium, so that the medium was torn on removing any of the growth. In some cultures the growth remained finely granular, not developing the leathery appearance. In these the growth was confined to the surface of the medium. Attempts at anaerobic cultures were unsuccessful. The organism grew equally well at room or incubator temperature.

The development of pigment was variable. In some cultures none at all was formed. None was formed if air was excluded from the tube after the growth was obtained. In some tubes the color was uniform, being any shade from a light brown to a black, while in other tubes the surface was mottled. The advancing edge of the growth often was white while the center was deeply pigmented and this pigment was in the spores. Davis³ has succeeded in obtaining pigmented and nonpigmented strains by securing his material for transplants from corresponding areas in the growth. These strains have remained true after many transplants and after animal passage. In the first two or three weeks the surface of the growth was shiny and moist, but after prolonged growth it was usually covered by a fine powder due to spores on aerial branches. In cultures of several months' standing large oval



Four day culture on hanging-drop of 2 per cent. glucose agar. Outline drawing of actual microscopic field.

* From the Bacteriologic Laboratory of the Creighton Medical College.

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2. Meyer, K. F., and Aird, J. A.: Differentiation of Sporotricha by Fermentation, Jour. Infect. Dis., 1915, 16, 399.

3. Davis, D. J.: Chromogenesis in Cultures of Sporotricha, Jour. Infect. Dis., 1915, 17, 174.

bodies two or three times as large as the usual spores were found (chlamydospores?).

Cultures on hanging-drop agar showed the mycelium to branch irregularly, the spores springing from the sides by slender stems or grouped around the ends of the branches as pictured in the illustration.

This case adds another one from the Missouri Valley, where, according to Reudiger,⁴ by far the largest number has been found.

Unfortunately the patient disappeared about the time the cultures were obtained and efforts to locate him were unsuccessful.

CANCER OF THE RECTUM AND
THE PELVIC COLON

STATISTICAL AND CLINICAL REVIEW OF FOUR
HUNDRED AND NINETY-ONE CASES *

JEROME M. LYNCH, M.D.

Assistant Surgcon, Medical Reserve Corps, U. S. Navy; Fellow of the
American College of Surgeons
NEW YORK

I have seen to date 491 cases, which my associate, Dr. Giles, has tabulated (Table 1). Fifty-one patients died and 253 recovered, a mortality of 16 per cent. for

TABLE 1.—ANALYSIS OF FOUR HUNDRED AND
NINETY-ONE CASES

| | No. |
|---|-----|
| Males | 281 |
| Females | 210 |
| Nature of Disease: | |
| Adenocarcinoma | 451 |
| Epithelioma | 15 |
| Colloid carcinoma | 4 |
| Scirrhus carcinoma | 4 |
| Round cell sarcoma | 5 |
| Melanosarcoma | 5 |
| Lymphosarcoma | 4 |
| Spindle cell sarcoma | 3 |
| Patients operated on | 344 |
| Radical excision | 304 |
| Simple abdominal section | 20 |
| Combined operation | 111 |
| Operations in one stage | 75 |
| Operations in two stages | 36 |
| Perineal | 102 |
| Kraske operations | 20 |
| Operations by modified bone flap method | 32 |
| Intra-rectal operations | 18 |

radical excision. The remaining forty-one cases not included in the series were colostomies and palliative operative procedures for inoperable cases.

I feel very strongly that early colostomy in inoperable cases is as vital to the patient as early operation in operable cases. And I further feel that it is a great injustice to put off this operation until the patient is moribund. If colostomy is indicated, it certainly should be performed before the individual has become so weakened by the disease that the operation will be of no benefit.

There are so many inherited misconceptions with regard to cancer, and they are so firmly rooted in the minds of the laity, that it will require a long time to dislodge them. Reeducation is essential if we wish to progress. Textbooks on surgery, except the more recent, lay stress on age, pain, cachexia, loss of weight, and tumor as the cardinal symptoms of cancer. This is very misleading. Cancer knows no age; 0.5 per cent. of these cases are in children under 9 years of age; 2.5 per cent. of the patients are under 19, and in

my personal experience 7 per cent. were under 30 and 9 per cent. were between 30 and 35 years of age.

The symptoms mentioned in the textbooks are those associated with the last or inoperable stage of cancer. Many of these patients seen by us had had unmistakable symptoms of the disease for over a year, although some of them had gained in weight.

The average duration of symptoms before admission is just over 8 months.

TABLE 2.—AGE OF CANCER PATIENTS

| | No. of Patients |
|-------------------------------|-----------------|
| Under 20 years | 4 |
| Between 20 and 30 years | 32 |
| Between 30 and 40 years | 66 |
| Between 40 and 50 years | 117 |
| Between 50 and 60 years | 136 |
| Between 60 and 70 years | 91 |
| Between 70 and 80 years | 21 |
| Over 80 years | 7 |
| Not stated | 17 |
| Total | 491 |

Cachexia seldom appears until cancer is far advanced, and then principally in old persons and in those with cardiovascular diseases. One does not often associate pain with cancer of the rectum, except as a terminal symptom, and when the tumor is situated adjacent to the anus. In rectal malignancy the tumor can usually be felt with the finger, and on this examination alone a diagnosis can be made; but when the disease is situated in the sigmoid or the colon, the diagnosis is made in the former by means of the proctoscope. In the latter case, I admit that many difficulties are encountered in arriving at a conclusion. However, the roentgen ray and the natural inhibition usually associated with malignancy, together with the presence of blood in the stool and the reaction of occult blood, afford material aid in differentiating benignancy from malignancy. Except in advanced cases, an abdominal cancer can very seldom be felt, and then only in patients with a relaxed abdominal wall. Frequently, when a mass is found, it is an accumulation of fecal matter above the site of the growth, and not the tumor.

It is fortunate for the individual if this accumulation of fecal matter occurs early, as then, at operation, the malignancy is recognized. The late Dr. William Bull told me that he believed the day was not far distant when the public would be so educated as to accept exploratory laparotomy in every instance in which there is doubt. He lamented the difficulties he

TABLE 3.—LENGTH OF TIME SYMPTOMS OF CANCER HAD
BEEN APPARENT

| | No. of Patients |
|----------------------------|-----------------|
| Under 4 months | 54 |
| From 4 to 6 months | 87 |
| From 6 to 9 months | 99 |
| From 9 to 12 months | 102 |
| From 12 to 18 months | 42 |
| From 18 to 24 months | 45 |
| From 24 to 36 months | 14 |
| From 36 to 60 months | 8 |
| Over 3 years | 3 |
| Not stated | 37 |
| Total | 491 |

encountered in trying to convince patients that this was the proper course to pursue. If we could only remove from the minds of our patients preconceived notions of the immodesty of a rectal examination and insist on this in every case, many tumors would be discovered in their incipency. Especially must we eliminate malignancy in cases in which there are constipation, diarrhea, hemorrhoids and loss of blood.

When it is realized that 10 per cent. of my patients had had an operation for hemorrhoids within a few

4. Reudiger, Gustav: Sporotrichosis in the United States, Jour. Infect. Dis., 1912, 11, 193-206.
* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

months of the time when I first saw them and that they might have been spared the suffering which followed those operations, we must feel convinced of the necessity of being thorough, and conclude that hemorrhoids are all too often the symptom of a worse malady.

Twenty per cent. of these patients had an incorrect diagnosis and were treated for stomach and enteric disease, when, in reality, they were suffering from a malignancy remote from these organs. It is well known that esoteric stomach symptoms are very misleading, but here again we are confronted by the lack of thoroughness.

We should make it a rule, no matter in what branch of medicine or surgery we specialize, to see that every patient referred to us has the thorough examination to which he is entitled. One fails to be thorough if one overlooks anything, and is guilty of neglect toward that patient.

Dr. John B. Murphy's advice to me, when I started to practice, was to examine every patient thoroughly, and if he refused such an examination, to decline to treat him. Nicholas Senn, on so many occasions, reiterated the necessity of a digital examination that I am sure most of his students followed his advice.

Many cases of carcinoma of the rectum are turned down as inoperable without due consideration. This decision is often influenced by the high mortality in the hands of some surgeons. Also, because in the

TABLE 4.—RESECTIONS IN CANCER PATIENTS

| | No. of Cases |
|--|--------------|
| Removal of a part or the whole of the prostate | 20 |
| Resection of urethra, prostate and seminal vesicles..... | 6 |
| Resection of bladder wall | 4 |
| Resection of a part or the whole of the vagina | 14 |
| Hysterectomy complete | 9 |
| Wertheim hysterectomy | 5 |
| Removal of one or more coils of the intestine | 6 |

past, a large tumor mass with the involvement of some unimportant structure was considered as a contra-indication to a radical operation. I recall several instances in which this decision influenced the surgeon. But we should remember that cancer here remains stationary for a very long time, that the patient is facing certain death unless some effort is made to eradicate the growth, and that even if the patient should die in the attempt to save him, he is at least spared a great deal of horrible suffering. On many occasions I have found it necessary to remove the uterus, resect the vagina, remove a portion or the whole of the prostate, resect the seminal vesicles, resect the urethra, perform a radical Wertheim operation, resect several coils of the intestine and resect the bladder wall.

One must expect a high mortality in such radical operations; but the percentage of cures is a sufficient justification to encourage us to continue and, if necessary, to do even more radical work. Dellman, in 1916, giving statistics for cancer in the Netherlands, says, in conclusion, that the more radical treatment of cancer nowadays is curing so many patients that the day is approaching, if not already here, when the number of deaths from malignant disease will no longer be an index of the actual prevalence of cancer. This is certainly encouraging, coming as it does from one who has evidently studied the subject very thoroughly.

The choice of operation in cancer of the rectum is always perplexing, and one that cannot be decided off-hand; but it is safe to say that there are four operations, any one of which, when indicated, offers a solution to the problem.

Patients very often insist on knowing beforehand whether they will be left with a hole in their side, or whether it will be possible to restore the anus to its original site. Some men, in an effort to please, make contracts that they are unable to fulfil. This is unwise. In such a vital matter, the surgeon should insist that he be given full power to do what in his judgment is to the best interest of his patient. No surgeon should tie his hands beforehand and feel compelled, because of a previous understanding, to perform an incomplete operation when a slightly more radical procedure might prevent recurrence. I myself prefer to place the anus at its original site; but I never hesitate to leave a patient with a colostomy if by so doing I can get a better result. I never consider placing the anus high up in the sacrum, or in any other situation than the original site, because I believe that a colostomy is preferable to a stoma in any other than the normal position.

I agree with the surgeons who state that perfect continence can never be attained by attempts at restoration of the intestine to the normal anal site. Yet I have so many cases in which patients have enjoyed great comfort with this imperfect continence that I am convinced that this operation has a place in surgery.

Everything being relative, this applies with equal force to incontinence; and I feel confident that if a census could be taken of patients with relative continence, after a radical operation of the rectum, none of them would be willing to have a colostomy, in preference to a relative continence, with the anus in its normal situation.

My operation of choice is the combined operation, with the anus in its normal site in the perineum. This gives one the advantage of being able thoroughly to explore the abdomen. I know from experience that the under and diaphragmatic surfaces of the liver are first involved, and that only by abdominal exploration can this be determined. There are other advantages, namely, that one can perform a practically bloodless operation, and remove all the interglandular tissue and fat with a minimum of traumatism.

It is my custom, whenever possible, to block the sympathetic by the combined extradural and hypogastric anesthetization, as I feel that, by this method, shock, which is a bugbear to all surgeons in this operation, is obviated. I suggested to Dr. Halstead that this procedure accounted for my better results since I have followed it; but he seemed to think that it was due rather to a more perfect technic than to the combined blocking. Still, I nevertheless feel a good deal like the surgeons of the old school after they had washed their hands in mercuric chlorid, that it is at least a step in the right direction, adds no risk to the operation, and is in keeping with modern thought. The work of Crile confirms me in my belief, and so long as it does not add to the danger or the length of the operation, it seems well worth while.

The fact that a perineal operation was performed by me completely under sacral anesthesia must convince the most pessimistic of its value as a distinct method in blocking sensory impulses.

Whether the combined operation should be performed in one or two stages can only be decided at operation, and the surgeon is guided by his own experience and judgment. Often the anesthetist becomes alarmed during the course of the operation, but the

surgeon familiar with this operation can always see the danger signal ahead. I prefer to perform the operation in one stage whenever feasible, but I am not inflexible in my judgment and never hesitate, if I feel that there is extra risk, to divide it into two stages.

The perineal operation is indicated in very fat persons and in those so debilitated that any form of abdominal exploration would be almost sure to result in death. In looking over my perineal operations, especially in that decade when this was the operation of choice, I find so many good results that it is hard to believe that this method should have such a limited field of usefulness.

Kocher many years ago pointed out that extensive glandular enlargement does not necessarily mean that those glands themselves are carcinomatous. I have had those glands examined at levels, and at various distances, from the growth, and in the majority of cases they have proved to be merely inflammatory. However, at the present date, it is much safer to explore the abdomen than to confine oneself to the perineal operation alone.

In all cases, no matter what the operation, I remove the coccyx as a matter of routine. It affords far greater room, obviates the pain that follows the operation when the coccyx is not removed, permits of thorough drainage, and adds materially to the comfort of the patient in subsequent dressings.

When the growth is situated near the anus, it seems advisable to perform a colostomy first. At the end of ten days, a wide incision is made of the tuberosities on both sides, and the growth is removed *en bloc* after the ischiorectal fossae are thoroughly cleaned out. I have succeeded in restoring the anus to its original site, and I have obtained a relative degree of continence for so extensive an operation.

I have found it to be of advantage to pack the pelvis by means of a device that has given great satisfaction from the standpoint of drainage, and has spared the patients unnecessary suffering during the removal of the gauze. No doubt this is nothing new, and has probably been used with equal satisfaction by others; but I mention it for the benefit of those who are unfamiliar with its advantages. A rubber glove, from which the upper halves of the fingers have been cut, and in which a small opening has been made in the palmar and dorsal surfaces to permit of drainage, is passed into the pelvis as tightly as necessary to control oozing and to fill up the dead spaces posterior to the bowel. At the end of forty-eight hours the gauze can be removed, the wound irrigated, if necessary, or desirable, and the glove repacked.

I have long since abandoned resection of the rectum, as early experience has taught that stricture inevitably followed. This is owing to the fact that the rectum has a terminal blood supply, and not, as is commonly supposed, to the lack of peritoneal covering. It is an axiom in pathology that the amount of connective tissue is inversely proportionate to the blood supply.

Kraske's operation has been abandoned by most surgeons, and I see very little indication for it in cancer of the rectum.

The sigmoid and cecum are two of the most variable organs of the body. The sigmoid, particularly, varies within wide limits, as in the case of Hirschsprung's disease. It possesses few lymphatics, has a dense fascial covering, and, for this reason, sigmoidal

growths remain stationary for a long time. On account of its wide variation, it lends itself easily to resection.

There are many drawbacks to end-to-end anastomosis in this region, on account of the blood supply and the danger of leakage. Recognizing this, Mikulicz, Tuttle and others have suggested a three stage operation which has a low mortality, but like all safe procedures, has many inconveniences, in that the patient is incapacitated for a long time, and it may require more than one operation to close the stoma. It would also seem that the danger of metastasis would be enhanced by the subsequent handling and pressure, and by allowing the growth to remain *in situ* many days after the first operation.

For several years, except in cases of obstruction and in patients that are greatly debilitated, I have used the following technic: The sigmoid naturally rests in the iliac fossa, and this can be taken advantage of to make a lateral anastomosis between the two limbs of the sigmoid. The mesentery should be tied as in the Mikulicz operation. Both legs of the sigmoid are then brought together by a peritoneal suture on the inside. The intestine is mobilized toward the center, the pelvic and small intestines being carefully walled off. Following this, an anastomosis is made on the outer side of the parallel limbs. After the anastomosis has been completed, the sigmoid is allowed to fall toward the iliac fossa and is sutured to the parietal peritoneum, dorsad, cephalad and caudad. A small cigaret drain is placed above and below the anastomosis, and the abdominal wound is closed, except for the skin. Both limbs are double clamped, and the growth is removed with the cautery. After this the ends of the bowel are inverted, and the skin is closed in the usual manner. If leakage should occur it will be practically shut off by the two walls of the peritoneum. If there is any trouble with the anastomosis, the skin is opened up, and the cephalad portion of the bowel is opened and drained.

108 East Sixty-Fifth Street.

ABSTRACT OF DISCUSSION

DR. GEORGE B. EVANS, Dayton, Ohio: I have never seen a patient with carcinoma under 55 years of age. In cases in which the pelvis is much involved—by that I mean the vagina, uterus, ovaries and tubes, seminal vesicles, prostate and posterior urethra—I believe we should not extirpate or resect. Although we may give our patients temporary relief, their secondary sufferings are greater. I have never used the cautery because I feel it is better for me to have my finger up in the wound.

As Dr. Lynch has said, the question of diagnosis is by far the most important in these cases, and we should make it with the aid of the proctoscope, sigmoidoscope and roentgenogram. We should never operate in any case of carcinoma until we have given the patient's kidneys a thorough consideration. We should never operate on these patients until we have brought the phenolsulphonephthalein test to our aid. In the first ten years of my work, nearly all of my cases were operable, as I thought in those days. In the last ten years I do not think that in all the cases I have seen 10 per cent. were operable. I find that all the organs in these cases are involved. Therefore, and in conclusion I wish to emphasize that I believe we are going back to where we were, so far as the good of the patient is concerned—back to colotomy.

DR. FRANK C. YEOMANS, New York: Every one in speaking of cancer of the rectum and cancer of the colon emphasizes early diagnosis, saying that if the surgeon gets the patient early enough he will cure him, no matter where the

cancer is. Then they urge that we examine the patients carefully. I think all this is very good precept and practice; but many men who have been practicing for years never examine patients carefully. They do not take postgraduate medical courses, and they were not taught in the undergraduate schools the method of making a routine examination. The only way that we can hope to succeed in this, I believe, is to have courses of instruction in enteroproctology introduced into the undergraduate medical schools and make this a compulsory part of the curriculum, so that a student may become familiar with the average pathology of the bowel and know how to use the ordinary instruments of precision. Then, if he cannot interpret the findings, he will, at least, have the wisdom to confer with some one competent to make the diagnosis before the disease has progressed to a stage where it is beyond relief. Until that time the entire profession will not receive adequate instruction, cancer of the bowel will not be recognized early, nor will the patient receive the benefit of early operation.

DR. WILLIAM M. BEACH, Pittsburgh: I should like to ask Dr. Lynch the tenure of life following these cases.

DR. DWIGHT H. MURRAY, Syracuse, N. Y.: The microscope does not tell us the histologic factor. This may seem strange. I will explain by saying that in the examination of the cancer tissue removed, the pathologist will say that all of the growth has been removed and that the microscope does not show any cancerous tissue on the outside of the growth. In my opinion the microscope cannot show tissue which has been invaded and which has not yet shown pathologic changes that the microscope will reveal. I saw this thoroughly demonstrated in a case in which operation was performed a year ago.

DR. JOHN L. JELKS, Memphis, Tenn.: I am so pessimistic with regard to cancer of any part of the alimentary tract that I feel almost inclined to offer a resolution that it would be the sense of this assembly that late radical operations for cancer of the stomach and intestines are hardly warranted. I have operated and operated for cancers of the stomach, colon and rectum and the patients are all dead, or, if not already dead, going to die a little bit later of cancer of the liver. What is the use? I think it is best to turn the patients down. A number of men have said much could be done if we have "early cases." In the "early cases" the patients will not dream of having an operation and in the late cases we should not dream of operating.

DR. LOUIS J. HIRSCHMAN, Detroit: I hope this paper will go out as a message from the enteroproctologist to the general surgeon and everybody doing surgery, to mark the passage of mutilating operations for the excision of a cancer; that the day of the sacral anus is over. I think the time has arrived when we must tell the profession at large that if they cannot do anything else than colostomize and implant the anus anywhere but at its normal site, they had better do nothing.

DR. JEROME M. LYNCH, New York: I am really sorry that my friend Dr. Jelks feels as he does; it is very unfortunate, for Dr. Jelks has many friends and a large following and the result will be that a great many patients with cancer who should be operated on will not be operated on. The statistics of Mayo and other men show that a great deal has been done in cancer.

Dr. Beach asked me for the tenure of life in these cases. Twenty-six per cent. of the patients are alive after three years (all these statistics will be published); two or three over sixteen years. When the average patient comes for operation he is over 50, and if he lives sixteen or seventeen years, he is going about the limit. So far as I can see, the results are very encouraging, and notwithstanding the pessimistic view taken by some surgeons, I shall still continue to perform these operations, and it will just mean holding the same position now that Samuel Sharpe held in 1820. Then he said, "Some men are so pessimistic about operation for cancer that they would rather let the patients die. In my own personal experience I have saved so many patients that I shall still continue to operate." It is almost 100 years since that time and we have the same obstructive pessimism to contend with.

MIXED INFECTION WITH THE PNEUMOCOCCUS IN EPIDEMIC MENINGITIS *

GEORGE MATHERS, M.D.

CHICAGO

In a recent communication, Netter and Salanier¹ report twenty-two instances of epidemic meningitis in which pneumococci as well as meningococci were found in the spinal fluid. These cases of mixed infection exhibited all the symptoms of meningococcic meningitis, but did not respond to serum treatment and terminated fatally. It is my purpose to call attention to the importance of these observations, and to report an example of this type of meningeal infection.

W. D., a boy, aged 7 months, entered the Cook County Hospital, Sept. 28, 1917, with all the physical signs of meningitis. According to the mother, the illness began suddenly two days before with convulsions, vomiting, stiffness and retraction of the neck, and a staring expression of the eyes. Otherwise the history was negative. The noteworthy physical findings were blindness, marked opisthotonos, orthotonus, and a positive Kernig's sign. The temperature was 103 F. and the pulse rapid and weak.

The spinal fluid was under increased pressure, opalescent, and contained 1,000 cells per cubic millimeter, 98 per cent. of which were of the polymorphonuclear type. Gram-positive and gram-negative intracellular and extracellular diplococci were present in the stained smears. The urine contained a trace of albumin and an occasional leukocyte, and the Wassermann test was negative. During the twenty days in the hospital, 185 c.c. of antimeningococcus serum were given intraspinally with no results. The temperature remained high and the child gradually became weaker and died, Oct. 18, 1917. A necropsy was not made.

During the course of the disease two bacteriologic examinations of the spinal fluid were made. In each instance a gram-negative and a gram-positive diplococcus were found in the cultures. The gram-negative organism had all the morphologic and cultural characteristics of the meningococcus, and was agglutinated by a polyvalent antimeningococcic serum in a dilution of 1:800. The gram-positive diplococcus was found to be a typical pneumococcus of Group I type. In the plate cultures of the spinal fluid in both instances, the meningococcus colonies were more numerous than the pneumococcus colonies. The spinal fluid had a faint greenish tint, and at no time was markedly purulent. Precipitin tests of the spinal fluid, in which the specific serums for both organisms were used, yielded negative results.

These observations emphasize the importance of frequent cultural examinations of the spinal fluid in all cases of epidemic meningitis, especially those in which antimeningococcus serum does not prove efficacious. Furthermore, they indicate that mixed infection may occur in meningococcic meningitis as in other infectious diseases, and exert an unfavorable influence on the clinical course. In the instance of mixed pneumococcus and meningococcus infection, combined serum treatment, as advocated by Netter, would be indicated. In regard to the general significance of this new observation in epidemic meningitis, it is sufficient to say that the importance of mixed infection in acute infectious diseases cannot be overestimated. The presence of two virulent organisms in the same pathologic lesion must not be neglected on the basis that one is a secondary invader; the activities of each organism must be reckoned with in the treatment.

* From the Memorial Institute for Infectious Diseases.

1. Netter and Salanier: Bull. et mém. Soc. méd. d. hôp. de Paris, 1917, 41, 789.

Military Medicine and Surgery

SHELL-SHOCK *

A DIGEST OF THE ENGLISH LITERATURE

HENRY VIETS, M.D.

First Lieutenant, M. T. C., U. S. Army

BOSTON

In the last three years, the neurologists and psychiatrists of the United States have viewed with interest the reports that have come to us from abroad regarding the remarkable war neurosis, shell-shock. While these papers excited our interest, it was not until our country entered the war that the problem became one that demanded our serious attention. At the present time, however, we ought to be fully acquainted with the data already accumulated by foreign workers in the three years of war; to be able to give successful treatment in the many cases that are sure to arise in our armies and, vastly more important, to gain a clear insight into the condition so that we may be able to exclude from our draft army at the time of enlistment the men most liable to shell-shock, and thus prevent "the wastage of the recruiting office," which has been such a burden to the European countries.

Moreover, the importance of the problem cannot be overemphasized. Osler,¹ in a recent communication, speaking of the neurasthenic as he appears at the recruiting station, says that the unfit should be checked at the recruiting office and kept at home; "the trenches is no place for a man with unstable vasomotors. In the strain of war they break like dry twigs and become a heavy burden in the hospitals and convalescent homes."

June 1, 1917, Dr. Thomas W. Salmon, in a letter to the National Committee for Mental Hygiene, wrote from London in regard to the shell-shock cases:

The extent of these casualties is almost beyond belief. I have not yet had access to the official records, but apparently the neuroses constitute one of the most formidable problems of modern war. These people are certain to go to pieces in the presence of danger or hardship, and are not only useless to themselves but are also a serious drag upon their comrades and the army in general.

When one sees, also, the vast number of these patients collected in England in the various special hospitals devoted to their treatment, one cannot but realize that, if we, in this country, could only prevent such wastage, our work would be of inestimable value to the government. Therefore, in view of the importance of this problem, one feels fully justified in bringing to notice the work already done on the subject by British neurologists and psychiatrists.

SHELL-SHOCK

The term "shell-shock" came into use in the English army the latter part of 1914, but the first reported cases that I have been able to find in the English literature were by Myers² in February, 1915. He reported three cases under the term "shell-shock" with loss of

memory, vision, smell and taste. He expresses the opinion that his cases "appear to constitute a definite class among others arising from the effects of shell-shock." Even at this early date it was found that the term "shell-shock" was a very loose one, and that many of the patients coming back from France to England in this group had never been "shocked" by the concussion of a shell, but had been buried under débris when the shell exploded; in some cases the patients had never been under shell fire at all. March 27, 1915, the *Lancet*, in an editorial, commented on the effect of shell explosion on the central nervous system, especially in its relation to the special senses, and thought that most cases would fall into one of three classes: fatigue-paralysis, "commotio," or traumatic hysteria. In other words, the numerous cases with protean symptoms of nervous disorder were being thought of from the etiologic standpoint, and the neurasthenia and hysteria cases were being separated from those of supposed commotion or concussion with probable organic brain changes due to trauma.

It was not, however, until February, 1916, that we had the first clear classification of the shell-shock cases. Mott,³ the London neuropathologist, in a series of lectures on "The Effects of High Explosives Upon the Central Nervous System," divided his cases into three groups from the pathologic point of view:

1. The immediately fatal.
2. The wounded with injuries to the central nervous system.
3. The traumas to the central nervous system without visible injury.

The last group, according to Mott, forms the true shell-shock cases. Thus, from the pathologist's point of view, all cases are "commotio" with or without visible injury to the central nervous system. Shell-shock, however, as seen from the practical clinical point of view, includes all functional or obscure neurologic cases. In many cases now grouped as shell-shock, the patients have never been within the zone of active warfare. Henry Head,⁴ in a protest against the use of the term "shell-shock," is quoted as having said that it represented "a heterogeneous collection of different nervous affections, from concussion to sheer funk, which have merely this much in common, that nervous control has at last given way. To me it would be just as reasonable to sweep up the various fruits which fall from the trees in a strong wind and then to discuss them without first stating that some fell from an apple and some from a pear tree."

A workable classification from the clinical point of view is that of Buzzard⁵:

1. Pure exhaustion cases. These were quite common in the early part of the war, but are rarely seen now.
2. Neuropaths and psychopaths, who develop shell-shock symptoms very early and quickly.
3. Martial misfits; the "objector," who hates war but goes because he must and often malingers.
4. Concussion cases.
5. Cortical injury, a few of which get into the shell-shock group by mistake.
6. Cases of hysteria who show the major and minor symptoms of hysteria as in civil life.

From this brief outline on classification and definition, it can readily be seen that the term "shell-shock"

* Read at the staff meeting, Boston Psychopathic Hospital, Oct. 17, 1917. The contents of this paper are based on observations made in England from May, 1916, to February, 1917, under grant of a Moseley Traveling Fellowship from Harvard University. Indebtedness is acknowledged to Sir William Osler and Dr. Frederick W. Mott for their kindness in making these observations possible.

1. Osler, Sir William: War Wastage: A Note of Warning to Examiners of Recruits, *THE JOURNAL A. M. A.*, July 28, 1917, p. 290.

2. Myers: *Lancet*, London, 1915, 1, 316.

3. Mott, F. W.: *Lancet*, London, 1916, 1, 331, 441, 545.

4. Head, Henry: *Lancet*, London, 1916, 1, 306 (quotation).

5. Buzzard: *Lancet*, London, 1916, 2, 1095.

is a blanket diagnosis to cover all the traumas and disorders of the central nervous system without visible injury, occurring in modern warfare. The term is a poor one, and Eder,⁶ in his latest book, has used the title, "War-Shock: The Psycho-Neuroses in War." He markedly limits himself, however, by defining, "war-shock" as "hysteria occurring in a person free from hereditary or personal psychoneurotic antecedents, but with a mind more responsive to psychical stimulus than the normal." Such a narrow definition seems to me unpractical, as many cases other than these must be treated as shell-shock in hospitals devoted to the care of the neuroses of the war. An expression much employed lately is "war-strain," but this is lacking in not emphasizing the dominant rôle of the central nervous system. As shell-shock is now so widely used, it does not seem practical to change it. G. Elliot Smith⁷ did not use either "war-strain" or "war-shock" in his book on "Shell-Shock and Its Lessons," and preferred "shell-shock" "as a popular but inadequate title for all those mental effects of war experience which are sufficient to incapacitate a man from the performance of his military duties." A new and excellent classification by Hurst⁸ is too long to reproduce here. It is, by far, the best one that has been made.⁹

PREDISPOSING CONDITIONS TO SHOCK

It has been found that in a large majority of cases of shell-shock the patients have a neuropathic tendency or inheritance. Some of Mott's patients "gave a history of either previous nervous breakdown or of a timid disposition, easily frightened, emotional, or afraid of the sight of blood; in a few, the fact was elicited that they had a fright in early childhood and that this recurred in dreams." In a case reported by Feiling,¹⁰ the boy ran away from school at 13 because he was "tired of it," and also worked at various trades, at none of them apparently with any very marked success. In one of the best of the articles on shell-shock, Forsyth¹¹ says, "In all cases coming under the writer's notice with symptoms which were more than mild and transitory, a history of some earlier nervous trouble, slight or severe, was forthcoming." In twelve consecutive cases the following notes were elicited:

Nervous breakdown two years before.
Highly nervous and irritable.
Often depressed; worries over things.
Longish periods of depression.
Always been shy; still shy, though middle-aged.
Nervous breakdown four years ago.
Self-conscious.
Very depressed; worries unnecessarily.
Of nervous temperament.
Intensely self-conscious; married, but sexually impotent.
Highly strung and excitable since a child; violent tempered.

Later Forsyth says, "The occurrence of a definite neurosis is to be looked for only in psychopathic individuals, the onset representing the collapse of what is already psychically unsound."

Adrian and Yealland,¹² in a report on 250 cases, say:

There are certain mental abnormalities which are present to some extent in nearly every patient. The majority of

patients are below the average normal intelligence as judged by the Binet-Simon scale, and others who are more highly equipped prove to have an unstable history either personally or in the family.

Mott¹³ again insists:

Of even greater importance than the extrinsic conditions in the causation of military unfitness from exposure to shell fire are the intrinsic conditions, for if there is an inborn timorous or neurotic disposition, or an inborn or acquired neuropathic or psychopathic taint, causing a *locus minoris resistentiae* in the central nervous system, it necessarily follows that such a one will be unable to stand the terrifying effects of shell fire and the stress of trench warfare.

CONDITIONS AT THE TIME OF SHOCK

The conditions in the front-line trenches that put the soldier's nervous system "on edge" and sometimes are the sole factor in causing a war neurosis are intimated in a letter from an English officer to his mother, telling of his first experiences under shell fire:

The shelling all day was awful. Before I had been in the trench three minutes, a bit of shrapnel made a clean cut in my breeches, only scratching the skin. The sights were awful, dead men all over the place, some half buried by shells. The ground and trenches had all been flattened out by our artillery fire, so there was hardly any shelter. I told the men to scratch themselves in with their entrenching tools, but it was simply a case of looking death in the face and waiting to be hit. Never for a moment did I expect to get out alive, as the shrapnel rattled all day long on my helmet, and of course the Boche might have counterattacked at any time. Many men got buried and had to be dug out. It was dreadful to see men's nerves give way and a man of 40 whimpering like a child and crying his soul out. Very catching this disease too, so I had to send him back. I never got into a smaller ball than I did that day, and of course the sights next one made eating impossible. When night came nerves got even worse, and there was hardly a man who was not shivering like a leaf. That day and night was a nightmare. It is the only time I ever felt the sweat of fear, but then it dropped off me in one continuous stream, as I thought in the dark my nose was bleeding.

From the foregoing note one gets a slight idea of active trench warfare. Mott¹³ expresses it in this way:

It must be obvious that through all the sensory avenues, exciting and terrifying impressions are continually streaming to the perceptual centers in the brain, arousing the primitive emotions and passions, and their instinctive reactions. The whole nervous system, excited and dominated by feelings of anger, disgust, and especially fear, is in a condition of continuous tension; sleep, the sweet unconscious quiet of the mind, is impossible or unrefreshing because broken or disturbed by terrifying dreams. Living in trenches or dugouts, exposed to wet, cold, and often (owing to shelling of the communicating trenches) to hunger and thirst, dazed or almost stunned by the increasing din of the guns, disgusted by foul stench, by the rats and by insect tortures of flies, fleas, bugs and lice, the minor horrors of war, when combined with frequent grim and gruesome spectacles of comrades suddenly struck down, mangled, wounded, or dead, the memories of which are constantly recurring and exciting a dread of impending death or of being blown up by a mine and buried alive, together constitute experiences so depressing to the vital resistance of the nervous system, that a time must come when even the strongest man will succumb, and a shell bursting near may produce a sudden loss of consciousness, not by concussion or commotion, but by acting as the "last straw" on an utterly exhausted nervous system, worn out by this stress of trench warfare and want of sleep.

6. Eder: War Shock, London, William Heinemann, 1917.

7. Smith and Pear: Shell-Shock and Its Lessons, Manchester, England, 1917.

8. Hurst: Guy's Hosp. Gaz., 1917, 21, 109.

9. Mental Hygiene, 1917, 1, 468.

10. Feiling: Lancet, London, 1915, 2, 63.

11. Forsyth: Lancet, London, 1915, 2, 1399.

12. Adrian and Yealland: Lancet, London, 1917, 1, 867.

13. Mott, F. W.: Brit. Med. Jour., 1917, 2, 39.

Forsyth¹¹ lays special stress on "the ghastly sights of carnage":

These shake the self-control of all but the very strong, and when, as must often happen, a man sees his best friends killed or horribly mutilated, the anguish of his own feelings may unnerve him beyond control, even though, curiously enough, the effects may not be felt for hours or even days after.

From the psychologist's standpoint, the situation is interesting:

At the time of the trauma, whether it is concentrated in a few moments or spread over days or weeks, the situation to be met derives its psychical importance from the fact that it involves the risk of death. Against this, the instinct of self-preservation rebels, employing as its weapon the powerful emotion of fear. And this, it is not superfluous to recall, is a natural emotion, and therefore ineradicable; its function, like that of its physical counterpart, pain, is protective, dictating an immediate flight from the danger arousing it. In face, therefore, of the prospect of sudden death, fear strains all its powers to enforce an escape, and it can be coerced only by a still more powerful effort of will.¹¹

Just what happens at the precise moment of the shock is best shown by quotations from a few case histories. In one of Myers² cases, the patient was not feeling afraid but "rather enjoying it" until the shells burst about him. While creeping under wire entanglements, some shells burst near him. "As he was struggling to disentangle himself from the wire, three more shells burst behind and one in front of him. Immediately after the shell had burst in front of him, his sight became blurred. At the same moment he was seized with shivering, and cold sweat broke out, especially round the loins." Another patient "was blown off a heap of bricks 15 feet high owing to a shell bursting close to him." Pemberton¹⁴ relates the case of a sergeant of a battery of field artillery: "His gun was No. 1. A direct hit was made on No. 2 gun with a high-explosive shell, killing three men. I saw Sergeant ——— shortly afterward, and although naturally excited, he appeared otherwise normal. He went on working his gun until dawn next day, when he collapsed and was found lying across one of the disemboweled corpses." In Feiling's¹⁰ case, a trench in which the patient was fighting was blown in and he was buried for twelve hours in a mass of mud and debris. Mott³ gives the history of a captain as follows: "His whole company had been destroyed, and, while talking to a brother officer, the latter had half his head blown off by a piece of a shell." Another patient said: "There was something dropped into the trench. I think it was a shell. I felt myself go up into the air, but I cannot remember falling."

Forsyth¹¹ gives the following case to show how light trauma may be:

The patient, after being for some weeks in France, where his battalion was completing its training, spent two nights, which were quiet ones, in reserve trenches. The following day, as his platoon was moving to the rear, a shell exploded close by, wounding several men, but killing none. He himself was unhurt, though he thinks some earth thrown up by the explosion may have struck his right arm. At any rate, on getting back to his billet, he found his right hand was weak, and the next morning he had lost the use of the right arm. When examined three weeks later, the limb was found to be paralyzed and showed marked involuntary movements, which had spread to the shoulder and right side of the neck. No organic cause of the condition could be found. Three months later the movements had ceased, but the arm was still weak.

RESULTS OF SHOCK: SYMPTOMS

1. *Loss of Consciousness*.—Most patients lose consciousness at the time of the shock, but many are only dazed or stuporous. The ones that die are usually unconscious from the time of shock. A condition of automatic wandering, like the fugue of an epileptic so vividly described by Marie, has been observed in some cases. Parsons¹⁵ says, in a typical case "consciousness is lost for a variable time, but often not so far as to prevent automatic movements, so that the man may walk in a dazed condition to the dressing station."

2. *Amnesia*.—One of the most common symptoms of shell-shock is amnesia, or loss of recollection. Very few patients lose consciousness for anything but a short time, and the memory of many of the events during most of the period of trauma may be brought out in various forms of treatment. The temporary amnesia may be very severe and even complete. Mott³ gives the history of a man who was blown up by a shell and who could not recollect any recent or past events. He did not recognize any coins or even his own written name. He rapidly improved and recovered completely. One of Myers¹⁶ cases is an example of retrograde amnesia:

A private was found wandering in a neighboring village, clad only in his shirt and socks. "He was unable to give his name, regiment, or number. He thought his age was between 20 and 30. I tried him with various Christian names, but he replied that none of them seemed familiar to him. He could remember two men finding him as he was strolling on the outskirts of a village, and could describe everything that had occurred to him since then. There was no means of identifying him, and his past was a complete blank; he could recall nothing, for instance, of the events of his childhood."

Mott³ gives another remarkable case, the treatment of which I shall give later in this paper. He writes:

The patient's mind was a complete blank, and this condition was reflected in a dazed, mindless, masklike expression. When asked where he lived, he said, "W——"; he did not know it was in the West Riding. He did not know the address of his home; and when shown a letter from his father with the address on the top, he did not recognize it or his father's handwriting. When shown a photograph of his home, with a group of his father, mother, and three brothers in front of it, he maintained the same wondering, dazed expression, and failed to recognize the nature of the picture. His father had heard from a comrade that he had been buried by the explosion of a shell in the trench; that he had been unconscious for some time and lost his speech.

3. *Motor and Sensory Changes*.—Paralysis and disorder of gait are common symptoms. In 250 cases with some objective disorder, Adrian and Yealland¹² found 37 cases of monoplegia of the arm or leg, 46 of paraplegia, 16 of hemiplegia, and 18 of disordered gaits. The suggestion of an external injury is usually found in the history of these patients. The man who has fallen on his shoulder will have a monoplegia of the corresponding arm. Injury to the back often precedes paraplegia. The reflexes are normal or there may be an increase in knee-jerks with a spurious ankle-clonus. I cannot find that a positive Babinski sign has been reported in a purely functional case. The overaction of antagonistic muscles is quite remarkable, especially noticed in relation to gait. Batten¹⁷ relates a case as follows:

When first admitted and asked to walk, the patient grasped the top of the crutches and pulled the body up by the strength

14. Pemberton: *Lancet*, London, 1915, **1**, 967.

15. Parsons: *Lancet*, London, 1915, **1**, 697.

16. Myers: *Lancet*, London, 1916, **1**, 65.

17. Batten: *Quart. Jour. Med.*, 1915-1916, **9**, 73.

of his arms; he then placed each crutch alternately forward, allowing the whole weight to fall on the advanced crutch, and would advance the legs synchronously with the crutch. Later, when taught to walk in the walking-machine, he would support the weight of the body on the hands, dragging the hindmost leg forward against a resistance produced by placing all the antagonistic muscles into forcible contractions. At a later period he walked without the machine, but with the hinder leg as if it were glued to the ground, from which it could only be moved by the most violent tugging efforts.

The direct opposite of the glued-to-the-ground foot is the dancing tremor, in which the patient walks as if the legs were on springs of coiled wire.

The paralyses differ in no way from the hysterical paralyses of civil life. Extensive paralysis is the usual thing, a whole arm or leg. They are often associated with sensory changes. Myers¹⁸ has made a special study of these, finding various disorders of cutaneous sensibility in about 25 per cent. of his patients. Mott³ found in severe cases of shock "loss of sensibility to all forms of stimulus, pricking, heat and cold, and touch, also of deep sensibility, pressure of muscles, movement of joints, and bone sensibility to vibration of tuning-fork. Hyperesthesia is even more common than anesthesia, and even the lightest touch gives rise to apprehension and movement of withdrawal in severe cases."

Tremors and coarser rhythmic spasmodic movements are an extremely common symptom. Mott³ gives an example of a gunner blown up by a big shell who was amnesic for fourteen days. He says: "When I examined him he was sitting in a chair; legs, hands, and jaw were in continuous coarse rhythmical tremors like those of paralysis agitans, which became exaggerated when he was spoken to. Every now and again he starts and looks upward and laterally, as if he feared a shell would drop on him." Fine tremors like those of exophthalmic goiter have been noted, and also tremors of the intention type; but most of them were coarse rhythmic tremors like those of advanced paralysis agitans. In one of Mott's cases, a former pugilist was terrified by the explosion of bombs dropped by a Zeppelin and "developed a curious tic, which took the form of jerky purposive movements of the shoulders and head, as if to avoid a blow, and facial grimaces such as a pugilist might assume in a fight."

4. *Dreams, Terror and Mental Changes.*—In shell-shock, the patients often suffer from terrifying dreams. These are associated with the manifestations of fear, such as terrified facial expressions, cold blue hands, feeble pulse and respiration, sweats and tremors. These dreams often take on the form of nightmares, during which a soldier will go through the pantomime of some terrible experience at the front. I have seen men stand up in bed, sweating and pale, continually shouting epithets at the invisible enemy, go through the pantomime of a charge "over the top," and a hand-to-hand or bayonet attack on the enemy. Mott³ gives a case as follows:

A captain, aged 20, was admitted under my care in a state of restless delirium; he moved continually in the bed, sat up, passing his hand across the forehead as if he were witnessing some horrifying sight, and muttering to himself; yet, when interrogated, he answered quite rationally. This motor delirium I associated with the continuous effects on the conscious and subconscious mind of the terrible experiences he had gone through.

Sometimes the terror leads to mania:

A young man, aged 19, was admitted, suffering with shock due to emotional stress and shell-fire. He suffered with terrifying dreams, and after he had been in the hospital a short time, he developed sudden paroxysmal attacks of maniacal excitement. One afternoon he had been helping as usual in the kitchen, and then he went and lay down on his bed and apparently went to sleep; he suddenly awoke with a startled, terrified look, became flushed in the face, sweated profusely, and made for the door as if to get away from some terrifying conditions. He was restrained with difficulty. He remained in this excited state, glaring rapidly from side to side, giving one the impression that he was suffering from terrifying hallucinations of sight and hearing, although he would make no response to interrogation. He did not recognize his wife, the doctors, or the sisters. Once when I, accompanied by two medical officers in uniform (strangers), came up to speak to him, he became violently agitated, as if some terrifying conditions had been aroused by the sight of the uniforms; the face was flushed and he sweated so profusely that the perspiration dripped in a stream off his nose. The attacks would last from a few hours to a few days; they came on quite suddenly, like an epileptic fit, and often without any apparent cause. It may be mentioned that there was no obtainable history of epilepsy or insanity in the family. The case rather suggests the psychic equivalent of epilepsy in the attacks.

Mott noticed other points of interest in his patients. Many complained of a falling or sinking feeling; often in their dreams, patients were heard to cry out and would awake to find themselves in a cold sweat; some officers gave commands to their men and urged them on to battle; and some performed the pantomime of raising the gun to the shoulder and pulling the trigger.

The revival of old associations in shell-shock dreams is not uncommon. In one of Mott's cases, the patient would dream of meeting a leper in a mine passage. He had been alarmed previously by a leper in a South African campaign. A single predominating incident may be repeated again and again in these terrifying dreams. A soldier who had seen a legless body of a comrade at the front had many dreams in which a legless body was always the central figure.

5. *Special Sense Disturbances.*—(a) Vision: The usual disturbances are photophobia, with or without blepharospasm, "smoky vision," diminution in the visual fields, and amblyopia. The photophobia is not usually a serious or persisting symptom; "smoky vision" may last for months. Diminution of visual fields alone is common. Patients with amblyopia usually go to special hospitals. The first and best cases recorded are those by Parsons¹⁵ early in 1915. Functional blindness is more common than deafness, loss of smell or taste. "On examination, it is found that there are intense blepharospasms and lacrimation. The lids are opened with great difficulty, and examination of the eyes is almost impossible in the early stages." The man is struck blind instantaneously. In two to three weeks blepharospasm diminishes. "The fundi appear to be absolutely normal. The pupils react to light, though in some cases the reactions are sluggish, and sometimes one pupil differs from the other, being larger or more sluggish in its reaction. By this time probably some restoration of sight has occurred, light is perceived and large objects may be distinguished. As improvement occurs, the patient manages to grope about, usually with his hands outstretched before him, but it is noteworthy that he does not usually stumble against objects in his path. As soon as it is possible to take the fields of vision, it

18. Myers: *Lancet*, London, 1916, 1, 608.

is found that they are markedly contracted, and that indeed to a degree which seems scarcely consistent with the avoidance of obstacles in walking. The recovery of vision is slow, but eventually it always seems to be complete."

In Pemberton's¹⁴ case which I mentioned before, of the sergeant who suddenly collapsed twelve hours after seeing the gun-crew next to his hit, the amblyopia and contraction of fields was marked when first seen. There were many sensory and motor disorders, also.

(b) Speech: The speech defects most commonly noted are mutism, aphonia, stammering, stuttering and verbal repetition. Mutism is most common—about one in twenty, according to Mott. The patients cannot produce any audible sound; there is no sound when they attempt to laugh, try to whistle or cough. Most of these patients can write. "Many who are unable to speak voluntarily call out in their dreams expressions they have used in trench warfare and battle. Sometimes this is followed by return of speech, but more often not." Mott³ continues, "This mutism is due to emotional shock; it is a psychic rather than physical trauma, in my judgment, for it in no way differs from the description of hysterical mutism thus given by Bastian." Anesthesia of the pharynx has been noted. Some cases will be quoted later, in the consideration of treatment.

(c) Hearing: Deafness often accompanies mutism or aphonia, causing the condition of functional deaf-mutism. "It is not at all infrequent for a man to be deaf on one side and not the other, and the history often shows in these cases that a shell has burst on this side of the man. Auditory hallucinations are not uncommon, and the patients complain of hearing the bursting of shells, of the noise of shells coming, of bullets whizzing, and of whistles blowing. Hyperacusis, or extreme sensibility to sound, is a common and very troublesome symptom, making the patient miserable and apprehensive." Mott found that many relapses occurred during a Zeppelin raid (on London), and one man, "a sergeant who had been a professional pugilist of great renown, suffered extremely, so that the noise of the click of billiard balls irritated him to such a degree that he would protest forcibly against the game continuing. His fellow patients found that they could easily cause him to flee by taking their slippers off and banging them on the ground sufficient to produce a sharp loud noise."

(d) Taste and Smell: Both are often affected, but owing to the difficulty of an examination which is so largely subjective, they are often omitted from the case reports. No very definite data could be obtained about them.

6. *Cardiovascular*.—"Patients often complain of palpitation, breathlessness on exertion, and precordial pain. There may be physical signs of dilatation and tachycardia. The pulse is often small and increased in frequency; the blood pressure is never high. It was often below 110, and never above 135. The hands are frequently blue or mottled and cold; and often there is cold, clammy sweating of the palms. The surface temperature may be very low; in one case it was only 16 C." (Mott³). Most of the patients with marked cardiac symptoms go to special hospitals. The complaints of these patients are: breathlessness, pain, giddiness, palpitation, and exhaustion on exertion. There are no physical signs of structural change in the heart. These are the cases of "irritable heart" that

have received so much attention by Dr. Thomas Lewis and his colleagues at the Military Hospital, Hampstead, England.¹⁹ In the broad sense these cases come under "shell-shock," as they are certainly functional disorders of the nervous system that are peculiar to modern warfare.

The vasomotor conditions are quite noticeable. Osler mentions the "men with unstable vasomotors" as unfit for the trenches. Excessive flushing and dermatographia are quite commonly seen.

Headache is often a prominent symptom. Mott³ says:

The commonest situation for the maximum pain is the occipital region and the back of the neck; it is often described as a tight compression, like a helmet—the helmet of Minerva. The pain may be in the frontal region over one or both eyes, over the vertex, in one or both temples, or at the back of the eyes. The pain is variously described as burning, stabbing, or a heavy, dull, dizzy feeling, a feeling like a tight hat, or a red-hot wire being run through the temples. It is worse at night, especially upon lying down and trying to sleep.

NEUROPATHOLOGY

The neuropathology of shell-shock has received scant attention in the literature except for the work at Dr. Mott's laboratory. The reasons are quite obvious, as very few patients died at the hospitals except by chance of intercurrent disease, and those that die on the field are seldom examined postmortem. In the last year, however, more provision has been made for necropsies at or near the front, and by arrangement with the Royal College of Surgeons, London, certain brains are being sent back, properly preserved for future study. Dr. Mott²⁰ has been fortunate enough to secure a few of these, and his findings are of great interest. He first noticed the marked similarity between the brain of a soldier dead from shell-shock and the brain of a man dead from carbon monoxid poisoning. His study of carbon monoxid poisoning before the war led him to think that the main postmortem findings were extensive capillary hemorrhage in the brain, especially in the corpus callosum, the internal capsule, cerebral peduncles and centrum ovale.²¹ Two cases were from carbonyl of nickel works. There was a case of suicide by illuminating gas. In the first case of shell-shock, a man had been buried by a shell blowing in a parapet, and had died two days later. No visible wounds were found on the body. Throughout the white matter of the centrum ovale, and especially in the corpus callosum, were multiple punctate hemorrhages. Mott³ says: "This appearance to the naked eye corresponds to that which I have described in carbon monoxid poisoning. The same microscopic appearances were observed as those seen in coal gas (CO) poisoning, only the hemorrhages were more extensive." Apparently the fatal cases are the gas cases, as Mott has found the same appearance in later brains. These are the true cases of shell-shock with burial that form a very small part of the vast number of cases in men who return from the front with symptoms of a neurosis. Whether these also may have minor brain hemorrhages is problematical, but we may feel certain that many men who never got within the range of shells and yet develop brain symptoms probably have no such gross pathologic lesions. Most neurologists believe with Wilt-

19. Heart, 1917, 6, No. 4.

20. Mott, F. W.: Lancet, London, 1916, 1, 331, 441, 545; Brit. Med. Jour., 1917, 1, 637.

21. Mott, F. W.: Arch. Neurol., 1907, 3, 246.

shire²² that "chemical poisoning by shell gas cannot be more than an exceptional cause of shell-shock."

TREATMENT

The treatment of the war neuroses naturally divides itself into a number of separate fields. One may treat the symptoms, at the same time paying attention to the general health of the patient. This method is the one generally used in the British hospitals. But some authors believe that we must go deeper than the treatment of symptoms and make a study of the underlying mental condition that enables a "fixed idea" to develop. The latter form of therapy leads us to the large question of psychoanalysis and its place in the treatment of shell-shock. Laying this aside for a moment, I shall take up the treatment of the symptoms.

Adrian and Yealland¹² say that the three principles involved in those methods of treatment that aim only at relieving the functional symptoms are: (1) suggestion, (2) reeducation, and (3) discipline. "The aim of suggestion is to make the patient believe he will be cured, and to lead him on from this to the belief that he is cured." These authors have obtained the best results by:

A very brief suggestive treatment followed by rapid reeducation, which is continued, if possible, without a pause until the normal function is entirely regained. The suggestive treatment may take any form, but it is essential that the patient should be convinced that it will produce an immediate recovery. In untreated cases there is rarely any difficulty in this, and the conviction can be strengthened by using a form of treatment which will be capable by itself of evoking some part of the function which is temporarily in abeyance. For instance, a case of mutism may be cured by tickling the back of the mouth so as to induce reflex phonation. The patient is compelled to make a noise, and the fact that he has done so will convince him that the treatment will be effective. In the same way, a strong electric stimulus will produce a sensation and motion in a limb which is supposed to be anesthetic and paralyzed, and this in itself will be enough to convince the patient that he is on the road to recovery.

The application of strong electricity by the faradic current is a very successful method of augmenting suggestion. Of course, the secret of success lies in the fact, as these authors point out, that "the patient must be convinced that the physician understands his case and is able to cure him. This idea should be fostered from the moment the patient enters the ward." Many treatments have failed because of a lack of confidence of the operator in himself. The physician's authority must be absolutely unquestioned, and "an air of complete assurance is far more convincing than the most elaborate reasoning."

Hypnotism is a form of treatment under the head of suggestion. It is very easy to hypnotize most patients lightly, according to Adrian and Yealland:

They will readily accept the idea that they cannot open their eyes or move their limbs, and they will comply with any suggestion which does not relate to their disability. Unfortunately they are not nearly so tolerant when the suggestion touches their fixed belief that they cannot speak or that their legs are paralyzed. With a patient who is intelligent and anxious to get well, hypnotism may be extremely successful, and it is certainly of great value in the treatment of subjective troubles such as insomnia, fighting dreams, etc."

Myers¹⁶ reports that in twenty-three cases he had apparently complete cures in 26 per cent., and distinct

improvement in 26 per cent. He failed to hypnotize 35 per cent., and found no improvement after hypnosis in 13 per cent. He says that it "invariably proved of great assistance toward recovery." Eder²³ found that out of seventy-eight patients only three could not be hypnotized at the first attempt, and says that "hypnotism has been most successfully applied in the treatment of our soldiers." Buzzard⁵ sums up the subject by saying:

My experience leads me to believe that any form of suggestion, whether applied under normal conditions or under the influence of anesthetics or hypnosis, may be successful; but the success depends first of all on the willingness of the patient to recover, and secondly on the adequacy of the suggestive stimulation.

Strong suggestion in the excitement stage of ether anesthesia has been tried, and has been successful in certain cases of mutism and loss of hearing.²⁴ O'Malley²⁵ has been very successful in his cases of aphonia and deafness by treatment with suggestion and reflex excitation.

The second principle of treatment outlined by Adrian and Yealland is reeducation. Under the heading of reeducation they include the method of simple persuasion, in which the patient is convinced by logical argument that his condition is not so serious as he supposes. However, it is not easy to convince a patient that his trouble is purely mental when he has physical symptoms and he naturally looks for a cure by physical means. Electricity is the best and the most mysterious to the layman of the physical means which we have at our command.

While reeducation by physical means is a valuable adjunct to treatment, occupation plays a very important part. Drills and physical exercises should be replaced by productive occupations as soon as possible. Those which are nonproductive should be avoided. All occupations, and especially those carried on by patients seriously incapacitated, should be regarded merely as steps in the process of their education. Constantly more difficult tasks should be assigned as a means toward the restoration of the lost or impaired function.

The third form of treatment is by discipline. Isolation is often used. It may supply "the needful stimulus to recovery by making the patient's illness a dreary and unprofitable business, instead of a source of pride and satisfaction. For this reason it is extremely useful in cases of functional tremors and pseudochorea, where the patient becomes quiet as soon as he is deprived of his audience."¹²

The details of the treatment of various symptoms as carried out by Adrian and Yealland cannot be gone into. The essential elements consist in a very brief suggestive period followed by rapid reeducation. The self-confidence of the physician, the faith of the patient, and the rapidity of operation are all important factors in the method of treatment.

Other methods of treatment consist in the emphasis being placed on the general condition of the patient. This is Mott's method of procedure, and it certainly has been very successful in his hands. He³ says, "Only common sense and interest in the comfort, welfare, and amusement of these neurotic patients are necessary for their recovery." He lays special emphasis

23. Eder: *Lancet*, London, 1916, 2, 264.

24. Dawson: *Lancet*, London, 1916, 1, 463. Proctor: *Ibid.*, 1915, 2, 977.

25. O'Malley: *Lancet*, London, 1916, 1, 1080.

22. Wiltshire: *Lancet*, London, 1916, 1, 1207.

on the hospital and its environment. At his beautiful institution outside of London, he has:

Light airy wards, and day rooms for meals and recreation, plenty of single rooms for the isolation of cases that are troubled with noises or require special attention; and especially valuable are the baths, so that every soldier can get a warm or cold spray bath every day. The warm baths, and especially the continuous warm baths, are especially valuable for promoting the action of the skin, of relaxing the tired muscles, and by the soothing influences helping to induce sleep, so that less hypnotics are required to be employed.

In these ideal surroundings the patients are usually left to adjust themselves.

When indicated, mild suggestive and persuasive measures are used, as in the case of amnesia partly quoted. The story continues as follows:

We heard from his father that he was a good musician, and I said to him, "G—, I hear you are a good musician," and I asked him if he could play the piano or sing; there was the same wondering, bewildered look, and he muttered something which was to the effect that he could not sing or play. Three days later I said, "Come, you can whistle 'God Save the King.'" He took no notice, but upon pressing him, he looked up and a glint appeared in his eyes, and he said "You start me." I whistled the first bar; he took it up and whistled it admirably. I then asked him to whistle "Tipperary," but he could not do it till I started him, and the same with several other tunes, but once started, he had no difficulty, and I recognized from the admirable intonation that he was, as his father described him, an excellent musician. I could not, however, that day get him to start upon his own initiative any one of the tunes he had whistled. The next visit, three days later, I observed that his expression had changed. He smiled when I spoke to him, and I recognized clear evidence of a mind that had partly found itself. He could not whistle by himself any of the tunes I had previously started him on when I called for them. [He relearned to play the piano by first having his finger held on the keys and a melody played.] The next time I came, he was able to play any music set before him. His associative memory and recollection of music were in advance of other associative memories. Thus, eight months after he had recovered his musical memory, he had very imperfectly recovered his memory of elementary facts regarding his profession as a land surveyor, and there was still a tendency to a vacant, mindless expression and prolonged reaction time as shown by delay and slowness in responding to questions, as if there were a difficulty in linking up the necessary associations.

Mott reports that about thirty-five cases of mutism have come under his observation, with recovery in all. Some of the recoveries take place under most amusing circumstances:

In one case the patient "was sitting in his wheeled-chair playing baseball, at which he was quite good, when a runner overturned him; the sudden emotional shock and surprise made him exclaim aloud, and since then he has quite recovered speech." Strong faradic stimulation to the larynx in this patient had not resulted in phonation. Another patient "was in a punt and it was turned over, and he was capsized into the water, which made him shout out. Practically, he had been mute for more than eight months. He often shouted words in his sleep about trench warfare, so he must have had dreams but forgot them." This patient under the strong suggestion of removal of adenoids did not speak. In regard to a third patient, the following is told: "His fellow soldiers thought he ought to hear and speak, and they adopted energetic measures to make him shout out for help. Two of them leathered him with a slipper and then nearly throttled him. He struggled and shouted 'Stop it.'"

One dreamed he was falling over a cliff, shouted out, and recovered his speech. A deaf-mute was heard to speak in

his sleep. He was told of it by a comrade. He said, "I don't believe it."

Mott's summary of treatment is as follows:

Be cheerful and look cheerful is the note that should ever be sounded to these functional cases. Sympathy should not be misplaced, although it should be shown to all these poor fellows who have a fixed idea of never recovering; it is not their fault, it is a real thing to them, and no one could be more grateful than these cases of functional nervous disability for cheery words. I use many of these cases that have recovered as object-lessons. I do not find hypnosis or psychoanalysis necessary or even desirable."

Forsyth¹¹ thus outlines his treatment:

The only treatment during the acute stage comprises three items—physical rest in bed, mental quiet, and good food. A private room is best. "Noises of all kinds, indoor and out, are borne with intolerance and are harmful, especially if they are unexpected and even remotely recall the dreaded shell explosions." At first the patients should be left to themselves, without being disturbed by the taking of medical histories or conversation. "They must expect to pass restless nights with piercingly vivid dreams, for which even hypnotics are only palliative. Those with the mildest symptoms can safely be allowed to get up within a few days, gradually increasing this exertion, until perhaps in a week or a fortnight they can get away to the quiet of the country or the seaside; and in another six weeks they will probably be able, not indeed to return to the front, but to take up light duties at home."

Most patients need bed for three to four weeks or longer, followed by two or three months of quiet living. "Throughout the greater part of convalescence any indiscretion in the way of mental or physical exertion beyond the narrow margin of the patient's endurance at the time seems regularly to entail a setback out of all proportion to the extra effort."

The symptoms of depression of spirits, listlessness, taciturnity, desire for solitude, lack of confidence, poor appetite and sleeplessness are "best and most quickly relieved when the patient has been induced to talk freely of what is on his mind, the opportunity at the same time being taken to present his facts to him in their true light, together with the additional information he needs to form a just opinion of his conduct and to rehabilitate himself in his own esteem." Forsyth looks at the neurotic symptoms as in a case of everyday neurosis, a problem dealing with "the psychical development of the patient since childhood; and the further treatment must follow psychanalytical lines." A patient who has not been able to regain his self-control after three or four months is in need of extraneous help, that is, psychotherapy.

Rows²⁶ treatment is along nonradical lines. He says that the patient's difficulty lies chiefly in the fact that:

He has little or no insight into the nature and mode of origin of his mental illness. This insight can be provided by explaining to him in plain language the mechanism of simple mental processes, by enabling him to understand that every incident is accompanied by its own special emotional state and that this emotional state can be reawakened by the revival of the incident in memory. The patient will thus be led to see that it has been no gross disease and no supernatural agency which has disturbed him; he will be able to recognize the relation of cause and effect in the origin and development of his illness. When this relation is appreciated, both the patient and the physician will begin to realize that they have some ground in common. The physician should

26. Rows: Brit. Med. Jour., 1916, 1, 441.

be prepared to give at least an hour for an interview, and in most instances several interviews will be necessary.

The value of psychoanalysis as a form of treatment has caused much controversy in England. Adrian and Yealland¹² believe it to be very valuable as a form of treatment for the state of mind of the patient which has allowed a fixed idea to develop. The fixed idea itself that gives rise to the functional symptom or paralysis, loss of speech, etc., is best treated by suggestion, but at the basis of this is a state of mind that will not vanish by these methods. They say that the patient minus his symptoms "will always be liable to develop hysterical troubles in moments of emotional stress and exhaustion, just as a man with a malformed chest will be liable to attacks of bronchitis." This is borne out by the number of patients returned from the front with a remission of symptoms after apparent recovery. Psychoanalysis, in their opinion, will "cure not only the hysterical symptoms but also the hysterical mentality." If the repressed desire is "unearthed and explained to the patient, the repressed conflict will vanish, and with it not only the hysterical symptom but also the state of mind which made this symptom possible." Practically it takes too long a period to use psychoanalysis on the average shell-shock patient, and it can be used only in special hospitals. One must therefore treat symptoms during the war and leave this longer method for more leisure moments.

Eder²³ also thinks psychoanalysis valuable but not usually expedient in war time. He, however, uses it "for purposes of diagnosis or with a view to helpful suggestion in most cases."

One of the most important problems in the early part of 1915 was the question of sending the apparently cured patients back to the front. Those that went back proved useless as soldiers in front-line trench duty, for they broke down again either on the way to France or soon after reaching the trenches. Forsyth's views are that "with an increasing experience of these cases a very strong doubt rises as to the judiciousness of sending any cases of nerve-shock, with few exceptions, back to the firing line." If the patient knows he will not return to trench warfare, he makes a more rapid recovery. Forsyth thinks that these patients should be kept in England on light duty because of the following points:

1. Their untrustworthy memory (one of the last symptoms to disappear), by leading them to forget to carry out orders or to forget when they have carried them out, may entail the miscarriage of plans.
2. Their example may infect those around them with irresolution or even worse.
3. When the strain becomes severe, they will almost certainly break down a second time.

The hospital building and its surroundings are important in the treatment of war neurosis. The English War Office has arranged two exceptionally fine hospitals for officers,²⁷ one on a quiet street in London, of thirty-three plain bedrooms with gray walls, without pictures or ornaments. Here the patients are received from France and given from three to four weeks of a modified Weir-Mitchell treatment of absolute rest in bed in quiet surroundings. When somewhat recovered, they are removed to a large country house, where they remain for six weeks or longer and receive the treatment that has been outlined above.

For the soldiers a complete series of hospitals has been inaugurated.²⁸ There are two "clearing hospitals" of 500 beds for all neurologic patients, including those with functional paralysis, disturbances of speech, amnesia, mutism, deafness, amblyopia, motor agitations, nervous debility, mild neurasthenia, simple mental confusion, anxiety psychoneurosis, simple mental depression, etc. The treatment here consists of rest, proper feeding, massage, electricity, baths, psychotherapy, simple suggestion and occasional hypnosis. From these two hospitals about 40 per cent. return to light duty, 20 per cent. are invalided, and 20 per cent. are transferred to special institutions.

Of these special institutions there are two of about 550 beds, mostly with single isolated rooms. No new patients are sent here, but only those transferred from the neurologic hospitals. Here are treated severe neurasthenia, mild psychoses, profound amnesia, epilepsy and mild primary dementia. The treatment consists of rest, proper feeding, recreation and massage. Psychoanalysis is used in selected cases. About 40 per cent. of these patients return to light duty.

There are also two hospitals of 700 beds for certifiable mental patients. From 10 to 15 per cent. of these return to light duty.

PROPHYLAXIS

What can the Medical Corps of the United States Army do toward the prevention of shell-shock? Obviously it must be checked at the recruiting station or in the cantonment camps before the men leave for France. There ought to be no question in the minds of the medical officers as to the advisability of checking this condition at the source, for no one who has seen the results of modern warfare on the unstable mind can do otherwise than urge such measures with his utmost vigor. It becomes the duty of each medical examiner to weed out from the recruits such men as are liable to shell-shock. By so doing, an enormously important advance will be made in our army, as judged by the experiences of the other armies of the Allies.

We have been strongly advised by Osler to check the enlistment of the neurasthenic. It is obviously difficult to pick him from the crowd, "as he may come up in good form" and be eager to go overseas. But it is not so difficult with the mentally deficient, the "queer stick," the "boob," and the butt of the practical jokers. He is soon observed and noted by both officers and men, and if he is singled out and talked with for five or ten minutes one ought to have no difficulty in deciding his fitness for active trench warfare. One ought also to look especially carefully into the past history of the depressed, the man who worries unnecessarily, the self-conscious, the shy, the high-strung, excitable man, the violent-tempered, the nervous, the timorous, the easily frightened, or the neurotic individual. Any or all of them may make poor first-line-trench soldiers. The task is a difficult one, but that in itself should not prevent our trying. What an advantage it would be to our army officers, and what a saving of life it would mean to our men, if the shell-shock patients could be eliminated from our forces that will fight overseas! Such utopia is probably impossible, but I feel confident that careful weeding out of the mentally unstable will certainly greatly reduce the numbers of shell-shock cases that are bound to appear in our casualty lists.

27. *Lancet*, London, 1915, 2, 1155.

28. *Turner: Lancet*, London, 1916, 1, 1073.

THE WILD RATS OF THE SOUTHERN
STATES AS CARRIERS OF SPIRO-
CHAETA ICTEROHEMORRHAGIAE *

JAMES W. JOBBLING, M.D.

AND

A. A. EGGSTEIN, M.D.

NASHVILLE, TENN.

In order to preserve the health of the large number of men now being trained in the various cantonments, it is essential that we recognize the sources of infections to which they may be subjected. This applies particularly to infectious jaundice, a disease with which many of the medical officers and civilian physicians are not familiar.

Infectious jaundice is not a new disease, as Cleg-horn reported an epidemic in Minorca in 1745, and Larry, while he was with Napoleon in Egypt, in 1800, observed an epidemic near Cairo. In the Civil War, 22,509 cases were reported among the Northern troops, with 161 deaths. Epidemics were also observed among the Bavarian troops in the France-German War in 1870, and the disease has been epidemic for many years in Japan. A small epidemic was reported in North Carolina in 1900, and Barker described a series of cases which he observed in the city jail in Baltimore, in 1909. The case which we observed here in Nashville was in the service of Dr. O. N. Bryan, in the Vanderbilt University Hospital, and is the first so far as we can discover that has been reported from this section of the United States.

In view of the trench training that is now being given to the soldiers at the various Southern camps and the possibility of their being subjected to infection from the rats that frequently infest these places, we thought it important to determine whether or not the wild rats of the South harbor the *Spirochaeta icterohemorrhagiae*. The present report deals with the results of this investigation.

The etiology of infectious jaundice has been attributed to many bacteria, but none of these has been shown to bear a definite relation to the disease. In 1914, Inada, Ido and their associates¹ succeeded in transmitting the infection to guinea-pigs by intraperitoneal injections of blood taken from patients suffering from the disease, and noted the presence of large numbers of spirochetes in the blood and in the organs of these animals. Later, the same observers found a similar spirochete, which they termed *Spirochaeta icterohemorrhagiae*, in the blood and organs of human patients dying from the disease. During their investigations, made to determine the source of the infection, they found that wild rats harbor the *Spirochaeta icterohemorrhagiae*, and that the majority of persons affected were those whose occupation brought them into more or less intimate contact with places infested with these animals. The work of the Japanese observers has been confirmed in various parts of Europe, particularly in the war zone, and Noguchi,² in this country, found that the spirochetes were present in the wild rats in New York City.

With the object of determining whether or not the wild rats of this locality harbor the *Spirochaeta ictero-*

hemorrhagiae, we examined a large number caught in different places in Nashville.

The rats were alive when brought to the laboratory. They were killed with chloroform, the hair was moistened with alcohol, and the kidneys were removed with precautions to insure asepsis. One kidney from each animal was made into an emulsion in saline solution and injected into the peritoneal cavity of a guinea-pig. The remaining kidney was prepared for microscopic examination. Levaditi's method was used to demonstrate the spirochetes in the organs.

More than a hundred rats were examined, and of these at least 10 per cent. harbored the *Spirochaeta icterohemorrhagiae*. These rats were obtained from different parts of the city, and so far as can be determined the various localities have given about the same proportion of infected animals.

The guinea-pigs that developed the disease usually died from the twelfth to the fourteenth day following inoculation. Jaundice of the sclera and of the mucous membranes became very marked before death, and postmortem examination revealed a yellowish discoloration of the subcutaneous tissues and of nearly all the internal organs. In addition, there were many small hemorrhages scattered through the subcutaneous tissues, and particularly in the inguinal and axillary regions. The spirochetes were demonstrated in the urine with the India ink method, and were readily found in the kidneys from the infected rats and in those from the inoculated guinea-pigs that developed the disease. These sections were stained by Levaditi's method. The virulence of the organism increases rather rapidly, as shown by the short duration of the disease when material from infected guinea-pigs is injected into others. These animals die in about half the time required for those inoculated direct from the rats.

From the foregoing it will be seen that about 10 per cent. of the wild rats of this community harbor the parasite causing hemorrhagic icterus, and as Noguchi has shown that the rats about New York City are also infected, it is probable that similar conditions apply in many sections of this country. The importance of these observations becomes more evident when we consider the trench training that is now being given to American soldiers in the various camps. Here we have duplicated in many ways the conditions that make possible the large number of cases now being reported in France and Italy, and our demonstration that the rats of the South harbor the parasites of this disease makes it obvious that all possible means should be used in the camps to eradicate these pests. It has been shown that the virulence of this organism for guinea-pigs increases rapidly when transmitted through several series of these animals, and we must not forget that the same thing may occur when the organism becomes acclimated to human beings. This would seem to explain the high mortality of 38 per cent. noted in Japan, where the disease is more prevalent; while in Europe, where fewer cases have been observed, the mortality is much less.

Insurance for Parturients.—The Italian government, it is announced, has arranged a system of insurance for parturients in wage-earning families. At childbirth each mother receives 40 lire (\$8) from a fund to which for each person insured the state gives 12 lire annually, the employer 1.25 lire and the insured 1 lire.

* From the Departments of Experimental Medicine and Pathology, Vanderbilt University, Medical Department.

1. Inada, Ido, et al.: The Etiology, Mode of Infection and Specific Therapy of Weil's Disease (Spirochetosis Icterohemorrhagica), Jour. Exper. Med., 1916, 23, 377.

2. Noguchi: Hideyo: Jour. Exper. Med., 1917, 25, 755.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address "Medic, Chicago"

Subscription price Five dollars per annum in advance

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SATURDAY, NOVEMBER 24, 1917

THE HEART'S ACTIVITIES

The movements of the mammalian heart are so rapid and the performances of its various parts follow each other in such rapid succession that they call for delicate methods of registration and study. Many of our readers can easily recall the variety of recording apparatus that furnished the data in the early work of Chauveau and Marey, and in the investigations of many of their successors. Recording levers and tambours played a conspicuous part. Gradually they were made lighter and more delicate; yet such mechanical devices left much to be desired.

The introduction of electrocardiography has marked a decided step in advance. The real starting point was perhaps represented by the investigations of Burdon-Sanderson and Page in 1878 with the capillary electrometer on the tortoise heart. Waller in London initiated this mode of investigation on man a few years later; but, as Lewis¹ remarks, it was in the present century that Einthoven, in Holland, perfected an instrument which, on account of the facility of its working and the precision of its movements, has enabled us to unveil much that was formerly mysterious. This instrument is the string galvanometer, and its construction must rank as an outstanding milestone in the study of the questions that we are considering. The electric current and the sensitive photographic plate have contributed in an unanticipated way to the solution of many difficult problems in the physiology and pathology of the heart.

What are some of the acquisitions to science derived through these studies, particularly as they have been combined with elaborate investigations of the minute morphology of the heart? Lewis, himself a skilled experimenter in this field, offers this explanation for the development of two sets of chambers in the heart: an upper one "frail and thin-walled"; the lower "sturdy and massive." The function of the auricle, he concludes, is not to fill the ventricle, as is so commonly taught in elementary classes. The blood pumped from auricle to ventricle at the end of the heart's diastole is only a fraction of its full content. The function of

the auricle is to save the veins from overdistention. During a third of the ventricular cycle, during the period when the ventricle is pouring blood into the body, the circulation is completely obstructed at the auriculoventricular orifices. Yet the blood flow in the veins continues; the flow goes on into the expanding auricles. The mechanical function of the auricle is that of a reservoir, to catch and hold the content of the stream when a dam is thrown across it. It wants little strength for this task; its walls must stretch easily; they have to pump against a low resistance; the muscle layer is therefore thin.

The spread of the contraction wave from the mouth of the great veins to the auricular mass as a whole, Lewis continues, is expedited by the central position of the node from which the wave starts, by the architecture of the muscle bands that radiate from it in all directions, and, lastly, by the relatively high rate of conduction that auricular muscle possesses.

In traveling through the auriculoventricular node, the contraction wave meets a long delay in its progress while the auricle is emptying itself. Thereupon it spreads to the bundle, a structure of fibers endowed with conducting fibers of the highest order, with the result that all parts of both ventricles are thrown into contraction with the closest approach to simultaneity. Hence, too, the mechanical advantage of the ventricle as a driving power.

THE EFFECT OF RANK ON THE DUTIES AND RESPONSIBILITIES OF THE MEDICAL OFFICER

The importance of the medical officer in the armies engaged in war, as indicated by the rank and authority given him, is less highly esteemed in this country than in any other, including both our allies and our enemies. Medicine has accomplished great triumphs in the armies of Europe. Under unprecedentedly difficult conditions, sanitation has been so ably maintained that both morbidity and mortality from the infectious diseases are less today in the military than in the civilian population of the warring nations. In the British Army, 80 per cent. of the wounded have been returned to duty. The number of hospitals in France reaches into the hundreds, and for the most part their equipment is excellent. Scientific laboratories are carrying on practical research investigations. Chemists are finding antidotes for the multitudinous poisonous gases turned on by the Germans, and are discovering new compounds to be used offensively. Within twenty-four hours after the first discharge of chlorin by the Germans, not only had the nature of the gas been determined and an antidote found, but protective masks were being made; and within ten days the Germans were being treated with the more deadly phosgen. Indeed, scientific studies made at the front saved the armies of Great Britain and France from complete

1. Lewis, Thomas: Upon the Motion of the Mammalian Heart, Croonian Lecture, Proc. Roy. Soc., B, 1917, 89, 560.

annihilation. Rehabilitation hospitals in which the badly injured are supplied with artificial limbs and other devices are working successfully and converting the apparently hopelessly maimed into productive, self-supporting citizens. In fact, these institutions constitute one of the great triumphs of military and conservative medicine. Every wounded and sick soldier can be instantly located and his condition reported to his friends. In this way the discontent arising from anxious waiting for news is avoided. There has been no breakdown in the medical service in the great armies of Europe, as has been the case so often in the past and with us in 1898. When a son is killed in battle, parents seek and find consolation in the proud knowledge that he has died fighting for his home and his country; but when he is wounded or sick and dies from neglect, there is no consolation, and in the most patriotic soul a bitterness against those in authority develops.

All this and much more might be said concerning the efficiency of the medical service of our chief allies. What is the explanation of its efficiency? The answer is that the medical officer is given support backed by rank and authority. A line officer in the British Army hesitates a long while before he rejects the advice of his medical colleague, because that colleague has rank and authority commensurate in some degree at least with his own, and is recognized as his superior in the special line of work. Compare this with the record of the congressional inquiry into the conduct of the War Department in the war with Spain, when, according to his own testimony, the commanding officer at Chickamauga in 1898 ostentatiously drank from a well condemned by his medical officer, while his hospitals were filled with typhoid fever patients. We have gone into this war with the medical officer invested with no more authority than he had in 1898. Is it unreasonable to ask if we are to repeat the experiences of that time? However, we are told that the line officer of today is much wiser than his predecessor of twenty years ago, and since he makes this statement himself, we must give it credence. We certainly hope that it is true. It is the duty of the medical profession to protest against this condition. The medical men of this country are not slackers, as is shown by the fact that more than one seventh of their total number have voluntarily offered their services to their country, notwithstanding the failure of those in authority to give the reasonable recognition asked. We have asked for increased authority, and in the Army this can be secured only by high rank, because when a medical man goes into the service the government puts its stamp on him just as it does on the coin of the realm; and 30 cents will not buy a dollar's worth of anything. So far the protest has fallen on deaf ears.

Medical men will play the game and do their duty, whatever may be the verdict in this matter; but it

should be clearly understood that they are going into the game under a heavy handicap. They will do the best they can; but if discontent should arise from poor or poorly prepared rations, if respiratory diseases prevail as the result of overcrowding, if pneumonia becomes widespread because barracks are not heated and soldiers are not warmly clothed and amply provided with blankets — if all these things happen, the medical officer will continue to do the best he can under the conditions, but he will not be responsible for the conditions.

PULMONARY VENTILATION AND THE CARBON DIOXID OF THE BLOOD

The renewal of the air in the lungs, with which the blood exchanges its gaseous constituents, is brought about by muscular movements, which are under the control of the nervous system. When it was discovered that the functioning of this regulatory mechanism was in large part dependent on the chemical composition of the blood reaching the respiratory center, the natural tendency was to ascribe the stimulation of the latter to a fall in the oxygen tension in the circulatory system. It is now understood, however, that until the oxygen tension falls very decidedly, no noteworthy change in the ventilation of the lungs takes place so long as an increase of carbon dioxide tension is prevented. The classic investigation of Haldane and Priestley, reported in 1905, has demonstrated in a convincing way that the total volume of air sent in and out of the lungs in a unit of time by the respiratory movements is regulated by the carbon dioxide tension of arterial blood, which is the same as that of the alveolar air of the lungs. Subsequently, Haldane and his co-workers showed, in 1913, that the alveolar oxygen pressure can be varied within wide limits without sensibly affecting the excitability of the respiratory center to carbon dioxide.¹

Whether certain types of clinical dyspnea are due, primarily, to retained carbonic acid, rather than to other acids formed in metabolism, has frequently been asked by those engaged in the study of acidosis in its relation to pathologic symptoms. The difficulties in answering this question have been due in part to the lack of suitable methods for the detection of very small deviations from the normal in the composition of the blood. Indirect methods, such as the determination of the alveolar carbon dioxide and the total carbonate concentration of the blood, have become popular in the study of the interrelations between the composition of the blood and the respiratory exchange. In the physiologic laboratory of the Western Reserve University School of Medicine, Cleveland, Scott² has noted in

1. Campbell, J. M. H.; Douglas, C. G.; Haldane, J. S., and Hobson, F. G.: The Response of the Respiratory Center to Carbon Dioxide, Oxygen and Hydrogen Ion Concentration, *Jour. Physiol.*, 1913, **46**, 301.

2. Scott, R. W.: The Effect of the Accumulation of Carbon Dioxide on the Tidal Air and on the H-Ion Concentration of the Arterial Blood in the Decerebrate Cat, *Am. Jour. Physiol.*, 1917, **44**, 196.

animals that, when an actual increase in the hydrogen ion concentration of the blood is due to acids other than carbon dioxide, the bicarbonate content of the blood is reduced below normal. Evidence is presented to indicate that when the blood bicarbonate is diminished, there is an actual increase in the hydrogen ion concentration of the blood. When the increase in hydrogen ion concentration is due, on the other hand, to a retention of carbon dioxide, an elevation in the bicarbonate of the arterial blood may result.

Scott finds that when the inspired carbon dioxide has reached about 4 per cent., an increase in the hydrogen ion concentration of the arterial blood becomes detectable by colorimetric methods. With the oxygen in the inspired air varying between 13.15 and 30 per cent., like percentages of carbon dioxide produce the same elevation in the hydrogen ion concentration of the blood. It is interesting to learn that the respiratory center is stimulated to increased pulmonary ventilation by an acid increment in the blood far too small to be demonstrable by the most refined methods of analysis at present available. For example, an increase of less than 2 per cent. of carbon dioxide in the inspired air causes a conspicuous acceleration of pulmonary ventilation at a time when no change in hydrogen ion concentration can actually be detected in the arterial blood by the conventional methods. These facts furnish an interesting illustration of the remarkable facility with which the chemical regulations in the body are brought about; and they indicate how delicately the acid-base equilibrium of the body is balanced.

THE MEDICAL PROFESSION AND THE SELECTIVE SERVICE

The newspapers have acquainted our readers with the important facts concerning the next call under the selective service law. There is one factor of the new regulations in which the medical profession is especially interested—the medical advisory boards. The methods of determining the physical fitness under the old regulations were not altogether satisfactory; the new regulations are intended to correct them. Under the new regulations the preliminary examination is still to be made by the examining physician; but

“if the examining physician is in doubt as to whether the registrant is to be held for military service, or if the examining physician finds the registrant to be qualified for military service and either the Government Appeal Agent, the registrant, or two members of the Local Board, are dissatisfied with such finding, such examining physician, Government Appeal Agent, members of the Local Board, or registrant may apply to the Local Board to have the registrant sent before the nearest Medical Advisory Board (provided in Sections 29 and 44 hereof) for an exhaustive reexamination.”

Under the old regulations, such appeal would go direct to the district appeal board, and the physician of the district board would make the second examination. In many instances this physician associated with him-

self experts to assist him in making these examinations. To all intents and purposes the new regulations provide just such a group of men as this, but not connected with the appeal board. The doubtful cases, instead of being referred directly to the appeal board, as heretofore, will be referred to this medical advisory board. A reference to the report of the committee appointed by the American Medical Association, which appears elsewhere in this issue,¹ gives the principal points in connection with the establishment of these boards.

In the foreword to the publication of the new regulations President Wilson says: “I ask the doctors of the country to identify themselves with the medical advisory boards which are to be constituted in the various districts throughout the United States for the purpose of making a systematic physical examination of the registrants.” As will be noted in the report above referred to, a physician has been appointed in each state on whom will rest the main responsibility for the selection of the personnel that shall constitute these boards. The responsibility that rests on these men is very great. But it does not rest on these men alone; it rests on the entire medical profession. The President has called on the members of the medical profession to assist in this work. The Provost Marshal General has accepted the advice and assistance of those representing the medical profession. Those physicians called on by the state adviser to assist him in making the selection of those who shall compose the medical advisory boards should feel it a duty to respond by giving their best advice as to the men who are qualified for this work. Let us not forget that while the governors will make the nominations, these medical advisers and those who cooperate with them will be responsible for the success or failure of this plan of passing on the physical fitness of the young men of the country for military service.

A SURGICAL DRESSING—SPHAGNUM MOSS

Sphagnum moss, from the Greek *σπάγνος*, moss, is a term now used to designate a single genus of about forty species of moss. This particular genus has also been known as muskeg moss or peat moss, the latter being the same substance in a semidecayed condition. It grows abundantly in England, in parts of Canada, in the United States and in Germany. At one time it was used internally with a reputed effect in menstrual disorders. Cathcart² quotes I. B. Balfour's description of the plant as follows:

Its smooth stem is densely beset with leaves, and emits a branch at every fourth leaf; often these branches are turned downward, and apply themselves more or less closely to the stem. At the periphery of the stem are one or more layers of fine colorless chambers, known as capillary cells, whose

1. Association News, this issue, p. 1807.

2. Cathcart, C. W.: Cheap Absorbent Dressing for the Wounded, Brit. Med. Jour., 1915, 2, 137.

thin walls have big perforations, and are strengthened against collapse by a thickening band running spirally or in rings around the inside. The leaf is formed of a single layer of chambers or cells. Some of them, narrow and green, form a network of feeding cells, in the meshes of which are larger, broader, colorless cells, perforated and thickened after the fashion of those of the peripheral layers of the stem. The whole construction results in a system of delicate capillary tubes, having the effect of a very fine sponge.

The only expense connected with the use of the moss, aside from preparing the dressings, is the gathering of the material; this may be done by school-children, Boy Scouts and others whose services are not otherwise utilized in the war. Before and after gathering, specimens may be submitted to experts who may determine whether the moss is of the proper variety. The upper layers of the moss are pulled up by the handful, and wrung out. The moss is then slowly dried in the open air. The dry moss, containing as it does large cells with elastic walls, is capable of absorbing and retaining liquid better than cotton, which depends on capillary attraction between the fibers. According to Porter³ of McGill University, good specimens of dried sphagnum moss will absorb from twenty to twenty-two times their own weight of water before they begin to drip. Average moss will absorb at least twelve times its own weight, whereas absorbent cotton does not absorb more than six times its own weight of water. In the utilization of moss surgically, the dried moss is packed loosely into various sized muslin bags, which are afterward carefully sterilized either by heat or by a chemical, such as mercuric chlorid.⁴ Cathcart⁵ suggests that steam, whether by high or by low pressure, hardens the walls of the minute tubules of the moss, and inhibits, though it does not destroy, the absorbing power. When fluid, especially warm fluid, reaches the moss, it is again softened, and absorption takes place, but somewhat slowly. It is suggested that sterilized pads of sphagnum should be wrung out of antiseptic lotion just before use, in which case the full power of absorption is restored. As an antiseptic solution, Cathcart recommends 0.25 per cent. of mercuric chlorid. While the utilization of sphagnum moss as a wound dressing is not new, having been suggested as early as 1882, its new method of application and extensive employment as a surgical dressing would certainly not have attracted the attention of surgeons unless the shortage of absorbent cotton occasioned by a greater demand and less available room for shipment had stimulated the demand for such a procedure.

The utilization of this substance is significant of one phase of the way in which war stimulates inventiveness and original thinking. The truth of the old saying that "necessity is the mother of invention" is

particularly noticeable in times of such great emergency as now stimulate the thought of scientists the world over. It was the emergency of the war which has caused the extraordinary recent developments in the chemical industry of our own country, which has stimulated certain American universities to turn their attention to the growing of digitalis for medicinal purposes, and which has induced the introduction of foods hitherto slightly used, popularized them and caused them to become a part of ordinary diet.

IS UREA FORMED IN THE MUSCLES?

Urea is the conspicuous end-product of nitrogenous metabolism in the higher organisms. The theories to account for its origin have undergone successive modifications from decade to decade in harmony with the latest chemical evidence available at successive intervals. Thus the hypotheses of the genesis of urea through oxidative synthesis and in other ways directly from proteins have gradually been abandoned. At the present moment, in the light of what is known respecting the rôle of amino-acids in the disintegration of protein and its metabolism in the body, urea is no longer regarded as a product of the entire molecule. The nitrogenous groups of the amino-acids are split off from the rest of these complexes, perhaps by enzymatic deamination. From these nitrogenous fragments, urea arises.

With respect to the place or tissues in which this reaction proceeds, opinion has likewise been vacillating. Of late there has been a tendency to assign the function of urea formation to all cells. As a recent writer has expressed it, the basis for the theory that urea formation is a function of body cells in general rather than of liver cells in particular is, of course, founded on the idea that the metabolism of the individual cell is complete in itself. Thus, in case of muscle cells, it is well known that they contain several proteolytic enzymes which actively break down the cell proteins with the production of amino-acids and ammonia, if not urea. From a quantitative standpoint the greatest abundance of active cells of a specific sort in the body is to be found in the muscular tissue which makes up so large a part of the entire mass. The idea that urea formation was centered in this great bulk of active cellular tissue was favored years ago, only to be succeeded by a preference for the liver, the largest single glandular organ of the body, as the seat of this final activity in the degradation of proteins.

There is, indeed, much weighty evidence for the importance of the liver in urea formation, though the facts by no means indicate that this organ has an exclusive function in this direction. It is conceivable that successive stages in amino-acid disintegration and reconstruction leading up to the stage of urea may go on in different organs; for example, it is not excluded

3. Porter, J. B.: Sphagnum Moss for Use as a Surgical Dressing: Its Collection, Preparation and Other Details, *Canad. Med. Assn. Jour.*, 1917, 7, 201.

4. London Letter, *THE JOURNAL A. M. A.*, Oct. 7, 1916, p. 1105.

5. Cathcart, C. W.: *Lancet*, London, 1916, 1, 820.

that ammonia is liberated in the muscle or other body cells and carried to the liver to undergo there a final synthesis to urea. One step in the exclusion of conflicting hypotheses lies in direct observations on the possibility of urea formation by self-contained enzymes in muscle. Such an investigation has been undertaken by Hoagland and Mansfield¹ in the Bureau of Animal Industry at Washington. The results of their studies of the products of autolytic change in aseptically removed portions of muscle tend to show, as they themselves express it, that urea formation is not an important function of muscular tissue. In view of the well established fact that the liver plays an important part in the formation of urea in the body, they add, these findings lend support to the view that urea production is chiefly a function of that organ. In the light of current evidence they give added weight, though in a very indirect way, to the view of Van Slyke and his co-workers that the liver plays the chief part in the breakdown of the amino-acids, without denying to other tissues the possession of similar power of promoting metabolic change.

Current Comment

THE ARMY HOSPITALS OF FIFTY YEARS AGO

At the present time when every noteworthy contribution of modern medical science may be expected to be put to the test of usefulness in the plans of the Army medical organization, the task of meeting a great emergency successfully is almost certain to leave unfulfilled possibilities exposed to the ubiquitous critic. To those on whom devolves the responsibility for the major part of the effort of suddenly providing for the sanitary and medical needs of a vast group of fighting units it may be comforting, if not helpful, to learn something of the fire of criticism through which the United States Army has passed in former days in respect to its barracks, hygiene and hospitals. A notable instance has lately been described by Dr. Fielding H. Garrison² of the Surgeon-General's Office in a review of the scientific work of the late Dr. John Shaw Billings. In 1870 and 1875, Billings made two reports to the Surgeon-General which have become classic, as far as our military establishment is concerned. In a drastic criticism of the barracks and hospitals of "the best fed and worst housed army in the world," Billings described the pictures of United States Army hospitals in the report as "simply inserted as ingenious modes of 'how not to do it.'" There is vigorous opposition to the false economy which results in "a saving in boards and brick at the expense of the health of the soldier." Of more immediate interest today, however, is the substance of the constructive advice for improving the health and personal well-

being of the enlisted man. Garrison has thus summarized Billings' suggestions, given in 1875: Bath tubs and shower baths, abundant space and good ventilation in quarters, a ration at least 25 per cent. in excess of what is required, plenty of ice at southern posts, lime juice and baking powder for scouts, canned tomatoes when fresh vegetables are not available, are recommended as novelties; and it is especially urged that the chief cook at a post should be a permanent detail, in place of the custom at that time of changing company cooks every ten days; that schools for instruction of cooks should be established at recruiting stations, and that a manual of cookery, with dietetic tables and culinary directions for all climates and seasons should be prepared. The report concludes with timely observations on the ventilation, hygiene and avoidance of infection in the military hospitals. Today the "novelties" here recommended have become the "staples" of hospital routine; but there is an ever-recurring abundance of new problems that demand novel solutions, and perhaps some old defects that deserve exposure. To these a new generation of trained scientists and devoted men is giving its best intellectual efforts.

ADULTERATED IMPORTED DRUGS

In times of stress, it is often feared that our food and drug laws will not be vigorously enforced. It is gratifying, therefore, to note the regulatory announcements of the Department of Agriculture¹ concerning action against and detention of certain drug imports. A recent issue reports that examinations of samples of belladonna root, *Atropa belladonna* L., disclosed adulteration with roots of yellow dock, *Rumex crispus* L. Some importations of cantharides (Spanish flies), *Cantharis vesicatoria*, had been adulterated with "so-called Chinese blister flies belonging to a species of *Myiabras*." The department found cinchona barks offered for entry under names recognized in the U. S. Pharmacopeia, but deficient in alkaloids. A number of other less used drugs also were illegally labeled. Efficient government protection along these lines, especially during the war, is of benefit to the public, and is appreciated by the medical and pharmaceutical professions.

JERSEY VERSUS HOLSTEIN

The most striking differences between well selected dairy cattle with respect to their milk production are those attributable to the breed. It is literally true, of course, that beside breed and individuality, the period of lactation, the season of the year, feeding, care, and completeness of milking may affect the composition of the milk. Liberal feeding and exceptional care bring their reward in the form of an increased yield rather than a permanent change in the character or proportions of the ingredients of milk. We are not prepared to draw on ourselves the fire of the advocates—and they are in each case both enthusiastic and formidable—of the superiority of any of the well known

1. Hoagland, R., and Mansfield, C. M.: The Function of Muscular Tissue in Urea Formation, Jour. Biol. Chem., 1917, 31, 487.

2. Garrison, F. H.: The Scientific Work of Dr. John Shaw Billings, National Academy of Sciences, Biographical Memoirs, 1917, 8, 385.

1. Service and Regulatory Announcements, No. 21, U. S. Dept. Agric., Nov. 12, 1917.

breeds of dairy cattle by appearing as the champion of some rival breed. Both the Jerseys, at one extreme of the list, yielding milk containing nearly 15 per cent. of solids, including over 5 per cent. of fat, and the Holsteins, at the other extreme, with a more abundant supply of milk averaging only about 12 per cent. in solids and 3.5 per cent. in fat, have their champions for public favor. The average weight of a Jersey is from 800 to 900 pounds, and of a Holstein, 1,200 pounds. The comparison of large and small cows is thus involved. A person with judicial temperament and motives of strict economy might be inclined to estimate the cost of the important items relating to the milk production of each breed and thus form a judgment in the matter. Precisely this has recently been attempted at the Ohio Experiment Station¹ with results that seem, strange as it may appear on hasty consideration, to justify the propaganda of both breeds. In an exhaustive study of the economy of production of dairy cows from the feed consumed, it was found that the Holsteins, when the feed alone is considered, are able to produce milk more economically throughout the entire lactation period. The difference in economy of producing solids is not greatly in favor of either breed, although the Jerseys have a slight advantage. The Jerseys have a decided advantage, however, in the economy of producing fat. If the averages for each breed for the entire lactation period are used and the Jerseys are considered 100 per cent. efficient in producing milk, solids and fat from the digestible nutrients consumed, the Holsteins were 116.5 per cent. efficient in producing milk, 93.4 per cent. efficient in producing solids, and 74.5 per cent. efficient in producing fat. This indicates that the cows yielding high-testing milk produced solids and fats more economically than those producing low-testing milk, and also that the Jerseys gave in their product a larger return of digestible nutrients for each pound of digestible nutrients consumed than did the Holsteins. Where milk is sold by measure, that is, by the quart, regardless of quality differences, the volume is an important item. From this point of view it was found that the Jerseys consumed 163 pounds of dry matter and 106 pounds of digestible nutrients, and the Holsteins consumed 140 pounds of dry matter and 91 pounds of digestible nutrients for each hundred pounds of milk produced. It is not often that all parties to a controversy can find a morsel of satisfaction in the decision of the conflicting claims.

THE EFFECTS OF WAR ON MEDICAL RESEARCH

One of the significant effects of the war has been the turning of the attention of laboratory workers from some of the intricate, complex and wholly technical problems of research to those of immediate practical utilization and clinical bearing. These problems include efforts to secure new wound dressings; to discover serums or antitoxins to control the spread and the course of infections; to determine the causes

and to discover means of prevention and treatment of those little understood conditions peculiar to the war, such as shell-shock, trench fever, trench foot, etc., and finally, to improve the methods of treatment of the common surgical conditions particularly associated with modern warfare. It is difficult to estimate today precisely the value of the procedures that have been adopted or the theories that have been advanced. The claims made for many of them, in some cases associated with an unfortunate sensational publicity, undoubtedly cause those easily swayed to form a too optimistic opinion. The meritorious virtue of some of the remedies has been lost in the clap-trap or mystery that surrounds them. Usually the value seems to reside in some already well known substances or procedures. While it is not to be regretted that enthusiasm and praise should be attached to the work of those engaged in actual warfare, overenthusiasm and false values should not be allowed to influence the opinions of scientists in an estimation of the procedures associated with the medicine and surgery of the war.

SKIN DIPHTHERIA

At Richmond, Va.,¹ during September, October, November and December, 1916, skin lesions that were at all suggestive of diphtheric infection were swabbed, and cultures were made. Also there was a wholesale swabbing of sores of all sorts. Out of 191 swabs examined, thirty-four were positive for diphtheria. This represents 17 per cent. of positive cultures, as compared with 23 per cent. positive during the preceding year. Pure cultures were isolated in eleven cases, all from schoolchildren, no two of whom were in the same family, although several attended the same school. Virulence tests in seven cases were positive. Each culture was grown on broth for about a week at 37 C. (98.6 F.) and then injected subcutaneously into the abdomens of two guinea-pigs, one of which received antitoxin. In no instance were there serious after-effects in the animal given antitoxin.

1. Annual Report, Richmond, Va., Health Department, 1916, pp. 87, 94, 95.

For Prenatal Instruction.—The Department of Health of New York City has organized a special corps of nurses to instruct, advise and guide mothers during pregnancy in all matters pertaining to the health of themselves and their offspring and to aid in the reduction of the number of stillbirths. It is found that over 40 per cent. of the deaths of children under 1 year of age in New York City are due to congenital diseases; almost 37 per cent. occur during the first month, and three quarters of these during the first ten days. Eighty per cent. of all deaths occurring during the first months of life, and 90 per cent. of deaths during the first ten days of life, are due to congenital diseases, congenital deformities and malformations, inanition, marasmus, prematurity, accidents of labor, atelectasis, infection and hemorrhage of the cord, Winckel's disease, etc. The nurses arranged for are to be assigned to the infant welfare stations, and will be assisted in the prenatal work by the regular nurses of those stations. It is hoped that the physicians will avail themselves of the services of these nurses to the fullest extent.—*Weekly Bulletin*, New York City Department of Health.

1. Crady, R. I.: Economy of Production by Dairy Cows, Ohio Agric. Expt. Sta. Month. Bull., 1917, 2, 334.

Medical Mobilization and the War

TYPHOID VACCINE SUPPLIED BY ARMY
MEDICAL SCHOOL

Between April 1 and November 1, the Army Medical School Laboratory, Washington, D. C., shipped 8,843,047 cubic centimeters of typhoid and paratyphoid vaccine for use by the Army and Navy. Enough typhoid vaccine was shipped to vaccinate 1,051,604 men; enough of the paratyphoid "A" and "B" vaccine to vaccinate 777,352 men. Since July 1, a triple vaccine, including typhoid and paratyphoid "A" and "B," has been manufactured and enough of this has been shipped to vaccinate 1,489,902 men.

DIRECTORS FOR MEDICAL SERVICE WITH
AMERICAN EXPEDITIONARY FORCES

Major John M. T. Finney, M. R. C., U. S. Army, has been appointed director of general surgery with the American Expeditionary Forces in France; Major Hugh H. Young, M. R. C., director of venereal, skin and genito-urinary surgery, and Lieut.-Col. Joseph Siler, M. C., U. S. Army, director of the laboratory service.

Major John M. T. Finney, professor and head of the department of surgery in Johns Hopkins Medical College, went to France as head of the Johns Hopkins Hospital base hospital unit which was among the first to be ordered to active duty abroad. He was born in 1863 and graduated from Princeton in 1884, and from the Harvard Medical School in 1889.

Major Hugh H. Young, head of the department of urologic surgery and professor of urology at Johns Hopkins University, was ordered to active duty in France in June, 1917, to investigate the establishment of a urologic service. He was born in 1870, graduated from the University of Virginia in 1893, and received his medical degree from Virginia in 1894, and from Johns Hopkins University in 1895.

Lieut.-Col. Joseph Siler is especially noted for his research on tropical diseases and pellagra, particularly with the McFadden Pellagra Research Commission. He was born in 1875, and graduated from the University of Virginia in 1898.

DISEASE CONDITIONS AMONG TROOPS
IN THE UNITED STATES

Extracts from Telegraphic Reports Received in the Office
of the Surgeon-General for the Week Ending
Nov. 9, 1917

- 1. Total Strength of Troops1,042,225
Admission rate per 1,000 (disease only)annual 1,236.5
Non-effective rate (all causes) 31.1
- 2. National Guard—strength (camps) 369,148
Admission rate per 1,000 all camps (disease only).....annual 1,517.3
Non-effective rate all camps (all causes) 38.9
Camps showing admission rate for disease higher than average: Camps Bowie, Wheeler, Kearney, Sevier, Shelby and Cody.
Camps showing non-effective rate all causes higher than average: Camps Bowie, Wheeler, Sevier, Kearney, and Shelby.
- 3. National Army—strength (camps)428,788
Admission rate per 1,000 all camps (disease only) ..annual 1,139.9
Non-effective rate all camps (all causes)..... 25.2
Camps showing admission rate for disease higher than average: Camps Pike, Jackson, Funston, Travis, Dodge, and Dix.
Camps showing non-effective rate all causes higher than average: Camps Pike, Funston, Jackson, Lewis, Dodge, Travis and Dix.
- 4. Venereal Disease—
Admission rate Regulars 83.5
Admission rate National Guard (camps)annual 151.5
Admission rate National Army 115.3
Camps National Guard having rate above average: Camps Kearney, and Wheeler.
Camps National Army having rate above average: Camps Sherman, Travis, Dix and Jackson.
- 5. Number of cases of pneumonia 346
Highest number in any one camp (Pike)..... 76
Number of cases of meningitis 32
Highest number in any one camp (Funston)..... 9

Medical Military Information.—A list of pamphlets of interest to medical officers of the Army will be found on advertising page 28 of this issue.

6. SPECIAL DISEASES REPORTED DURING THE WEEK ENDING
NOV. 9, 1917

| Division | Pneumonia | Dysentery | Malaria | Venereal | Paratyphoid | Typhoid | Measles | Meningitis | Scarlet Fever | Strength of Command |
|--------------------|-----------|-----------|---------|----------|-------------|---------|---------|------------|---------------|---------------------|
| 27th, Wadsworth.. | 1 | ... | ... | 44 | ... | ... | ... | ... | ... | 32,085 |
| 28th, Hancock.... | ... | ... | ... | 38 | ... | 1 | 2 | ... | ... | 28,781 |
| 29th, McClellan... | 2 | ... | ... | 19 | ... | ... | 4 | ... | ... | 26,495 |
| 30th, Sevier..... | 13 | ... | 1 | 45 | ... | ... | 693 | 2 | ... | 27,207 |
| 31st, Wheeler..... | 34 | 1 | 6 | 93 | ... | ... | 740 | ... | ... | 21,747 |
| 32d, MacArthur.. | 1 | ... | ... | 23 | ... | ... | 27 | ... | 2 | 26,513 |
| 33d, Logan..... | 1 | 1 | 10 | 66 | ... | ... | 1 | ... | ... | 28,084 |
| 34th, Cody..... | 6 | ... | ... | 34 | ... | ... | 18 | ... | 5 | 25,854 |
| 35th, Doniphan... | 16 | ... | 2 | 17 | ... | ... | 73 | 2 | ... | 25,566 |
| 36th, Bowie..... | 39 | ... | 12 | 61 | ... | 1 | 1147 | ... | ... | 25,888 |
| 37th, Sheridan.... | 2 | ... | ... | 29 | ... | ... | 25 | ... | ... | 24,238 |
| 38th, Shelby..... | 11 | ... | 3 | 46 | ... | ... | 254 | ... | ... | 24,613 |
| 39th, Beauregard.. | 4 | ... | 8 | 27 | ... | ... | 113 | ... | ... | 11,377 |
| 40th, Kearney.... | 15 | ... | ... | 502 | ... | ... | 29 | 4 | 1 | 23,908 |
| 41st, Mills..... | 2 | ... | ... | 30 | ... | ... | 19 | ... | 2 | 14,538 |
| 76th, Devens..... | 1 | ... | ... | 29 | ... | ... | 5 | ... | ... | 30,194 |
| 77th, Upton..... | 2 | ... | ... | 14 | ... | ... | ... | ... | ... | 26,366 |
| 78th, Dix..... | ... | 1 | ... | 56 | ... | 1 | ... | ... | ... | 19,410 |
| 79th, Meade..... | ... | ... | ... | 15 | ... | ... | ... | ... | ... | 32,365 |
| 80th, Lee..... | 4 | ... | 1 | 63 | ... | ... | 1 | 1 | ... | 34,686 |
| 81st, Jackson.... | 11 | 3 | 10 | 357 | ... | ... | 370 | ... | ... | 15,414 |
| 82d, Gordon..... | 5 | ... | ... | 38 | ... | ... | 28 | 1 | ... | 21,427 |
| 83d, Sherman.... | 9 | ... | 1 | 128 | ... | ... | 3 | 2 | 2 | 35,058 |
| 84th, Taylor..... | 5 | ... | ... | 27 | ... | 3 | 154 | 6 | ... | 27,579 |
| 85th, Custer..... | 4 | ... | ... | 15 | ... | ... | 36 | ... | 1 | 15,587 |
| 86th, Grant..... | 6 | ... | ... | 21 | ... | ... | 6 | 1 | ... | 26,249 |
| 87th, Pike..... | 76 | 1 | 6 | 28 | ... | ... | 683 | 2 | ... | 23,358 |
| 88th, Dodge..... | 8 | ... | ... | 14 | ... | ... | 3 | ... | ... | 22,377 |
| 89th, Funston.... | 24 | ... | ... | 19 | ... | ... | 64 | 9 | ... | 29,821 |
| 90th, Travis..... | 28 | ... | 6 | 107 | ... | 2 | ... | ... | ... | 30,540 |
| 91st, Lewis..... | 1 | 1 | 1 | 18 | ... | ... | 3 | 2 | 3 | 38,177 |

| | Regulars, U. S. Army, in U. S. only, 1916 | | Regulars in U. S. week ending Nov. 9, 1917 | | Nat'l Guard, All Camps, week ending Nov. 9, 1917 | | Nat'l Army, All Camps, week ending Nov. 9, 1917 | |
|---|--|-------|---|-------|---|--------|--|--------|
| | Cases | Rate | Cases | Rate | Cases | Rate | Cases | Rate |
| Admissions, dis- eases only, an- nual rate per 1000 | ... | 613 | ... | 840.4 | ... | 1517.3 | ... | 1139.9 |
| Pneumonia..... | ... | 2.59 | 22 | 5.4 | 147 | 20.7 | 184 | 22.3 |
| Dysentery..... | ... | 3.97 | 4 | 0.9 | 2 | 0.2 | 6 | 0.7 |
| Malaria..... | ... | 12.52 | 8 | 1.9 | 42 | 5.9 | 25 | 3.0 |
| Venereal..... | ... | 91.00 | 535 | 83.5 | 1076 | 151.5 | 951 | 115.3 |
| Paratyphoid..... | ... | 0.31 | ... | ... | ... | ... | ... | ... |
| Typhoid..... | ... | 0.21 | ... | ... | 2 | 0.2 | 6 | 0.7 |
| Measles..... | ... | 20.29 | 143 | 35.6 | 3203 | 451.2 | 1356 | 164.4 |
| Meningitis..... | ... | 0.29 | ... | ... | 8 | 1.1 | 24 | 2.9 |
| Scarlet fever..... | ... | 0.59 | 16 | 3.9 | 10 | 1.4 | 6 | 0.7 |

7. Deaths by causes: Pneumonia, lobar, 35; bronchopneumonia, 6; cerebrospinal meningitis, 20; cerebral abscess, 1; cerebral syphilis, 1; cerebral tumor, 1; cerebral hemorrhage, 1; encephalitis, 1; hemoptysis following emphysema, 1; empyema, chronic, 1; pyemia, 1; endocarditis suppurative, 1; endocarditis, septic, 1; embolism of mesenteric artery, 1; angina pectoris, 1; measles, 1; edema of lungs, 1; alcoholism, acute, 1; delirium tremens, 1; asphyxiation, accidental, 1; accidental drowning, 1; traumatism, 3; traumatism by firearms, 5; traumatism by cutting, 1; fracture, base of skull, 3; poisoning, type undetermined, 1; suicide by phenol poisoning, 1; suicide by strychnin poisoning, 1; suicide by hanging, 1, and cause not reported, 1.

THE CAMP GREENLEAF SCHOOL OF
MILITARY HYGIENE

Within the past year we have become interested in the efforts of the State Board of Medical Examiners of Pennsylvania to arouse interest in universal training in hygiene as a requirement for candidates seeking license to practice medicine.

The Pennsylvania board made this a practical fact by securing a state law which prohibits the licensing of a physician to practice medicine in that state unless the applicant has had a practical camp course in military hygiene. The bill provides, however, that this requirement is waived if the government of the United States fails to provide the necessary course.

When this camp opened, June 1, 1917, one of the ambitions of its commandant was to found a school of military hygiene on such a firm basis that it would last, not only for the period of the war, but for all time. A tiresome recital of disappointing setbacks and tribulations would profit little, and the announcement that the school is now in full operation, built

on a foundation of permanent proportions, is the fact that we wish to set forth. The school has already begun to accumulate valuable property, such as microscopes, selected microscopic specimens, models of apparatus, books and pamphlets. In addition to this, arrangements have been completed to publish in full the valuable lectures delivered in the class rooms.

These lectures are in large part delivered by members of the student body, many of whom are specialists in some particular branch of sanitation. The school is a school plus a clearing house of knowledge. It is amazing to find how much talent drifts into these camps, and it is believed that the accumulated work of the attendants and instructors, published in book form, will make a valuable contribution to the literature of the country.

At the close of the camp, the literature and property, scheme of operation, and all other matter connected with the school, including models of sanitary apparatus, will be presented to the world's greatest sanitarian, the Surgeon-General of the Army, with the expressed hope that it may be found practical to make it a permanent benefit to the country.

A description of the school, written by the director, follows:

The Camp Greenleaf School of Military Hygiene has for its object the intensive training of Army surgeons in the field of camp sanitation.

occupied by the school and only to the class in hygiene. The character of the lectures by the student officers varies with the men available in the school at the time. To illustrate: Since the school was organized, lectures have been delivered by members of the class on the following, among other subjects: pellagra; malarial fever; vaccine therapy; fleas and disease; rat proofing of buildings; customs of the service; paper work in the Army; rural sanitation; hookworm; running a mess; duties of a quarantine officer; ship disinfection; military map making (with practical work in the field); amebic dysentery; refuse disposal; typhus in Serbia; the Kentucky closet; routine work in Panama; operation of sewage disposal plants; yellow fever; first aid in sanitation; causative factors in epidemics; special quarantine measures; building disinfection (a demonstration); hygiene of ventilation; water purification; sanitation in building construction; details of sanitary inspection; military map reading.

The instruction in the school of hygiene is given in hours that do not conflict with the general instruction given to the entire student officer body, and members of the school are required to attend such instruction as well as the special instruction given in the school. While in the school of hygiene, the student is relieved from military drill, but no student officer is assigned to the school who has not had at



Class work, Medical Officers' Training Camp, Fort Riley, Kan.

The basic curriculum of the school comprises didactic and practical instruction on such fundamental subjects as camp sites, draining; approved methods for the disposal of kitchen, human and animal waste; the necessity for the sanitary policing of barracks and surroundings; water supply, quality, quantity and approved methods of purification; the inspection of the mess, and mess kitchen, including the food, its mode of preparation, the means for preservation, general cleanliness, and prevention of waste; insects as nuisances, sleep disturbers and transmitters of disease; the cycle of development of the common insects, and the approved methods used for the suppression of insects; the transmissible diseases and the approved methods for their control, including isolation, disinfection and prophylactic vaccination; the diseases of camp life in the several seasons, and military administrations. The sanitary clinics are an essential feature of the instruction. These complement the didactic teaching. They are entirely practical field work. Convenient groups of student officers are assigned for duty on problems involving drainage, road construction, insect abatement, conduct of picket lines, construction and care of latrines, disposal of waste, mess kitchen inspection, construction and care of the various types of incinerators and grease traps, water purification and storage, administrative work, etc. Their work is under the critical supervision of the staff of instructors.

In addition to the foregoing routine instruction, lectures are given on cognate subjects by the staff and student members of the school. Such lectures are given in the barracks

least two weeks of such drill, and the plan, therefore, does not materially interfere with the training arranged for student officers. As with other instructional departments of the camp, quizzes are held regularly by officially appointed instructors, and the students are graded according to the progress made in the work. Weekly records of such grades are made.

The staff of instructors comprises Major Alexander C. Abbott, M. R. C., director, and Capts. William K. Evans, M. R. C., and M. L. Todd, M. R. C., assistant directors.

There are fifty students. The course of instruction covers four weeks from the date of assignment, unless it is obvious at the end of the first week that the student, for various reasons, is not adapted to sanitary work. In that event he is transferred to the company from which he was assigned, and another is detailed in his place. In the immediate future, the number of students of the company will be increased to 100, with a corresponding increase in the staff of instructors. As a saving of time, only students of Grade B and up will be assigned to the company.

Throughout, the instruction is as practical as possible, the student officers' camp, the outlying organizations, and the surrounding camps serving as excellent object lessons.

HENRY PAGE, Colonel, U. S. Army.

Commandant, Camp Greenleaf, Fort Oglethorpe, Ga.

ALEXANDER C. ABBOTT, Major, M. R. C.

Director, Camp Greenleaf School of Military Hygiene;
Director, University of Pennsylvania Laboratory of Hygiene.

NEWS OF THE CANTONMENTS

Twenty-Eighth Division, Camp Hancock, Augusta, Ga.

During the past week, Captain Roux, specialist in orthopedics, has been visiting our camp and lecturing on military feet and shoes. Proper exercises in bending the ankles outward and rising on the toes were described for weak feet; dressings and modifications in shoes were described also.

The entire division is being trained in the use of the gas mask, under the direction of Captain Stone and Lieutenant Russell. Cardiac, tubercular and nerve specialists are sifting out men with defects.

The course of instruction for medical officers is comprehensive and will require considerable time for completion. We hope to complete courses in litter bearing, first aid, pack mule drills, etc., on field day. It is also planned to have an original medical article competition for medical officers.

Thirty-Fifth Division, Camp Doniphan, Fort Sill, Okla.

The arrival of 3,000 drafted men by way of Camp Funston, among whom were several men with measles, has unfortunately increased the morbidity statistics for Camp Doniphan. Two cases of cerebrospinal meningitis also promptly developed among the new arrivals, and twelve carriers were found among contacts. All were immediately placed under rigid quarantine, and it is hoped that the situation will be controlled.

The care of the sick unfortunately is still handicapped by the fact that the new base hospital, with the exception of a few wards, is not yet ready for occupancy. Construction work, however, is being pushed with all energy, and it is hoped that within two weeks a considerable number of the wards of the new institution will be ready.

LYCEUM WORK

Lyceum work under the able direction of Lieut.-Col. W. T. Davidson is progressing satisfactorily and is widely appreciated. Meetings are held Monday, Wednesday and Friday evenings. The Monday meeting was devoted to the reports of the special examining boards. Capt. Ralph Brown, for cardiovascular diseases, reported on the examination of 15,000 men since September 15, with forty rejections. Capt. Brown briefly classified the classes that come up for observation under the headings, first, myocardial; second, valvular; third, functional. The first group is practically eliminated in the type of men that come up for examination; most cases fall within the last two groups.

Lieutenant Little of the tuberculosis board reported that his board had rejected 0.03 per cent. out of 15,000 men examined since the board began its work here in September. The number of these rejections, he said, is likely to increase as the facilities for examination improve. At present the work has to be done under considerable difficulty, and does not permit of the refined diagnoses possible under the best circumstances.

Lieut. Thomas Heldt of the psychiatric board reported on the work of his board. Since September 4, 15,000 cases were examined, with 1 per cent. of rejections. The type of cases were found in the following order of frequency: mental deficiency, constitutional psychopathic state, psychoneuroses, nervous disease and injuries (including the epilepsies), inebriety (alcoholism and drug addiction), and psychoses.

Wednesday's meeting was devoted to short talks by the chiefs of staff of the base hospital. Major P. B. Connelly, in charge of the base hospital, briefly explained the organization and present facilities of the hospital, and assured the men of the field of his heartiest cooperation through the personnel of his command.

Major J. Barksdale, chief of the surgical staff, called special attention to the need for careful examination of men complaining of "pain in the belly." Too often these cases prove to be appendicitis, which is brought to operation under a serious handicap. He cautioned against the administration of purgatives in cases of suspected appendicitis. The records of the surgical department give a splendid showing with 389 operative cases since September, 150 of which represent major work, with but one death.

Major Sidney Strauss of the department of internal medicine discussed briefly the symptomatology and diagnosis of the diseases encountered at this camp thus far. He urged that all patients with a temperature of more than 100 F. should be transferred to the hospital.

Major Magruder of the eye, ear, nose and throat department called attention to the relatively large number of disease carriers (diphtheria and Vincent's angina) that were found among those referred to his clinic. He advised that men

with chronic middle-ear infection should be recommended for discharge, since surgical interference cannot improve them for service in the Army.

Major G. C. Ruhland, in charge of the laboratories, spoke briefly on methods of securing and transmitting specimens for laboratory diagnosis.

Lieutenant Hoffmeier, roentgen specialist, and Lieutenant Woods, dermatologist, also spoke briefly on matters relating to their specialties.

Friday's meeting was given over to a paper on camp sanitation by Major Phillips, chief sanitarian of the division surgeon's staff. Major Phillips admirably covered the essentials of camp sanitation and hygiene; his paper was received with a great deal of interest and was profitably discussed.

The discovery of a second case of anthrax, also occurring on the patient's face, suggests the possibility of anthrax infection from shaving brushes, and special attention is being directed toward this possible source of infection.

PERSONAL

Colonel Lewis of the Regular Army and Major N. M. Black, M. R. C., have arrived in camp on an inspection tour of National Guard and Army camps.

Lieut.-Col. Robert Carswell of the Regular Army has arrived and has taken charge of the administration of the post hospital.

Thirty-Ninth Division, Camp Beauregard, Alexandria, La.

Many changes in the Medical Department of the camp have taken place. Many more troops have arrived; there are now more than 20,000 here, and the number of medical officers has increased to over 100. Owing to the fact that 9,000 draft men have been sent here from Camp Pike, who brought with them from that place the remains of a rather extensive epidemic of measles of a mild form, and furthermore owing to the fact that these men are distributed throughout the various organizations of the camp, a rather rigid quarantine is in force. Two field hospitals are now in operation, one taking care of the measles and the other one handling the mumps of the camp. This relieves the base hospital of congestion and allows it to take care of the more seriously ill.

Col. Henry C. Fisher, M. C., inspector from the Surgeon-General's Office, spent two days here making a general inspection of the entire medical department, including the sanitary conditions.

On November 12, Captain Gephart of the Surgeon-General's Office visited the camp on a tour of inspection in the interests of food conservation.

Captain McMillan of the Surgeon-General's Office made a tour of inspection on November 15, in the interests of the venereal work of the camp.

The entire body of medical officers of the camp was invited to attend a meeting of the Rapides Parish Medical Society on November 6. (It will be noted that the term "parish" is employed in Louisiana instead of "county.") The meeting was held in the city hall, and about fifty medical officers and about fifteen local civilian physicians were present. Mayor Whittington of Alexandria told the officers that the city administration would give them every possible aid in sanitary matters, and was roundly applauded. P. A. Surg. H. S. Smith of the United States Public Health Service, who is in charge of the sanitation of the extra-camp area, gave a very interesting talk on the work he and his assistants are doing. Contract Surgeon Wright of Monroe, La., who has been on the tuberculosis board, told of his experiences with the intravenous administration of quinin in malaria. Short talks were also made by Colonels Smart and Schauffler, and Majors Lull, Burrus and others. After the meeting the guests and their hosts adjourned to the banquet hall of the Hotel Bentley where a delightful supper was served which was thoroughly enjoyed by all.

BASE HOSPITAL NOTES

The base hospital has been running in full swing for some weeks and there are now about 400 patients quartered there.

The laboratory is exceedingly well equipped and excellent work is being done. One deficiency is that it is not equipped to perform the Wassermann test. Specimens of blood and spinal fluid for this test are sent to the department laboratory in Atlanta, Ga., and from five to seven days elapse before a report is returned. This causes a great deal of inconvenience, and it is hoped that before long the base hospital will be equipped and authorized to perform this test.

Only two cases of epidemic cerebrospinal meningitis have developed in camp. Both are being treated in the base hospital.

The operating pavilion was opened recently and already several operations, both major and minor, have been performed.

The venereal section occupies two wards and has been practically full for some time. Only the acute cases are kept for treatment, all chronic cases being returned to their commands for treatment in the regimental infirmaries. A large percentage of the patients contracted the diseases before coming to camp, and it is thought that as soon as all of the troops have arrived and have settled down to the routine of intensive training the venereal rate will drop materially.

Lieut. Adrian Landry, who was home on a month's sick leave, recently returned greatly improved in health. He has been assigned to the laboratory.

Seventy-Seventh Division, Camp Upton, Yaphank, N. Y.

Undoubtedly the most important medical event that has taken place in Camp Upton during the past month has been the removal of the base hospital from its temporary barracks to the new hospital unit. This group of some seventy buildings is located about two miles from the camp proper, so that the transportation of patients from the camp to hospital and back affords considerable valuable practice for the ambulance companies, which undertake the major part of this work.

The hospital is not finished, and but twelve wards are completed and occupied. The quarters for the enlisted men are practically completed, and though not yet supplied with steam heat, they are reasonably warmed by stoves. The men are supplied with assembly rooms, a point that thus far has been utterly neglected in the officers' quarters, which are not yet ready for full occupancy. Most of the officers, for the time being, are lodged in the receiving pavilion. It is much to be regretted that no provision has been made in the hospital for an assembly room for officers in which a library and rest facilities are provided, but we are informed that this matter is to be considered favorably later, and that ample provision has been made for standard medical books and journals.

The pleasure of moving into the new unit has been greatly dampened by the edict, which applies alike to patients, enlisted men and officers, that there is to be no smoking in or about the hospital unit. That such a ruling is absolutely necessary in buildings of this type, and particularly in the unfinished state with much inflammable material lying about, is obvious; but the lamentations of Moab for her children was joyous beside the wail that has gone up from the base hospital, and during off moments the surrounding roads are crowded with disconsolate men and officers seeking solace in the weather outside plus nicotin, rather than relative comforts inside minus tobacco. It would seem too much to expect that optimism should reign within the walls of the hospital at such a time of famine, but none the less the spirit that seems to imbue the men of the staff is anything but depressed.

The messing facilities in the unit are as yet incompletely developed, but are quite adequate for the immediate needs of the service. Luxuries, in the way of crackers, cookies, jellies and preserves, are being contributed in great generosity by the women of New York and particularly by those of the adjoining towns. It is notable, as compared with former occasions, that contributions of this nature are almost without exception sensible and well adapted.

INSTRUCTION OF HOSPITAL STAFF

Courses of instruction of the base hospital staff are being conducted, mostly by the members of the staff under the immediate direction of Major Jay D. Whitham, while that of the medical organizations within the camp proper are under the control of Lieut.-Col. Reynolds. These courses cover military-medical subjects, and paper work—which is so very needful in all military establishments—in addition to the usual professional work and subjects. After the hour of evening instruction, a short session of clinics is conducted, cases of particular interest being brought in, demonstrated, and discussed by the members of the various services.

DISEASE INCIDENCE

Comparison with the sick percentage of the other National Army cantonments shows that Upton is particularly fortunate in nearly all particulars. Our relatively low rate of venereal infections has excited considerable comment, and those cases of this class reporting at the regimental infirmaries and at the base hospital, with few exceptions, are instances contracted before entering the military service.

Stations for venereal prophylaxis under the command of the medical staff of Upton, and attended by the men of the hospital detachment, have been established in New York and Brooklyn. Similar measures are contemplated for certain of the villages nearer the encampment. Through these, and the full instruction of the men of the command, it is hoped to obviate any serious problem in this respect.

EXAMINATION OF RECRUITS

Much of the time of the medical staff of the main camp is still occupied in the examination of recruits. A careful tabulation of this work is being kept by Lieutenant Freeman, which affords some very interesting data. Forty-two medical men working at one time have been able to examine on an average of 267 men per hour, including the special examinations, which frequently consume much time. The staff of examiners is working in three shifts of from four to five hours each. They are assisted by a total number of 180 enlisted men. The total staff of examiners consists of eighty-four regular examiners and nine specialists.

Defects in vision have been by far the most frequent cause for rejection at Upton; chronic purulent otitis media has been the second most frequent factor, hernia the third, organic heart disease the fourth, and defective and deficient teeth the fifth.

DISTINGUISHED GUESTS

Distinguished medical visitors to the camp have been Colonel Shaw, inspector of base hospitals; Colonel Reynolds of the Surgeon-General's Office, best known to us as brother of "our" Colonel Reynolds; Dr. Davenport, the distinguished biologist, who has assisted us regularly in certain of our examinations, and Major E. K. Dunham, whose researches on water purification, and in association with Dakin of the chlorin methods of disinfection, are promising such flattering results. Several days ago Major Flexner of the Rockefeller Institute paid the camp a brief visit. Major Webb, commandant of the Bellevue Hospital Unit, and Major Leon T. Le Wald, instructor in roentgenology, both retired officers of the regular service who have generously reentered at this time of crisis, are guests at the base hospital. Dr. Glentworth Butler and Dr. Tasker Howard of Brooklyn have been working as cardiovascular experts with us, and their return home is much regretted by us all, in both personal and professional respects.

Eighty-Fifth Division, Camp Custer, Battle Creek, Mich.

Special instruction and preparations are being formulated by the division surgeon for the rapid and complete examination of the increment of the draft that is expected this week. It is expected that the entire work of examination will be completed in two weeks. Special arrangements have been made by the division surgeon so that all medical officers will be given an opportunity to become familiar with the paper work necessary in handling these examinations.

During the last week courses for instruction for all medical officers have been progressing rapidly. Captain Donnelly and Lieutenant Drowne have been giving talks on the medical paper work and that pertaining to the Quartermaster Department, respectively. Majors Bremerman and Jackson, directors of field hospitals and ambulance companies, gave practical talks relative to their special work.

Major Wood, commanding officer of the base hospital, has arranged for special instructions three evenings a week. This consists in the work of medical organizations in actual combat, in reports on military surgery as found in the various medical journals and in clinics held by the officers of the base hospital on cases of military interest. The evening classes have proved of exceptional merit and are attended practically by every medical officer in camp.

NOTES

Capt. Constantine MacGuire, commanding officer of the Three Hundred and Thirty-Seventh Ambulance, was relieved from duty at Camp Custer and ordered to report at Camp Mills.

Major J. F. Edwards has reported as chief sanitary inspector to fill the vacancy left by Lieut.-Col. W. A. Powell, who was ordered to Camp Devens.

Major Lewis Wine Bremerman, director of field hospitals, addressed the Kalamazoo Academy of Medicine, November 13, on the subject, "What the Medical Profession Owes the Country." There were about thirty-five members present. The meeting was preceded by a luncheon in honor of Major Bremerman.

A board of experts on tuberculosis has arrived in camp and their work of examining all men in the camp is progressing rapidly.

Lieutenant Tyner of Field Hospital No. 339 is absent in the East on a five-day leave of absence. It is understood that he may have a bride with him on his return.

Lieutenant Morris of Field Hospital No. 338 is on leave, visiting in Detroit.

The rate of venereal disease is decreasing remarkably in this camp. Last report showed 1.85 per cent. covering all forms of disease of this character. These facts speak well for the moral standing of the division.

Eightieth Division, Camp Lee, Petersburg, Va.

BASE HOSPITAL NOTES

The hospital is nearly completed, and the operating rooms are in such a state of completion that they are used daily for all kinds of operative cases. The successful opening of the operating room is due, in a great measure, to the untiring energy of the operating room nurse, Miss Byrnes, whose originality and adaptability have hastened its opening.

The force of nurses who are to care for the hospital patients is augmented from day to day by new arrivals; thus far they number twenty-six. About seventy-five are expected when all have reported.

There are some queer bed fellows in the receiving ward barracks, now temporarily occupied by the base hospital surgeons. Lieut. J. J. Beaton, M. R. C., made a hurried and undignified exit from his bed at 1 a. m., bringing with him all the bedclothes and a 6-inch slider terrapin (*Pseudemys rubriventris*) that some thoughtful friend had deposited in his bed earlier in the evening. The evening recital of yarns by the noted liars is still kept up. Gulliver and Baron Munchausen would blush with envy and chagrin could they be present. Hampton M.D.'s will recognize the chief Ananias.

The roentgen-ray outfit has been set up by Captain Merritt, M. R. C., and Lieut. Victor Noel, S. C., and some excellent pictures have already been taken. The laboratory is doing great work and materially aiding the whole staff by prompt and rapid reports. Men exposed to meningitis

are now being examined for carriers. The new quarters for the hospital staff are ready for occupancy and the officers are moving in. Major Hope reports that on a recent visit to the Chesapeake region he found the oysters in prime condition and of excellent flavor, and that he ate a barrel on the half shell to be sure that they were.

The base hospital staff has been delighted and very much improved in every way by the presence of Mrs. Ferdinand Schmitter, the wife of the commanding officer, and her sister, Miss Bradstetter, who have added the charm of social life to the camp.

The first of the regular weekly clinical meetings was held at the base hospital, Thursday evening, November 8, and was attended by all the medical officers of the base hospital and the division. Major Ferdinand Schmitter, M. C., presided. The meeting was under the direction of the chief of the medical service, Major Lawrence Litchfield, M. R. C.

Contract Surgeon Thomas S. Lee presented a case of dextrocardia, the only case detected in the examination of 40,000 recruits. Major Schmitter stated that in the examination of 40,000 recruits at Fort Slocum, one case of dextrocardia was diagnosed.

Lieutenant Phails then showed a case of lichen planus, and one of pityriasis rosea. The discussion of the latter case elicited the fact that a positive Wassermann test had been obtained in a number of cases of pityriasis rosea. Two interesting abnormal gait were demonstrated by Major Litchfield; one was possibly sacro-iliac disease; the other patient had an unusual rolling gait, walking on the outer side of the feet, no change in sensation or reflexes, and no abnormality in the joints. This case was believed to be one of hysteria.

Lieut. P. C. Riley, M. R. C., of the medical staff, told of the number of cases of communicable disease treated in the base hospital since it was opened: thirteen cases of lobar pneumonia, with no deaths; four of typhoid fever (infection prior to arrival), with one death; seven of meningitis, with one death; one of scarlet fever; two of chickenpox; twenty-two of mumps, and twenty-six of measles.

The subject of the evening was cerebrospinal meningitis, the clinical features of which were discussed by Major Litchfield. Lieut. E. J. Asnis, M. R. C., then discussed the subject of meningitis carriers and method of detection. Lieut. F. B. Humphreys demonstrated the brain of the patient with meningitis that had died, and made some interesting remarks on the different immunologic reactions of the different types of meningococci.



Officers of base hospital, Camp Lee, Va. From left to right: lower half row, Major Ferdinand Schmitter, M. C., U. S. Army; Major E. W. Day, M. R. C.; Major Joseph W. Hope, M. R. C.; lower full row, Major William E. Peple, M. R. C.; Major Samuel B. Moore, M. R. C.; Major Lawrence Litchfield, M. R. C.; Major J. B. Clark, M. R. C.; Capt. Beverly R. Kennon, M. R. C.; Capt. L. E. Hetrick, M. R. C.; second row, Capt. Lauren Thomas, M. R. C.; Capt. Henry B. Gillen, M. R. C.; Capt. Edward M. Parker, M. R. C.; Capt. Henry R. Weston, M. R. C.; Capt. Hugh Beebe, M. R. C.; Lieut. P. C. Riley, M. R. C.; Lieut. J. J. Beaton, M. R. C.; third row, Lieut. Nathaniel Barnard, D. R. C.; Lieut. Clay M. Easter, M. R. C.; Capt. Edwin A. Merritt; Lieut. I. H. Goldman, M. R. C.; Lieut. F. B. Humphreys, M. R. C.; Lieut. Samuel E. Lambert, M. R. C.; Lieut. Clarence S. Yoakum, S. C.; top row, Capt. W. S. Hunter, M. R. C.; Lieut. Edward S. Jones, S. C.; Lieut. Thomas S. Lee, M. R. C.; Lieut. T. F. Smith, D. C.; Lieut. F. J. Smith, M. R. C.; Lieut. H. A. Rothrock, M. R. C.; Lieut. C. H. Perry, S. C.; Lieut. W. S. Hunter; Lieut. R. L. Davis, M. R. C.; Lieut. George R. Moffitt, M. R. C.

Eighty-First Division, Camp Jackson, Columbia, S. C.

We have moved to the base hospital. A more beautiful and healthier site could hardly be found. To stand on the misty hill-top to welcome the glorious sun and fill the lungs with pure air makes a man thankful that he is an American, beginning his real duty to the world.

ORTHOPEDIC WORK

Among the specialists who are visiting Camp Jackson is Capt. J. T. Rugh, M. R. C., Philadelphia. Prophylaxis along orthopedic lines is being organized in Camp Jackson; lectures pertinent to the care of the feet, joints and spine are given to the medical and line officers of every brigade and of independent organizations. The instructions

deal purely with the soldier; every effort is directed toward rendering him more efficient by personal attention to the fit of the shoes, proper manner of walking, and strengthening of his foot and leg muscles by graduated exercise, and greater emphasis is placed on the importance of this care during the first six or eight weeks of his training. The care of the shoes, stockings and feet is also taught to the officers and by them to their men, and everything that will contribute to greater efficiency is being utilized in all channels.

Captain Rugh is supervising orthopedic surgeon in charge of five camps in North Carolina, South Carolina and Georgia, and his work and efforts are meeting with the heartiest cooperation among the officers in all organizations. A daily orthopedic dispensary under the care of Lieutenant Garrenton has been established. Foot inspection of all in the camp will be made, and potential disabilities will be recognized early and prevented by proper means.

TUBERCULOSIS AND CARDIAC SERVICE

The Medical Department of the government is doing a great service for the people of America. A board for the special examination of all members of the command for pulmonary and cardiac defects began work in camp this week. It consists of Major Boyce, M. R. C., Pittsburgh, president; Lieuts. Leopold Shumaker, Edgar W. Cowan, Owen S. Deathridge, Ephraim Goldman, Urban H. Reidt and Edward N. Packard, and Surgs. Howard Van Rensselaer, John R. Williams and Hugh F. Keating. Recently Major Boyce addressed the meeting of the base hospital lyceum on the pathology and diagnosis of tuberculosis, laying especial stress on the value of close coordination between clinician and roentgenologist. Major Herrick, chief of the medical service, will have the cooperation of this board in this service.

PERSONAL

The new commander, Major Thomas J. Leary, who recently returned from Panama, where he was chief surgeon in command of the Colon Hospital, has taken firm hold on the base hospital, and things are moving with a swing. Visiting him are his wife and child from Philadelphia. Mrs. Leary, being the wife of a Regular Army man, has been his companion in Panama and the Philippines.

The wife and the daughter of Captain Baeslack, chief of the pathologic laboratory, are visiting in Columbia. Captain Baeslack has done original work on cancer, sarcoma, syphilis and other diseases.

Dr. F. Victor Laurent, formerly baritone of the Paris Opera, Covent Garden and Metropolitan companies, joined the Medical Reserve Corps last April as first lieutenant, and after a course of training at the medical officers' training camp at Fort Oglethorpe was sent to this camp to make examinations in his speciality, otolaryngology. Lieutenant Laurent is now stationed at the base hospital, and in addition to his medical and military duties is teaching his fellow officers French conversation, and finds time to sing occasionally in some of the churches in Columbia. Several weeks ago he sang "It is Enough," from "Elijah," at Trinity, and repeated this the following Sunday at the First Baptist Church by request of Lieutenant-Governor Bethea, who is a warm admirer of the Mendelssohn oratorio. The doctor had arranged for some joint recitals with Yvonne de Treville, the distinguished coloratura soprano, for this season; but after accepting his commission, these engagements were canceled. It is possible, however, that they will give a joint recital at the camp during the winter.

Lieutenant Laurent lived for five years in Paris, and is anxious to get to the front where many of his old comrades now are.

Major J. Stone, chief of the surgical service, received his commission in October.

Captain Pendleton of Portsmouth, Va., has just received his commission as captain.

Mrs. Burton Chance, wife of Captain Chance, and son recently visited Columbia and Camp Jackson.

Lieut. Harry Judge of Albany, N. Y., has been assigned to the ophthalmologic department.

Major Greenwood has visited Camp Jackson and other cantonments in the interest of eye departments.

**Eighty-Fourth Division, Camp Zachary Taylor,
Louisville, Ky.**

FOOD WASTE

Numerous letters have been received by the daily press in Louisville, attributed to German propagandists, in which it is charged that food by the wholesale is being wasted at Camp Zachary Taylor. Some of the letters have been turned over to the intelligence section of the general staff of the Eighty-Fourth Division for investigation. It is a fact that the garbage contractor who expected to get 60,000 pounds of garbage daily from the entire camp is receiving only 8,000 pounds, which of itself shows that waste is at a minimum. The problem of saving food, until recently, has fallen on Major Luther Poust, chief sanitary inspector, who has under his direction six lieutenants of the Medical Reserve Corps who make the rounds of the camp every morning and see that all sanitary rules are obeyed, and that nothing is found in the garbage cans other than what should be there. In addition, a commissioned officer must be in attendance when mess is served, to prevent waste.

Here are a few of the instructions that every mess sergeant and cook must follow in his kitchen: The portion of bread bitten by a soldier must be cut off, placed in the oven and

sterilized, and saved for bread pudding and meat dressings; oatmeal and corn grits must be saved for puddings and dressings; bones, after the meat is removed, are saved and boiled for soup; all left over meats and fats are boiled and rendered, and used for frying and flavoring.

A soldier is expected to eat as long as he is hungry, just so that he does not waste.

A commissioned officer is on duty at the garbage incinerator, and closely observes every can that comes there. The inspection of garbage does not at first thought seem to be a very important duty for a medical officer to perform; yet this is one of the most important functions of the Sanitary Corps. Lieut. Lee Ernstberger of Louisville is one of this corps detailed for the inspection of garbage, and reports that there is no waste at the camp.

Orders were issued, November 6, designating Col. J. H. Allen as food conservation officer of the cantonment. Under the orders, all regimental, battalion and independent unit commanders must submit every ten days, commencing November 10, a report to the food conservation officer showing the amount of fresh and canned beef, fresh pork, bacon, bread, sugar and lard used by their respective commands, and this report must embody also the respective strength of the commands. Mess officers will be required to keep a daily report showing the number of meals prepared for officers and those actually served, together with the amount used of the foregoing foodstuffs. The order enjoins every enlisted man to do all in his individual power to prevent waste of food. One of the regulations of the sanitary corps is that garbage cans be kept within the screened kitchens, in this way flies being reduced to a minimum. Garbage cans are chemically treated and steamed, eliminating entirely the sour smell ordinarily present in these cans.

MEASLES

The entire Three Hundred and Thirty-Sixth Infantry, composed almost entirely of Kentucky soldiers, has been quarantined on account of an epidemic of measles. Eighty-one cases have been reported from this regiment. They came in so fast as to swamp the base hospital, and a company barracks in the regimental confines was requisitioned for a temporary hospital. The quarantine order applies to officers and men alike, not a man being allowed to leave the regimental area. The epidemic began three weeks ago and was traced to a drafted man in whose home there was a case of measles when he left for the camp. Practically every company has had men affected. The disease generally has been in a mild form. One death has resulted from a complicating bronchopneumonia. Practically none of the men from Louisville have had it. The quarantine order prevented a number of Louisville men obtaining leave in order to vote.

On the first evening of the session of the Kentucky State Medical Association, the members heard a stirring patriotic address by Governor A. O. Stanley, given especially before the medical members of the draft examining boards of the state. At the conclusion of his address, three members of the reviewing board at Camp Zachary Taylor were called on to explain in brief in regard to the chief causes for final recommendation for rejection by the reviewing board. Major Walter Hamburger, president of the board, called attention to the fact that approximately but 5 per cent. of all troops received were rejected, a smaller percentage in comparison with nearly all of the other camps. The division surgeon had stated that probably many men were accepted, with perhaps no visible or demonstrable lesion, who were in such a general physical condition, perhaps of malnutrition, that they would finally not make good soldiers.

Major Hamburger mentioned, as among the most frequent causes for rejection, hernias, flatfoot, trachoma, congenital amblyopia, tuberculosis, asthma, chronic valvular disease of the heart, and active syphilis.

Lieut. Willard J. Stone, in charge of the cardiovascular examinations, reported that of 201 heart patients, 43 per cent. had been rejected. Of this number, mitral regurgitation caused 54 per cent.; mitral stenosis with regurgitation, 16 per cent.; simple tachycardia, 10 per cent.; hypertension, 7 per cent., and hyperthyroidism, 5.7 per cent. A large number of men with accidental or functional murmurs were referred to the board by the regimental surgeons, and 35 per cent. of these were accepted. He mentioned the effort test that was used in these heart examinations, the pulse rate and blood pressure being taken with the patient recumbent; then with the pressure cuff in position, the soldier is caused to take 100 short hops on alternate feet, the blood pressure being then taken within fifteen seconds after the effort. The ratio of rate and blood pressure before and after effort is carefully

recorded and compared. If the rate increases inordinately while the blood pressure does not, the candidate is not fit to serve.

DIVISION SURGEON'S REPORT

The report of the division surgeon, November 11, shows a total of 550 patients in the base hospital, and 420 under treatment in the regimental infirmaries. The venereal cases show 455 cases of gonorrhea. Venereal prophylaxis was given 126 times. Twenty per cent. of all sickness in the command is venereal. In the base hospital are nineteen cases of pneumonia, with no new cases; three cases of parotitis; four of meningitis; four meningitis carriers, and 186 cases of measles. November 10, 3.27 per cent. of the command were ill. The lowest rate was 1.67 per cent.

The first meningitis carrier slept next to the first man who developed meningitis, and has remained well, as have the other three carriers. These men have been treated by the dichloramin-T solution and are now free of organisms.

The reviewing board up to November 11 had rejected 1,689 men.

Diphtheria developed in the Three Hundred and Thirty-Third Infantry, and cultures were taken from the throats of all the rest of the men and were found negative. In the future the Schick test will be used, as the diphtheria toxin is now on hand for that purpose.

The entire Three Hundred and Thirty-Sixth Regiment of Infantry is quarantined for measles, and one battalion of four companies in the One Hundred and Fifty-Ninth Depot Brigade.

Capt. Herbert Fox and Mrs. Fox have been called to Philadelphia by telegram announcing a serious injury to their son caused by an automobile.

Eighty-Sixth Division, Camp Grant, Rockford, Ill.

Specialists have been assigned to the camp for consultation on doubtful cases so that in every questionable case the patient may have the benefit of an expert's opinion. Tuberculosis is especially looked for and the following method has been effective in finding mild and incipient cases:

An enlisted man makes out the roster of the company, using a separate slip for each man. This slip has the man's name, rank and organization, pulse and temperature, and the heart and lung findings. Half an hour before the appointed time, four enlisted men go to the barracks and take the pulse and temperatures, which they record on the slip. The examining board goes to the barracks and examines the men. Each man strips to his waist and stands by his cot with his slip. This method creates very little confusion and inconvenience. Positive or doubtful cases are referred to the tuberculosis expert who is attached to the base hospital. It takes about five minutes to examine a man's chest, and each examiner can examine about seventy-five a day. When heart cases are found, the patients are referred to the cardiovascular expert, who is also attached to the base hospital.

The Base Hospital Medical Society is organized, and holds weekly meetings at which papers on various subjects are read.



Base hospital, Camp Grant, Ill.

No communicable diseases have been encountered among the 4,500 horses and mules received at the remount station, and from there distributed to the various regiments.

PERSONAL

The president-elect of the Kentucky State Medical Association, Dr. Phil Stewart of Paducah, the retiring president, Dr. Milton Board of Louisville, and the secretary, Dr. Arthur T. McCormack, are members of the Medical Reserve Corps, in active service. The orator in surgery, Dr. Fred L. Koontz of Louisville, was unable to be present on account of a special detail to a point of instruction.

First Lieuts. Lauren N. Lindenberger and Walter S. Wyatt, medical officers, have reported at headquarters in compliance with orders from the War Department, and have been temporarily assigned to the base hospital. They came from Camp Shelby at Hattiesburg, Miss.

The second evening session of the Kentucky State Medical Association was devoted to a military symposium. The special speaker was Dr. George Loewy, representing the French Army, who showed a number of slides of wounds, before, during and after treatment by the Carrel-Dakin method. Lieutenant Holstein read a paper on cerebrospinal meningitis; Major Jump of Philadelphia, from the Surgeon-General's Office, made an impassioned plea for more recruits for the Medical Reserve Corps; Major Poust told of the work of the Sanitary Corps at Camp Zachary Taylor, and Lieut.-Col. John Allen gave a summary of the work of the reviewing board.

Lieut. Willard J. Stone, contract surgeon, left for his home in Toledo, Ohio, on special leave, to return on call from the camp division surgeon.

Eighty-Seventh Division, Camp Pike, Little Rock, Ark.

With the exception of the base hospital, practically all the buildings at Camp Pike have their heating plants in good working order. The men both in barracks and in the officers' quarters were very comfortable during the recent cold spell.

Men leaving here for National Guard camps in the South, as they have been doing in large numbers for the past few weeks, did not depart with any special enthusiasm, knowing that they were leaving the land of heated wooden barracks and hot shower baths for a country of tents and "cold gray dawns" with no heat.

There is a feeling of great relief that the War Department's ban on reserve corps commissions has apparently been lifted, as commissions are beginning to arrive, notice of the recommendations for which were issued just prior to the institution of the embargo.

There are at Camp Pike nearly 200 medical officers, including those at the base hospital. A large percentage of these are from the training camps at Forts Riley and Oglethorpe.

PROMOTIONS

Many of these officers have been in the service nearly six months. The five promotions recently reported in these columns are from the last class, and are the only promotions received in this class at this camp. Promotions for medical men in this cantonment have not averaged 5 per cent. to date since the cantonment was opened. It is generally conceded that the matter of promotion of medical officers has not been overdone.

Many entered the service with a sort of unofficial understanding that they would be promoted at the end of ninety

days' active service. The members of the old Medical Reserve Corps who were the first to enter the service, without the stimulation of whose example it would have been more difficult to get things started, are apt to feel that their claims for recognition should be considered before those who came in later. It is generally recognized, however, that under the tremendous pressure of the great work essential to the building up, officering and equipping of the Medical Department of so great an army, it is difficult to be absolutely fair to all concerned.

LECTURES

Lieut.-Col. Robert M. Thornburgh, division surgeon, gave an interesting and illuminating lecture on customs of the service at a lyceum held at the base hospital on the evening of November 5. Colonel Thornburgh brought out clearly that there are a good many things not covered by army regulations which are still important to know if the new medical man wishes to conduct himself as an "officer and a gentleman" while on duty.

Lieut. E. T. Wentworth of the orthopedic staff at the base hospital gave a series of three lectures on the foot recently at the officers' lyceum. Lieutenant Wentworth divided the subject by lectures into anatomy, diagnosis and treatment.

MEASLES

The measles epidemic at Camp Pike continues unabated. There was an apparent lull in the contagion for a short period, but at present there is a large number of these cases. The base hospital has found it too great a burden to look

Lieut.-Col. WILLIAM A. POWELL, relieved at Camp Custer, Battle Creek, Mich., and to *Camp Devens*, for duty as division surgeon.

To be relieved from Philippine Dept. and to *San Francisco*, and to *Western Dept.* for assignment to duty, Majors LANPHEAR W. WEBB, ALEXANDER W. WILLIAMS.

Major LEOPOLD MITCHELL, relieved from Hawaiian Dept. and to *San Francisco*, Western Dept., for assignment to duty.

Major JOHN P. FLETCHER, now on duty at Motor Ambulance Supply Depot, Louisville, Ky., be directed to proceed on completion of his present work at that place, of inspecting motor ambulance spare parts equipment, to Pontiac, Mich., for the purpose of inspecting motor ambulance equipment, and on completion of this duty to return to his proper station.

Col. GEORGE E. BUSHNELL to the following named camps for the purpose of inspecting the work of tuberculosis examiners, Camp Beauregard, Camp Pike, Camp Funston, Camp Dodge, Camp Grant.

Col. LOUIS A. LAGARDE, to *New York City* to present eight lectures on military medicine and camp sanitation, and additional lectures on military surgery at the University and Bellevue Hospital Medical College, New York University.

Lieut.-Col. GEORGE F. JUENEMANN, relieved at the Reorganization Camp, Gettysburg, Pa., and to *Fort Logan H. Roots, Ark.*, for duty as commanding officer of that post.

Col. ALLEN M. SMITH, at Fort Logan, Colo., to inspect property known as the *Westminster College, Westminster, Colo.*, with a view to reporting upon its desirability for use as a hospital.

Lieut.-Col. FRANK C. BAKER, relieved at Fort Oglethorpe, and to report to the commanding officer, *Camp Greenleaf*, for duty as commanding officer, Evacuation Hospital No. 4.

Lieut.-Col. PAUL C. HUTTON, relieved at Philippine Dept. and to *Camp MacArthur, Waco, Texas*, for duty as division surgeon.

Major LOUIS H. HANSON, relieved at Syracuse, New York, and



erman, Chillicothe, Ohio.

after them, so an order has been issued requiring each area to take care of its own cases as long as they are of the mild type without serious complications.

HEMORRHAGIC SEPTICEMIA OF MULES

An epidemic of hemorrhagic septicemia has kept the veterinary section of the Medical Reserve Corps, stationed at Camp Pike, busy for some time past. A quarantine covering several weeks has just been partially lifted at the auxiliary remount depot, the sanitary train receiving this week part of its quota of mules. There are over 10,000 animals at the remount depot. The deaths from hemorrhagic septicemia have totaled about 200. The serum treatment was used as a prophylactic in combating the disease.

ORDERS TO OFFICERS OF THE
MEDICAL CORPS

Col PERCY M. ASHBURN, Major SAMUEL S. CREIGHTON, Major CONDON C. McCORMACK, relieved at Fort Benjamin Harrison, Ind., and to proceed to *Washington, D. C.*, for duty in the office of the Surgeon-General of the Army.

To *Camp Greenleaf*, Fort Oglethorpe, Ga., for duty as instructors, from Fort Benjamin Harrison, Ind., Lieut.-Cols. A. W. SHOCKLEY, GEORGE H. SCOTT; Majors JOSEPH E. BASTION, TAYLOR E. DARBY.

To *Fort Riley, Kan.*, as instructors, from Fort Benjamin Harrison, Ind., Lieut.-Col. HENRY F. PIPES, Major HOWARD McC. SNYDER.

Col. WILLIAM STEPHENSON, Headquarters, Central Dept., Chicago, Ill., to *Governors Island, N. Y.*, for duty as department surgeon.

Col. HENRY I. RAYMOND, Medical Supply Depot, Fort Mason, Calif., to *Chicago*, for duty.

to *Camp Bowie, Fort Worth, Tex.*, for duty as commanding officer of the base hospital.

Major GARFIELD L. McKINNEY, relieved at Corozal, Canal Zone, and to *commanding general, Eastern Dept.*, for duty.

Major LEARTUS J. OWEN, now on duty in the office of the Surgeon-General of the Army, to *Army Medical School, Washington, D. C.*, for examination for promotion.

Lieut.-Col. JOHN W. HANNER, relieved from 76th Division, Camp Devens, Ayer, Mass., and to *Washington, D. C.*, and report in person to the Surgeon-General of the Army for duty in his office.

Col. HENRY D. SNYDER, to *New York City* for temporary duty pertaining to the assembling of the branch of the Division of Finance and Supplies for duty overseas.

To *San Francisco, Calif.*, and to report by wire to the Adjutant-General of the Army and to the Surgeon-General of the Army for further orders, from Hawaiian Dept. Majors CLARENCE R. BELL, GEORGE R. CALLENDER, HARRY N. KERNS.

Major WILLIAM H. TEFFT, relieved at Fort Douglas, Utah, and to *Fort Riley, Kan.*, for duty as commanding officer of Evacuation Hospital No. 7.

Lieut.-Col. ROBERT E. NOBLE, to *Camp Greenleaf* for duty in connection with the Medical Dept. and upon completion of this duty will return to his proper station.

Col. WALTER D. McCRAW, relieved at Headquarters, Southern Dept. Fort Sam Houston, Texas, and to *Presidio, San Francisco, Calif.*, to assume command of the expedition of medical officers for duty overseas.

Col. CHARLES LYNCH, relieved with Base Hospital No. 2, Fort Bliss, Texas, to *Fort Sam Houston, Texas*, and report to the commanding general, Southern Dept., for duty as department surgeon.

Col. HENRY A. WEBBER, relieved at Laredo, Texas, and to *Fort Bliss, Texas*, for duty as commanding officer of Base Hospital No. 2.

Lieut. EDGAR N. HUME, relieved at the United States Disciplinary Barracks, Fort Leavenworth, Kan., and to *Washington, D. C.*, and report in person to the Surgeon-General of the Army for duty in his office.

ORDERS TO OFFICERS OF THE MEDICAL
RESERVE CORPS

Alabama

To Army Medical School, from Fort Benjamin Harrison, Lieut. JULIAN E. MEYER, Birmingham.

To Camp Dix, Wrightstown, N. J., from Fort Ethan Allen, Lieut. GEORGE C. KILPATRICK, Mobile.

To Fort Riley, base hospital, Lieut. RUSSELL CALLEN, Birmingham.

To Hoboken, N. J., as officer in charge of Mobile Laboratory, 41st Division, Lieut. JAMES R. BEAN, Birmingham.

To Rockefeller Institute, New York City, for instruction, from Fort Oglethorpe, Lieut. JOHN D. DICKSON, Birmingham.

Arkansas

To Camp McClellan, Anniston, Ala., base hospital, from Fort Oglethorpe, Lieut. JAMES F. POE, Shirley.

To Fort Sam Houston, Tex., from Fort Benjamin Harrison, Lieut. GEORGE B. FLETCHER, Little Rock.

To home and inactive list, from Fort Des Moines, Lieut. DANIEL W. JONES, Little Rock.

California

To Berkeley, Calif., University of California, as recruiting officer, Lieut. BRUNO F. SANDOW, Oakland.

To Camp Kearney, Linda Vista, Calif., base hospital, Capt. HERBERT S. THOMSON, Berkeley.

To Chicago, Ill., Northwestern University Dental School, for instruction, and on completion to Camp MacArthur, base hospital, from Fort Oglethorpe, Capt. ERNEST DOZIER, Redding; for instruction and on completion to proper station, from Camp Lewis, Lieut. JOSEPH R. BROWN, San Francisco.

To Fort Leavenworth, Kan., for duty in the department laboratory, Capt. JAMES M. FISHER, Gilroy.

To Fort Sam Houston, Tex., from Fort Benjamin Harrison, Lieuts. LOUIS FELGER, PERCY K. TELFORD, Los Angeles; WILLIAM A. BOYLE, FRANK W. PINGER, San Francisco.

To Los Angeles, Calif., for instruction in military roentgenology, from Presidio of San Francisco, Lieut. WALLACE A. REED, Covina.

To San Francisco, Calif., for duty, Lieuts. WALTER E. COPPEDGE, Alturas; ALBERT F. ADAMS, Sacramento; to Letterman Hospital, for duty, from the Presidio of San Francisco, Lieut. HARRY E. FOSTER, Berkeley.

Colorado

To Camp Grant, Rockford, Ill., base hospital, from Fort Oglethorpe, Lieut. WILLIAM A. SEDWICK, Denver.

To Mount Clemens, Mich., for duty, from Fort Riley, Lieuts. JOHN W. THOMPSON, Pueblo; JUSTIN J. YOUNG, Kremmling.

To Rantoul, Ill., for duty, from Fort Riley, Lieut. CARL C. FUSTON, Milliken.

To Rockefeller Institute, for instruction, and on completion, to Walter Reed General Hospital, Takoma Park, D. C., for duty, Lieut. JOHN R. HALL, Fort Logan.

Connecticut

To Boston, Mass., General Hospital, for instruction, and on completion, to Camp Lee, base hospital, from Fort Benjamin Harrison, Lieut. JEREMIAH B. SULLIVAN, New Haven.

To Camp Devens, 76th Division, for duty, Capt. FRANK P. TODD, Danielson.

To Camp Greenleaf, Fort Oglethorpe, for duty with Hospital Train No. 26, Lieut. LAWRENCE H. FROST, Plainville.

To Camp Sherman, Chillicothe, Ohio, base hospital, from Fort Benjamin Harrison, Capt. LOUIS I. MASON, Willimantic.

To New Orleans, La., Charity Hospital, for instruction, and on completion, to Camp Beauregard, base hospital, Lieut. FREDERICK E. STOCKTON, Springdale.

To Portland, Ore., for further instructions and assignment to duty with squadrons now being organized, Major RICHARD BLACKMORE, Framington.

To Rockefeller Institute, for instruction, Lieut. WILLIAM M. STAHL, Danbury.

To Walter Reed General Hospital, Takoma Park, D. C., for instruction in tuberculosis examination, Lieut. RAYMOND V. QUINLAN, Meriden.

District of Columbia

To Camp Sevier, Greenville, S. C., base hospital, from Fort Benjamin Harrison, Lieut. ROY T. MORRIS, Washington.

To Chicago, Ill., Northwestern University Dental School, for instruction, and on completion, to Camp Hancock, base hospital, from Camp Hancock, Lieut. OLIVER C. COX, Washington.

To Fort Sam Houston, Tex., for duty, from Fort Benjamin Harrison, Lieuts. JOSEPH P. MADIGAN, PATRICK S. MADIGAN, ERNEST K. STRATTON, Washington.

To Pittsburgh, Pa., for instruction from Dr. William O. Sherman, and on completion, to Fort McHenry, Md., Army General Hospital, No. 2, Lieut. IVA A. PELZMAN, Washington.

To Walter Reed General Hospital, Takoma Park, orthopedic service, from Camp Meade, Major THOMAS M. FOLEY, Washington.

Honorably discharged on account of being physically disqualified for active service, from Camp Jackson, Lieut. WILLIAM E. WHITSON, Washington.

Florida

To Camp Wheeler, Macon, Ga., base hospital, from Fort Oglethorpe, Lieuts. ELIJAH T. SELLERS, Jacksonville; WILLIAM R. GROOVER, Lakeland.

To Fort Barrancas, Fla., for duty, from Camp Wheeler, Lieut. ALLEN M. AMES, Pensacola.

To Fort Sam Houston, Tex., for duty, from Fort Benjamin Harrison, Lieut. BASCOM H. PALMER, Lake City.

Georgia

To Atlanta, Ga., Georgia School of Technology, as recruiting officer, Capt. WILLIAM A. JACKSON, Atlanta.

To Camp Wadsworth, Spartanburgh, S. C., base hospital, from Fort Oglethorpe, Lieut. ROBERT C. WALKER, Waycross.

To Camp Wheeler, Macon, Ga., base hospital, from St. Elizabeth's Hospital, Washington, D. C., Lieut. QUINTARD TAYLOR, Maysville.

To his home and the inactive list, from Cornell Medical College, Lieut. JOHN S. DERR, Atlanta.

To be honorably discharged on account of being physically disqualified for active service, Lieut. GRADY L. CARTER, Talbotton.

Hawaii

To Camp Kearney, Linda Vista, Calif., base hospital, from Hawaiian Dept., Capt. JOHN B. LUDY, Honolulu.

Idaho

To Camp Stuart, Newport News, Va., for duty, from Fort Benjamin Harrison, Lieut. ERNEST N. LAUBAUGH, Boise.

Illinois

To Boston, Mass., for instruction and on completion to Camp Jackson, Columbia, S. C., base hospital, from Fort Benjamin Harrison, Lieuts. HILIEL T. ISACOWITZ, Chicago; ANSON L. NICKERSON, Moline; FRANK E. SHIPMAN, Paris; MARSHALL WALLIS, Normal; ORA M. WILLIAMSON, Sullivan.

To Camp Custer, Battle Creek, Mich., base hospital, from Fort Benjamin Harrison, Major PHILIP S. DOANE, Chicago, Lieuts. PAUL E. BAIN, Pleasant Plains; CLIFFORD J. SPRUCE, Sibley.

To Camp Funston, Fort Riley, to inspect, and on completion to Fort Des Moines, and to the regular itinerary furnished, Major JOHN RIDLON, Chicago.

To Camp Gordon, Atlanta, Ga., base hospital, from Fort Benjamin Harrison, Lieut. GUY A. LONGBRAKE, Galesburg.

To Camp Grant, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Capt. FRANCIS W. BARTON, Danville; Lieut. JOHN R. PORTER, Rockford.

To Camp Greene, N. C., base hospital, from Fort Benjamin Harrison, Lieut. ROSCOE A. MITCHELL, Marshall.

To Camp Greenleaf, Fort Oglethorpe, for a course of instruction, Capt. ROY R. FERGUSON, Chicago.

To Camp Lee, for duty, from Camp Sherman, Chillicothe, Ohio, Capt. STEPHEN V. BALDERSTON, Evanston.

To Camp Pike, base hospital, from Fort Benjamin Harrison, Capt. CHARLES J. POOLE, Mount Vernon; Lieut. RAYMOND C. GILLOGLY, Newman.

To Camp Sevier, Greenville, S. C., base hospital from Fort Benjamin Harrison, Lieut. GEORGE BLACKBURNE, Minier.

To Camp Sherman, Chillicothe, Ohio, base hospital, from Fort Benjamin Harrison, Capt. JOSEPH R. HOLLOWBUSH, Rock Island; Lieuts. ROBERT A. NOBLE, Bloomington; CHARLES A. BURKHOLDER, Chicago; JOSEPH A. CAMPBELL, Anna; ORVEL A. SUTTLE, Mt. Vernon.

To Camp Travis, Fort Sam Houston, Texas, board for examination for tuberculosis, from Camp McClellan, Lieut. SAMUEL M. MARCUS, Chicago.

To Champaign, Ill., University of Illinois, as recruiting officer, Lieut. JAMES H. FINCH, Champaign.

To Chicago, Ill., for instruction, from Camp Dodge, Capt. EDWARD C. G. FRANING, Galesburg; Capt. ALPHA E. ROCKEY, Chicago; Lieut. LEROY B. ELLISTON, Depue; Lieut. LYMAN A. BURNSIDE, West Union.

To Cleveland, Ohio, for instruction, and on completion to Camp Hancock, base hospital, Lieut. JOHN H. EVANS, Chicago.

To Fort Riley, Kan., base hospital, from Fort Benjamin Harrison, Capt. PERCY J. CARROL, East St. Louis; Lieuts. ARTHUR D. JACKSON, FRANK W. MERRITT, Chicago.

To Fort Sam Houston, Texas, for duty, from Fort Benjamin Harrison, Lieuts. JOHN E. ROBINSON, MONTREVILLE A. ST. PETER, Chicago; EDWARD S. MURPHY, Dixon.

To Hawaii, and on arrival in Honolulu to report in person to the commanding general, Hawaiian Dept., for duty, from Fort Benjamin Harrison, Lieut. ALBERT L. STEBBINGS, Marseilles.

To New Orleans, La., Charity Hospital for instruction, and on completion to Camp Beauregard, base hospital, Lieut. TODD P. WARD, Mt. Vernon.

To New York City, Bellevue Hospital, for instruction, and on completion to Camp Meade, base hospital, from Fort Benjamin Harrison, Lieuts. ANTHONY J. LINOWIECKI, Chicago; LOUIS SAVITSKY, Cicero; EMANUEL M. RUNDQUIST, Rockford; to Camp Pike, Lieut. MILTON A. WEISE, Chicago; to Camp Taylor, Lieut. FRANK F. FRAIDER, Chicago; to Camp Upton, Lieuts. JACOB A. GOODMAN, IRA McKINNEY, Chicago; to Cornell Medical College, from Fort Oglethorpe, Lieut. SAMUEL J. TAUB, Chicago.

To Philadelphia, Pa., University Hospital, for instruction, and on completion to Camp Custer, base hospital, from Fort Benjamin Harrison, Capt. EUGENE F. WAHL, Edwardsville; to Camp Dix, base hospital, Lieut. EVERETT P. COLEMAN, Canton.

To Pittsburgh, Pa., for instruction, and on completion to Camp Dodge, base hospital, from Fort Benjamin Harrison, Lieut. ARTHUR K. SPIERING, Oak Park.

To Rockefeller Institute, New York City, for instruction, Lieuts. THOMAS R. MAXWELL, New Berlin; JOHN HRABIK, Murphysboro; on completion to Fort McPherson, Ga., base hospital, Lieut.

ARTHUR D. WEST, Moline; to *Fort Oglethorpe*, base hospital, from Fort Benjamin Harrison, Lieut. CHARLES R. SANDERSON, Waynesville.

To *Scott Field*, Bellevue, Ill., for duty, from Fort Benjamin Harrison, Lieut. HENRY L. DAVIS, Mt. Vernon.

To his home and the inactive list on account of being physically disqualified for active service, from Fort Benjamin Harrison, Lieuts. JAMES A. BOYER, Carmi; ADRIAN J. DeHAAN, East St. Louis.

Indiana

To *Camp American University*, Washington, D. C., for duty, from Fort Oglethorpe, Lieut. WALTER M. STOUT, Indianapolis.

To *Camp Custer*, Battle Creek, Mich., base hospital, from Fort Benjamin Harrison, Lieuts. JOHN C. GLACKMAN, Hartford; ELTON L. TITUS, Indianapolis.

To *Camp Devens*, base hospital, from Fort Benjamin Harrison, Lieut. HARRY S. OSBORNE, Glenwood.

To *Camp Gordon*, Atlanta, Ga., base hospital, from Fort Benjamin Harrison, Capt. SIMON J. YOUNG, Valparaiso.

To *Camp Mills*, Garden City, L. I., N. Y., base hospital, Lieut. WALLACE C. DYER, Evansville.

To *Camp Pike*, base hospital, from Fort Benjamin Harrison, Lieut. JOSEPH A. GRAHAM, Hammond.

To *Camp Travis*, base hospital, from Fort Benjamin Harrison, Lieut. MANFORD M. CLAPPER, La Fayette.

To *Cleveland, Ohio*, for instruction and on completion to *Camp Wadsworth*, base hospital, from Fort Riley, Lieut. Lyman T. Rawles, Fort Wayne.

To *Fort Riley, Kan.*, base hospital, from Allentown, Pa., Lieut. WALTER M. STOUT, Indianapolis, Ind.

To *Fort Sam Houston, Texas*, from Fort Benjamin Harrison, Lieut. BENJAMIN F. PENCE, Columbia City.

To *Hawaii*, from Fort Benjamin Harrison, Lieut. EPHRAIM B. CHENOWETH, Nineveh.

To *Hoboken, N. J.*, Port of Embarkation, as officer in charge of Mobile Laboratory, Third Division, Lieut. WEIR M. MILEY, Anderson.

To *New Orleans, La.*, Charity Hospital, for instruction and on completion to *Camp Travis*, base hospital, from Fort Benjamin Harrison, Lieut. ETHAN A. ISH, Waterloo.

To *New York City*, Bellevue Hospital, for instruction, and on completion to *Camp Sherman*, Capt. JAMES J. STANTON, Logansport; to *Camp Gordon*, Lieut. WILCOX G. THORNE, Columbus; to *Camp Sherman*, Lieut. FRANK McBEELER, Clinton, to Fort Oglethorpe, Lieut. STEPHEN B. ELRED, Henryville.

To *Philadelphia, Pa.*, University Hospital, for instruction and on completion to *Camp Custer*, base hospital, from Fort Benjamin Harrison, Lieut. DAVID D. OAK, La Crosse.

Iowa

To *Boston, Mass.*, City Hospital, for instruction and on completion to *Camp Dix*, base hospital, from Fort Benjamin Harrison, Lieut. JOHN D. HEXON, Decorah.

To *Chicago, Ill.*, for instruction, from Fort Sam Houston, Tex., Capt. BENJAMIN R. JOHNSTON, Cedar Rapids; to *Northwestern University Dental School*, for instruction and on completion to *Camp Bowie*, base hospital, from Camp Bowie, Lieut. PRENTISS B. CLEAVES, Cherokee.

To *Fort Riley, Kan.*, base hospital, Capt. JAMES W. OSBORN, Lieut. WILLIAM S. BINFORD, Dixon.

To *New Orleans, La.*, Charity Hospital, for instruction and on completion to *Camp Travis*, base hospital, from Fort Benjamin Harrison, Capt. GEORGE W. YAVORSKY, Belle Plaine.

To *New York City*, Bellevue Hospital, for instruction and on completion to *Camp Sherman*, Lieut. RANSOM D. BERNARD, Clarion; to *Camp Upton*, Lieut. WILLIAM HARRIS, Moravia.

To *Philippine Islands*, from Fort Benjamin Harrison, Capt. CLIFFORD W. LOSH, Des Moines; John H. Baldrige, Batavia.

To *Pittsburgh, Pa.*, for instruction and on completion to *Camp Grant*, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Lieuts. ELLIOT S. STRONG, Iowa City; HARRY B. WILKINSON, Perry.

To his home and the inactive list on account of being physically disqualified for active service, from Camp Bowie, Lieut. HARRY L. BRIDGMAN, Columbia.

Kansas

To his home and the inactive list on account of being physically disqualified for active service, from Fort Riley, Lieut. EDMOND R. KEITH, Lawrence.

Kentucky

To *Boston, Mass.*, City Hospital, for instruction and on completion to *Camp Dix*, base hospital, from Fort Benjamin Harrison, Lieut. LOUIS R. EDLESON, Louisville.

To *Camp Dix*, Wrightstown, N. J., base hospital, Capt. JOHN L. PHYTHIAN, Newport.

To *Camp Jackson*, member of board for examination for tuberculosis, from Fort Oglethorpe, Capt. HORACE LUTEN, Fulton.

To *Camp Sherman*, Chillicothe, Ohio, base hospital, from Fort Benjamin Harrison, Capt. PORTER LAYNE, Ashland.

To *Camp Wadsworth*, Spartanburg, S. C., base hospital, from Fort Oglethorpe, Lieut. CHARLES W. STROUP, Ludlow.

To *Fort Benjamin Harrison*, for instruction in tuberculosis examination, Lieut. WILLIAM S. NEEDHAM, Louisville.

To *New York City*, Bellevue Hospital, for instruction and on completion to *Camp Mead*, base hospital, from Fort Benjamin Harrison, Lieut. ALBERT L. SOLOMON, Hodgenville.

To his home and the inactive list from Fort Des Moines, Lieuts. MORRIS A. BLACKBURN, ROBERT L. OLIVER, Louisville.

Honorably discharged, Lieut. FINIS LONDON, Woodburn.

Louisiana

To *Camp American University*, Washington, D. C., for duty, from Fort Oglethorpe, Lieut. JOHN G. LILLY, St. Joseph.

To *Camp Meade*, Annapolis Junction, hospital, from Fort Oglethorpe, Capt. FRANK M. LETT, Lecompte.

To *Camp Sheridan*, Montgomery, Ala., for duty, from Fort Oglethorpe, Major ROY M. VAN WART, New Orleans.

Maine

To *Army Medical School*, Washington, D. C., for instruction in orthopedic surgery, Capt. TALCOTT O. VANAMEE, Portland.

To *Camp Dodge*, Des Moines, Ia., base hospital, from Fort Benjamin Harrison, Lieut. HORACE K. RICHARDSON, Bradford.

To *Camp Gordon*, Atlanta, Ga., base hospital, from Fort Benjamin Harrison, Capt. BERTRAND D. RIDLON, Portland.

To *Chicago, Ill.*, for instruction, and on completion to *Fort Oglethorpe* for duty, from Camp Grant, Lieut. RALPH W. WAKEFIELD, Bar Harbor.

To *Hoboken, N. J.*, Lieut. CHARLES S. WRIGHT, Portland.

To *Rockefeller Institute*, for instruction, and on completion to *Fort McPherson, Ga.*, base hospital, Lieuts. HENRY K. STINSON, Augusta; CARL G. DENNETT, Unity.

Maryland

To *Camp Greenleaf*, Evacuation Hospital No. 4, Capt. EDWARD E. LAMKIN, Vienna.

To *Camp Hancock*, Augusta, Ga., base hospital, from Fort Benjamin Harrison, Lieuts. PATRICK F. McGUIRE, IRVING K. LOVETT, Baltimore.

To *Camp Meade*, base hospital, from Fort Benjamin Harrison, Lieut. ERWIN E. MAYER, Baltimore.

To *Camp Travis*, Fort Sam Houston, member of board for examination for tuberculosis, from Camp McClellan, Capt. CHARLES W. RAUSCHENBACH, Baltimore.

To *Fort Oglethorpe, Ga.*, for duty with Hospital Train No. 22, Lieut. FRANK L. JENNINGS, Hamilton.

To *Fort Sam Houston, Texas*, for duty, from Fort Benjamin Harrison, Lieut. HERTEL P. MAKEL, Baltimore.

To *Rockefeller Institute*, for instruction in therapy of pneumonia, Lieut. HENRY M. THOMAS, Baltimore.

To *Walter Reed General Hospital*, for instruction in tuberculosis examinations, Lieut. LOUIS L. JACOBS, Baltimore.

To *Washington, D. C.*, for duty at the Army Medical Museum in connection with supplying illustrations for lecture work, from Baltimore, Major ROBERT T. TAYLOR, Baltimore.

Massachusetts

To *Birmingham, Ala.*, to inspect a site proposed for a general hospital and on completion to his proper station, Major ELLIOT G. BRACKETT, Boston.

To *Camp McClellan*, base hospital, from Fort Oglethorpe, Capt. DONALD R. GILGILLAN, Worcester.

To *Camp Sevier*, for duty in his specialty, from Syracuse, N. Y., Lieut. HENRY R. VIETS, Boston; from Fort Benjamin Harrison, Lieut. TIMOTHY J. SULLIVAN, Watertown.

To *Camp Taylor*, Louisville, Ky., base hospital, from Fort Benjamin Harrison, Capt. CHARLES L. UPTON, Shelburne.

To *Cleveland, Ohio*, for instruction and on completion to his proper station, from Fort Ethan Allen, Lieut. HERBERT B. PERRY, Northampton.

To *Fort Riley, Kan.*, for duty, from Fort Benjamin Harrison, Capt. ERIK S. J. JOHNSON, New Bedford.

To *Gettysburg, Pa.*, for duty with Field Hospital and Ambulance Co. No. 29, Lieut. CHARLES H. WILSON, Chelsea.

To *New York City*, to attend the meeting of the Carnegie Foundation from Boston, Major HORACE D. ARNOLD, Boston; to *Bellevue Hospital* for instruction and on completion to *Camp Pike*, base hospital, from Fort Benjamin Harrison, Lieut. NORMAN M. SCOTT, Boston.

To *Philadelphia, Pa.*, University Hospital, for instruction and on completion to *Camp Dix*, base hospital, from Fort Benjamin Harrison, Lieut. GEORGE W. TULLY, Southbridge.

To *Philippine Islands*, for duty, from Fort Benjamin Harrison, Lieut. HERBERT B. PRIEST, Ayer.

To *Washington, D. C.*, to report in person to the Surgeon-General of the Army for duty in his office, from Boston, Mass., Major HORACE D. ARNOLD, Boston.

To his home and honorably discharged from Camp Devens, Lieut. JOHN J. STACK, Boston.

Michigan

To *Ann Arbor, Mich.*, Psychopathic Hospital, for intensive training, from Fort Benjamin Harrison, Major FREDERICK H. NEWBERRY, Detroit.

To *Army Medical School*, for instruction in orthopedic work, Lieuts. AUGUST E. GEHRKE, WILLIAM S. GONNE, Detroit.

To *Boston*, for instruction and on completion to *Camp Jackson*, Columbia, S. C., base hospital, from Fort Benjamin Harrison, Lieuts. CARL A. MITCHELL, Benton Harbor; BRUNO J. SOWICKI, Detroit.

To *Camp Custer*, for duty, from Camp Sherman, Capt. Orton H. Clark, Kalamazoo; Lieut. CRAWFORD W. McCORMICK, Detroit.

To *Camp Devens*, Ayer, Mass., base hospital, from Fort Benjamin Harrison, Lieut. VICTOR H. DESOMOSKEOY, Flint.

To *Camp Dix*, Wrightstown, N. J., base hospital, Lieut. LEANDER P. FERNANDEZ, Eau Claire.

To *Camp Dodge*, Des Moines, Iowa, base hospital, Capt. WALTER S. SHARPE, Dowagiac.

To *Camp Grant*, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Capt. HENRY J. MEYER, Saginaw; Lieut. ELLSWORTH P. MILLS, Detroit; ELLSWORTH ORTON, Pontiac.

To *Camp Jackson*, Columbia, S. C., as a member of board for examination for tuberculosis, from Camp McClellan, Capt. CHARLES H. MERRILL, Detroit; for temporary duty in the base hospital, from Fort Benjamin Harrison, Lieut. ESLI T. MORDEN, Adrian.

To *Camp Sherman*, base hospital, from Fort Benjamin Harrison, Lieut. JEROME F. BERRY, Kalamazoo.

To *Camp Taylor*, Louisville, Ky., base hospital, Lieut. SAMUEL E. GEIST, Detroit; GEORGE F. LISTER, Hillman; HARLEN MACMULLEN, Manistee.

To *Chicago*, Northwestern University Dental School, for instruction, and on completion to *Camp Shelby*, base hospital, Lieut. DAVID D. TODD, Calumet.

To *New York City*, as member of examining board and recruiting officer, from Physical Examining Unit, Aviation Section, Capt. DAVID H. WEBSTER, Rudyard.

To *Rockefeller Institute*, for instruction and on completion to *Fort Oglethorpe*, base hospital, from Fort Benjamin Harrison, Capt. EDWIN J. EVANS, Greenland.

To the inactive list on account of being physically disqualified for active service, from Camp Sherman, Lieut. EDWARD J. AGNELLY, Detroit.

Minnesota

To *Camp Lee*, base hospital, from Fort Oglethorpe, Lieut. CARL C. COWIN, Adrian.

To *Camp Pike*, base hospital, from Fort Benjamin Harrison, Capt. ROBERT H. MONAHAN, International Falls.

To *Camp Sherman*, base hospital, from Fort Benjamin Harrison, Lieut. GARNETT BELOTE, Caledonia.

To *Cleveland*, for instruction and on completion to *Camp Greene*, base hospital, Lieut. RALPH B. BETTMAN, Rochester.

To *Fort Sam Houston*, Texas, for duty from Fort Benjamin Harrison, Lieut. CLEON J. GENTZKOW, Minnciska.

To *New York City*, Bellevue Hospital, for instruction and on completion to *Camp Taylor*, base hospital, from Fort Benjamin Harrison, Lieut. CARL N. HARRIS, St. Paul; to proceed to Camp Upton, Lieut. GORDON G. ST. CLAIR, Section Thirty.

To *Pittsburgh*, for instruction and on completion to *Camp Grant*, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Lieut. IRAN B. MAERCKLEIN, Renville.

To *Rantoul, Ill.*, for duty, from Fort Riley, Capt. CHESTER H. CLARK, Duluth.

To the inactive list on account of being physically disqualified for active service, from Camp Grant, Lieut. WARD AKESTER, Marshall.

Mississippi

To *Camp Meade*, Annapolis Junction, base hospital, from Fort Oglethorpe, Lieuts. CHARLES G. BELL, Canton; LEONIDAS F. BARRIER, Greenwood.

To his home and the inactive list, from Fort Des Moines, Lieuts. BENJAMIN T. WILLIAMSON, Greenwood; THOMAS E. PHILLIPS, Whynot.

Missouri

To *Boston*, City Hospital, for instruction and on completion to *Camp Dix*, base hospital, from Fort Benjamin Harrison, Capt. ELBERT J. LEE, JR., St. Louis.

To *Camp Dodge*, Des Moines, Iowa, base hospital, from Fort Benjamin Harrison, Lieut. LEWIS E. J. BROWNE, Lewistown.

To *Chicago*, Northwestern University Dental School, for instruction and on completion to *Camp Hancock*, base hospital, Lieut. CLAUDE E. FRAZIER, Kansas City; to *Camp Logan*, base hospital, Lieut. FRANK M. BARNS, Brashear.

To *Fort Riley*, Kansas, for instruction, from Jefferson Barracks, Capt. ABRAHAM C. LEGGAT, St. Louis.

To *New York City*, Cornell Medical College, for instruction in military roentgenology, from Camp Funston, Lieut. ZACHARIAN G. JONES, Kansas City.

To Philadelphia, to give instruction in the school of plastic and oral surgery, and on completion of this duty to return to his proper station, Major VILRAY P. BLAIR, St. Louis.

Montana

To *New Orleans*, Charity Hospital, for instruction and on completion to *Camp Travis*, base hospital, from Fort Benjamin Harrison, Lieut. GROVER C. SHERRARD, Opheim.

Nebraska

To *Fort Riley*, Kan., for duty with Evacuation Hospital No. 1, from School of Military Roentgenology, Lieut. IRA H. LOCKWOOD, Lincoln.

To *Pittsburgh*, for instruction and on completion to *Camp Dodge*, base hospital, from Fort Benjamin Harrison, Lieut. CREIGHTON D. WILLIAMS, Genoa.

To *Rockefeller Institute*, for instruction in laboratory work, Capt. WILLIAM W. DEWOLFE, Bennet; HARRY M. BONNIWELL, Lincoln.

Nevada

To *Camp Dodge*, Des Moines, Iowa, for duty, from Fort Leavenworth, Lieut. DELOS A. TURNER, Goldfield.

To *Camp Shelby*, Hattiesburg, Miss., base hospital, from Fort Riley, Lieut. WILLIAM J. CIRCE, Carson City.

To *Fort Oglethorpe*, for duty, Lieut. ROLAND D. RUSSELL, Owyhec.

New Hampshire

To *Camp Gordon*, Atlanta, Ga., base hospital, from Fort Benjamin Harrison, Lieut. OSWALD S. MAYNARD, Nashua.

New Jersey

To *Army Medical School*, Washington, D. C., for instruction in orthopedic surgery, from Boston, Lieut. FRANK W. PINNEO, Newark.

To *Camp Devens*, as member of a board for examination for tuberculosis, from Walter Reed General Hospital, Lieut. SAMUEL R. FAIRCHILD, Carney Point.

To *Camp Dix*, Wrightstown, N. J., base hospital, from Fort Oglethorpe, Lieuts. ALFRED L. ELLIS, Metuchen; GLENDON R. LEWIS, Newark.

To *Columbus Barracks*, Ohio, for duty in his specialty, from Gettysburg, Pa., Lieut. AMBROSE F. DOWD, Newark.

To *Fort Porter*, N. Y., for duty with Hospital Unit A, from Cornell Medical College, Lieut. PETER G. FAGONE, Hackensack.

To *Princeton*, N. J., Princeton University, as recruiting officer, Lieut. ANTHONY C. ZEHNDER, Newark.

To *Yaphank*, L. I., N. Y., for duty, Capt. WILLIAM J. CONDON, New Brunswick.

New York

To *Army Medical School*, Washington, D. C., for duty, from Fort Benjamin Harrison, Lieut. SAUL L. MEYLACKSON, New York City; for instruction in orthopedic surgery, from Camp Bartlett, Westfield, Mass., Lieut. FRANCIS J. A. BENNETT, Auburn; from Camp Taylor, Lieut. HUBERT E. CHAUVIN, Brentwood; Lieut. ALFRED M. RIDWELL, New York.

To *Atlanta*, Ga., for duty in the department laboratory, from Army Medical School, Lieut. MANNING C. FIELD, Brooklyn.

To attend conference of the State Hospital Development Commission, New York City, Major THOMAS W. SALMON, Staten Island.

To *Austin, Tex.*, school of aeronautics, for duty, from Fort Riley, Lieut. FRANK A. JOHNSTON, Kingston.

To *Boston*, for instruction and on completion to *Camp Jackson*, Columbia, S. C., base hospital, from Fort Benjamin Harrison, Lieut. ALEXANDER S. SIM, Brooklyn.

To *Boston*, Massachusetts General Hospital, for instruction and on completion to *Camp Lee*, base hospital, from Fort Benjamin Harrison, Lieut. SAMUEL ZWERLING, Brooklyn.

To *Camp Custer*, Battle Creek, Mich., base hospital, from Fort Benjamin Harrison, Capt. ALFRED W. ARMSTRONG, Canandaigua; Capt. EUGENE F. CONNALLY, Troy.

To *Camp Devens*, Ayer, Mass., as member of board for examination for tuberculosis, from Walter Reed General Hospital, Capt. THEODORE J. ABBOTT, New York; Lieut. EDWARD P. EGLES, New York; Lieut. CLYDE D. OATMAN, Poolville; for duty in the base hospital, from Syracuse, Lieut. RAYMOND C. HILL, Bath; for duty in the base hospital, from Fort Benjamin Harrison, Lieut. LEON H. CORNWALL, New York.

To *Camp Dix*, Wrightstown, N. J., base hospital, from Fort Oglethorpe, Lieut. HAROLD F. MICKLEY, Seneca Falls.

To *Camp Doniphan*, Fort Sill, Okla., base hospital, from Fort Benjamin Harrison, Lieut. GEORGE W. BATT, Kennedy; from Neurological Institute, New York City, Lieut. VINCENT W. WEISS, New York.

To *Camp Gordon*, as member of board for examination for tuberculosis, from Fort Oglethorpe, Lieut. FRANCIS A. GLASS, Yonkers.

To *Camp Grant*, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Capt. JOHN M. KEYES, New York.

To *Camp Greenleaf*, Fort Oglethorpe, base hospital, Lieut. HERBERT ADLER, New York.

To *Camp Hancock*, Augusta, Ga., base hospital, from Fort Benjamin Harrison, Lieut. MAX A. LEVY, New York.

To *Camp Jackson*, Columbia, S. C., Lieut. HARRY V. JUDGE, Albany; Lieut. GEORGE A. BLAKESLEE, New York; Lieut. PAUL B. JOHNSON, New York; Lieut. LEWIS H. TAFT, New York.

To *Camp Lee*, Petersburg, Va., Capt. GEORGE D. HAMLIN, Brooklyn.

To *Camp McClellan*, base hospital, Lieut. HARRY D. BREWSTER, New York.

To *Camp Meade*, Annapolis Junction, base hospital, from Fort Oglethorpe, Lieut. HERBERT W. EMSHEIMER, New York.

To *Camp Mills*, Garden City, L. I., N. Y., base hospital, from Camp Custer, Capt. CONSTANTINE J. MACGUIRE, New York.

To *Camp Pike*, Little Rock, Ark., base hospital, Capt. GEORGE E. MAURER, New York; board for examination of command for tuberculosis, from Camp McClellan, Lieut. FRANK J. HERBIG, Staten Island.

To *Camp Sevier*, Greenville, S. C., base hospital, from Fort Benjamin Harrison, Lieut. MAURICE A. STRUM, New York.

To *Camp Shelby*, base hospital, from Fort Riley, Kan., Lieut. JOHN W. BURTON, Alpine.

To *Camp Sherman*, Chillicothe, Ohio, base hospital, from Fort Benjamin Harrison, Capt. HENRY L. SCHELLING, Brooklyn.

To *Camp Taylor*, Louisville, Ky., base hospital, from Fort Benjamin Harrison, Capt. CARLIN PHILIPS, New York; Lieut. WILLIAM H. NAFIS, Brooklyn; Lieut. WILLIAM A. CONLON, Central Islip; Lieut. EMIL J. PELLINI, New York.

To *Camp Travis*, Fort Sam Houston, board for examination of command for tuberculosis, from Camp McClellan, Lieut. PATRICK J. HIRST, Middle Grove.

To *Camp Upton*, Yaphank, L. I., N. Y., board for examination of command for tuberculosis, from Walter Reed General Hospital, Lieut. DANIEL R. ROBERT, Brooklyn; base hospital, from Fort Oglethorpe, Lieut. JONATHAN PEARSON, Schenectady.

To Chicago, Northwestern University Dental School, for instruction, and on completion to Camp Wheeler, base hospital, Capt. FRANCIS R. LYMAN, Hastings-on-Hudson; Lieut. GEORGE S. SKIFF, Gainesville; Lieut. FREDERICK W. LESTER, Seneca Falls.

To Fort Oglethorpe, for duty with Hospital Train No. 27, Lieut. KARL V. PACE, Mineola; for duty with Hospital Train No. 23, Lieut. DANIEL BACHARACH, New York; for instruction, Lieut. PHILIP R. ZINN, New York; for duty in his specialty at the base hospital, from Camp McClellan, Lieut. FREDERICK C. DEVENDORF, Utica.

To Fort Riley, Kan., base hospital, from Fort Benjamin Harrison, Major BRUCE G. PHILLIPS, New York; for duty in connection with the outbreak of meningitis, and on completion to Fort Oglethorpe for duty as instructor, from Fort Benjamin Harrison, Capt. HERBERT L. CELLER, New York.

To Fort Sam Houston, Texas, for duty from Fort Benjamin Harrison, Lieut. RALPH E. CURTI, Brooklyn; Lieut. ROLAND A. DAVISON, Brooklyn; Lieut. JOHN R. EVERS, Elmsford; Lieut. FRANCIS M. FITTS, New York; Lieut. WILLIAM A. SMITH, New York; Lieut. EDWARD H. TONOLLA, New York; Lieut. HAROLD H. GOLDING, Peekskill; Lieut. SEYMOUR C. SCHWARTZ, Syracuse; Lieut. FRANCIS T. DUFFY, Troy.

To Fort Slocum, N. Y., for duty, from Cornell Medical College, Lieut. CHARLES S. GOODWIN, Brooklyn.

To Garden City, L. I., N. Y., for duty, from Fort Sill, Major ATTILIO M. CACCINI, New York.

To Ithaca, N. Y., Cornell University, as recruiting officer, Capt. SAMUEL A. MUNFORD, Ithaca.

To Louisville, Ky., base hospital, from Fort Benjamin Harrison, Lieut. LIPMAN M. KAHN, New York.

To Mineola, L. I., N. Y., for duty, from Fort Benjamin Harrison, Capt. GUY H. TURRELL, Smithtown Branch.

To New Orleans, La., Charity Hospital, for instruction, and on completion to Fort Riley, base hospital, Lieut. EDWARD P. FLOOD, Albany.

To New York City, in charge of the physical examining unit, Capt. WILLIAM A. SCRUTON, New York.

To New York City, Roosevelt Hospital, for instruction, and on completion of this duty to Fort Oglethorpe, Evacuation Hospital No. 7, from Syracuse, N. Y., Capt. ARCHER D. BABCOCK, Randolph; on completion to U. S. Army General Hospital, Capt. JAMES W. DECKER, New York.

To New York City, U. S. Army General Hospital No. 1, for duty, from Academy of Medicine, Capt. JOHN J. COTTER, New York; to Bellevue Hospital for instruction and on completion to Camp Gordon, base hospital, from Fort Benjamin Harrison, Lieut. GROVER A. SILLIMAN, Delhi; on completion of course to Camp Pike, base hospital, from Fort Benjamin Harrison, Lieut. IRVING S. SCHNEIKRAUT, Brooklyn; on completion of duty to Camp Taylor, base hospital, from Fort Benjamin Harrison, Lieut. MYER S. BLOOM, Binghamton; on completion of duty to Camp Upton, base hospital, from Fort Benjamin Harrison, Lieut. WILLIAM H. SEWARD, Amsterdam; to Roosevelt Hospital, for instruction and on completion to Camp Upton, base hospital, Lieut. EDWIN C. FOSTER, Penn Yan.

To New York City, for instruction in orthopedic work, from Camp Bartlett, Westfield, Mass., Lieut. WALTER H. McSHANE, Troy.

To Philadelphia, University Hospital, for instruction, and on completion to Camp Dix, base hospital, from Fort Benjamin Harrison, Lieut. MICHAEL E. NOLAN, Johnstown.

To Pittsburgh, for instruction, and on completion to Camp Grant, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Lieut. SOLOMON SCHLIMBAUM, New York.

To Rockefeller Institute, for instruction, on completion to Roosevelt Hospital for a further course of instruction, and on completion to Wrightstown, N. J., Camp Dix, Capt. WAYLAND A. MORRISON, New York; for instruction in laboratory work, from Washington, D. C., Lieut. BYRON D. WHITE, Brooklyn; for instruction and on completion of this course to U. S. Army General Hospital No. 1, N. Y., for temporary duty, from Fort Benjamin Harrison, Lieut. LOUIS F. BOYD, New York; for instruction and on completion to Walter Reed General Hospital, Takoma Park, D. C., for duty, Lieut. FRANCIS X. McGOVERN, New York.

To Scott Field, Belleville, Ill., for duty, from Fort Benjamin Harrison, Lieut. MORRIS WINECK, Troy.

To Walter Reed General Hospital, for instruction in tuberculosis examination, Lieut. FRANCIS ARGUS, Buffalo.

To his home and honorably discharged, from Cornell Medical College, Lieut. BENJAMIN J. BOYD, New York.

To the inactive list, from Camp Wheeler, Macon, Ga., Lieut. CARLTON A. LEE, Brooklyn.

Honorably discharged on account of being physically disqualified for active service, Capt. EDWARD J. WIENCKE, Schenectady.

North Carolina

To Camp Lee, Petersburg, Va., as member of board for examination of command for tuberculosis, from Fort Oglethorpe, Capt. SYLVESTER D. CRAIG, Winston Salem.

To Camp McClellan, Anniston, Ala., base hospital, from Fort Oglethorpe, Lieut. JOHN M. PRESSLY, Belmont.

To Chicago, Northwestern University Dental School, for instruction, and on completion to Camp Greene, base hospital, Lieut. CHARLES W. BANNER, Greensboro.

To Fort Oglethorpe, for instruction, Lieut. RALPH S. STEVENS, Smithfield.

Honorably discharged on account of being physically disqualified for active service, from Fort Des Moines, Lieuts. JAMES S. THOMPSON, Dunn; FOSTER F. BURNETT, Wilmington.

North Dakota

To Camp Meade, Annapolis Junction, for duty, from Camp American University, Lieut. EDWARD F. KENNEDY, White Earth.

To Fort Benjamin Harrison, for instruction in tuberculosis examination, Lieut. HERBERT B. WENTZ, Verona.

To Fort Riley, base hospital, Lieut. BERNARD S. NICKERSON, Mandan.

Ohio

To Allentown, Pa., for duty with Base Hospital No. 31, from Rockefeller Institute, Lieut. DAVID L. FARLEY, Youngstown.

To Army Medical School, for instruction, Lieut. CHARLES A. STAMMEL, Jr., Cincinnati.

To Camp Dix, Wrightstown, N. J., base hospital, Capt. WILLIAM A. QUINN, Portsmouth.

To Camp Grant, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Lieut. IVAN I. YODER, Cleveland.

To Camp Greene, N. C., base hospital, from Fort Benjamin Harrison, Lieuts. WALTER H. MYTINGER, Chillicothe; NICHOLAS L. ZINNER, Cleveland.

To Camp Jackson, Columbia, S. C., as member of board for examination of command for tuberculosis, from Camp McClellan, Lieut. WILLIAM S. P. DONEHOO, Wintersville.

To Camp Taylor, Louisville, Ky., base hospital, Capt. ELMER A. KLEIN, Norwood.

To Columbus, Ohio, Ohio State University, as recruiting officer, Lieut. AUSTIN H. SEEDS, Columbus, Ohio.

To Fort Benjamin Harrison, base hospital, from Fort Benjamin Harrison, Major HENRY L. WOODWARD, Cincinnati; for instruction in tuberculosis examination, Lieut. CHARLES B. HAMMA, Springfield.

To Fort Oglethorpe, for instruction, Lieut. JOHN A. MEEK, Lorain.

To Fort Sam Houston, Texas, for duty, from Fort Benjamin Harrison, Lieut. HAROLD O. BROWN, Cincinnati.

To New Orleans, Charity Hospital, for instruction, and on completion to Fort Riley, base hospital, Lieut. JOHN M. STEEL, Cleveland; to proceed to Camp Beauregard, Lieut. JOHN M. STEEL, Lakewood.

To Philadelphia, for duty with Base Hospital No. 38, Second Regiment Armory, from New York Post-Graduate Hospital, Lieut. ROBERT B. PRATT, Bellefontaine.

To San Diego, Calif., Rockwell Field, for duty, from Fort Riley, Lieut. JULIUS C. KRAMER, Elyria.

To the inactive list, from Fort Des Moines, Lieut. LOUIS A. CORNISH, Cincinnati.

Oklahoma

To Chicago, Northwestern University Dental School, for instruction, and on completion to Camp Dodge, Des Moines, Iowa, from Fort Riley, Capt. GEORGE D. McLEAN, Oklahoma; for instruction, from Camp Doniphan, Fort Sill, Okla., Lieut. RAYMOND H. FOX, Altus; from Fort Sam Houston, Lieut. WILLIAM G. HUSBUND, Gould.

To Fort Omaha, Neb., for duty, from post hospital, Fort Omaha, Lieut. BURTON FAIN, Frederick.

To Fort Sam Houston, Texas, for duty from Fort Benjamin Harrison, Lieut. JOHN W. WHISENANT, Duncan.

To Rockefeller Institute, for instruction in laboratory work, Lieut. THOMAS A. HARTGRAVES, Soper.

Oregon

To Camp Lewis, American Lake, Wash., for duty, Lieut. DWIGHT F. MILLER, Portland, Ore.

To Chicago, for instruction, and on completion to return to his proper station, from Fort Columbus, Wash., Lieut. LLOYD H. MOTT, Salem.

Pennsylvania

To Army Medical School, Washington, D. C., for instruction in orthopedic surgery, Lieut. GUY C. BOUGHTON, Erie; for instruction, from Camp Hancock, Lieut. ZERA E. BOLIN, Philadelphia.

To Atlanta, Ga., for duty in the department laboratory, Lieut. RUBEN A. E. PETERSON, Allentown.

To Boston, City Hospital, for instruction, and on completion to Camp Dix, base hospital, from Fort Benjamin Harrison, Lieut. WILLIAM J. REDDY, Shenandoah.

To Camp Bowie, Fort Worth, Texas, base hospital, Capt. JAMES G. FLYNN, Ridgway.

To Camp Custer, Battle Creek, as sanitary inspector, Major JAMES F. EDWARDS, Pittsburgh; at base hospital, from Fort Oglethorpe, Lieut. FRANK B. STEVENSON, Indiana.

To Camp Dix, Wrightstown, N. J., base hospital, from Fort Oglethorpe, Lieut. CHARLES C. GANS, Chambersburg.

To Camp Grant, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Lieut. FRANCIS J. KELLY, Philadelphia; Lieut. REES S. LLOYD, Pittsburgh.

To Camp Greenleaf, Fort Oglethorpe, for duty with Hospital Train No. 26, Lieut. FRANK F. BARTHMAIER, Philadelphia; for instruction, Lieut. HERBERT COOPER, Philadelphia; to Evacuation Hospital No. 5, for duty, Lieut. EDWARD A. PITCAIRN, Wilkinsburg.

To Camp Hancock, Augusta, Ga., to direct the nutritional survey of this camp and on completion of this duty to return to his proper station, Capt. CASPAR W. MILLER, Wallingford.

To Camp Jackson, as member of board for examination of command for tuberculosis, from Fort Oglethorpe, Lieut. THOMAS L. COLEY, Philadelphia; in base hospital, from Fort Benjamin Harrison, Lieut. EVAN W. MEREDITH, Pittsburgh.

To Camp Kelly, San Antonio, Texas, for duty, from Fort Oglethorpe, Lieut. WILLIAM C. T. POULSON, Philadelphia.

To Camp Lee, Petersburg, Va., as member of board for examination of command for tuberculosis, from Walter Reed General Hospital, Capt. ELMER G. WEIBEL, Erie; Lieut. JOHN DONNELLY, Philadelphia; in base hospital, from Fort Oglethorpe, Lieut. OSCAR J. KINGSBURY.

Nesquehoning; Lieut. JOSEPH J. KOCYAN, Plains; Lieut. HOWARD C. DOWN, Wycoc.

To *Camp McClellan*, Anniston, Ala., base hospital, from Fort Oglethorpe, Lieut. JOHN W. MERRYMAN, Kennett Square.

To *Camp Meade*, Annapolis Junction, Md., base hospital, from Fort Oglethorpe, Major FRED H. CLARK, Wilkes-Barre; as member of board for examination of command for tuberculosis, from Walter Reed General Hospital, Lieut. ABRAHAM TRASOFF, Philadelphia.

To *Camp Pike*, Little Rock, Ark., as member of board for examination of command for tuberculosis, from Camp McClellan, Lieut. HARRY O. MATEER, Pittsburgh.

To *Camp Taylor*, Louisville, Ky., base hospital, from Fort Benjamin Harrison, Lieut. FRANCIS E. EVANS, Philadelphia.

To *Camp Travis*, Fort Sam Houston, Texas, base hospital, from Fort Oglethorpe, Lieut. WILLIAM R. BREADY, Philadelphia; Lieut. REUBEN A. BOGIA, Philadelphia.

To *Camp Upton*, Yaphank, L. I., N. Y., base hospital, from Fort Oglethorpe, Lieut. CHARLES E. MULLIN, Cambridge Springs; as member of board for examination of command for tuberculosis, from Walter Reed General Hospital, Lieut. RALPH E. HENRY, Erie.

To *Camp Wadsworth*, Spartanburg, S. C., base hospital, from Fort Oglethorpe, Lieut. CLARK H. YEAGER, Wilkes-Barre.

To *Chanute Field*, for duty, from Fort Riley, Lieut. THOMAS E. JONES, Philadelphia.

To *Chicago*, Northwestern University Dental School, for instruction, and on completion to *Camp Sheridan*, base hospital, from Fort Oglethorpe, Lieut. SAMUEL McCLARY, III, Philadelphia.

To *Fort McHenry*, Md., for duty in the U. S. Army General Hospital, No. 2, from Johns Hopkins Hospital, Baltimore, Lieut. STEWART C. BOWERS, New Freedom.

To *Fort Monroe*, Va., for duty, from Camp Wheeler, Lieut. CHARLES C. CROUSHORE, Greensburg.

To *Fort Oglethorpe*, for instruction, from Fort McPherson, Lieut. VICTOR J. P. JOURDAN, Bristol; for duty with Hospital Train No. 28, Lieut. CLARENCE H. KETTERER, Butler.

To *Fort Porter*, N. Y., for duty with Hospital Unit "A," Lieut. PERCY D. MOULTON, Germantown, Philadelphia; Lieut. CHARLES A. FIFE, Philadelphia; Lieut. DOUGLAS P. MURPHY, Philadelphia.

To *Fort Sam Houston*, Texas, for duty from Fort Benjamin Harrison, Lieut. RICHARD S. MAGEE, Altoona; Lieut. CHARLES R. SNYDER, Marysville; Lieut. DANIEL C. HANKEY, Pittsburgh; Lieut. WILLIAM W. McCAW, Pittsburgh; Lieut. MYRON P. RUDOLPH, Pittsburgh; Lieut. MAURICE S. WEAVER, Pittsburgh.

To *Hoboken*, N. J., Port of Embarkation, as officer in charge of Mobile Laboratory, Thirty-First Division, Lieut. HARRY E. UNGERLEIDER, Philadelphia.

To *Louisville*, Ky., for conference with the Kentucky Committee on Medical Defense, and on completion to *Indianapolis and Memphis*, Tenn., to confer with State Committees on Medical Defense and itinerant boards, and on completion to his proper station, Major HENRY D. JUMP, Philadelphia.

To *New York City*, Bellevue Hospital, for instruction, and on completion to *Camp Gordon*, base hospital, from Fort Benjamin Harrison, Lieut. LAWRENCE C. MOORE, Chatham.

To *Philadelphia*, University Hospital, for instruction, and on completion to *Camp Gordon*, base hospital, from Fort Benjamin Harrison, Lieut. JOHN L. LAVIN, Kingston; on completion to *Camp Dix*, base hospital, from Fort Benjamin Harrison, Lieut. HARRY P. SMITH, Pittsburgh.

To *Rockefeller Institute*, for instruction, and on completion to *Fort Oglethorpe*, base hospital, from Fort Benjamin Harrison, Lieut. WILLIAM H. NIX, Indiana; for instruction in laboratory work, Lieut. OTTO C. HIRSCH, Philadelphia.

To the inactive list, from Camp Custer, Lieut. ROBERT C. JOHNSTON, Springdale.

Honorably discharged on account of being physically disqualified for active service, Lieut. SAMUEL H. KOHLMAN, Philadelphia.

Philippine Islands

To *Philippine Department*, Manila, P. I., for duty, Lieut. PAUL McC. LOWELL, Manila.

Rhode Island

To *Army Medical School*, for instruction, Lieut. CLYDE B. COVEY, Howard.

South Carolina

To *Camp Greenleaf*, Fort Oglethorpe, for instruction, from Army Medical School, Lieut. KARL L. ABLE, Leesville.

To *Fort Oglethorpe*, for instruction, Lieut. VICTOR M. ROBERTS, Blackburg.

To *Fort Riley*, Kan., for duty, from Fort Benjamin Harrison, Lieut. LEWIS F. ROBINSON, Pickens; from Jefferson Barracks, Lieut. WILLIAM G. WHITE, York.

To *Fort Sam Houston*, Texas, for duty, from Fort Benjamin Harrison, Lieut. ALBERT B. PAVY, Charleston.

To *New Orleans*, Charity Hospital, for instruction, and on completion to *Camp Beauregard*, base hospital, Lieut. BENJAMIN F. WYMAN, Aiken.

To *New York City*, Bellevue Hospital, for instruction, and on completion to *Camp Gordon*, base hospital, from Fort Benjamin Harrison, Lieut. PRESTON J. JOHNSTON, Estell.

South Dakota

To *Fort Riley*, for duty, Lieut. WILLIAM E. CLARK, Aberdeen.

To *Fort Sam Houston*, Texas, for duty, from Fort Benjamin Harrison, Lieut. EARLE D. QUINNELL, Sisseton.

To *Rockefeller Institute*, for instruction in laboratory work, Lieut. GUSTAVE A. LANDMANN, Scotland.

Tennessee

To *Boston*, for instruction, and on completion to *Camp Jackson*, Columbia, S. C., base hospital, from Fort Benjamin Harrison, Lieut. LISLE B. ROBINSON, Memphis.

To *Camp Jackson*, Columbia, S. C., base hospital, from Fort Oglethorpe, Lieut. NICHOLAS ARDAN, Bristol.

To *Camp Kearney*, Linda Vista, Calif., base hospital, from Fort Oglethorpe, Lieut. HUGH T. MOORE, Chattanooga.

To *Chicago*, Northwestern University Dental School, for instruction, and on completion to *Camp Beauregard*, base hospital, Capt. WILLIAM A. CARNES, Memphis.

To *Fort Oglethorpe*, for instruction, Lieut. JOHN H. HERRING, Memphis.

To *Fort Sam Houston*, Texas, for duty, from Fort Benjamin Harrison, Lieuts. JAMES W. McCLAREN, Jackson; HENRY L. FRASER, Nashville.

To *Memphis*, Dyersburg, Union City, Jackson, Brownsville, Paris, Clarksville, Franklin, Columbia, Fayetteville, Murfreesboro, Chattanooga, Cleveland, Morristown, Bristol, Johnson City, Knoxville, Nashville, for the purpose of examining applicants for the Medical Reserve Corps, Lieuts. HARRISON H. SHOULDERS, Nashville; SIDNEY S. EVANS, Ripley.

To *Nashville*, Tenn., for duty, Lieuts. HARRISON H. SHOULDERS, Nashville; SIDNEY S. EVANS, Ripley.

To *San Antonio*, Texas, Camp Kelly, for duty, from Fort Oglethorpe, Lieut. FLEMING J. O'CONNOR, Jackson.

To *Tenafly*, N. J., Base Hospital No. 66, Venereal Hospital, Lieut. HARLEY L. ACUFF, Knoxville.

To his home and the inactive list, from Fort Des Moines, Lieuts. GEORGE W. BUGG, Nashville; THOMAS W. RHODES, Whiteville.

Honorably discharged, from Camp Wheeler, Lieut. ROBERT B. GRIFFIN, Ridgely.

Texas

To *Austin*, Texas, University of Texas, as recruiting officer, Lieut. ROBERT A. TRUMBULL, Dallas.

To *Boston*, and on completion to *Fort Sam Houston*, base hospital, Major CHARLES S. VENABLE, San Antonio.

To *Camp Grant*, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Lieut. GEORGE L. LANGWORTHY, Lakeview.

To *Camp Travis*, as member of board for examination of command for tuberculosis, from Fort Bliss, Capt. CHARLES McC. HENDRICKS, El Paso.

To *Chicago*, for instruction, from Camp Cody, Capt. THOMAS C. BROOKS, Bay City, Texas.

To *Fort Sam Houston*, Texas, for duty, from Fort Benjamin Harrison, Lieuts. DOUGLAS H. MEBANE, ROBERT K. SIMPSON, PAUL H. STREIT, Galveston; WILLIAM D. PETIT, Marfa, FRANK H. MOOSE, Weatherford.

To *Fort Worth*, Texas, for duty, from Fort Sill, Lieut. EUGENE W. R. WILLIAMS, Celeste.

To report by wire to the commanding general, *Southern Department*, for assignment to duty, Lieut. BROOKS G. GRANT, Fort Worth.

To his home and the inactive list, from Camp Cody, Lieut. PAUL GALLAGHER, El Paso.

To his home and the inactive list on account of being physically disqualified for active service, from Camp Sherman, Lieut. JULIUS H. HILL, Heath.

Virginia

To *Army Medical School*, Washington, D. C., for instruction, Lieut. BERNARD L. JARMAN, Charlottesville.

To *Camp Lee*, Petersburg, Va., for duty, from Camp Wheeler, Lieut. WILLIAM S. WILEY, Bristol.

To *Fort Sam Houston*, Texas, for duty, from Fort Benjamin Harrison, Lieut. CHARLES W. SALE, Fredericksburg.

To *New York City*, Roosevelt Hospital, for instruction, and on completion to *Camp Lee*, base hospital, Capt. EDWARD M. PARKER, Emporia; to *Bellevue Hospital*, for instruction, and on completion to *Camp Gordon*, base hospital, from Fort Benjamin Harrison, Lieut. CHARLES PHILLIPS, Richmond.

To *Philadelphia*, for instruction in orthopedic surgery, and on completion to return to inactive list, Lieut. KYLE B. STEELE, Charlottesville.

Vermont

To *Army Medical School*, Washington, D. C., for instruction in orthopedic surgery, from Fort Ethan Allen, Lieut. JOHN D. THOMAS, Burlington.

To *Baltimore*, Phipps Clinic, for intensive training in his specialty, from Gettysburg, Pa., Lieut. STEWART L. GOODRICH, Waterbury.

To *Boston*, for instruction in orthopedic surgery, from Fort Ethan Allen, Capt. HARRY L. FROST, Williston.

To *Fort Riley*, Kan., base hospital, from Fort Benjamin Harrison, Capt. HENRY C. JACKSON, Woodstock.

To *Rockefeller Institute*, for instruction in laboratory work, from Fort Ethan Allen, Capt. FREDERICK E. CLARK, Burlington; to *Fort Oglethorpe*, base hospital, from Fort Benjamin Harrison, Lieut. GEORGE ROBERTS, Chester.

Washington

To *Camp Hancock*, *Camp Scvier*, *Camp Wadsworth* and *Camp Greene*, to make a nutritional survey of the camps, and on completion to return to his proper station, from Camp American University, Lieut. ROLLA B. HILL, Colfax.

To *Chicago*, for instruction, Major DEAN LEWIS; from Vancouver Barracks, Lieut. WALLACE A. PRATT, Walla Walla.

To *Fort Sam Houston*, Texas, for duty, from Fort Benjamin Harrison, Lieut. LEO S. TRASK, Burlington.

West Virginia

To Camp Custer, Battle Creek, Mich., base hospital, from Fort Benjamin Harrison, Lieut. WILLIAM L. RAYL, Huntington.

To Camp Devens, as member of board for examination of command for tuberculosis, from Walter Reed General Hospital, Capt. GEORGE H. BARKSDALE, Charleston.

To Chicago, Northwestern University Dental School, for instruction, and on completion to Rockford, Ill., base hospital, from Fort Benjamin Harrison, Capt. MAURICE C. JAMES, Hinton.

To Fort Oglethorpe, for instruction, Lieut. WILLIAM O. HEARN, Bluefield; Lieut. HERBERT C. KINCAID, Summersville.

To New York City, Cornell Medical College, for instruction in military roentgenology, from Fort Benjamin Harrison, Lieut. HOMER W. GRIMM, St. Marys.

To Tenafly, N. J., for duty at Base Hospital No. 86, venereal hospital, from Fort Benjamin Harrison, Lieut. RUSH F. FARLEY, Ivaton.

Wisconsin

To Camp Cody, base hospital, from Fort Benjamin Harrison, Lieut. ELMER S. JOHNSON, Oregon.

To Fort Leavenworth, Kan., for duty in the department laboratory, Capt. MILTON W. HALL, Mendovi.

To Fort Sam Houston, Texas, for duty from Fort Benjamin Harrison, Lieut. BENJAMIN B. ROWLEY, Milwaukee.

To Rantoul, Ill., for duty, from Fort Riley, Lieut. PAUL H. FOWLER, Plain.

To Rockefeller Institute, New York City, for instruction in laboratory work, from Houston, Texas, Lieut. EDWARD P. COOKE, Milwaukee.

Wyoming

To Rockefeller Institute, for instruction in laboratory work, Lieut. GEORGE W. EARLE, Lusk.

Association News

MEDICAL ADVISORY BOARDS

Arrangements for Creating Medical Examining Boards
in Connection with the Selective Service

Under date of October 19, the following report of the Board of Trustees was submitted to the members of the House of Delegates of the American Medical Association, and was adopted unanimously by a postal vote:

To the Members of the House of Delegates of the American Medical Association:

Under date of Oct. 13, 1917, Hugh S. Johnson, Lieutenant-Colonel, Judge Advocate, Executive Officer of the Provost Marshall General, acting for the President of the United States and War Department, addressed a letter to the American Medical Association from which we quote:

"We need the active and vigorous cooperation of the American Medical Association. We need the promptest and most thorough action in this regard. Will you not call together a sufficient number of your executive council to authorize this cooperation by the Association, and to consider a definite and concrete proposition which can be presented here, and upon which we can act?"

Specifically, the cooperation desired of the Association is set forth in the following:

"It is planned to establish Medical Advisory Boards, not necessarily integrated with the territorial jurisdiction of either Local or District Boards, but having headquarters with sufficient apparatus and conveniences so located as to be accessible to boards in the portion of the state in which the Advisory Boards are situated. Any case in which the local examining physician has held the registrant disqualified for service (unless the disqualification is obvious) or in which the local physician is in doubt, or in which the registrant feels aggrieved by the decision of the local physician, or where the Local Board or the Government Appeals Agent desires to appeal the findings of the local physician, is to be sent to such Medical Advisory Board for an exhaustive [medical] reexamination upon which the Local Board can proceed to a final determination."

These Medical Advisory Boards will consist of physicians selected for their ability to make thorough and complete physical and mental examinations. This means that the boards shall be composed of specialists competent to make such laboratory and other examinations as may be required. This matter was of such importance and the urgency was so great that, in accordance with the spirit of the recommendation of the Reference Committee on Reports of Officers adopted by the House of Delegates in June, 1917, i. e.:

"We further suggest to the House of Delegates that it formally and officially offer to the government, through adoption of this recommendation, the services and facilities of the American Medical Association for such assistance as may be in its power to render hereafter." the Board of Trustees, on Oct. 19, 1917, in special session assembled for the purpose of considering the matter, all the members being present, unanimously adopted the following resolutions:

Resolved, That the Board of Trustees for and on behalf of the American Medical Association accept the invitation to cooperate with the Provost Marshall General in the matter presented in the letter of Lieut.-Col. Hugh S. Johnson under date of Oct. 13, 1917.

Resolved, That a committee of three be and hereby is appointed with full power to act in conjunction with the Provost Marshall-General in the premises.

The following committee was appointed: M. L. Harris, secretary, Board of Trustees; Hubert Work, chairman, House of Delegates, and E. J. McKnight, member of the Board of Trustees.

Respectfully submitted, by order of the Board of Trustees,

M. L. HARRIS, Secretary, Board of Trustees.

The committee at once proceeded to Washington, D. C. After consultation with Lieut.-Col. Johnson of the Provost Marshal-General's Office, a conference with representatives of the Committee on State Activities of the General Medical Board of the Advisory Commission, Council of National Defense, was arranged. At the latter meeting, Drs. Edward Martin, Philadelphia, F. F. Simpson, Pittsburgh, and John D. McLean, Philadelphia, were appointed a committee from this Committee on State Activities to cooperate with the committee of the American Medical Association, and it was agreed that the six should select a seventh member of this joint committee.

The joint committee met in Washington, D. C., November 1, when on motion of Dr. Edward Martin, Dr. Alexander R. Craig, secretary of the American Medical Association, was named as the seventh member and made secretary of the joint committee. On motion of Dr. Hubert Work, Dr. Edward Martin was elected chairman.

The committee was advised that the Provost Marshal-General desired to have the joint committee immediately suggest in each state a member of the Medical Reserve Corps, not assigned to duty in connection with the National Army or base hospital, in order that the Surgeon-General of the Army might be requested to order this medical officer into active duty as the medical adviser to the governor of his state in the erection of the medical advisory boards for the state. The joint committee thereupon proceeded to select a physician in each state to be recommended to act as medical adviser to the governor.

Later, the members of the committee received the following telegram:

You have been appointed a member of committee on Medical Appeal Boards of General Medical Board of Council of National Defense. You are requested to attend an important meeting of this committee at the Council of National Defense, Washington, 11 o'clock, Friday, November 16.

FRANKLIN MARTIN, Chairman, General Medical Board.

In compliance with this request, the joint committee met. Dr. John D. McLean, secretary of the Committee on State Activities of the General Medical Board of the Advisory Commission, Council of National Defense, reported to the joint committee that it had been necessary to revise the list of medical advisers to the governors, who had been suggested at the previous conference of the joint committee. A number of such changes had to be made for different reasons, among which were that the physician selected was on duty elsewhere, or was connected with a hospital unit, or was an officer in his own state. Accordingly, Dr. McLean reported that the following physicians had been selected as medical advisers to the governors and requested to report for a conference to be held on Saturday, November 18:

Alabama.....James Norment Baker, Montgomery
Arizona.....Francis Eppes Shine, Bisbee
Arkansas.....Clinton P. Meriwether, Little Rock
California.....Henry Howard Sherk, Pasadena
Colorado.....Horace C. Wetherill, Denver
Connecticut.....David Chester Brown, Danbury
Delaware.....James A. Draper, Wilmington
District of Columbia.....John Wesley Bovee, Washington
Florida.....Carey Pegram Rogers, Jacksonville
Georgia.....William Clifton Lyle, Augusta
Idaho.....Warner Hunter Carithers, Moscow
Illinois.....Frank Billings, Chicago
Indiana.....Joseph Rilus Eastman, Indianapolis
Iowa.....William Wilson Pearson, Des Moines
Kansas.....John Franklin Hassig, Kansas City
Kentucky.....Louis Samuel McMurtry, Louisville

Louisiana.....Charles Jefferson Miller, New Orleans
 Maine.....Erastus E. Holt, Sr., Portland
 Maryland.....William Henry Welch, Baltimore
 Massachusetts.....Fred Lund, Boston
 Michigan.....Reuben Peterson, Ann Arbor
 Minnesota.....William James Mayo, Rochester
 Mississippi.....Walter B. Dobson, Jackson
 Missouri.....John Young Brown, St. Louis
 Montana.....Thomas Casey Witherspoon, Butte
 Nebraska.....August Frederick Jonas, Omaha
 Nevada.....George McKenzie, Reno
 New Hampshire.....John Martin Gile, Hanover
 New Jersey.....Philip Marvel, Atlantic City
 New Mexico.....John Wilson Elder, Albuquerque
 New York.....Charles North Dowd, New York
 North Carolina.....John Wesley Long, Greensboro
 North Dakota.....Victor Hugo Stickney, Dickinson
 Ohio.....Charles S. Hamilton, Columbus
 Oklahoma.....Claude A. Thompson, Muskogee
 Oregon.....Kenneth Alexander J. MacKenzie, Portland
 Pennsylvania.....Edward Parker Davis, Philadelphia
 Rhode Island.....John William Keefe, Providence
 South Carolina.....Robert Spann Cathcart, Charleston
 South Dakota.....Fred Angier Spafford, Flandreau
 Tennessee.....William D. Haggard, Nashville
 Texas.....Witten Booth Russ, San Antonio
 Utah.....William Brown Ewing, Salt Lake City
 Vermont.....John Brooks Wheeler, Burlington
 Virginia.....Reid White, Lexington
 Washington.....James R. Yocum, Tacoma
 West Virginia.....John Egerton Cannaday, Charleston
 Wisconsin.....L. Rock Sleyster, Waupun
 Wyoming.....Fred Wood Phifer, Wheatland

The duties of these state medical advisers and of the medical advisory boards were explained by Provost Marshal-General Crowder and Lieut.-Col. Hugh S. Johnson of the Provost Marshal-General's Office. The medical advisers were directed to report to the governors of their respective states and to offer to assist in determining the number of districts and territory to be covered by each district as well as in the selection of the personnel of the medical advisory boards.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

County Medical Society Aids War Sufferers.—The Fresno County Medical Society at its meeting, November 6, voted the establishment of a permanent monthly donation of \$10 to be turned over to relieve the sufferers from the war in Europe.

New Officers.—The Psychopathic Association of California, at its annual meeting at Los Angeles, November 3, elected Curtis D. Wilbur, president; Edward H. Williams, vice president; William S. James, secretary-treasurer, and Drs. Henry G. Brainerd, Charles L. Allen, Edward H. Williams and Thomas J. Orbison, all of Los Angeles, as medical members of its board of directors.

Personal.—Dr. Everett R. Smith, Los Angeles, is reported to be seriously ill at the California Hospital, Los Angeles. —Dr. Charles W. Anderson, Los Angeles, has returned after a year's service with the Canadian Army Medical Corps on the western front. —Dr. John T. Davison, Stockton, has been reappointed health officer of San Joaquin County. —Dr. Nathaniel B. Potter, formerly of New York, has transferred his work regarding the metabolic unit to Santa Barbara, where he will continue his research work at the Cottage Hospital. —Dr. Stanley Stillman, San Francisco, has received orders for foreign service. —Dr. Franklin S. Wilcox, Patton, superintendent of the Southern California State Hospital, has been appointed superintendent of the State Hospital at Norwich, Conn., succeeding Dr. Harry Pollack.

ILLINOIS

German, Not General.—At the meeting of the German Hospital Association, held November 15, the question of changing the corporate name of the institute from "The German Hospital of Chicago" to "The General Hospital of Chicago" was voted down, and the institution will retain its original name.

Reconstruction Service.—In the report of the Central Free Dispensary of Rush Medical College it is stated that the reconstruction of invalided soldiers and men and women

physically unfit who are needed in the industries will constitute an important part of the work of the institution during the coming year. Eighteen members of the staff of the dispensary are now in the army service.

Personal.—Major William J. Swift, Chicago, commanding the Field Hospital Section of the Thirty-Third Division, Camp Logan, Houston, Texas, has resigned, and his resignation has been accepted to take immediate effect. —Major Eugene G. Clancy, Chicago, formerly of the Seventh Illinois Infantry, and later commander of the One Hundred and Thirtieth Field Hospital, has been appointed Major Swift's successor. —Dr. Clifford C. Ellis, formerly a member of the staff of the Chicago State Hospital, Dunning, has been appointed assistant superintendent of the Watertown State Hospital, succeeding Dr. Edward A. Foley, transferred to similar duty at the Chicago State Hospital. —Dr. Joseph B. Liston, Carlinville, has been appointed a member of the staff of the Jacksonville State Hospital. —Dr. Martin L. Moyer, Hillsboro, was operated on in the Hillsboro Hospital, November 2, for nephrolithiasis, and is reported to be doing well.

IOWA

Field Hospital Unit Formed.—Dr. Francis L. Love, Iowa City, has completed the organization of the Iowa Field Hospital Unit, which he will command. His officers are Drs. Virgil Orin Muench, Nichols; Philip M. Day, Barnes City, and Arthur T. Bailey, Iowa City.

Personal.—Dr. Richard H. Whalen, Tama, has been appointed physician and surgeon to the Sac and Fox Indian Agency, succeeding Dr. Benjamin Thompson. —Dr. Alexander W. Trout, Perry, received a check for \$8,000 from Washington, D. C., November 1, on account of services rendered during the Civil War. —Dr. James B. Horner, Lamoni, who suffered a cerebral hemorrhage, October 25, is reported to be improving. —Fire in the office of Dr. George A. Carson, Mount Vernon, October 23, burned out the entire interior of the building.

Hospital News.—At a special meeting of the stockholders of the May Hospital Company in Charles City, October 30, it was voted that the corporation be dissolved. —Miss M. Esther Bayliss, Minneapolis, has been appointed superintendent of the Spencer Hospital, succeeding Miss Della Darling, resigned to take up Red Cross duties in France. —Work has been commenced on the new Children's Hospital in connection with the State University of Iowa, Iowa City, which is to be situated on the West Side of the Iowa River. An appropriation of \$150,000 for this institution was made by the last legislature. —The Denison (Iowa) Hospital, announces that it is now thrown open to all physicians.

KENTUCKY

Sanatorium Nearly Full.—Dr. Howard E. LeCates, physician in charge of the Fayette County Tuberculosis Sanatorium, states that there are now fifty patients in the institution, which is within two of its capacity.

New Officers of State Association.—At the sixty-seventh annual meeting of the Kentucky State Medical Association, held in Louisville, November 6 to 9, the following officers were elected: president, Dr. James S. Lock, Barboursville; vice presidents, Drs. Joseph L. Barker, Pembroke; Hazelton H. Stallard, Pikeville, and James C. Douglass, Franklin; councilors, third district, Dr. Joseph N. McCormack, Bowling Green; sixth district, Dr. Robert C. McChord, Lebanon, and ninth district, Dr. James W. Kincaid, Catlettsburg, and delegates to the American Medical Association, Drs. William W. Richmond, Clinton, and Carl L. Wheeler, Lexington (reelected).

LOUISIANA

Infant Clinic.—A free clinic for infants up to the age of 9 months has been established at the Lying-In Hospital, New Orleans. The clinic will be in charge of Dr. George Bloom, and will be open from 11 to 12 o'clock daily.

Personal.—Dr. William H. Robin, superintendent of the New Orleans City Board of Health, was given a handsome gold badge by the employees of his department, November 3. —Dr. George W. Martin, Arnaudville, was made superintendent of oil inspection by the state board of health, October 29. —Dr. Thaddeus P. Bell, New Orleans, has been elected field secretary of the Louisiana Anti-Tuberculosis League for the coming year. —Asst. Surg. Howard F. Smith, U. S. P. H. S., has been appointed, by the president of the state board of health, director of the civil sanitary dis-

strict surrounding the Thirty-Ninth Division Army Camp.—Dr. Ernest S. Lewis, New Orleans, has been appointed consulting gynecologist; Dr. Charles Chassaignac, consultant in genito-urinary diseases, and Dr. Roy M. Van Wart, psychiatrist, to Charity Hospital, New Orleans.

MARYLAND

Diphtheria at Fullerton.—There has been one fatal case of diphtheria at Fullerton, Baltimore County, and considerable anxiety exists among the parents of children there. Dr. Harry M. Slade, Reisterstown, county health officer, will have all cases of the disease which may develop isolated, and every precaution will be taken to prevent an epidemic.

Personal.—Dr. Lewellys F. Barker, Baltimore, was elected president of the Southern Medical Association at the annual meeting of the association held in Memphis, Tenn.—Dr. Franklin P. Mall, professor of anatomy in the medical department of the Johns Hopkins University, a nationally known authority on anatomy and author of several textbooks on the subject, is critically ill at the Johns Hopkins Hospital, following two operations to remove gallstones.

MICHIGAN

New Hospital.—A new fireproof contagious disease hospital, to cost about \$12,000, is to be erected by the St. Luke's Hospital Association, Marquette.

Personal.—Dr. John C. Lampman, Hastings, injured his hip seriously by a fall from a stepladder, November 7.—Dr. Frederick C. Warnshuis, Grand Rapids, chief surgeon of the Pere Marquette System, fractured his leg in a collision between his automobile and another car, November 5.

Health League Recommended.—In his address, made on retiring from the presidency of the Michigan Anti-Tuberculosis Association, Dr. Arthur F. Fischer, Hancock, chief of the medical staff of the Quincy Line, recommended the establishment of a Good Health League, which would come closer to the people than an antituberculosis association could.

MISSOURI

Goodwin and Dercle in St. Louis.—Col. T. H. Goodwin of the British Army Medical Service and Col. C. U. Dercle of the French Army Medical Service were guests of the Medical Section of the State Committee on National Defense at St. Louis, November 16. They delivered addresses before the Chamber of Commerce and the City Club at a luncheon, were entertained at a dinner at 6 o'clock at the St. Louis Club, and at 8 o'clock addressed a large audience in the Central High School. Colonel Dercle addressed the St. Louis Medical Society, November 17.

Reports of Births.—For failure to report the birth of a child, a St. Louis doctor who had knowledge of the birth was arrested and fined \$5, the midwife who delivered the child was fined \$10. The baby is blind. After birth the baby developed inflamed eyes which the midwife treated for nine days and then called the physician, who was unable to save the eyes, and failed to report the birth. Commenting on this neglect the *St. Louis Post Dispatch* remarks editorially: "In the light of these facts, we venture the opinion that St. Louis should make an effort to keep as perfect a record of new babies as it does of new corpses."

Personal.—Dr. J. Carl Drake, formerly of St. Louis, now lieutenant in the One Hundred and Thirty-Eighth Infantry (Fifth Missouri) has been confined to the base hospital, Fort Sill, Okla., for several weeks. He was operated on November 1, and will soon be able to resume work in camp.—Dr. E. H. Trowbridge, physician at the tuberculosis hospital and municipal farm of Kansas City, has been elected secretary of the hospital and health board of Kansas City, and will be in charge of the medical inspection of the schoolchildren.—Dr. Guy L. Noyes, dean of the Medical School, University of Missouri, has been relieved from military duty at Camp Funston and returned to Columbia to continue his school duties.—Dr. William W. Duke, Kansas City, was a guest at a joint meeting of the St. Louis Medical Society and the St. Louis Dental Society, November 3, and delivered an address on "Dental Sepsis as a Focal Infection."

MONTANA

Scarlet Fever.—On account of the prevalence of scarlet fever in Helena, a meeting of state and county health officials was held in that city, October 26, at which it was decided to

take stringent measures to stamp out the disease. Dr. John H. Dent, East Helena, was appointed deputy county health physician to assist the county physician with the scarlet fever cases.

Hospital Notes.—At the meeting of the board of trustees of the Butte Deaconess Hospital Association, October 31, contracts were signed for an addition to the present building to cost \$21,500, and to accommodate forty patients.—The Grandview Hospital, located just outside the city limits of Malta, was destroyed by fire, October 24. All patients were safely removed from the institution.

Personal.—Dr. Herbert H. Judd, Bozeman, has been appointed a member of the State Board of Medical Examiners, succeeding Dr. William L. Renick, Butte, resigned.—Dr. Julius H. P. Gauss, Lewistown, has been nominated by the administrative board of the Mayo Clinic, Rochester, Minn., for a fellowship in internal medicine in the Mayo Foundation.—Dr. Oscar M. Lanstrum, Helena, has been elected a vice president, and Drs. Thomas C. Witherspoon, Butte, and William F. Cogswell, Helena, members of the executive board of the Montana State Association for the Study and Prevention of Tuberculosis.

NEBRASKA

Friction in State Board.—The state board of health, October 19, made an investigation of the friction in the administration staff of the board. Health Commissioner Tenney, Mrs. Andrews, the statistician, and Dr. William F. Wild, state epidemiologist, are said to be involved in this investigation.

Personal.—Dr. Benjamin F. Williams, superintendent of the Lincoln State Hospital for the Insane, presented his resignation to take effect Jan. 1, 1918, and will enter private practice in Lincoln.—Dr. William J. Davies, Fremont, who was operated on for the removal of gallstones in the Nicholas Senn Hospital, Omaha, October 31, is reported to be making satisfactory progress toward recovery.

NEW YORK

New York City

The Harvey Society.—The second of the present course of Harvey Society lectures was given at the New York Academy of Medicine, November 24, by Dr. Linsly R. Williams, on "Medical Problems of the War."

In Memory of Dr. Lewis Atterbury Stimson.—Exercises in honor of the memory of Dr. Lewis Atterbury Stimson, professor of surgery in Cornell University Medical College, were held in the auditorium of the college, November 16. Addresses were made by Dr. Jacob Gould Shurman, Elihu Root, Dr. W. Gilman Thompson and Dr. Edward L. Keyes.

Representatives of Red Cross Meet.—A meeting of representatives of the Southern Section of New York met in this city recently for the purpose of stimulating the war work and adding to the efficiency of the Atlantic Division. Dr. Thomas D. McRossie, Brooklyn, member of the Red Cross Commission to France, addressed the representatives. He laid special stress on the necessity of keeping up the work of making surgical dressings.

Personal.—Dr. J. Ramsay Hunt has been appointed associate in neurology and psychiatry on the staff of the New York City Children's Hospital and School, Randall's Island.—Dr. William M. Leszynsky has been appointed neurologist to the Manhattan State Hospital.—Drs. Morris Steinberg and Leo Lieberman, members of the house staff of St. Mary's Hospital, Jamaica, were injured in a collision between the ambulance in which they were riding and an automobile, November 9.—Dr. Thomas F. Reilly has been appointed to the chair of medicine in the Fordham University School of Medicine.

Laboratory Course for War Service.—Through the united efforts of the War Service Committee of the Medical Women's National Association, New York University, and the bureau of laboratories of the department of health, a course in medical laboratory work is offered to applicants who have the preliminary training in science and scientific methods obtained in a four years' college course or the equivalent. The object is to fit workers for war service in medical laboratories in this country and in Europe. The course will extend over a period of three months, requiring six hours' work each day. Application may be made to Dr. Anna W. Williams, Research Laboratory, foot of East Sixteenth Street. The fee is \$75.

NORTH CAROLINA

Personal.—Dr. Charles T. Nesbitt, Wilmington, has been appointed health commissioner of Akron, Ohio.—Dr. William K. Reid has resigned as superintendent of the health department of Charlotte.

State Quarantine Law Enforced.—Seventy-seven counties of North Carolina have at present put into operation the new state quarantine law. Twenty-three counties have so far made no progress in this regard.

Orthopedic Hospital for Gastonia.—Mr. R. B. Babington, Gastonia, has donated 20½ acres of land on which is to be established an orthopedic hospital, the charter for which has already been granted by the state.

PENNSYLVANIA

Physicians Needed.—The Pennsylvania State Committee of the Council of National Defense, Medical Section, announces that the committee has applications at this time pending to fill the following positions in hospitals and institutions in or near Philadelphia: Medical: Superintendent of hospital, salary \$1,500 per annum; two clinical assistantships, psychopathic, salary \$600 per annum; assistant bacteriologist, salary \$1,000 per annum; anesthetizer, salary \$30 per month. Surgical: Assistant surgeon, salary \$3,000 per annum; visiting surgeon, dispensary, no salary; visiting ophthalmologist, no salary; visiting laryngologist, no salary. Internships, general internships, resident physicians in special hospitals, etc. Applicants for these positions should communicate with the secretary, Charles Scott Miller, M.D., giving school and year of graduation, qualifications, credentials, etc., and salary desired.

Philadelphia

Addresses Before Medical Societies.—Dr. Rosalie Slaughter-Morton, New York, chairman of the Woman's Committee of the Council for National Defense, delivered an address on "War Service for Women Physicians" at the meeting of the Medical Society of the Woman's Hospital, November 20.—Dr. Arthur S. Kendall, Sydney, N. S., delivered the Gross Lecture, "Recent Developments in Intestinal Bacteriology," at the meeting of the Pathological Society, November 22.

Philadelphia County Medical Society.—At the meeting of the Philadelphia County Medical Society, to be held November 28, Major David Silver, Pittsburgh, assistant director of the Division of Military Orthopedic Surgery, will discuss the surgical aspects of the function of orthopedic surgery in the war, and will detail what has been accomplished and what his branch intends to do for the service. The civic aspects will be discussed by Major Henry R. Hayes of the Sanitary Corps. The discussion will be opened by Dr. Gwilym G. Davis, professor of orthopedic surgery in the University of Pennsylvania, and a member of the Orthopedic Advisory Council.

Optometrists to Be Ousted.—About 120 fake "eye-doctors" are to be thrown out of business shortly in this city. The unscrupulous individuals who have not hesitated to advertise themselves as optometrists, when they had no right whatever to that title, and who have ruined the eyes of thousands of their patients by prescribing glasses or giving treatment which was harmful in the extreme, will be ousted within a few months, if the plans of the State Board of Optometrical Education, Examination and Licensure are realized. There are about 2,000 practicing optometrists in Pennsylvania, 800 of whom have offices in this city. The state board today began examining the 800 local optometrists, 300 taking the prescribed examinations in the Central High School. Two more days will be required to examine the others. The examinations, which cover five subjects, are the first to be held under the new law to license men engaged in the practice of optometry, and are designed to eliminate the charlatan practitioner.

WISCONSIN

Tells of War Surgery.—At the meeting of the Beloit Six O'clock Club, November 14, Major Charles McDonald spoke on war surgery and Red Cross work in Austria-Hungary, where he has spent the last three years.

Anthrax in Milwaukee.—A second case of anthrax has been discovered in Milwaukee in the same tannery where the first victim was found. The infection is not so severe as in the first case, and the patient is under treatment in the South View Isolation Hospital.

All Physicians Medical Examiners.—The medical examiner-ship for the Wisconsin State Tuberculosis Sanatorium has

been extended to include all regularly licensed physicians who are citizens of Wisconsin. The former list will be used in cases in which the applicant for the sanatorium does not give the name of his family physician.

Hospital Items.—The Franson Hospital, Augusta, has been sold to Mr. Robert Reider, Humbird.—The fund-raising campaign for the Ashland General Hospital began, November 12. A tentative site for the tuberculosis sanatorium for the northern part of the state has been selected on the Bayfield County side of Chequamegon Bay. The last legislature passed a bill appropriating \$75,000 for this project.

Personal.—Dr. Matthew N. Federspiel, Milwaukee, was elected president, and Dr. Henry McCabe, Milwaukee, vice president of the Marquette University Alumni Association.—Dr. Thaddeus D. Smith, Neenah, who was recently wounded in a German air raid in a base hospital behind the trench line, is under treatment in a hospital in England.—Dr. Angus E. MacMillan, Stevens Point, was operated on in Chicago for removal of the gallbladder, November 1, and is reported to be doing well.

New Officers.—At the annual meeting of the West Wisconsin District Medical Society, held in Eau Claire, Dr. Fred S. Cook, Eau Claire, was elected president; Dr. Nels Werner, Barron, vice president, and Dr. Eugene E. Tupper, Eau Claire, secretary.—At the annual meeting of the Wisconsin Anti-Tuberculosis Association, held in Milwaukee, November 9, the following officers were elected: president, Dr. Timothy L. Harrington, Milwaukee; vice presidents, Drs. John W. Coon, Stevens Point, and Charles D. Boyd, Kaukauna; recording secretary, Dr. J. Gurney Taylor, Milwaukee, and treasurer, Mr. J. H. Kopmeier.

CANADA

Hospital News.—Finance Commissioner Bradshaw, Toronto, and Medical Officer of Health Dr. Charles J. C. O. Hastings have made a joint report to the board of control that the boards of the several hospitals in that city be coordinated or else governed by a commission, with a general manager. Duplication of certain expenditures is costing the city thousands of dollars. The city contributes \$900,000 annually to the hospitals and is not in a position to see how the money is being expended. Recently the hospitals have requested grants from the city treasury as follows: General, \$50,000; Western, \$20,000; Toronto Free Hospital for Consumptives, \$40,000; Hospital for Sick Children, \$38,000, and Women's College Hospital, \$33,000. The two officials recommended that the grant to the General Hospital be conditioned on the government of Ontario making a grant of \$25,000; that the grant to the Western be \$11,182; that the Hospital for Consumptives get the full amount of \$40,000 asked for; that the full amount asked be paid the Hospital for Sick Children, and that the grant to the Woman's College Hospital be deferred until after the war, as the money was to be used for the erection of a new wing.

Personal.—Dr. Charles Sheard, sometime medical officer of health, Toronto, and formerly professor of preventive medicine in the University of Toronto, has been chosen to contest South Toronto constituency in the pending federal elections.—Dr. S. Hawden, who has been in charge of the Dominion government laboratory, Agassiz, B. C., has been appointed dominion pathologist in succession to Dr. Charles P. Higgins, Vancouver, who has resigned to enter business.—Dr. Allen M. Baines, Toronto, addressed the graduating class of nurses at the Hospital for Sick Children, November 16. He emphasized the importance of nurses being good readers, maintaining that elocution should be part of their course, inasmuch as reading is a source of very great pleasure to a patient in a convalescent stage.—Lieut.-Col. Clarence L. Starr, Toronto, who has been doing orthopedic work in England for a year, has returned to Toronto. In a short address to the nurses of the Hospital for Sick Children he spoke of how splendidly the nurses graduated from that hospital had upheld the honor of the hospital in France and England.—Major Harley Smith, home for a short furlough in Toronto, will shortly return to England and will probably be attached to a hospital in France, as Major Smith speaks French and Italian fluently.—Lieut.-Col. Charles H. Gilmour, Toronto, is now surgeon-in-chief, Ontario Military Hospital, Orpington, England, Lieut.-Col. William J. O. Malloch, Toronto, having been transferred to the hospital at Basingstoke.—Capt. J. Harvey Todd, Toronto, who has been overseas nearly three years, has returned to Quebec, and is now with Militia Headquarters as A. D. D. A. M. S., fifth district. His services abroad have been recognized by promotion to the rank of major.—Dr.

George C. Livingstone, who for the past year has been assistant superintendent of the Toronto General Hospital, has severed his connection with that hospital, and has offered his services for overseas. For a time he will be attached to the C. A. M. C., Exhibition Camp, Toronto.

GENERAL

Hospital Car.—A hospital car made at the suggestion of Dr. David O. Edson, New York, to transport sick and injured soldiers from the cantonments to base hospitals has just been completed by the mechanical department of the Erie Railroad. This car will accommodate twenty-eight patients, and has on each side seven two-tier berths.

Southern Tuberculosis Fighters Meet.—At the annual meeting of the Southern Tuberculosis Conference, held at the Pine Breeze Sanatorium, Chattanooga, Tenn., the following officers were elected: president, John Stagmier, Chattanooga, Tenn.; vice president, Boulton Smith, Memphis; members of the executive committee, Drs. Augustus C. Shipp, Little Rock, Ark.; William H. Cox, Jacksonville, Fla.; Henry Boswell, Jr., Magee, Miss.; Lewis B. McBrayer, Sanatorium, N. C.; William N. Lackey, Gallatin, Tenn., and directors, Drs. David L. Flanary, Dyersburg, Tenn., and Henry P. Coile, Knoxville, Tenn.

Insurance Company Offers Vital Statistics.—The statistical bureau of the Metropolitan Life Insurance Company invites physicians, public health and social workers to make use of its collection of mortality statistics. These statistics present the principal causes of death among white and colored wage earners in the United States and Canada. The material covers over 10,000,000 individuals for each of the six years, 1911 to 1916. Death rates are available for each race, by sex and by age period. All inquiries should be addressed to Statistical Bureau, Metropolitan Life Insurance Company, 1 Madison Avenue, New York City.

FOREIGN

Training School for Women Workers.—Through the efforts of Mr. Edouard Herriot, mayor of Lyon, France, a professional training school for the higher technical development of women has been established and opened its first session, Oct. 1, 1917. The curriculum of the school will include a commercial course and a technical course of two years each. The minimum age limit for entrance has been fixed at 16 years, and an examination for admission will be required. An elaborate course of study in commercial and technical subjects has been provided.

In the munition plants of the city, in May, 1917, out of a total of 12,000 workers, more than 50 per cent. were women. Efforts are constantly being made to improve the surroundings of the women and to make the work congenial. Hygienic conditions are being improved and rest rooms provided. Extra holidays will be granted the women, and expectant mothers are made an allowance of 4.50 francs per day, for a period of forty days, making a total allowance of about \$36. If both father and mother are employed in any plant, the children are cared for during working hours by especially organized asylums. The women workers are divided into two squads, one working from 6:15 a. m. to 2:15 p. m., with an interruption of 45 minutes for luncheon, the second squad working from 2:30 to 9:30 p. m., with the same interval for the evening meal.

LONDON LETTER

LONDON, Oct. 30, 1917.

The War

ARRIVAL OF SECOND AMERICAN ORTHOPEDIC CONTINGENT

The second American orthopedic contingent, composed of forty-two medical officers under the direction of Major Goldthwaite, has arrived. All of the officers as well as three of engineering experience commissioned in the sanitary corps are to take charge of the development of curative workshops in the American orthopedic hospitals in France. There are also twelve orthopedic nurses as a nucleus around which a nursing staff is to be developed. All the medical staff except the director are to be distributed temporarily through the British orthopedic centers. Arrangements have been made by which these centers can be used for training Americans in orthopedic work with the idea of providing relief for the large number of medical officers that will be required for this special work. When these men are needed for service in the American hospitals in France, another group will be sent

from home to take their place in the British hospitals. The rotation will be continued until the American hospitals are fully staffed. Major Goldthwaite is going on to American headquarters in France to organize the orthopedic hospital with the American Army.

FOOD CONTROL

All the principal foodstuffs have been brought under control, that is to say, bread, flour, meat, potatoes, sugar, tea, milk, butter, cheese and bacon. Control has further been extended to certain subsidiary foods, such as jam, oatmeal, dried peas and beans, chocolate and sweetmeats, and also to feeding stuffs for livestock. Prices have been or are being fixed at every stage of production and distribution of controlled commodities, from the stockyard or barn to the shop counter. The speculative middleman has been eliminated, and the charges that may be made by the necessary middleman and the retailer are being defined and regulated by the fixing of prices or profits. The prices to be paid for live cattle have been fixed on a descending scale, so as to show an ultimate reduction of from 20 to 25 per cent. Butchers' profits are limited to 5 cents per pound, or 20 per cent. on their fortnightly turnover, whichever is less. These measures should ultimately secure an average reduction in the retail price of meat equivalent to the reduction in the purchase price of cattle. As compared with last July, the wholesale price of British beef has fallen 17 per cent., and the wholesale price of mutton, 19 per cent. This fall is already reflected in retail prices, but some time must elapse before its influence can be fully ascertained. As a result, a guaranty to growers of \$30 a ton on the acreage under potatoes has been considerably increased, and there is an abundant crop. The retail price of these is controlled, and as a rule will be about 2 cents per pound. Complaints have been made in regard to the distribution of sugar rather than to its price. A new scheme of sugar distribution is designed to secure that such supplies as are available shall be distributed without suspicion of favor. It safeguards the position of the householder, whether he be rich or poor. Sir Arthur Yapp, director of food economy, advocates simpler meals of two courses only at midday or evening dinner, at any rate on three days of the week, and also extended use of communal kitchens. He suggests no butter or bread for midday or evening dinner, but extra vegetables in their place, no cream except for invalids and children; no tea except for tea meal, no open sugar bowl, and no ham or bacon except for breakfast. There must be better preparation of food by expert cooking. To obtain every possible assistance in the new campaign he is relying largely on the churches, but is hoping also for the help of cooperative societies and the friendly society organizations. Then he is bringing into effect an organization to be known as the League of National Safety, in which he aims first at enrolling 10,000 members, to be followed almost immediately by 100,000 and later by a million. Speaking of the difficulties of rationing, he said that anything of that kind might be good enough for Germany, but it was not quite English. He had unbounded faith that English people, when they realized the needs of the situation, would respond loyally and would render unnecessary the setting up of machinery for compulsory rationing.

CARE OF WOMEN, MUNITION WORKERS

Various precautions are being taken by the Ministry of Munitions to maintain health among the women munition workers who are now employed by thousands throughout the country. The hours of labor, though necessarily long, are being steadily reduced, and Sunday labor is being abolished, except when the work is bound to be continuous. In no case may a woman work longer than sixty hours a week, unless a special permit be granted to the employer by the Home Office, after consultation with the Ministry of Munitions. Without such permission, the maximum hours of a woman worker on a twelve hours' shift are ten and a half a day, with seven hours on Saturday, a minimum daily interval of one hour for dinner and half an hour for tea being enforced. The welfare of women in engineering shops is being safeguarded by the Health of Munition Workers' Committee and the Welfare Department of the Ministry. Canteens, cloak rooms and rest rooms are being increasingly introduced into the factories. Seats for the workers, labor-saving appliances and safety equipment in connection with the machinery are being more extensively employed. Welfare supervision in the factory has become a normal feature, and a complete system of housing munition workers in bungalows, hostels or colonies has sprung up.

Sir William Herschel

Sir William Herschel, author of the finger-print identity system, has died. Born in 1833, he was a grandson of the famous astronomer, the discoverer of Uranus, and a son of the no less eminent astronomer and chemist, Sir John Frederick Herschel. He entered the Indian Civil Service in 1859, after the suppression of the mutiny. He applied the first tests of the practicability of using finger-print impressions as a means of identification. His object was to circumvent the personation then prevalent in the Bengal courts of justice and which, in the general state of illiteracy, could seldom be checked by a comparison of signatures. As early as 1823, Purkenje, the physiologist, had drawn attention to the subject of finger impressions; but it was Herschel, more than a generation later, who proved by practical application their individuality and their persistence for a term of at least fifteen years. His recommendation of their general adoption for civil purposes throughout India was not followed, and the practice lapsed after his departure for other spheres. But his enthusiasm for the system did not abate; and though he evolved it amid "depressing difficulties," he had the satisfaction in later years of seeing his methods applied in all parts of the world on a larger scale than he had ever anticipated. In 1897, nearly twenty years after he had left the country, the government of India accepted the recommendation of an expert committee that finger-prints should be adopted as a means of identification both for civil and for criminal purposes as being in every way superior to the anthropometric method.

PARIS LETTER

PARIS, Oct. 25, 1917.

Death of Professor Dastre

French science has sustained a great loss in the person of Professor Dastre, who died as the result of an automobile accident, at the age of 73. He was one of the most noted French physiologists, one who followed in the footsteps of Claude Bernard and Paul Bert, whose student and collaborator he was. [The cable despatch stated that he had been run over by an automobile at the same corner where Professor Curie met with a similar fatal accident a few years ago.]

Jules Albert Franck Dastre was born in Paris, Nov. 7, 1844. He was a student at the Superior Normal School, then a Fellow of physical science, licentiate of mathematical science, doctor of natural science, and then he entered on the study of medicine, presenting his doctorate thesis on "Diabetic Asphyxia" in 1879. From 1872 to 1876 he was laboratory assistant of Claude Bernard at the College of France, and of Paul Bert at the Museum of Natural History. He was appointed supplementary professor of physiology at the Faculté des Sciences in 1876, and in 1887 he was made full professor. In 1904, he was made a member of the Académie des sciences, and in 1908 of the Académie de médecine.

DASTRE'S WORK

Dastre's researches in physiology were conducted on various phases of this science. Particularly worthy of note are his researches on the composition of birds' eggs and their value as nutriment to the embryo; on the storing up of fats, their digestion, their origin and their utilization in the organism; the rôle played by the starches and various sugars in nutrition. He thus cleared away many obscurities in the phenomena of nutrition, specifying the rôle played by fat bodies in these processes and the production of fat bodies by various digestive glands. In the domain of the nervous system he demonstrated the general existence, in all the organs, of inhibiting nerves which oppose the exciting action of other nerves. His studies on the physiology of the heart added to our knowledge of the causes of the rhythm of the heart beat, and his researches on the liver threw new light on the multiplicity of functions of that organ, notably in the production of fats and in the storing up of the iron necessary for the formation of red blood cells. Some of the more important of his works are the following: "Experimental Researches on the Vasomotor Nervous System" (1884), in collaboration with J. P. Morat; "Anesthetics: Physiology and Surgical Application" (1890); "Researches on the Coloring Matter of the Liver and of the Bile and on Liver Iron" (1898), in collaboration with N. Floresco; "Life and Death" (1903). He also was a collaborator on the staff of the *French Scientific Review*, *Philosophic Review* and the *Review of Two Worlds*.

The War

TREATMENT OF WOUNDS OF THE SOFT PARTS

At a recent session of the Société de chirurgie de Paris, Dr. P. Duval, professor agrégé at the Faculté de médecine de Paris and surgeon of the hospitals, presented a very interesting communication on the results he has obtained in the army, thanks to a new special organization, created at his instigation, for the distribution, evacuation and treatment of soldiers sustaining wounds of the soft parts, the most numerous of all. Treated under the best conditions they heal quickly and well; treated under less favorable conditions, they may be followed by the worst complications. The fundamental principle, which, apparently, is accepted by every one today, is that all wounds of the soft parts should be treated within the period of the first twelve hours by opening up the wound widely and removing all foreign bodies. The surgical wound left can then be treated either by immediate suture or by secondary suture done after progressive sterilization. The immediate suture is beyond question the method of choice, but it can be carried out only under fixed conditions: experienced surgeons, perfect equipment, and every possibility of a hospital residence of at least fifteen days with the operating surgeon. For the last reason, primary suture may be made the rule during quiescent periods, but would be the exception during periods of activity when the majority of the wounds of the soft parts can get only secondary suture.

DEFERRED PRIMARY SUTURE

In order to remedy this state of affairs, as far as possible, Duval has adopted the following organization: Behind the evacuating centers, but as near to them as the commandant will permit, large surgical formations, with numerous operating rooms, are established, to be used solely for the treatment of wounds of the soft parts. Two such formations, accommodating many hundreds of wounded, are designated to receive soldiers who are to be treated by primary suture. The other surgical formations are to take care of such wounded as have been sent from the evacuation hospital, but they must send them on to the rear as quickly as possible, in from eight to twelve hours after the primary treatment. Instructions are given to these surgical groups to treat these wounds as follows: Lay them wide open, excising all dead tissue, removing foreign bodies, and then applying simple aseptic dressings after ether lavage. The evacuation of the wounded so treated is finally made to a designated center in the rear where, at the proper time, secondary suture is performed.

RESULTS

By reason of the perfect teamwork done by the surgical formations at the front and those farther inland, the most remarkable results have been obtained, as is shown by the following data: About one third of these wounded were sent to the two centers provided for treatment by immediate suture. Of this number, 67.5 per cent. were treated by primary suture, with only 4 per cent. of failures. Not a single grave accident was noted. Two thirds of the wounded were operated on in the special formations reserved for the treatment of these wounds in the manner outlined above, that is, without suture. Not a single accident was noted. These patients were sent to the base hospitals in less than twelve hours after operation and in less than twenty-four hours after they were wounded. Of those wounded who were operated on in the front line and then evacuated rapidly to the base hospitals, and had their wounds sutured secondarily, 81 per cent. were so treated within eleven days after having been wounded and operated on. No untoward results were noted among this class; no deaths, no gas gangrene, no tetanus, only one case of septic complication—an amputation for arthritis of the knee with purulent discharge, which developed as a late complication of a wound of the foot. Fully 84 per cent. of the wounded evacuated were sutured and cured completely within five weeks after they were wounded.

One sees that it is hardly necessary to regret that immediate primary suture, which is the method of choice, cannot be applied to all the wounded during an offensive movement. The retarded primary suture, that is, suture done after several days, yields equally good results as immediate primary suture. The systematic progressive sterilization of surgical wounds is therefore a method which is useless in about two thirds of the cases, and the secondary suture should give way to deferred primary suture. The latter has further the following advantages: simplification of the treatment, a notable reduction in the length of the treatment, and lastly—

to which too much attention cannot be drawn—a more complete cure. The primary delayed suture, when made in healthy tissues, restores these tissues to almost perfect function. The cicatrix is soft, flexible and nonadherent.

Motherhood Welfare Work in Factories

The manufacturers who employ, for purposes of national defense, a large number of female workers are taking steps to insure the protection of motherhood. They are creating many associations formed for the purpose of providing various measures needed for the protection of these women. One of these associations, the *Maternité ouvrière de Levallois-Perret et de Neuilly*, has built, on a large piece of ground in close proximity to several large factories, where hundreds of women are employed, a model motherhood welfare institution, which was opened by M. Loucheur, minister of munitions, MM. Albert Thomas and Paul Strauss. In this institution are provided all of the hygienic and comfort measures demanded by the Committee on Women's Work appointed by the minister of munitions. On the occasion of this dedication, M. Loucheur declared himself to be in perfect accord with his predecessor, M. Albert Thomas, in regard to the welfare work among workers, especially the protection of the health of female workers. He has given freely of his counsel for the development and perpetuity of this effort, as outlined by the originators of this movement.

Discontinuation of the Meatless Days

The régime of the meatless days is coming to an end. The results of the inquiry made by the minister of agriculture as to the supply of grazing live stock (*cheptel*) on July 1, 1917, which was published in the *Journal Officiel*, permitted of taking count up to a certain point of the consequences resulting from the institution of meatless days. The total figures for each kind of stock are: horses, 2,282,560 head; cattle, 12,443,304 head; sheep, 10,586,594 head. Comparing these figures with those given Dec. 31, 1916, it will be noted that since that time the live stock has been augmented by about 36,000 head of horses and about 100,000 head of cattle, although the number of sheep has diminished about 250,000 head and pigs about 160,000 head. It was mainly an insufficient supply of potatoes which was responsible for the reduction in the raising of pigs, and therefore the steady increase in price. This year, however, the potato harvest has been most abundant, and there is reason therefore to count on larger numbers of hogs being raised.

Marriages

LIEUT. AMBLER BAXTER PATTON, M. R. C., U. S. Army, Great Falls, Mont., to Miss Ruth Wells, of Athens, Ga., at Charlotte, N. C., October 21.

CHARLES G. MORGAN, M.D., to Miss Garnett German, both of Moundsville, W. Va., at Fairmont, W. Va., October 4.

GUY H. WILSON, M.D., Bicknell, Ind., to Miss Maude Ecker of Collinsville, Ill., at Bicknell, November 1.

JULIUS MORDECAI ROSENTHAL, M.D., to Miss Renée Prisament, both of Monticello, N. Y., October 6.

FRANK WALTER HANNUM, M.D., Muskegon, Mich., to Miss Lynne Carr of Rhineland, Wis., October 17.

IRVING HOTCHKISS PARDEE, M.D., to Miss Margaret E. Trevor, both of New York City, October 27.

DANIEL T. SULLIVAN, M.D., Mansfield, Mass., to Miss Helen M. Leonard of Brockton, Mass., October 30.

EUGENE EMMETT BIRMINGHAM, M.D., to Miss Theresa Celia Kelly, both of Chicago, October 24.

LEMUEL HARRIS KERR, M.D., Louisville, Ky., to Miss Marie Chenoweth, at Cincinnati, November 1.

GUNDMUND J. GISLASON, M.D., to Miss Esther Thorgrimsen, both of Grand Forks, N. D., October 24.

STERLING PRICE BOND, M.D., Little Rock, Ark., to Miss Mary Kitchens of Denver, October 24.

JOHN CARL WAHL, M.D., Scranton, Pa., to Miss Ethel Somers of Philadelphia, October 25.

STANLEY BRADY, M.D., to Mrs. Lillian London, both of New York City, October 24.

GEORGE ARTHUR BEMIS, M.D., to Miss Ruth Lewis, both of Garner, Iowa, October 31.

Deaths

Charles Henry Stanley Davis, M.D., Meriden, Conn.; New York University, New York, 1866; aged 77; clerk of the Meriden City Medical Association since 1870; representative to the state legislature in 1873, and 1885-1886; mayor of Meriden in 1887-1888, and city treasurer, 1898-1899; physician to the State School for Boys from 1895 to 1900; physician to the Curtis Home for Old Ladies and Orphans from 1886 to 1906; trustee, secretary and treasurer of the State School for Boys for four years, and president of the Meriden Board of Education for six years; well known as an archeologist; editor of *Biblia*, a journal of oriental archeology, since 1887; and associate editor of the *American Antiquarian and Oriental Journal*, since 1906; author of many books on science and archeology; died in the Middletown State Hospital, November 7.

Margaret Abigail Cleaves, M.D., Yonkers, N. Y.; State University of Iowa, Iowa City, 1873; aged 69; a Fellow of the American Medical Association; formerly assistant physician at the State Hospital for the Insane, Mount Pleasant, Iowa; and physician in charge of the female department of the State Hospital for the Insane, Harrisburg, Pa.; founder and director of the New York Electro-Therapeutic Clinic Laboratory and Dispensary; author of "Light Energy: Its Physics, Physiological Action and Therapeutic Application"; died in a hospital in Mobile, Ala., November 14.

W. Godfrey Hunter, M.D., Louisville, Ky.; Miami Medical College, Cincinnati, 1871; aged 76; a surgeon in the Federal service throughout the Civil War; a member of Congress from the third and eleventh districts of Pennsylvania; United States minister to Guatemala during President McKinley's administration; died in the Deaconess Hospital, Louisville, November 2, from hemorrhage of the kidney.

Frederick Boty Elliott, M.D., Pittsburgh; West Pennsylvania Medical College, Pittsburgh, 1896; aged 45; formerly a Fellow of the American Medical Association; local surgeon to the Pittsburgh and Lake Erie and Baltimore and Ohio railroads; at one time a member of the local school board; a member of the staff of the Allegheny General Hospital; died at his home, November 4, from heart disease.

Lewis Arthur Welles Alleman, M.D., Geneva, N. Y.; Jefferson Medical College, 1886; aged 55; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; formerly professor of diseases of the eye in Long Island College Hospital, Brooklyn; died at his home, November 3.

Jacob Maurice Morin, M.D., Brockton, Mass.; Long Island College Hospital, 1899; aged 48; a Fellow of the American Medical Association, and once president of the Brockton Medical Association; a member of the surgical staff of the Brockton Hospital; died at his home, September 12, from chronic interstitial nephritis.

Thomas Maher Reade, M.D., Springfield, Ohio; Washington University, St. Louis, 1871; aged 67; a member of the Ohio State Medical Association; and for a number of years a member of the board of trustees of the Springfield City Hospital; died in that institution, October 31, from cerebral hemorrhage.

Estella Horton Houghton, M.D., Chicago; Northwestern University Woman's Medical School, Chicago, 1899; aged 54; formerly a member of the Illinois State Medical Society; a specialist on diseases of the eye, ear, nose and throat; died in Wesley Hospital, Chicago, October 24, from cerebral embolism.

William Shannon Pollard, M.D., Evansville, Ind.; Miami Medical College, Cincinnati, 1871; aged 79; a veteran of the Civil War; formerly a member of the Indiana State Medical Association, and a member of the staff of Deaconess Hospital, Evansville; died in a hospital in that city, November 1.

Harry A. Nickerson, M.D., Camden, Del.; National Normal University, Lebanon, Ohio, 1890; Medico-Chirurgical College of Philadelphia, 1899; aged 50; formerly a Fellow of the American Medical Association; a member of the Delaware State Medical Society; died at his home, November 4.

Marshall Curtis Munn, M.D., Sycamore, Ill.; College of Medicine and Surgery, Physio-Medical, Chicago, 1893; Hospital College of Medicine, Louisville, Ky., 1895; aged 58; a member of the Illinois State Medical Society; died at his home, October 15, from tuberculosis of the larynx.

Acting Asst.-Surg. Ward Boleyn MacCaffry, U. S. P. H. S., Fortress Monroe, Va.; Medico-Chirurgical College of Philadelphia, 1906; aged 42; for many years in charge of the Cape Charles Quarantine Station; died in Philadelphia, November 4, from a general nervous breakdown.

Emmet Lincoln Smith, M.D., Bellefontaine, Ohio; Chicago Homeopathic Medical College, 1888; College of Physicians and Surgeons, Chicago, 1893; aged 52; for many years a practitioner of Zanesfield, Ohio; died at his home, November 3, from cerebral hemorrhage.

T. R. League, M.D., Greenville, S. C.; Medical College of Georgia, Augusta, 1868; aged 71; formerly a member of the South Carolina Medical Association; at one time a member of the house of representatives from Greenville County; died at his home, October 31.

Ralph E. Gustin, M.D., Detroit; Hahnemann Medical College, Chicago, 1881; aged 67; who was recently sentenced to imprisonment for one to fifteen years for performing an illegal operation; died in the hospital of the state penitentiary, Jackson, November 7.

Lieut. John Charles Murphy, M. R. C., U. S. Army, Hinesburg, Vt.; University of Vermont, Burlington, 1905; aged 35; formerly a member of the Vermont State Medical Society; died in Fort Ethan Allen, Vt., July 19, from purpura hemorrhagica.

Fielding Lewis Davis, M.D., Evansville, Ind.; Homeopathic Hospital College, Cleveland, 1870; aged 86; formerly a Fellow of the American Medical Association, and said to have been the oldest practitioner of Evansville; died at his home, November 1.

Homer Abraham Borin, M.D., Haw Knob, Tenn.; Lincoln Memorial University, Knoxville, Tenn., 1914; aged 33; physician for the Tellico River Lumber Company; was shot and instantly killed near Tellico Plains, November 4, by a young farmer.

George Murphy, M.D., Fort Wayne, Ind.; University of Wooster, Cleveland, 1870; aged 79; a veteran of the Civil War; formerly lecturer on chemistry and toxicology in the Fort Wayne Medical College; died at his home, November 3.

Basil M. Woolley, M.D., Atlanta, Ga.; Atlanta, Ga., Medical College, 1882; aged 82; a Confederate veteran; who was struck by an automobile, October 26; died from his injuries in the Davis-Fischer Sanitarium, Atlanta, November 28.

Arthur Martin Clapp, M.D., Springfield, Mass.; Harvard Medical School, 1902; aged 41; a Fellow of the American Medical Association; while testing a high-powered electrical coil in his office, October 31, was electrocuted.

William H. Webb, Adams, Ind. (license, Indiana, 1897); aged 91; a practitioner since 1866; and for fifty-six years of that time a resident of Adams; died at the home of his son at that place, November 8, from senile debility.

Mary J. Green, M.D., Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1878; aged 76; a member of the Medical Society of the State of Pennsylvania; died at her home in West Philadelphia, November 3.

Alvin H. Keller, M.D., Sioux Falls, S. D.; University of Nebraska, Lincoln, 1883; aged 64; a graduate of the Philadelphia College of Pharmacy, in 1886; died at his home, November 13, from chronic nephritis.

Jasper N. Tabler, M.D., Atlanta, Ga.; Medical College of Virginia, Richmond, 1869; aged 75; formerly a Fellow of the American Medical Association; died at the home of his daughter in Philadelphia, October 29.

Harry Lorenzo Chapin, M.D., Cleveland; Western Reserve University, Cleveland, 1893; was attacked by an unknown assailant in a hotel in Cleveland, November 8, and died shortly afterward from his injuries.

Carl Fulda, M.D., Brooklyn, N. Y.; College of Physicians and Surgeons in the City of New York, 1901; aged 38; attending surgeon to the German Hospital, Brooklyn, N. Y.; died at Pepperell, Mass., November 8.

James Taylor, M.D., East Liverpool, Ohio; Medico-Chirurgical College of Philadelphia, 1894; aged 46; first city clerk of Johnstown, Pa.; died at his home, November 6, from cerebral hemorrhage.

George W. N. Custis, M.D., Washington, D. C.; George Washington University, Washington, D. C., 1887; Hahnemann Medical College, Philadelphia, 1888; aged 87; died at his home, October 29.

Herschel J. Zeis, M.D., Kenton, Ohio; Starling Medical College, Columbus, Ohio, 1905; aged 36; a member of the

Ohio State Medical Association; died at his home, October 31, from diabetes.

William Henry Spilman, M.D., Schoolfield, Ky.; Miami Medical College, Cincinnati, 1869; aged 77; died in the Campbell County Infirmary, Newport, Ky., October 8, from arteriosclerosis.

Charles Edward Stuart Taylor, M.D., Guthrie, Okla.; University of Toronto, Ont., 1874; aged 65; for nearly a quarter of a century a druggist of Guthrie; died at his home, November 1.

John Francis Mumford, M.D., Newtown, Conn.; College of Physicians and Surgeons, Baltimore, 1913; aged 26; died at the home of his parents in Raynham Center, Mass., about October 10.

Edward L. Stahl, M.D., Chicago; Rush Medical College, 1883; aged 64; also a graduate of the Chicago College of Pharmacy; died at his home, November 12, from cerebral hemorrhage.

Alexander T. Stevenson, M.D., Bay City, Mich.; Miami Medical College, Cincinnati, 1891; aged 56; died in Ann Arbor, Mich., July 13, from chronic interstitial nephritis.

Sloan F. Hall, M.D., Orlando, Fla.; University of Nashville, Tenn.; aged 84; for many years a practitioner of Nashville; died at his home, August 26, from uremia.

Oliver R. Diehl, M.D., Bryn Athyn, Pa.; Harvard Medical School, 1915; aged 27; died at his home, July 14, from endocarditis following a streptococcus infection.

Robert S. Stahle, M.D., New Market, Pa.; University of Maryland, Baltimore, 1882; aged 59; died at his home, November 2, from disease of the liver.

John H. Wade, Lesley, Ark. (license, Eclectic State Medical Board of Arkansas, 1903); aged 71; a Confederate veteran; died at his home, October 29.

George Wilbur Tucker, M.D., Wilmington, Ohio; Miami Medical College, Cincinnati, 1879; aged 66; died at his home, October 31, from arteriosclerosis.

John Wesley Story, Jr., M.D., Baker, Mont.; University of Louisville, Ky., 1912; aged 30; died in Miles City, Mont., November 5, from pneumonia.

Samuel H. Riley, M.D., Hudson, Mich.; Eclectic Medical Institute, Cincinnati, 1868; aged 72; died at his home, November 1, from pneumonia.

Thomas S. Motter, Dayton, Ind. (license, Indiana, 1897); aged 80; a surgeon of volunteers during the Civil War; died at his home, November 13.

Martha A. Stevens, M.D., Downers Grove, Ill.; New York Hygeio-Therapeutic College, New York, 1861; aged 82; died at her home, November 2.

Jack R. Sharman, M.D., Meridian, Miss.; Louisville, Ky., Medical College, 1876; aged 66; died at his home, September 4, from arteriosclerosis.

Edward H. Jones, M.D., Arlington, Texas; Tulane University, New Orleans, 1882; aged 61; died at his home, July 9, from bronchiectasis.

Wilson J. Orr, M.D., Springdale, Pa.; Jefferson Medical College, 1873; aged 85; died at his home, November 4, from senile debility.

Herman Meyer, Chicago (license, years of practice, Illinois, 1878); aged 69; died at his home, November 3, from strangulated hernia.

Benjamin F. Felix, M.D., Cerulean, Ky.; Eclectic Medical Institute, Cincinnati, 1886; aged 72; died at his home, October 25.

Edgar DeWitt Hurtt, M.D., Piscataway, Md.; University of Maryland, Baltimore, 1854; aged 87; died at his home, October 28.

Dudley W. Welch, M.D., Parkersburg, W. Va.; Medical College of Ohio, Cincinnati, 1896; aged 45; died at his home, October 30.

James Ward Vance, M.D., Madison, Wis.; Pulte Medical College, Cincinnati, 1881; aged 85; died at his home, October 31.

John H. Agee, Lafollette, Tenn. (license, Tennessee, 1889); aged 67; died at his home, August 17, from cerebral hemorrhage.

Martha J. Creighton, M.D., Chicago; Hahnemann Medical College, Chicago, 1884; aged 84; died at her home, November 14.

Adna Balche Jones, M.D., Wakeeney, Kan.; Rush Medical College, 1882; aged 60; died in Kansas City, Mo., October 27.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

NOSTRUMS IN RETROSPECT

A Review of Worthless or Unscientific Proprietary Mixtures Previously Criticized

[FOREWORD.—It is over twelve years since the Council on Pharmacy and Chemistry of the American Medical Association was created. Since then there have been but few issues of THE JOURNAL that have not called the attention of the medical profession to the debasing influence on scientific medicine of unscientific or worthless proprietary mixtures advertised to physicians for their use in prescribing. The Council on Pharmacy and Chemistry has investigated and shown many of these preparations to be fraudulent in one way or another, and these reports have been published in THE JOURNAL. In spite of this, these preparations have been advertised continuously to physicians, through medical journals and otherwise, and prescribed by a large number of physicians. One reason for this is that there are many physicians who have never seen these reports—who were not in active practice at the time, or who were not reading THE JOURNAL. We probably have among our readers at the present time 35,000 or 40,000 physicians who were not among the readers of THE JOURNAL twelve years ago. It is desirable, then, that we should take up, in more or less detail, several of the more widely advertised products that have been the subjects of previous reports. It has been repeatedly stated in THE JOURNAL that many of the proprietary mixtures—the so-called ethical proprietaries advertised to physicians—were no better and no worse than “patent medicines” advertised to the public.

Every physician who has the welfare of medicine at heart should put these questions squarely to himself if he has not already taken a firm stand on this whole problem: What is my attitude toward the work of the Council? Are its reports worthy of acceptance? Am I upholding the Council in its efforts to place therapeutics on a rational basis, not by blind faith alone, but by an honestly critical attitude toward it? Am I following the path of indolence by taking the advice of nostrum makers without any serious effort to determine whether they are true or false? In a word, am I really practicing medicine, or am I an unpaid agent and a dupe of nostrum makers? There are other revolutions than political. The public can be wronged just as certainly by the abuse of its confidence in clinicians as by the usurpers of political power, and when the public is thoroughly aroused the heavy hand of retribution is not likely to be too discriminating. That the sins of clinicians are standing out plain for any one who wishes to read is becoming more and more evident. There is but one short and ugly word that properly characterizes the physician who accepts a fee for prescribing that about which he has no more knowledge than has the one for whom he prescribes it. Are you with the nostrum makers or decent medicine?

The article below is the first of a series written for THE JOURNAL by one who is thoroughly conversant with the work of the Council on Pharmacy and Chemistry and can speak authoritatively on questions dealing with the action of drugs and the treatment of diseases. We believe that these articles will prove of interest and profit and that they will help physicians to answer the questions just propounded.]

[ARTICLE I]

BELL-ANS (PA-PAY-ANS BELL)

By S. Q. Lapius, M.D.

Bell-ans, for years advertised only in medical journals under the name “Pa-pay-ans (Bell),” is now advertised in newspapers as a remedy that “Absolutely Removes Indigestion.” As it is still being advertised to physicians we propose to analyze the claims made for it with as much care as would be exercised in the discussion of the newest discovery in medicine, because we believe that it is desirable to show the trend of exploitation of a certain type of preparation in the medical press.

In the *New York Medical Journal* the following advertisement recently appeared on the front cover:

ACUTE INDIGESTION

Yesterday a great soldier and today the head of a big trust succumbed to an attack of Acute Indigestion; and every day we hear from some physician of some case he has saved with BELL-ANS by giving SIX (6) tablets dissolved in a glass of hot water and repeating if necessary. Can any doctor who reads this fail to provide himself with the free supply of BELL-ANS which we gladly send for his emergency case?

A recently purchased package of Bell-ans contained a circular in which it was stated that Bell-ans removes flatulence, vertigo, weakness and other symptoms of indigestion quickly and pleasantly; that it aids the digestion of food and tends to restore the digestive tract to a normal condition; that it relieves vomiting in pregnancy, alcoholism, seasickness and cholera morbus, besides being pleasant, harmless and effective for colic, sour stomach, feverishness, and wake-

Acute Indigestion

Yesterday a great soldier and today the head of a big trust succumbed to an attack of Acute Indigestion, and every day we hear from some physician of some case he has saved with BELL-ANS by giving SIX (6) tablets dissolved in a glass of hot water and repeating if necessary. Can any doctor who reads this fail to provide himself with the free supply of BELL-ANS which we will gladly send for his emergency case?

Bell & Co. (Inc. Mfg. Chemists) Orangeburg New York U.S.A.

Typical of Bell-ans advertisements as appearing in medical journals.

fulness of infants and children. The circular contained paragraphs purporting to be taken from various medical journals, including the *New York Medical Journal*, *Wisconsin Medical Recorder*, the *Lancet Clinic*, *International Journal of Surgery*, and *Massachusetts Medical Journal*. No exact references were given to permit verification or to determine whether or not the quotations were from “reading notices” (advertisements) or from the scientific part of the journals in question. To quote one of the statements given:

“The results from the use of Bell-ans (Pa-Pay-ans Bell) in the treatment of indigestion are so prompt and so generally good—and the evidence of this fact is accumulating so rapidly and from such reliable sources—that we venture to suggest to our readers who have not tried this remedy that they prescribe one original sealed package of Bell-ans (Pa-pay-ans Bell) and that they carefully note the results from its use.”

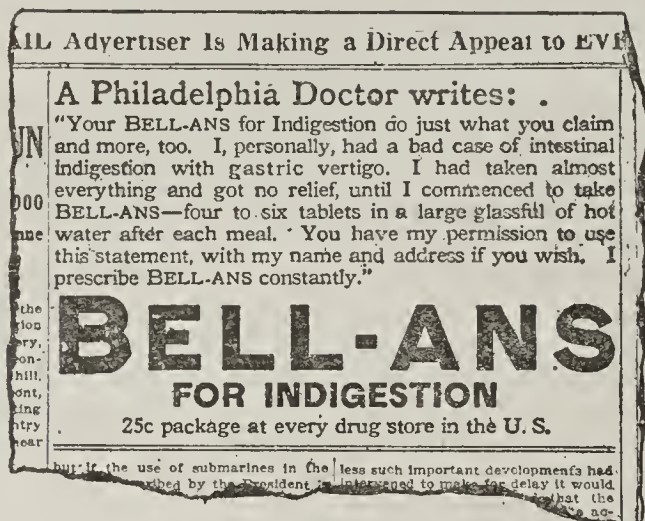
“We suggest an original sealed package because the preparation is widely and badly imitated, and unless such a package is specified an imitation of little value may be substituted and the experiment be thus rendered useless.”

It is possible that Bell-ans has been imitated, but it is not true that it is widely imitated, for no such imitation has ever been called to our attention, and we strongly suspect that the main reason for desiring that an original package be dispensed is that the patient may see for himself the name BELL-ANS plainly blown in the glass.

The circular in question states that there is no derangement of the digestive organs on which the proper dose of Bell-ans will not act quickly and pleasantly! These are samples of the claims made for Bell-ans. Let us inquire into the nature of the conditions for which the preparation is recommended and the treatment advised by well known clinicians.

The subject of indigestion is discussed by Robert Hutchison and Robert Saundby under the general title of dyspepsia in the "Index of Treatment by Various Writers," Edition 6, 1912, pp. 260-265. Hutchison says: "In the first place it must be remembered that in many patients who complain of 'indigestion' the seat of the trouble is not in the stomach at all."

The general principles to be observed in the treatment of functional dyspepsia, as given by Hutchison, are: (1) To remove the cause; (2) to adapt the diet to the impaired functional power of the stomach; (3) to administer such drugs as are calculated to stimulate or correct the particular function or functions which happen to be impaired, or disordered. Proper diet, proper mastication of food, hygiene of



Newspaper advertisement of Bell-ans, capitalizing the statements of physicians.

the mouth, and constipation are enumerated as deserving attention. Careful attention to securing a proper diet is essential. The choice of drugs depends, of course, on the conditions that give rise to indigestion, and he calls attention to the necessity of avoiding all routine treatment and compiling one's prescription with an eye to the special disorder or disorders of function, whether secretory, motor or sensory, believed to be present. Hutchison gives the following typical prescriptions to illustrate the use of drugs in the different disorders of function:

FOR HYPERSECRETION (HYPERCHLORHYDRIA, ACID DYSPEPSIA, ETC.)

Sodium bromid 10 grains
Bismuth subcarbonate 15 grains
Chloroform water ½ ounce

This mixture to be taken before meals.

Sodium bicarbonate.
Bismuth subcarbonate.

Heavy magnesium carbonate, of each equal parts.

A small teaspoonful of the powder to be taken mixed with a little water or milk about two hours after meals.

FOR DEFICIENT SECRETION (HYPOCHYLIA, ACHYLIA, GASTRITIS, ETC.)

Sodium bicarbonate 10 grains
Tincture of nux vomica 10 minims
Spirit of chloroform 8 minims
Compound infusion of gentian ½ ounce

This mixture to be taken before meals.

Dilute hydrochloric acid and glycerin, of each 15 minims with enough water to make half an ounce, to be taken about twenty minutes after meals.

FOR DEFECTIVE MOTILITY (ATONIC DYSPEPSIA, GASTROPTOSIS, ETC.)

Hutchison recommends the use of 10 minims of tincture of nux vomica in an aromatic vehicle, such as infusion of quassia and compound tincture of cardamom; but another aromatic bitter, such as the compound tincture of gentian, will serve quite as well, of course. This is to be taken before each meal, and for the flatulence that often accompanies this trouble he gives menthol, aromatic spirit of ammonia and spirit of chloroform, as may be needed.

FOR ACID DYSPEPSIA

Robert Saundby recommends the following to be used before each meal for the relief of acid dyspepsia: sodium bicarbonate, bismuth subcarbonate, magnesium carbonate, of each 10 grains; mucilage of tragacanth 15 minims, and enough peppermint water to make an ounce.

These are only a few of the conditions that are discussed by Hutchison and Saundby, but they serve to show that the treatment of indigestion by a single prescription or combination is wholly irrational.

Bell-ans, both under its present name and under its older name, "Pa-pay-ans (Bell)," has always been alleged by its

manufacturers to contain papain or to be a preparation of the digestive juice from the fruit of *Carica papaya* (papaw) with other substances. Various chemists have attempted to find papain present and to determine the digestive power of the tablets, but without success. For this reason THE JOURNAL suggested that the change of name from "Pa-pay-ans (Bell)" to "Bell-ans" was probably not made entirely for euphonious reasons, as alleged, especially when one considers that the name of a nostrum is its most valuable asset. It is much more likely that as analyses indicated there was not and probably never had been any papain present in the product, the name was changed for fear that some day the misleading term "Pa-pay-ans" might bring the preparation in conflict with the federal Food and Drugs Act.

Pa-pay-ans (Bell) was examined for the Council on Pharmacy and Chemistry in 1909 and the tablets were found to consist of charcoal, sodium bicarbonate, ginger, saccharin and oil of gaultheria. No digestive ferment could be detected in the tablets. Sodium bicarbonate is antacid and serves to dissolve mucus; ginger, if in sufficient amount, causes the expulsion of flatus, and charcoal, while an absorbent in the dry state, is probably useless for any therapeutic purpose whatever after it becomes saturated with gastric juice. Bell-ans, then, has all of the virtues, which are few, and all of the limitations, which are many, of a tablet of sodium bicarbonate and ginger. Its value in the treatment of acute indigestion would be limited to the value of a tablet of such a composition. It is absurd to suppose that it could have the slightest value in the far more serious conditions attended with intestinal indigestion, with the toxemia and autointoxication to which they give rise.

Bell-ans is now advertised directly to the public—but it is no less valuable on that account. True, it is a "patent medicine" in the commonly accepted sense of the term, but it is no more a "patent medicine" today than it was fifteen years ago when it reached the public, not through the direct medium of the newspapers but by the more indirect route of the medical journals and indiscriminating physicians. It is true that, in view of the serious nature of many conditions which are loosely spoken of by the public as "indigestion," its present method of exploitation is likely to make it just that much more dangerous because of the larger publicity that will be given. The point to be borne in mind is that



Typical of Bell-ans advertisements as appearing in newspapers.

Bell-ans is now in fact what it has always been in essence, a "patent medicine."

Again we ask the question: How do you wish to be classified, Doctor—among those who follow blindly the lead of a firm of nostrum makers, or among the intelligent members of the profession who study their cases carefully and prescribe intelligently? The manufacturers of Bell-ans claim that 100,000 American physicians now prescribe Bell-ans, and that 600,000,000 of the tablets are sold annually. If this is even approximately true it is a serious reflection on the medical profession, for the Council examined Bell-ans and reported its findings nearly eight years ago (THE JOURNAL A. M. A., Aug. 14, 1909), and the statements made in that report are as incontrovertible today as they were then.

Correspondence

DECENCY AND SAFETY AS PUBLIC HEALTH FACTORS

To the Editor:—Forcing the nation at large, by public health legislation, to adopt the idle fancies of the rich is advocated, at least by implication, in Dr. North's "Decency and Safety as Public Health Factors" (THE JOURNAL, Oct. 13, 1917, p. 1214). He proposes that "esthetic" requirements should be introduced into public health laws, and decries the "pragmatists" and "realists" who will not put into force any compulsory requirements beyond those definitely proved to be real requisites to safety. So direct a challenge to the best trend in modern public health thought certainly deserves a reply.

We are but struggling now from the slough of "esthetic" requirements, serving no useful purpose, which the old public health presented, and your author would have us return thereto. The amount of money spent in the past fifty years, even to this day, on "esthetic" measures would have placed us, had it been properly expended to diminish disease and death, fifty years in advance of where we are now. Nothing makes public health legislation more farcical, or gains for it more bitter and deserved opposition, than the belief, right or wrong, once established in the public mind, that the measures advocated are unnecessary, or based on a fad. Yet your author actually advocates fads as a useful guide to such legislation. The one great virtue of modern public health is that it goes to the nation for recognition and support on the real merits of its measures as proved life savers and life prolongers—that it disclaims all other objects, and refuses to be muddled with them; and this one great virtue he would have us lose!

Moreover, Dr. North misses the main point of estheticism, i. e., that it is a matter of taste and training. His crowning fallacy is that such happiness or enjoyment as "esthetics" gives can be compelled by legislation. All history shows that the mass of the world prefers liberty to the "enjoyment" he advocates. The war proves this in its every detail, if proof were needed. To legislate compulsory safety is the supreme duty of every government. To legislate compulsory happiness, which always means happiness of the brand enjoyed by the legislator who at the time is legislating, would be pure Prussianism—the essence of the evils which precipitated the war.

To make a legal requirement just, it must be applicable to all citizens equally. Hence, whatever advice may be given to the citizen, compulsion of the citizen can be justified only on incontrovertible evidence of its value to all, not to a few. Presenting to the ordinary citizen for his selection both silk and cotton underclothing, "esthetics" would I presume at once point to the former. Now suppose every citizen were compelled to buy the cotton. Would not that be an outrage, if he desired silk and had the price? How much more an outrage to compel the citizen to buy the silk, especially if he had not the price. Remember that 90 per cent. of our population are too poor to afford their children even a partial high school education. Remember that 95 per cent. of our population rank no higher in financial status than that of overseers or foremen of factories, and at least 90 per cent. rank below that financial status.

To examine Dr. North's own illustration of praiseworthy "esthetics" in public health, let us consider his "business man of New York" who demands a bottled spring water because of an "esthetic" dislike to the New York City supply on the ground that it has been polluted, although it is now made safe by artificial means.

Let us lay aside the point made by the Massachusetts State Board of Health that the bottled spring waters of that state were often far more impure than the city supplies. Let us ignore the fact that, this being true, such waters were bought on prejudice and ignorance and sold through reliance on false "esthetics," fostered by tradesmen for commercial purposes. Let us suppose that the particular spring water under consideration was, as Dr. North assumes, indeed "pure." Would

he then compel the 90 per cent. of the population, unable to send their children to high school from sheer lack of cash, to buy this spring water because it was admired by the "esthetic" sense (?) of the business man, in preference to the wholesome if unsentimental water of New York City? After, mind you, that 90 per cent. have paid already for the wholesome water, in labor and in taxes? Reverse the compulsion and see what an outcry there would be among the business men if they were compelled to drink one water although ready and able to buy the other.

But do not the "esthetics" really run the other way? The spring water itself was without doubt polluted once, and, then (perhaps) was purified (uncertainly, if at all) by Nature's crude filtration. The esthetics that would prefer this (supposedly) more remote pollution, and the (presumably) sufficient purification following, to the definite and definitely known purification of a good city supply is an "esthetics" too tenuous for me to grasp.

Who shall decide what is "esthetics"? I have known people of culture and refinement to revolt shuddering at the cremation of the dead because it was "unesthetic." Is, then, the slow, slimy corruption of the loved one in a moldy grave the "esthetic" demand with which we must all comply? In this dilemma, which would Dr. North "compel" by legislation? I for one would never compel either against the absurdest sentiments of any one, because there is no more safety in the one than in the other; and if greater happiness or content is the portion of those whose loved ones are disposed of in this way or that, why tear such comfort from them, since both methods are harmless?

Again, are not the "esthetics" of pasteurized milk the other way about also? What kind of esthetics is that which revolts at raw meat but advocates raw milk? However, the whole point in pasteurizing milk is to make it safe for those who cannot pay, no matter how they may wish it, the 20 cents or more per quart necessary to insure a raw milk fit for use.

Too long has mankind fought, prisoned and burned his brother to force his own fancies as the brother's law. Though the proposition be made softly and under guise of such good words as "decency" and "purity" (just as those earlier propaganda were carried out under the guise of religion and of civilization), no follower of public health as it has evolved throughout the last quarter century can possibly endorse returning it to the pit from which it has been dug with so much sweat and labor. If we must have "esthetics," by all means have a board of esthetics to legislate it through, but do not burden public health with it, for public health has serious work to do and neither men nor time nor funds for fancies, usually foolish and often definitely harmful, if not in themselves, then in distracting attention, energy and enterprise from the things that really matter.

H. W. HILL, M.D., D.P.H., London, Canada.
Director, Institute of Public Health.

OINTMENTS OF IODIN

To the Editor:—A manufacturer of certain ointments of iodine brought to me a few months ago some of his preparations and asked me to have them chemically examined. This request was granted and the examinations were made by competent chemists who ascertained that the composition of the ointments was practically in agreement with the claims of the manufacturer.

There was no statement concerning the medicinal value of these ointments. The manufacturer has seen fit to use my report as an advertisement of the medicinal value of his preparations. I am willing to assist him in his endeavor and am ready freely to express my opinion concerning the value of these preparations.

In the first place, the preparations of this manufacturer are in no way superior to preparations which any competent registered pharmacist might make.

In the second place, in my opinion, ointments containing iodine have but little medicinal value. This is not a proper form in which to apply iodine in order to get its local action.

V. C. VAUGHAN, M.D., Ann Arbor, Mich.

REQUEST FOR REPRINTS ON CANCER

To the Editor:—Dr. Angelo Roffo, Saenz Pena 719, Buenos Aires, Argentina, is desirous of obtaining reprints of American literature dealing with experimental and clinical problems concerning cancer. Dr. Roffo is a member of the medical faculty of the University of Buenos Aires, the leader in that country in the study of cancer problems and the representative of the faculty in the new institute now being built for the experimental and clinical study of cancer. Dr. Roffo would appreciate receiving reprints from American writers interested in cancer, and not only would file this literature for the use of workers in the cancer laboratory and hospital but also would abstract it for the Argentine medical weeklies. I am sure he would appreciate any assistance our workers might give him in this connection.

RICHARD M. PEARCE, M.D., Philadelphia.

SIGNS OF FRENCH MAPS AND HIGHWAYS

To the Editor:—Some of the signs used on French maps are unfamiliar to Americans, even though accustomed to reading our own maps. Likewise the highways of France

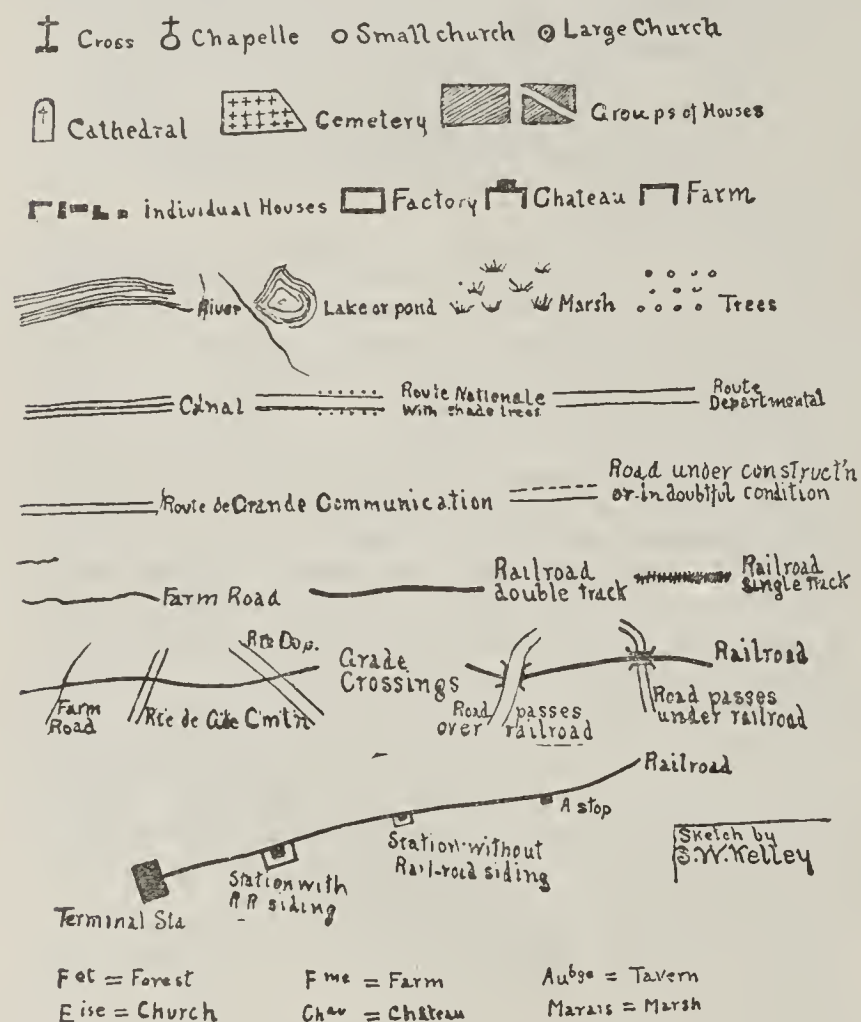


Fig. 1.—Markings and abbreviations in use on French maps.

have indexes and warnings, the meaning of which must be understood to be useful to the traveler. Many American officers and soldiers will be traveling in France in the near

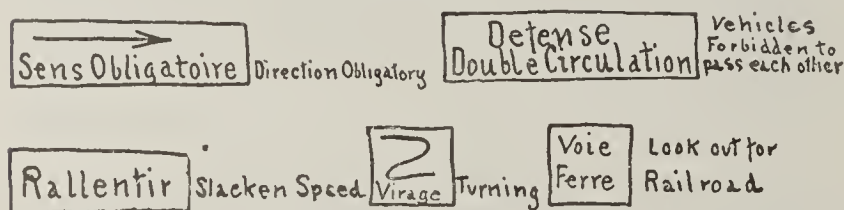


Fig. 2.—Road signs.

future, and in the hope of being useful to them I enclose sketches showing a few of the most ordinary abbreviations, markings and signs which I have found convenient to know in going about the country.

SAMUEL W. KELLEY, M.D., Cleveland.

Secteur Postal 205, France.

Chirurgien, Ambulance des Alliés.

BARBARITIES IN MEXICO

To the Editor:—An interesting side-light on the barbarities practiced by the soldiery of Zapata is shown by a patient who a short time ago entered the United States Marine Hospital here suffering from acute gonorrhea. On examination it was found that the penis had been amputated about one-half inch back of the corona. The patient stated that last year he was a soldier in the Carranzista army, and in a skirmish with some of Zapata's men he was captured and severely tortured. He was told that he was to be castrated and made to eat his testicles. They finally compromised by offering him death by hanging, with the alternative of having his penis amputated. He chose amputation. The penis was amputated with a saber. He was left to his fate, but happily was picked up by an ambulance driver, who stopped the flow of blood with a bandage.

The patient further stated that he knows of men who have had their ears, nose, tongue and penis amputated by Zapata's men and Villa's men, and portions of these parts forced down the victims' throats.

The stump had evidently received some surgical attention, as the skin of the shaft had been drawn over the raw surface, completely covering it. In the center of the stump was the small orifice of the urethra. The patient stated that erections are less frequent than before the amputation, and the sexual desire is less. He experiences, however, very little difficulty in performing coitus, and has ejaculations. On admission he had a very active acute gonorrhea with an epididymitis.

R. B. ACKER, M.D., New Orleans.

Assistant Surgeon, U. S. P. H. S.

THE HANDICAP OF PROPRIETORSHIP
IN MEDICINE

To the Editor:—I am enclosing a reprint of my article on the "Present Status of Pituitary Extract in Labor," which appeared in THE JOURNAL, June 2, 1917, p. 1601, and also the September issue of Parke, Davis and Company's *Therapeutic Notes*, on page 89 of which they quote this article, that you may compare the two. The *Therapeutic Notes* article is ostensibly a copy, but as a matter of fact, it gives it only in part, which seems to me to be a gross misrepresentation, and one which I do not think should go unnoticed.

JOSEPH J. MUNDELL, M.D., Anacostia, D. C.

[COMMENT.—*Therapeutic Notes* is one of the house organs of Parke, Davis and Company. A part of each issue is usually devoted to "excerpts" from current literature. The *Therapeutic Notes* may be judged from the manner of "excerpting" the article of Dr. Mundell. Naturally the interest of Parke, Davis and Company is in those sections of the article which may be expected to promote the use of Parke, Davis and Company's proprietary preparation of pituitary extract—pituitrin. The following passages from the article of Dr. Mundell were not among those "excerpted" in *Therapeutic Notes*:

"Used here in properly selected cases, after due consideration by one who has good obstetric judgment, its results are usually happy, and it is a boon to the tired mother and her attendants."

"To step beyond these narrow confines of indications is indeed entering on dangerous territory. Especially is this true as regards the life of the baby. It is recommended in small doses by some good authorities and is frequently used in cases of slight contraction at the brim with sometimes very good results if the birth occurs within a few minutes, but frequently with disastrous results to the baby if delivery is delayed. In such cases, forceps are urgently indicated. Its use in such cases is risky beyond question. Pituitary extract is recommended in cases of postpartum hemorrhage, but ergot is undoubtedly to be preferred."

"All means should be exhausted to arrive at a definite diagnosis, and the dangers of its use should be fully appreciated and due consideration given before its administration in any case, for such a powerful drug, used indiscriminately, will surely produce sad results to mother or child or both."

"During the past two years a number of untoward effects and consequences of severe character have arisen. As far as the maternal accidents and complications are concerned, I firmly believe that were the slogan of the hour "safety first" borne in mind, a number of them could have been prevented, for beyond question this drug has been greatly abused, as it has been given in too large doses, in cases in which its use was strongly contraindicated, and often, I am sorry to say, for no reason other than the accoucheur's expediency. Its use has been reckless and careless. The many reports of its rapid and safe action

have been one of the greatest dangers. DeLee says, 'It provides for the physician and his brother gynecologist a lot of chronic sufferers, often incurable, even after mutilating operations.'"

"An analysis of the detailed reports of all these cases of ruptured uterus with one or two exceptions reveals the fact that pituitary extract was abused, being given to patients who should not have had it. To my mind, to give a dose of pituitary extract to a woman who has a contracted pelvis, mild or severe, when the head has not passed through the pelvis, is criminal and, if the obstetrician is not aware of the contraction, he is still little short of being a criminal."

In the latter part of his article in *THE JOURNAL*, Dr. Mundell analyzes the reports of twelve cases of rupture of the uterus, thirty-four cases of fetal deaths, and forty-one cases of asphyxia pallida in which "resuscitation was effected only after prolonged and vigorous efforts." These also were not excerpted.—Ed.]

THE ETIOLOGY AND DEVELOPMENT OF NEPHRITIS

To the Editor:—My attention has been called to the fact that in my article on this subject (*THE JOURNAL*, Oct. 13, 1917, p. 1223), I overlooked important experimental work which was done by Prof. Oskar Klotz of Pittsburgh and published in the *Transactions* of the Association of American Physicians in 1914.

I regret this oversight because Professor Klotz' experiments were conducted in much the same way as our own, and because in some respects he seems to have had even more conclusive results than we obtained. Professor Klotz at that time (1914) already noticed the characteristic lesions in the glomeruli produced by intravenous injections of streptococci, and he seems to have been more successful than we in obtaining, in addition, characteristic lesions in the interstitial tissue.

I hope that you will publish this letter so as to give proper credit to Professor Klotz' work in this connection.

WILLIAM OPHÜLS, M.D., San Francisco.

Executive Head, Division of Pathology, Leland Stanford Junior University School of Medicine.

EXPEDIENT FOR RELIEVING SITUATION ARISING FROM SHORTENING OF INTERNSHIPS TO ONE YEAR

To the Editor:—At a conference of representatives of leading hospitals of this city, called recently by the Public Health Committee of the Academy of Medicine, it was ascertained that a number of hospitals, for the purpose of accommodating themselves to the program of the Medical Department of the Army, have, with some reluctance, shortened the period of their internships to one year.

All of those present at the conference agreed that an intern period of one year is insufficient for adequate clinical training.

I believe that the general adoption of an intern service of one year, especially at this time, when a large proportion of the members of visiting staffs of hospitals are being withdrawn for military service, thus increasing the responsibilities of interns, will seriously impair hospital efficiency and will react unfavorably on medical standards in the Army and in the community at large.

I quite appreciate the difficulty of relieving the situation through special legislation or by any radical change in the Surgeon-General's regulations, which now grant permission to commissioned interns to remain on the inactive list for the completion of one year of hospital service. However, a means is available of safeguarding the interests of hospitals, and indirectly of serving the public, without a radical change by, or serious embarrassment to, the Medical Department of the Army.

The expedient which I would suggest is the very simple and practical one of a change in the wording of the Surgeon-General's "Circular of Information on the Completion of Internships of Commissioned Officers" (Form I-1), permitting the period of internship "so far as the Surgeon-General's Office is concerned" to terminate in December of the year following graduation, instead of in July of that year; per-

mission to remain on the inactive list for the period named would, of course, be granted only "if the exigencies of the service permit."

S. S. GOLDWATER, M.D., New York.

Chairman, Committee on Hospital and Medical Facilities.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CATHETERIZATION OF INFANTS

To the Editor:—I was recently treating a child—a girl 1 year old—from whom I wished to obtain a sample of urine. I suggested using a catheter, but the parents had been told by a "children's specialist" that a catheter should never be used on an infant; that it was an extremely dangerous procedure and apt to cause inflammation of the bladder from which the child would never recover. Later I heard from the mother, who had taken the baby to a children's hospital, that the house physician had told her that he had never catheterized a baby and never would. I looked the matter up in several books and have asked a number of physicians their opinion; but so far I have not been able to get any satisfactory information. I do not see why using a catheter on an infant should be an operation attended with any particular danger if aseptic precautions are taken. If it is dangerous, I am unable to understand why it is not so mentioned in our textbooks. I shall appreciate an answer to this question or an opinion from you on the subject. If it is not a rational procedure to catheterize a child, I believe you will be doing a service to many members of our profession by publishing this letter and your answer. If you do this, please omit my name and address.

W. C. J.

ANSWER.—There is no reason to believe that catheterization of female infants is any more dangerous than the catheterization of older persons. Not only is the procedure a permissible one, but it is highly advisable when there is difficulty in obtaining urine, and especially in cases in which pyelocystitis is suspected. The procedure is absolutely necessary, if one wishes to find out the nature of the infecting organism in a case of pyelocystitis, which must be done if we are to treat the patient intelligently. It should be stated here that pyelocystitis is a frequent infection in children, and would be diagnosed often if catheterization were done in cases in which the cause of the rise of temperature is in doubt.

SALVARSAN

To the Editor:—At a recent meeting of a clinical club in this city, the fact developed that men thoroughly conversant with the use of arsenical preparations (salvarsan, etc.) could give us no definite information as to which of the American and Canadian products now on the market are most reliable both as to therapeutic results and absence of toxicity.

It seems well that a statement on this matter should be made by the Council on Pharmacy and Chemistry if it is possessed of that information; and if not, that it should at once take steps to come to a decision and relieve the profession of the uncertainty of the situation.

I shall be pleased if it is possible for you to give me an answer as to which preparation I ought to use.

J. E. TUCKERMAN, M.D., Cleveland.

ANSWER.—In addition to the German made salvarsan and neosalvarsan, now practically off the market, the Council on Pharmacy and Chemistry has admitted to New and Nonofficial Remedies diarsenol, manufactured by the Synthetic Drug Company of Toronto, Canada, and arsenobenzol made by the Dermatological Research Laboratories, as products essentially the equal of salvarsan. It has also accepted neodiarsenol, manufactured by the Synthetic Drug Company, as essentially equivalent to neosalvarsan. The Council has under consideration at the present time salvarsan manufactured by the Farbwerke-Hoechst Company, New York.

Before accepting these preparations, the Council required evidence to show that the products are manufactured under supervision which may be expected to insure its chemical identity and uniformity and its freedom from toxicity. It should be remembered, however, that, in the past untoward effects have been reported from German salvarsan and neosalvarsan possibly due to idiosyncrasy, but more probably to

the fact that certain lots (probably through some faulty technique in the manufacture) were more toxic than others. This has been the case particularly in regard to the last shipments of neosalvarsan from Germany. Recently some untoward effects from neodiarsenol have also been reported. No conclusive evidence is available, we believe, that shows difference in the toxicity or therapeutic efficacy between the German made salvarsan, diarsenol or arsenobenzol (Dermatological Research Laboratories); though reports have been received that the last product, while somewhat less soluble than salvarsan, is more nearly free from toxic action than salvarsan. We are informed that within a short time all salvarsan, neosalvarsan and the various products identical with these will be tested by the government before their sale is permitted. This control is to be established by the Federal Trade Commission under the authority of the recently passed "Trading with the Enemy Act." This act, among other things, provides for the manufacture of synthetics covered by German patents under licenses issued by the Federal Trade Commission. Such licenses, we are informed, will provide for government control of each lot manufactured, and may also stipulate the maximum selling price.

DEATH RATE FROM TUBERCULOSIS—DISEASES WITH GREATEST MORTALITY

To the Editor:—1. How many people die annually of tuberculosis in the United States? 2. What is the percentage per thousand? 3. What is the average age of those who die of this disease? 4. In their order of mortality, what diseases occupy first, second, third, fourth and fifth places?

J. E. BRINKMAN, M.D., Waterloo, Iowa.

ANSWER.—1. According to the mortality statistics of the Department of the Bureau of the Census for 1915, tuberculosis of different parts of the body caused 98,194 deaths during 1915, which is 10.8 per cent. of the mortality charged to all causes for that year.

2. All forms, 145.8 per hundred thousand; tuberculosis of the lungs, 127.7 per hundred thousand.

3. The average age of those who die of pulmonary tuberculosis is about 35 years.

4. The death rate during 1915 per hundred thousand population was as follows:

| | |
|--------------------------------|-------|
| Organic heart diseases | 156.2 |
| Tuberculosis (all forms) | 145.8 |
| Pneumonia (all forms) | 132.7 |
| Nephritis | 104.7 |
| Cancer | 81.1 |
| Cerebral hemorrhage | 79.3 |

SOLDIERS' AND SAILORS' INSURANCE LAW

To the Editor:—I notice an editorial in THE JOURNAL of November 17 about the Soldiers' Insurance Law. This article states that the insurance should be applied for within 120 days. As I am on the reserve list, I would like to know whether this means 120 days after receipt of commission, or after receiving orders for duty. Please give me information about this law, or tell me where to find such information.

MILTON J. STERN, M.D., Paris, Ky.

ANSWER.—Members of the Medical Reserve Corps not on active duty are not entitled to insurance either under the automatic provisions of the law or on application. The language of the Act (Sec. 401) relating to the time for applying for the insurance is: "Such insurance must be applied for within 120 days after enlistment or after entrance into or employment in the active service and before discharging or resignation, except that those persons who are in the active war service at the time of the application (Oct. 15, 1917) of the terms and conditions of such contract of insurance may apply at any time within 120 days thereafter and while in such service."

Medicine in Recent Fiction.—Voivenel remarks in a recent issue of *Progrès Médical* that medicine, and especially objective psychology, seems to be regarded by the writers of the day as worth flirting with. But our science is a princess who has more malice and wit than she seems to have. She likes to render ridiculous those who would flirt with her. But she is gracious to the writers who take the pains to deal seriously with her.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

COLORADO: Denver, Jan. 8. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DELAWARE: Wilmington, Dec. 11-13. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

DISTRICT OF COLUMBIA: Washington, Jan. 8. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

FLORIDA: Jacksonville, Dec. 4-5. Sec., Dr. W. M. Rowlett, Citizens Bank Bldg., Tampa.

HAWAII: Honolulu, Jan. 10-13. Sec., Dr. G. A. Batten, Box 375, Honolulu.

INDIANA: Indianapolis, Jan. 8-10. Sec., Dr. Wm. T. Gott, 84 State House, Indianapolis.

KENTUCKY: Louisville, Dec. 4-6. Sec., Dr. A. T. McCormack, Bowling Green.

LOUISIANA: New Orleans, Dec. 6-8. Sec. Pro-tem., Dr. E. W. Mahler, 730 Audubon Bldg., New Orleans.

MARYLAND: Baltimore, Dec. 11. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.

MINNESOTA: St. Paul, Jan. 2-4. Sec., Dr. Thomas McDavitt, 741 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, Dec. 17-19. Sec., Dr. George H. Jones, 205 Washington St., Jefferson City.

NATIONAL BOARD OF MEDICAL EXAMINERS: New York City, Jan. 9-17. Sec., Dr. J. S. Rodman, 310 Real Estate Bldg., Broad and Chestnut Sts., Philadelphia.

NEW HAMPSHIRE: Concord, Dec. 10-12. Sec., Dr. W. T. Crosby, Beacon Bldg., Manchester.

NORTH DAKOTA: Grand Forks, Jan. 1. Sec., Dr. G. M. Williamson, Grand Forks.

OHIO: Columbus, Dec. 4-6. Sec. Pro-tem., Dr. Herbert M. Platter, 185 E. State St., Columbus.

OKLAHOMA: Oklahoma City, Jan. 8-9. Sec., Dr. J. J. Williams, Weatherford.

OREGON: Portland, Jan. 1. Sec., Dr. Herbert S. Nichols, Portland.

PENNSYLVANIA: Philadelphia, Jan. 8-10. Sec., Nathan C. Schaeffer, State Capitol, Harrisburg.

RHODE ISLAND: Providence, Jan. 3. Sec., Dr. B. U. Richards, State House, Providence.

SOUTH DAKOTA: Pierre, Jan. 8. Sec., Dr. P. B. Jenkins, Waubay.

UTAH: Salt Lake City, Jan. 7-8. Cor. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

VIRGINIA: Richmond, Dec. 11-14. Sec., Dr. J. W. Preston, McBain Bldg., Roanoke.

WASHINGTON: Spokane, Jan. 1. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

Colorado January Examination

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the written examination held at Denver, Jan. 2, 1917. The examination covered 8 subjects and included 80 questions. The percentage required to pass was 75. Nine candidates were examined, of whom 8 passed and 1 failed. One hundred and fifteen candidates were licensed through reciprocity, including 99 osteopaths. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|--|------------------------------|------------|------------------|
| University of Colorado | (1915) | | 77.3 |
| Chicago College of Medicine and Surgery | (1916) | | 89.3 |
| Hering Medical College | (1895) | | 80 |
| Harvard University | (1914) | | 84.4 |
| Jefferson Medical College of Philadelphia | (1910) | | 81.2 |
| Lincoln Memorial University | (1915) | | 78.2 |
| Baylor University | (1913) | | 86.5 |
| University of Toronto | (1907) | | 85 |
| FAILED | | | |
| St. Louis College of Physicians and Surgeons | (1915) | | 70 |
| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
| Arkansas Industrial University | (1886) | | Arkansas |
| Atlanta College of Physicians and Surgeons | (1910) | | Georgia |
| Hahnemann Med. College and Hospital of Chicago | (1884) | | Penna. |
| Illinois Medical College | (1905) | | Illinois |
| Northwestern University | (1910) | | Illinois |
| State University of Iowa College of Medicine | (1902) | | Iowa |
| University of Louisville | (1911) | | Illinois |
| Medical School of Maine | (1910) | | Maine |
| University of Maryland | (1912) | | Maryland |
| Barnes Medical College | (1901) | | Missouri |
| Marion-Sims College of Medicine | (1893) | (1899) | Missouri |
| Albany Medical College | (1901) | | New York |
| Meharry Medical College | (1905) | | Alabama |
| Vanderbilt University | (1912) | | Tennessee |
| Memphis Hospital Medical College | (1886)* | | Arkansas |

*Official information on file indicates that this candidate is not a graduate of the medical school named.

Missouri June Examination

Dr. George H. Jones, secretary of the Missouri State Board of Health, reports the written examination held at St. Louis, June 18-20, 1917. The examination covered 14 subjects and

included 100 questions. An average of 75 per cent. was required to pass. Of the 117 candidates examined, 113 passed and 4 failed. Eleven candidates were licensed through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|--|--|------------------|------------------|
| Chicago College of Medicine and Surgery | (1916) | 82.3 | |
| University of Illinois | (1916) | 87.4 | |
| University of Louisville | (1917) | 86.9 | |
| Johns Hopkins University | (1906) | 75 | |
| Harvard University | (1917) | 87.1, 89.1, 90.6 | |
| Barnes Medical College | (1907) | 75 | |
| National University of Arts and Sciences | (1915) 82.1; (1916) 85.3; (1917) 75, 75.2, 79.1, 79.6, 79.7, 80.1, 81.1, 81.4, 81.8, 82, 82.1, 82.1, 82.1, 82.5, 82.5, 82.8, 82.9, 83, 83, 83.4, 83.9, 84.2, 84.3, 84.4, 85, 85.1, 85.7, 86.1, 86.1, 86.5, 86.8, 87.4, 87.6, 88, 89.1, 89.2. | 78.8 | |
| St. Louis College of Physicians and Surgs. | (1913) 81.3; (1915) (1917) 82.4, 85.1, 85.4, 87.2. | 80.1 | |
| St. Louis University | (1917) 80.1, 83.2, 83.4, 83.8, 83.9, 85, 85.1, 85.4, 86.2, 87, 87.1, 87.1, 87.3, 87.4, 87.4, 87.9, 88.1, 88.1, 88.1, 88.1, 88.3, 88.4, 88.4, 88.5, 88.7, 88.7, 89, 89.1, 89.1, 89.1, 89.1, 92.7. | 88.1 | |
| Washington University | (1916) 88.8; (1917) 83.1, 85.1, 85.5, 86.1, 86.1, 86.1, 86.7, 86.8, 87.1, 87.7, 88.1, 88.1, 88.1, 88.1, 88.2, 88.3, 90.1, 90.1. | 89.8 | |
| John A. Creighton Medical College | (1915) | 83.1 | |
| Jefferson Medical College of Philadelphia | (1915) | 84.2 | |
| University of Pennsylvania | (1917) | | |
| Meharry Medical College | (1916) 75, 76.1; (1917) 83.2, 84.2 | | |
| College | FAILED | Year Grad. | Per Cent. |
| St. Louis College of Physicians and Surgeons | (1910) | 72.4 | |
| Meharry Medical College | (1916) 75, 76.1; (1917) 83.2, 84.2 | | |
| University of West Tennessee | (1915) 56.1, 72.1 | | |
| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
| Bennett Medical College | (1913) | | Nebraska |
| Jenner Medical College | (1914) | | Illinois |
| Northwestern University | (1891) | | Iowa |
| Rush Medical College | (1913) | | Illinois |
| University of Michigan Medical School | (1913) | | Michigan |
| Barnes Medical College | (1908) | | Nebraska |
| St. Louis College of Physicians and Surgeons | (1909) | | Penn. |
| | (1914) | | Texas |
| Omaha University | (1895) | | Kansas |
| Meharry Medical College | (1915) | | Tennessee |
| University of West Tennessee | (1913) | | Maine |

Maryland June Examination

Dr. McP. Scott, secretary of the Board of Medical Examiners of Maryland, reports the written examination held at Baltimore, June 19, 1917. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of the 67 candidates examined, 59 passed and 8 failed. Twelve candidates were licensed through reciprocity, and 1 candidate was granted a reregistration certificate. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|------------|------------------|
| Howard University | (1917) | 84 | |
| John Hopkins University | (1916) 78, 79, 81, 83, 84, 91; (1917) 75, 75, 77, 77, 78, 79, 79, 80, 80, 81, 81, 82, 82, 83, 83, 85, 85, 85, 86, 86, 87, 87, 87, 87, 87, 90, 91. | | |
| University of Maryland | (1903) 81; (1915) 78; (1916) 75, 76, 78, 78, 79, 80, 87; (1917) 75, 76, 76, 78, 78, 79, 80, 82, 83, 87, 90. | | |
| Jefferson Medical College of Philadelphia | (1916) 85; (1917) 79, 83 | | |
| Meharry Medical College | (1916) | 78 | |
| Medical College of Virginia | (1917) | 75 | |
| College | FAILED | Year Grad. | Per Cent. |
| Bennett Medical College | (1914) | * | |
| College of Physicians and Surgeons, Baltimore | (1915) | * | |
| Johns Hopkins University | (1915) | 72 | |
| Maryland Medical College | (1904)* (1913) | * | |
| University of Maryland | (1916)* (1917) 67, 68 | | |
| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
| George Washington University | (1915) | | Louisiana |
| Louisville Medical College | (1894) | | W. Virginia |
| Maryland Medical College | (1908) | | Penn. |
| University of Maryland | (1882) West Virginia; (1912) | | S. Carolina |
| Harvard University | (1916) N. B. M. Ex. | | N. B. M. Ex. |
| Albany Medical College | (1897) | | Delaware |
| Western Reserve University | (1887) | | Ohio |
| Hahnemann Med. Coll. and Hospital of Philadelphia | (1904) | | Penn. |
| Jefferson Medical College of Philadelphia | (1916) | | Michigan |
| Medical College of Virginia | (1895) | | Virginia |

* No grade given.

Hawaii September Examination

Dr. R. W. Benz, chairman of the Hawaii Board of Medical Examiners, reports that three candidates were licensed at the examination held at Honolulu, Sept. 10-13, 1917. The following colleges were represented:

| College | PASSED | Year Grad. | Total No. Examined |
|---|--------|------------|--------------------|
| College of Physicians and Surgeons, San Francisco | (1917) | 1 | |
| Leland Stanford Junior University | (1917) | 2 | |

Book Notices

THE SECRETION OF THE URINE. By Arthur R. Cushny, M.A., M.D., LL.D., Professor of Pharmacology, University of London, University College. Cloth. Price, \$3 net. Pp. 241, with 36 illustrations. New York: Longmans, Green & Co., 1917.

This presents a critical digest of the entire literature on normal kidney function. The author states that he did not feel able "to adventure on the difficult subject of renal pathology." Hence at the end of the volume only three short chapters are devoted to glycosuria, albuminuria and nephritis. This is to be regretted, since the author's able exposition of normal kidney function would have served as a valuable norm for the interpretation of renal diseases. In the preface, Cushny registers a severe indictment of present day investigators of kidney function. "The growth in the literature on the kidney has been most extraordinary, and this increase in bulk has not gone along with an improvement in quality, but rather the reverse. No other organ of the body has suffered so much from poor work as the kidney, and in no other region of physiology does so much base coin pass as legal tender." This stricture is essentially just, and applies with equal force to the physiologist, the pharmacologist, the pathologist and the clinician. This monograph will help to speed the advent of a new day of greater accuracy and more severe critique in medical research. The book is a useful and opportune contribution to physiology and medicine.

SHELL SHOCK AND ITS LESSONS. By G. Elliot Smith, M.A., M.D., F.R.C.P., Dean of the Faculty of Medicine, University of Manchester, and T. H. Pear, B.Sc., Lecturer in Experimental Psychology, University of Manchester. Cloth. Price, \$1 net. Pp. 135. New York: Longmans, Green & Co., 1917.

This is a remarkably fine and most timely little book. Abroad our colleagues are constantly seeing examples of shell shock, and unless present signs fail, many of our medical men, military and civil, are going to see the same thing. A more succinct and reasonable treatment of the subject can scarcely be imagined. Chapters IV and V are devoted to a spirited criticism of the British attitude on insanity and the insane, on neuroses and the neuropaths, are not particularly germane to the title of the book, and are less applicable, we hope, to the United States than to England. But the preceding chapters on shell shock are wholly admirable. Any physician expecting to see such cases should be compelled to read these chapters with care. Before the patient can be shown that he has not a mysterious, unheard of, horrible malady, the physician must be as familiar with this disorder as he is with typhoid. Before the physician can really reach an apparently inaccessible patient, in all reason he should know the reasons of his apparent inaccessibility and the principles of approach. For the attainment of this intimate acquaintance and clarity of vision, the brochure in hand will be of inestimable value. Careful perusal of the three chapters leads one to at least two definite conclusions: Shell shock has brought us no new symptoms. These patients should be handled by experts: by men equipped with the necessary brains, training, experience and proper hospital facilities.

AN EPITOME OF MENTAL DISORDERS. A Practical Guide to Aetiology, Diagnosis and Treatment for Practitioners, Asylum, and R. A. M. C. Medical Officers. By E. Fryer Ballard, M.B., B.S., Captain R. A. M. C. (T.). Cloth. Price, \$2.25 net. Pp. 211. Philadelphia: P. Blakiston's Son & Co., 1917.

When a person in a foreign country knows nothing of the language, the little books of current phrases in parallel columns are very useful. Being perhaps lost in a tangle of streets, he looks up the equivalent of "Will you kindly direct me to the Grand Hotel?" and has a fair chance of reaching his hostelry. To be sure, he may first find himself at the Grand Central Station, and then maybe at the Grand Emporium of Novelties; but he neither feels nor is so helpless as he would be without his handy volume. Captain Ballard's epitome may be compared with such a little handbook. But we hasten to add that the very first line of the preface states that "this little book is not intended for students of medicine,"

and the third line informs us that the author "has not aspired to write a textbook of psychiatry." For the kind of book that it does aspire to be, it is excellent. We know of no work that could be so quickly and truly useful to "practitioners" and "assistant medical officers in asylums" ignorant of psychiatry, incompetent to make an accurate diagnosis in mental disorders and to treat the insane. We do not doubt that such a book is needed, will be used, and will be a real help not only in the United Kingdom but also in the United States. That this is true is pathetic. It means that the insane and mentally unbalanced are not getting the service they should have. We should also commend the book to the host of new medical men in the army who, if they see service, are sure to see mental cases with which they are entirely unfamiliar and yet concerning which they will have to make some decision. In this connection we should add that the chapter on shell shock is vague in statement and entirely inadequate: not to be compared with the handling of the subject in the little book of Smith and Pear.

THE AMERICAN ENCYCLOPEDIA AND DICTIONARY OF OPHTHALMOLOGY. Edited by Casey A. Wood, M.D., C.M., D.C.L., Professor of Ophthalmology and Head of Department, College of Medicine, University of Illinois. Volume 11. Muscles, Ocular to Ophthalmology, History of. Cloth. Price, \$6. Chicago: Cleveland Press, 1917.

The first third of the present volume is occupied by the continuation of the article on the ocular muscles, and the latter half by an instructive history of ophthalmology from the earliest times, including a brief account of ophthalmologic associations in America and American ophthalmologic journals. Concerning the character of this great work, it is believed that a judicious and courageous employment of the editorial blue pencil would have improved the historical article. The objection is not to the matter, but to the method of treatment. Other important topics in the volume are myopia, neosalvarsan, nephritis and eye symptoms, neurology of the eye, nystagmus, oblique astigmatism, and ophthalmia neonatorum (not fully treated here). The illustrations are abundant, as usual, and those of the historical article important to have preserved in a work of this sort.

A TEXT-BOOK OF FIRST AID AND EMERGENCY TREATMENT. By A. C. Burnham, M.D., Medical Reserve Corps, U. S. Army, Instructor in Surgery in the Polyclinic Hospital, New York City. Cloth. Price, \$2. Pp. 307, with 162 illustrations. Philadelphia: Lea & Febiger, 1917.

In this book, first aid methods are concisely and practically treated in a manner well within the comprehension of such groups as boy scout and Red Cross classes, factory foremen, first aid industrial teams, or the troops of the Sanitary Corps. The illustrations are well chosen. Every topic in the brief preliminary chapter on anatomy closes with a practical reference to first aid surgical considerations. The chapter on transportation of the injured, an adaptation of the regulations of the Sanitary Corps of the United States Army, is especially lucid and concise. The work includes a description of first aid treatment of the sick as well as of the injured. The recently perfected mechanical respirators are discussed. This small book is noteworthy throughout for the absence of anything not germane to its purpose of a clear description of first aid methods.

SANITATION FOR MEDICAL OFFICERS. By Edward B. Vedder, M.D., Lieutenant-Colonel, U. S. Army. Medical War Manual No. 1, Authorized by the Secretary of War and Under the Supervision of the Surgeon-General and the Council of National Defense. Leather. Price, \$1.50. Pp. 211, with 24 illustrations. Philadelphia: Lea & Febiger, 1917.

This is one of the manuals authorized by the Secretary of War, and published under the supervision of the Surgeon-General. It is issued as a guide for medical officers in the control of sanitary work. The author claims no originality for the material presented, much of which is compiled from other books on military hygiene and sanitation. Such Army orders as are of special value to medical officers are quoted, and others are mentioned by number so as to enable ready reference by those wishing to go into any subject in greater detail. The volume is interleaved with blank pages for making notes. It is a practical handbook for the purpose for which it was prepared.

Medicolegal

Duty and Liability of Owner or Operator of Sanatorium

(*Robertson vs. Charles B. Towns Hospital et al. (N. Y.), 165 N. Y. Supp. 17*)

The Supreme Court of New York, Appellate Division, Second Department, says that it is the duty of the owner of a sanatorium conducted for private gain to use reasonable care and diligence, not only in treating, but also in safeguarding, a patient, measured by the capacity of the patient to provide for his own safety. In the discharge of this duty, physicians and nurses possessing that reasonable degree of learning and skill that is ordinarily possessed by persons similarly engaged must be employed, and they must act with reasonable care and diligence. In this case, a patient, who had been advised to go to a sanatorium for treatment for alcoholism, was assigned to a room on the third floor, the one window in which room was guarded with a metallic grating. A few days later a physician and a nurse attached to the hospital found him in the room with an uplifted pitcher in his hand, after he had driven forth his roommate, whom he falsely charged with an attempt to kill him. The physician's attention was attracted to the incident by having heard a sound like "rattling the screen"; that is, the metallic grating on the window. The patient, being persuasively subdued and his fear apparently dispelled, then started for the lavatory, and the female nurse asked the physician to accompany him. The physician was about to do so instantly when he heard a crash. He rushed in. He saw the body of the patient falling through the window, which was of ground opaque glass and was not guarded. He grabbed him, but could not hold him, and he fell to the ground, where he died a few minutes afterward from the injury thus caused. The case was barren of evidence that conscious suicide should have been foreseen. There was, however, evidence that the patient had a delusion that his roommate had a design to kill him, and it was inferable that he shook the window screen in his bedroom in an attempt to escape from his imaginary assailant. There was also evidence that he had alcoholic delusions, and that fear of bodily harm and an impulse to escape an imaginary foe are characteristics of these delusions; and evidence that the delusion may manifest itself, disappear and shortly recur. The court thinks the evidence recited presented a question for the jury as to whether the physician or the nurse should not, in the exercise of the requisite skill and care, have foreseen such a casualty and protected the patient from the unguarded window in the bathroom. But the court holds that a judgment against the hospital and Charles B. Towns, for damages, must be reversed, because, while there was evidence on which the jury might have found either liable, there was no evidence on which they could be held jointly. The physicians and the nurse were not the servants of both. The jury did not decide who was the master. The corporation operated the hospital, or it did not. If it did, it could be liable; if it did not, and the individual defendant was the actual operator and master, why should there be a judgment against it?

Refusing to Submit to Reasonable Treatment—Results as Evidence

(*Peterson vs. Branton (Minn.), 162 N. W. R. 895*)

The Supreme Court of Minnesota holds, in this action to recover damages for alleged negligent and unskillful treatment of a fracture, that, when a patient refuses to submit to the reasonable treatment prescribed by a surgeon, from that time on the fault is with the patient, and not with the surgeon. And when a patient refuses to submit to the reasonable treatment prescribed by his surgeon, the surgeon may give in evidence his opinion of what the result would have been had the treatment that he prescribed been followed. It is also recalled that this court has held that, in an action against a physician to recover damages for negligent or unskillful treat-

ment of a patient, the result alone is not evidence of negligence; but an expert witness may give his opinion, based on the result, that the treatment must have been improper, and such an opinion is evidence on which the court or jury may find negligence.

The court says that the plaintiff, a man 49 years old, Oct. 25, 1914, sustained a fracture of both bones of the right forearm between 3 and 4 inches from the wrist. The defendant, after describing his treatment, testified that the plaintiff continued to come to his office in the hospital until some time in March, 1915; that up to the time he examined the arm, December 29, it was straight and the bones in perfect alignment; but that when he examined the arm in March he found there was a nonunion of the radius, and the ulna was crooked; that he then informed the plaintiff of the condition and advised him that further methods were necessary, and that he would have to give him another anesthetic and treat the ununited ends of the ulna so that they would unite; and that the plaintiff refused to submit to such treatment. At this stage of the trial the defendant was asked whether, in his judgment, a good arm would have resulted, if the plaintiff had followed his advice. To this an objection was sustained; but the supreme court holds that the testimony sought to be elicited was admissible under the pleadings, and that to exclude it was error.

This was not a personal injury case in which the wrongdoer claimed that the injured party could have reduced his damages by an operation to which he refused to submit. In such a case the injured party is not required to submit to an operation for the benefit of the person who caused the injury. But in this case the defendant contended throughout the trial that the condition of the arm was due to no fault of his. That he properly reduced the fracture in the first instance was conceded by the plaintiff's expert witnesses. The defendant claimed that the failure of union was due either to some act of the plaintiff, or to some cause for which neither party was responsible, a situation which the testimony showed is not unusual in cases of this character. If the defendant's claim of freedom from fault was well founded, a question he had a right to have submitted to the jury, it was his duty, on discovery of the nonunion, to advise the plaintiff of the necessary and proper treatment to be thereafter pursued. Proper advice is part of proper treatment, and if from that time on there was fault in any one, it lay with the plaintiff, and not with the defendant. It was defensive matter going directly to disprove the charge in the complaint, and not in mitigation of damages or to establish contributory negligence. The defendant claimed that in this respect as well as in all others he performed his whole duty toward the plaintiff; and in connection with his advice he had a right to state to the jury his opinion as to the result of the treatment he prescribed had it been followed.

The jury returned a verdict for \$4,500 for the plaintiff, from which the trial judge required him to remit \$1,500, or to have a new trial granted to the defendant; but, on account of the error in the exclusion of the testimony sought to be elicited by the question to which objection was sustained, the supreme court holds that a new trial should be granted, and reverses the order denying the defendant's motion for one.

Information Derived from and in Presence of Third Persons

(*North American Union vs. Oleske (Ind.)*, 116 N. E. R. 68)

The Appellate Court of Indiana, Division No. 2, says, in this action brought by plaintiff Oleske to recover on a beneficiary certificate for the death of her husband, that the insured on the morning of the day on which he died was suddenly stricken with severe illness, the nature of the ailment being in controversy. The insured was unconscious, and remained in that condition until he died. The plaintiff, discovering his condition, sent for certain neighboring women, and also called a physician. At the trial, the defendant offered to prove by the physician some statement made by the plaintiff to him in the presence of such neighbors and relative to the insured's condition. The statement, if made at all, was made while the physician, assisted by the neighbors and by

the plaintiff, was examining the insured with a view to treatment, the insured being at that time unconscious. The testimony was excluded as privileged, which the court holds as right. The insured, being unconscious, was unable to give to the physician any account of the cause, origin, or history of his ailment. It was necessary that such service be performed by another, if at all, and it would seem that the wife should be considered a proper person to give such information. Where the intervention of a third person is necessary in order that the patient may communicate with the physician with a view to intelligent treatment, neither the physicians nor such third person may disclose, over objection, information so communicated. To information obtained by a physician while treating his patient, the privilege may attach, notwithstanding the presence of third persons in the sickroom, where the consultation is held. It is held, however, that disinterested persons present when a patient communicates with his physician relative to the ailments of the former may testify to such communications. The privilege extends not only to communications from the patient to the physician, but to information derived by the physician from persons present at the interview. It is true that the weight which should otherwise be assigned to the New York decisions is detracted from somewhat by the fact that the governing statute of that state is not identical with the Indiana statute. Nevertheless, the court regards the situation presented here as arousing the spirit of the Indiana statute, and as a consequence that the evidence sought by the testimony of the physician was privileged and properly excluded.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Minneapolis, Dec. 27-29.
American Physiological Society, Minneapolis, Dec. 27-29.
Porto Rico Medical Association, San Juan, Dec. 22-23.
Society of American Bacteriologists, Washington, D. C., Dec. 27-29.
Southern Minnesota Medical Association, Mankato, Nov. 26-27.
Western Surgical Association, Omaha, Dec. 14-15.

MINNESOTA STATE MEDICAL ASSOCIATION

Annual Meeting, held at St. Paul, Oct. 11-12, 1917

The President, DR. HARPER M. WORKMAN, Tracy,
in the Chair

Tumors of the Bladder and Their Nonoperative Treatment

DR. W. F. BRAASCH, Rochester: In summarizing our experiences with the nonoperative treatment of tumors of the bladder, it may be said: 1. In cases of primary tumor, fulguration is applicable only to the papillomatous tumors of a relatively benign type. 2. Although the ultimate results following fulguration are much superior to those following suprapubic resection, the method does not always offer a permanent cure. 3. Recurrence most often takes place within a year following fulguration, and is usually at the site of the primary tumor. 4. Multiple recurrence is more often observed with multiple primary tumors. 5. The interval of recurrence and the evident degree of malignancy are lessened by repeated fulguration.

Cesarean Section

DR. H. T. MCGUIGAN, Red Wing: We have had no maternal mortality in our series, and only one infant mortality, which occurred one week after delivery, from causes in no way incident to the operation. These uniformly good results can be ascribed in a large measure to the fact of having the patients in the hospital and directly under control. unnecessary examinations were not made and the patients were operated on before they had become physically exhausted from long labor pains. It appears to us after our experience with the operation that it is advisable to employ it in many more cases than it is at present. One cannot help being convinced of this by watching a convalescence from a high forceps operation and a cesarean section.

DISCUSSION

DR. H. B. SWEETSER, Minneapolis: In the case of a primipara, with an undilated os, with convulsions, cesarean section seems to be a life-saving measure. About a month ago I saw a woman with a low blood pressure, who had had two convulsions. She seemed to be in a very fair condition, so that I did not advise cesarean section. She was delivered in the afternoon of a small child without any trauma; still she died. Another woman recovered from a cesarean section, and in about a week became maniacal. The condition lasted a few days, and then she recovered.

DR. CAREY CULBERTSON, Chicago: It has remained for the American obstetrician to emphasize the value of cesarean section for the relative indication, as it is called in the textbooks. By the relative indication we mean all of the other things for which we are now doing cesarean section, instead of the absolutely contracted pelvis. In the clinic of Dr. J. Clarence Webster, I have seen a woman with an acute anemia from placenta praevia develop an infection after a version and extraction, and I have seen a woman who is sectioned as soon as she begins to bleed. Comparing the difference in the recovery, the difference in the fetal mortality, and the difference in the subsequent morbidity, there is no question as to the advantage of cesarean section in a number of these cases.

Focal Infections in the Nose and Throat: Means of Diagnosis and Elimination

DR. W. E. PATTERSON, Minneapolis: Focal infections are not wholly confined to the teeth, tonsils and accessory sinuses, but one may find the same constitutional effects resulting from a diseased appendix, or an abscess formation around an ingrowing toenail. As to the relative significance of the various foci in the head, in my opinion the teeth come first, the faucial tonsils second, then the accessory sinuses, and lastly the middle ear and mastoid. I have found vaccines in conjunction with local treatment to be a most valuable aid in many cases. The essentials in the treatment of sinus infections are drainage, and when there is a resultant anemia, some form of tonic treatment.

Effect of Tonsillectomy on Focal Infection

DR. NORVEN H. GILLESPIE, Duluth: Joint, heart, kidney, goiter and glandular conditions show such marked improvement after tonsillectomy as to leave no doubt as to the source of the infection. The infection may be divided into two groups, that due to chronic conditions in the tonsil itself, and that reaching the tonsil from without, through the medium of water, milk and other articles of food.

DISCUSSION

DR. FRANK E. BURCH, St. Paul: A wave of conservatism is passing over the profession with reference to the removal of tonsils. Their wholesale removal, especially of juvenile tonsils, is a thing of the past. There has been a lack of discrimination in determining what tonsils should and what tonsils should not be removed.

DR. CHARLES M. SPRATT, Minneapolis: A diseased tonsil without enlargement should be removed. Any person who has recurring muscular or joint trouble, so-called rheumatism, or arthritis, should have his tonsils removed.

DR. J. D. LEWIS, Minneapolis: It is my belief that tonsillectomies, as usually performed, are complete in only 25 per cent. of the cases. I do not believe that by any blunt or sharp dissection method one is able to escape rupture of the capsule and therefore remove the tonsil completely.

Jejunostomy: Its Indications and Methods

DR. CHARLES H. MAYO, Rochester: Jejunostomy in the first loop of the intestine is very important in the maintenance of nutrition. It is used principally for palliation in inoperable diseases, and occasionally as a temporary expedient in benign lesions. When it is made low in the jejunum it is classified with enterostomy for the relief of obstruction in the small intestine. The Witzel method of inserting the tube, and the tube drawn through the punctured opening in the omentum, before it is passed through the abdominal wall,

guard the opening against leakage and maintain mobility of the bowel.

Pathology and Treatment of Osteomyelitis

DR. ALEXANDER R. COLVIN, St. Paul: It is sometimes said that if acute osteomyelitis were treated properly, there would not be a chronic stage. This is true only in part, for many cases are so insidious in onset that marked bone changes have occurred before we see them at all, and before the patient has had any symptoms impelling him to seek assistance. It is in these chronic forms that the greatest difficulty in diagnosis occurs because of the tumor-like thickening of the bone, with few symptoms; tumor-like masses of indurated tissues surrounding the bone increase the difficulty. After the removal of the sequestrums, each case demands separate consideration as to the best means of dealing with the resulting cavity. In the young, in whom the osteogenesis is comparatively rapid, the bone wax is especially valuable, if for no other reason than for furnishing a kind of drain; but occasionally when drainage ceases it keeps the cavity filled until such time as osteogenesis has built sufficient new bone to obliterate the cavity from which the wax has gradually been absorbed. In adult bones, in which osteogenesis is slow or it may fail to accomplish the desired result, the plastic use of bone, muscle, fat or skin may be desirable. During the course of the disease, joint contractures are prone to occur, and protective and mechanical treatment to prevent these are of the utmost importance. Where the sequestrum involves a large part of the shaft, fracture of the involucrum may also occur if protection is not sufficient.

DISCUSSION

DR. JAMES E. MOORE, Minneapolis: It is our experience at the University Clinic that many patients with osteomyelitis come in who have not been recognized as such, and often present themselves with a diagnosis of rheumatism. At a very early stage the roentgenogram will not show infection in the medullary cavity of bone, even when there is a pronounced abscess at the end of the diaphysis of the long bone.

DR. SAMUEL J. MIXTER, Boston: An adult may have a sudden acute bone infection. Nearly the whole shaft of the tibia may be involved, and the man is very sick. An opening into the bone is made, with insufficient drainage. That man can be cured only by amputation of the leg. I have seen these patients die in from three to twenty-four hours after such an operation. Amputation will save them, whereas a conservative operation will kill them.

Colles' Fracture

DR. OWEN W. PARKER, Ely: The thing of greatest importance in the treatment of a Colles fracture is to reduce it properly, and the next most important thing is not to abuse the use of splints. The successful treatment of all fractures requires good judgment, common sense, constant attention to details, a knowledge of many methods, and the election of the one which in the individual case will lead to a restoration of the form and function of the injured limb in the shortest possible time with the least danger and inconvenience to the patient.

DISCUSSION

DR. ALEXANDER R. COLVIN, St. Paul: A fracture with a little triangular crack through the base of the ulna, without any displacement, is often mistaken for a simple sprain, and many of these injuries, without deformity, may be mistaken for fractures.

DR. ARCHIBALD MACLAREN, St. Paul: Colles' fractures should always be reduced under anesthesia. We should never cover any fracture up so that we cannot see it.

DR. H. B. SWEETSER, Minneapolis: I recall two patients who apparently had entirely recovered; but when they returned there were nonunion and deformity. In both of these cases there was evidence of syphilis. I have not seen any cases of Colles' fractures in a normal person when there was nonunion.

DR. E. P. HAWKINS, Montrose: I must protest against the general statement that unless these fractures are reduced properly they do not remain in position. One cannot always

reduce them at once. If one can wait for a week and then put the patient under anesthesia, one can reduce all of them; but there are cases, as I know from personal experience, that cannot be reduced at first.

DR. ARNOLD SCHWYZER, St. Paul: We should not allow the remarks of Dr. Hawkins to go unchallenged, because the time when we can reduce these fractures is at the start. It is the time when we have no callus formation and no additional swelling, and I do not know of a case that cannot be reduced if one follows the advice of the essayist.

DR. GEORGE EARL, St. Paul: Two months ago, a lineman fell from the top of a pole. Among other injuries that he sustained, the ulna was found protruding, dislocated, with a Colles fracture. It was impossible to put the hand in a straight position to hold the Colles fracture in place because there was also a dislocation of the ulna; it was completely broken off, but by putting it up at an angle we obtained a satisfactory position.

DR. SAMUEL J. MIXTER, Boston: One may have a tremendous deformity, yet a perfect functional result. The cosmetic result may be bad, but the hand is just as good as ever.

Bursae

DR. GEORGE EARL, St. Paul: Chronic ailments, especially of the extremities, may be due to inflamed bursae. While trauma was at first thought to be all important, increasing recognition has been given to the rôle of infections and other factors, such as metabolic disturbances. Conservative surgical treatment is often sufficient, but pyogenic infection demands incision.

DISCUSSION

DR. EARLE R. HARE, Minneapolis: Oftentimes the diagnosis of surgical bursae is not made, and patients are allowed to suffer indefinitely when a cure might be effected by proper treatment. The etiology is a bone of contention at the present time. There are those who believe that the etiology lies in trauma, while others believe that it lies in infection. With our advancing knowledge of infection, it is very likely that the cause lies more toward the side of infection than it does toward the side of traumatism. Some years ago I removed with perfect result a pair of prepatellar bursae that measured an inch and a half in diameter, and an inch in thickness, even though there was active suppuration going on in one bursa at the time of its removal.

DR. ARNOLD SCHWYZER, St. Paul: When we have to operate in these cases, whether there are simply a few small deposits or they are infected, we should remove the bursa as a whole.

DR. JOSEPH R. KUTH, Duluth: In the past six or seven months I have seen six or seven cases. The impression I received was that the trouble undoubtedly followed trauma; but whether trauma was the primary or sole cause I am unable to say. These cases were notable for their chronicity.

DR. LOUIS DAUGHERTY, St. Paul: I have seen three cases of subdeltoid bursitis. In all there were calcareous deposits. I was impressed with the chronicity of the condition. These patients complained of pain in the shoulder joint which radiated down the arm, and the condition was diagnosed as neuritis.

DR. H. B. SWEETSER, Minneapolis: I had an interesting experience bearing on the diagnosis of bursitis. A woman had several sinuses around the hip joint discharging pus. One man made a diagnosis of tuberculosis of the hip. I thought it was tuberculosis of the spine. Roentgen examination showed nothing wrong with the hip. There was no interference with the motion of the vertebrae. We injected these sinuses with bismuth paste without any result, and then I operated and found that the focus of infection was a bursitis in the gluteus maximus muscle.

DR. M. S. HENDERSON, Rochester: When the bursae are excised the entire sac should be taken out. In a large number of cases of bursitis which I have seen, the bursae had merely been incised and the sac had not been dissected out.

Rickets, with Especial Reference to Premature Infants

DR. E. J. HUENEKENS, Minneapolis: I have been using tricalcium phosphate and cod liver oil in the treatment of

rickets in breast fed infants, both full term and premature, with very good results. In the beginning I had great difficulty in obtaining a smooth and palatable mixture, but finally found that 10 per cent. of tricalcium phosphate (C. P.) in emulsion of cod liver oil (U. S. P.) makes a smooth suspension, which is readily taken by most infants.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

November, XIV, No. 5

- 1 *Condition of Reflexes in Poliomyelitis. J. G. Regan, Brooklyn.—p. 321.
- 2 *Infantile Scurvy. Its Pathogenesis. A. F. Hess, New York.—p. 337.
- 3 Intestinal Bacteria in Children. W. W. Ford, K. D. Blackfan and M. D. Batchelor, Baltimore.—p. 354.
- 4 *Relation of Reaction of Urine to Diet in Infants and Children. C. Torres, Bogota, Columbia, S. A.—p. 365.
- 5 *Banana as Food for Children. M. C. Pease and A. R. Rose, New York.—p. 379.

1. Reflexes in Poliomyelitis.—Regan points out that the most common symptom of poliomyelitis is an alteration in the reflexes accompanying or following a short febrile period. The patellar reflex is most frequently affected owing to the common involvement of that region of the spinal cord which innervates the quadriceps extensor group of muscles. It was altered in various ways in 81 per cent. of 818 cases. Hyperactivity of the knee jerks is usually, if not invariably, the first change to occur in the preparalytic stage. Hyperactivity of the patellar reflex is most frequent in the meningitic and ataxic cases, and in the combined types of the disease in which meningitic symptoms were prominent. Absent or normal response is the rule in purely bulbar cases, except in the very early stages. An exaggerated reflex may be encountered in an atrophied and obviously paralyzed leg. Absence of the knee jerk is most frequently encountered in the myelitic and bulbar types of the malady.

The patellar reflex may remain normal throughout the entire paralytic phase, especially in bulbar and ataxic cases. It is also common in myelitic cases when the paralysis is limited to the upper extremities and trunk. It is scarcely ever encountered where the hydrocephalus is at all marked. The plantar reflexes are exaggerated in the preparalytic stage. The reflex was altered in 41 per cent. of 643 cases specified in the paralytic stage. An exaggerated response may persist into the paralytic stage, more especially in the meningitic and ataxic classes of cases. A diminished reaction was found most common in the ataxic, the myelitic meningitic, and the purely myelitic forms of the disease. The reflex was absent most frequently in the purely bulbar and in the combined bulbar and myelitic cases. A normal reaction was encountered most often in the ataxic, bulbar myelitic and bulbar meningitic forms of the malady. Often the first sign of improvement in cases with marked paralytic involvement is the gradual reappearance of the reflex. The Babinski phenomenon is relatively rare in poliomyelitis, but it occasionally occurs in the meningitic form of the disease. Its presence in a case in which the diagnosis was doubtful would always be decidedly in favor of tuberculous, and, to a less extent, cerebrospinal meningitis. A true ankle clonus is likewise very rare in contradistinction to the other forms of meningitis. The pupillary reflex is but little altered.

2. Infantile Scurvy.—Hess emphasizes the fact that infantile scurvy is an intestinal intoxication or an autointoxication due to the overgrowth of harmful bacteria in the intestine. It is the product of an unbalanced flora which is no longer controlled by a proper dietary. Oliguria is a common symptom of scurvy. The mild therapeutic effect of citric acid may be ascribed partly to its diuretic properties. Orange juice also was found to bring about marked diuresis. One of the striking and important symptoms of scurvy is a susceptibility to infection (furunculosis, nasal diphtheria,

"grip," etc.). Some hemorrhages are due to this secondary infection, and are to be regarded not as scorbutic, but rather as focal complications. Other hemorrhages are truly scorbutic. Scurvy, however, is essentially a disorder characterized by malnutrition and not by hemorrhage, taking months to develop, and, from a clinical point of view, frequently latent or subacute.

4. Diet and Reaction of Urine in Children.—Torres points out that the difficulties often encountered in changing the reaction of the urine in children are very much diminished when a suitable diet is prescribed. Diminishing the amount of protein in the diet to 2 gm. and sometimes to 3 gm. per kilogram will often in itself render the urine alkaline without using a drug. In cases in which the amount of protein reaches the lowest physiologic limit without turning the urine alkaline, one may continue to diminish the acidity by adding vegetables to the diet. In older children with whom the food is more varied, one can do much by regulating the diet in accordance with the principles outlined in this article. In cases in which vegetables are used to turn the urine alkaline, one must use, if possible, vegetables in which the amount of protein is smaller in proportion to the salts, like fruits, rice, wheat, etc., rather than those which have a large amount of protein like peas, beans, etc. Vegetables which contain purins, like coffee, tea and cocoa, may increase the acidity, because they may produce uric acid. In cases of infection, especially in infections of the urinary tract, and in cases of starvation, the urine tends to become more acid than in other conditions; therefore it is more difficult to render it alkaline. When drugs are used without the proper diet, the doses necessary to make the urine alkaline are much larger than is ordinarily believed. The action of drugs (either acid or alkaline) is very fleeting; therefore they should be given in large and frequent doses.

5. Banana as Food.—Numerous digestion experiments were performed by Pease and Rose to determine the food value of the banana. The results of their experiments show that the banana is a useful fruit that can with profit enter liberally into the child's dietary provided it is fully ripe or well cooked. If eaten baked in the yellow stage of ripeness or if eaten raw when fully ripe, the banana makes a delightful and highly nutritious article of food. Its composition does not warrant the use of the banana as the main component of the child's dietary, but it can compete well with other fruits and is decidedly to be preferred to candies. The nutritional value is relatively high, approximately one calorie per gram of pulp; and its carbohydrates, when it is fully ripe or cooked, are not less assimilable than those of cereals and potatoes. In the raw food the digestibility is directly proportional to the ripeness of the fruit. There is no positive evidence that the banana influenced bowel movements. In the many tests there was no suggestion whatever of any deleterious effect from consuming large amounts of fully ripe bananas. Prolonged use of the underripe fruit, on the other hand, developed undesirable symptoms. The banana ought not to be eaten raw until after the brown spots begin to appear. The brown color of the peel, however, should not be confused with the darkening due to bruises. An injured banana is soon invaded by molds and yeast cells. The banana properly handled and allowed to ripen is a wholesome food, uncontaminated by dirt and pathogenic germs even if purchased from the push cart in the congested streets.

American Review of Tuberculosis, Baltimore

October, I, No. 8

- 6 *Rôle of Surgery in Treatment of Intestinal Tuberculosis. E. Archibald, Montreal, Canada.—p. 449.
- 7 *Treatment of Tuberculous Hemoptysis with Thromboplastin and Euglobulin. G. Mannheimer and S. L. Wang.—p. 468.
- 8 Tuberculosis and Pregnancy. Study of Three Hundred Cases with Review of Literature. S. A. Douglass and J. E. J. Harris, Mount Vernon, Ohio.—p. 478.
- 9 *Experiments with Tuberculous Sputum Twenty-Two Years Old. N. B. Burns, Boston.—p. 484.
- 10 Clinical Observations Derived from Examination of Over Three Thousand Chests Checked by Stereoroentgenograms. K. Dunham, Cincinnati.—p. 489.
- 11 Cone and Collateral Circulation in Pulmonary Tuberculosis. K. Dunham, Cincinnati.—p. 498.

6. Surgical Treatment of Intestinal Tuberculosis.—Archibald says when the small bowel alone is involved, there is present constipation, often quite marked and there is no thickening or mass, and in particular no tenderness to palpation localized in the cecal region. When the cecum with or without the ascending colon is involved, and the small bowel is free, there is present diarrhea or alternating constipation and diarrhea, and there is always to be felt a fairly defined thickening, sometimes even a mass, and there is tenderness to palpation in the cecal region. When both small bowel and cecum are involved there is a mixture of the above signs and symptoms. When the transverse and descending colons are diseased in addition, there are very rarely any signs that point to it; these are comparatively silent regions. When the appendix alone is tuberculous, it is not possible before operation to exclude the possibility of disease in the cecum; one can only say that there is disease in that region. Between simple appendicitis and tuberculous disease it is often difficult to make a diagnosis; but it may be said that, where definite thickening of the tissues in the appendix region is felt, without there being an acute inflammatory reaction, and with a history of chronic slight pain and of occasional subacute attacks with persisting soreness, then the condition is much more suspicious of tuberculosis of the appendix, and possibly also of the cecum, than of simple appendicitis. While in the majority of cases of intestinal tuberculosis the lungs are already seriously diseased, and while in such cases the early hopes of bringing about arrest of the pulmonary condition by surgical removal of the diseased bowel have not on the whole been realized, it may still be emphasized that complete relief of bowel misery in these distressing cases may very often be accomplished by a well planned and carefully executed operation. The good cases with but little pulmonary trouble and with eradicable bowel disease may frequently be cured by operation.

7. Thromboplastin and Euglobulin in Hemoptysis.—Twenty-three cases with moderate or copious hemorrhages which had a tendency to continue were treated by Mannheimer and Wang. All had definite pulmonary tuberculosis with positive sputum. Other medicinal treatment was omitted for the time being. In the beginning small doses were used, as nothing was known about the effects. They were subsequently increased and also given more frequently. When a hemoptysis recurred in the same individual at a later period different dosages were administered. This refers only to thromboplastin, which was used in 23 instances. In two cases a hemorrhage ceased after the injection of thromboplastin, but recurred subsequently and was not influenced by a repetition or increase of the dose. In all the other cases there was even no apparent benefit. Euglobulin was administered fifteen times. There was no improvement in any case. A few patients showed slight reactions as evidenced by a chill, elevation of temperature and general malaise. One developed a typical serum rash. These reactions were not severe and were of short duration. Altogether the author's results with thromboplastin and euglobulin in the treatment of tuberculous hemoptysis have been negative.

9. Tuberculous Sputum Twenty-Two Years Old.—In all the material examined by Burns acid fast organisms resembling tubercle bacilli structurally and in staining qualities were seen to be present. They were more numerous in the dried material in which no other organism could be found. No growth was obtained such as would prove, or even suggest, that these organisms still retained their viability. Inoculation of both culture mediums and guinea-pigs produced only negative results in the attempts to recover living tubercle bacilli from the material examined.

Boston Medical and Surgical Journal

November 1, CLXXVII, No. 18

- 12 *Use of Normal Blood Serum, Particularly with Reference to Treatment of Wounds. T. Leary, Boston.—p. 611.
- 13 Preparation of Blood Serum for Use. T. Leary and F. H. Dunbar, Boston.—p. 617.
- 14 *Anaphylactic Reactions to Normal Serums. T. Leary, F. H. Dunbar and J. W. Watson, Boston.—p. 618.
- 15 Case of Streptococcus Meningitis Successfully Treated with Normal (Human) Serum. F. P. McCarthy, Boston.—p. 621.

- 16 *Treatment of Wounds with Normal (Beef) Serum. J. H. Shortell, W. F. Cotting and T. Leary, Boston.—p. 622.
- 17 Physical Examination of Factory Employees; Two Thousand Consecutive Cases and Defects Found. R. W. Cutler, Worcester.—p. 627.
- 18 Future of Medicine. C. W. Eliot, Boston.—p. 631.

12. Normal Blood Serum in Treatment of Wounds.—Leary is convinced that normal serum may be accepted as a natural physiologic solution, readily miscible with the tissue secretions, and bland in its action, apart from certain toxic and anaphylactic properties, now regarded as useful under proper control; it possesses natural antibacterial properties; it is the storehouse of the specific antibodies; it contains ferments capable of digesting tissue detritus and exhibiting other useful activities; it is employed successfully in controlling hemorrhage other than that form (rhesis) requiring mechanical control; it is fitted to serve as a culture medium for tissue; it is able to excite the protective machinery in a non-specific manner, useful in therapy; it provokes a desirable leukocytosis, valuable in the treatment of infections.

14. Anaphylactic Reactions to Normal Serums.—The clinical application by the authors of beef serum in the treatment of wounds has been followed by no anaphylactic phenomena when the serum has been applied to wound surfaces. In six cases injections of serum were made, either subcutaneously or into the deep tissue. The amount injected was about 15 c.c. In three of these cases chills occurred within two hours of the injection. In only one case was the chill marked, the temperature reaching 103. In no case did a delayed anaphylactic reaction appear.

16. Wounds Treated with Normal Beef Serum.—The results obtained by the authors in a variety of cases show that serum will control a septic process, wherever contact is made between the serum dressing and the infected tissue. It is absolutely harmless to normal tissue. As a prophylactic agent in fresh wounds it is of value. Serum is a most marked stimulant of granulations. The authors believe that grafting can and should be practiced earlier following the use of serum than under any other agent. Injections of unheated beef serum are followed by rises in temperature, usually slight, perhaps with chill, but the reactions are short and not severe. Used as a dressing to wounds, no matter how large the surfaces are, it gives rise to no anaphylactic response.

Journal of Cancer Research, Baltimore

October, II, No. 4

- 19 *Relation of Induced Cancer Immunity to Tissue Growth and Tissue Degeneration. F. D. Bullock and G. L. Rohdenburg, New York.—p. 455.
- 20 *Splenectomy Exerts No Appreciable Influence on Immunity Against Transplanted Tumors. F. D. Bullock and G. L. Rohdenburg, New York.—p. 465.
- 21 *Loss of Power to Produce Sarcomatous Transformation in Stroma. W. H. Woglom, New York.—p. 471.

19. Relation of Induced Cancer Immunity to Tissue Growth.—It is claimed by Bullock and Rohdenburg that induced immunity to transplanted cancer is not solely due to growth or the metabolites of growth of the immunizing agent, nor is it due to death and degenerative metabolites of the injected material.

20. Influence of Splenectomy on Immunity Against Tumors.—Bullock and Rohdenburg found that splenectomy has no effect on the persistence of immunity induced by the receding rat sarcoma 7; neither does it influence the fate of regressive tumors. Splenectomized animals are no more resistant to immunizing agents than are normal animals. Splenectomy neither increases the percentage of takes nor favors the growth of spontaneous tumor grafts.

21. Sarcomatous Transformation in Stroma.—A transplantable mouse carcinoma, which exhibited in the first generation the power to cause sarcomatous transformation in its stroma, lost that power after the fourth generation, and has not regained it during three years cultivation. The question is raised by Woglom whether mouse tumors containing keratin may not, perhaps, induce sarcoma development in their stroma more often than other types of carcinoma.

Journal of Cutaneous Diseases, Chicago

October, XXXV, No. 8

- 22 Erythema Figuratum Perstans; Report of Cases. W. H. Mook, St. Louis.—p. 635.
- 23 Focal Infection in Etiology of Skin Disease. E. D. Chipman, San Francisco.—p. 646.
- 24 *Glycerin. D. W. Montgomery, San Francisco.—p. 662.
- 25 *Relation of Fruit Ingestion to Cutaneous Diseases. A. Davidson, Los Angeles.—p. 665.
- 26 Lymphadenosis Cutis Universalis, Associated with Generalized Erythrodermia and Atrophy of Skin. F. Wise, New York.—p. 669.

24. Therapeutic Use of Glycerin.—Glycerin is freely miscible in all proportions with water and with ordinary alcohol, it mixes well with all the ointment bases, and is an excellent solvent. In prescribing mercuric chlorid for tinea versicolor, by adding glycerin, the skin is kept moist and the medication is retained. The following prescription is written by Montgomery:

R Hydrarg. bichlorid 53
Glycerin 15
Spts. vini rect. dil. 240

M. Sig.: Rub in well once a day.

One of the best lotions for roughness of the hands, as in chronic eczema, is composed of caustic potash (KOH), glycerin, alcohol and water:

R Potassii Hydroxidi 1.00
Glycerini 66.00
Spts. vini rect. aa
Aq. rosae ad 200.00

M. Sig.: Use on the hands once a day.

Petrolatum is the fatty base usually prescribed in ordering a paste, but glycerin may be employed. Such a prescription would be:

R Amyli 15.00
Zinci oxidi aa
Glycerini 30.00

M. Sig.: Apply by spreading on with the hand.

The zinc oxid glycerin jellies form another set of preparations that, when judiciously employed, give excellent service. A formula that Montgomery has found excellent consists of:

R Gelatini 46.00
Zinc oxid 28.00
Glycerin 12.00
Aq. ad. 114.00

Heat the water and dissolve the gelatin in it, and then add the glycerin and the oxid of zinc and stir until cold. This makes 200 gm., a little over 6 ounces, which is a convenient amount to dress a surface equal to that of both legs.

25. Relation of Fruit Ingestion to Cutaneous Diseases.—According to Davidson if all fresh fruits were stricken from the dietary, one-third of the sickness incidental to childhood and early life would be eliminated. He says that of all California fruits the orange is the most deleterious. The strawberry outranks it as a cause of urticaria but the orange is more prone to cause the furred tongue, cloyed appetite and general depression, a symptom group that is classed as "biliousness." The evil lies wholly in the pulp or cellulose, the juice is perfectly wholesome. Oranges exhibit their poisonous qualities most intensely when eaten fresh off the tree. When cold stored for a few weeks they lose these poisonous qualities and may then be eaten with impunity. Next in order of unwholesomeness come the peach, apricot, plum and cherry. Pears, apples, grape-fruit and grapes seem to produce no anaphylactic symptoms. Dried fruits such as dates, figs and raisins are valuable foods and have apparently no direct action on the skin. Figs are the only dried fruit that have a noticeable laxative action. In mild cases of constipation two or three figs eaten before retiring produce satisfactory results. The imported fig alone has this quality; California figs, including the fertile seeded varieties, do not seem to have this virtue. Raisins, if freely eaten, may cause an irritative diarrhea and in an unusual way; the skins are somewhat tough and difficult to digest and are prone to adhere by their flattened surfaces to the valvæ conniventes, where they may remain for some time before irritation is produced. The musk melon or canteloupe is apparently harmless, but Davidson does not feel quite sure about the watermelon.

The melons belong to a family of plants that in their wild state are drastic purgatives and in the instances where they

disagree, they may have possibly reverted to the family habit. Many people eat all manner of fruit not only with impunity but with pleasure and benefit, as it gives them that feeling of repletion that is essential to mental well being and prevents the excessive use of the ordinary proteins. There is a class of people who have digestions akin to those of the herbivora, who can eat, satisfactorily digest and assimilate all manner of fruits and vegetables, and examination of the stools show that the digestion of the cellular elements is complete. These people have one distinguishing feature: they all show a tendency to constipation and high blood pressure. In practice, then, one may lightly regard the possibility of anaphylaxis in these people. On the other hand, in those who suffer from catarrhal affections of the large bowel (and these affections are very numerous, ranging from mild catarrhal inflammation to membranous colitis) the anaphylactic action of fruits is liable to be very marked. There is, too, the possibility that the frequent association of anaphylaxis and colitis may be due to the parenteric action of the colon bacillus gaining access to the blood through the damaged points in the mucous lining.

Journal of Infectious Diseases, Chicago

November, XXI, No. 5

- 27 *Etiology of Common Colds. Probable Role of Filtrable Virus as Causative Factor; with Experiments on Cultivation of Minute Micro-Organism from Nasal Secretion Filtrates. G. B. Foster, Jr.—p. 451.
- 28 Hemolysin Production and Acid Production by Streptococci. S. Sekiguchi, Chicago.—p. 475.
- 29 Some Factors in Swimming Pool Control. W. D. Stovall and M. S. Nichols, Madison, Wis.—p. 484.
- 30 *Preparation and Method of Using Toxin-Antitoxin Mixtures for Active Immunization Against Diphtheria. A. Zingher, New York.—p. 493.
- 31 Effect of Anilin in Rabbits. M. W. Brown, Chicago.—p. 497.
- 32 *Wassermann Reaction with Glycerolated Human Serum More than a Year Old. E. H. Ruediger, Bismarck, N. D.—p. 502.
- 33 *Rocky Mountain Spotted Fever in California. J. G. Cumming, Berkeley, Calif.—p. 509.
- 34 *Complement Fixation with Specific Antigen in Acute Poliomyelitis. M. Neustaedter and E. J. Banzhaf.—p. 515.

27. **Etiology of Common Colds.**—From the experimental evidence presented by Foster it seems that the following facts have been established: Common colds of the ordinary type are infectious. It has been demonstrated experimentally that the virus of common colds occurs in the nasal secretions; and that this virus is capable of passing through Berkefeld filters which are impermeable to ordinary bacteria. By the employment of special anaerobic methods the virus of common colds has been cultivated in vitro by Foster, and has proved capable of repeated recultivation in subcultures. Experimental inoculations have demonstrated that Berkefeld N filtrates of subcultures of the virus, in the second generation at least, are infective. A peculiar minute micro-organism has been isolated from cultures made from the filtered nasal secretions in common colds. This micro-organism can be passed through Berkefeld N filters, and has been recultivated from culture-filtrates. Although conclusive proof of its nature has not been adduced, the experiments suggest that the micro-organism described bears a definite relation to the true infective agent. Analysis of the results of Foster's experiments showed that of the ten men inoculated, seven developed clear cut and definite symptoms of acute coryza; two reacted questionably, while one remaining case exhibited no symptoms. The experiments were adequately controlled.

30. **Toxin-Antitoxin Immunization against Diphtheria.**—The indications for active immunization with toxin-antitoxin are divided by Zingher into two groups: (a) as a general prophylactic measure, and (b) to control outbreaks of diphtheria. It is a safe and convenient rule to follow to immunize with toxin-antitoxin all children below 18 months of age irrespective of the Schick test they may show at the time of immunization. The immunity developing from toxin-antitoxin is slow in appearing, and is, therefore, not a reliable safeguard in hospital wards where children are crowded together, and suffering from various contagious diseases. But in institutions where small outbreaks of diphtheria have occurred, or where diphtheria is more or less constantly present and clinical cases and bacillus carriers steadily appear,

Zingher says, the use of antitoxin alone has often been insufficient to stamp out the disease, and the combined application of the Schick test and active immunization with toxin-antitoxin has given most successful and encouraging results.

32. **Wassermann Reaction with Old Glycerolated Human Serum.**—Ruediger has found that pure glycerol is an ideal preservative for human serum intended for the Wassermann reaction. In order to prevent the serum from becoming anti-complementary, it must be heated to about 56 C. for thirty minutes and then be mixed with an equal volume of glycerol. Serum kept for more than a year gave practically the same results as when fresh and without preservative.

33. **Rocky Mountain Spotted Fever.**—The results of animal inoculations in Cumming's cases definitely establish the occurrence of Rocky Mountain spotted fever in California. The occurrence of a case in Ventura County marks that region as a new area of possible prevalence of the disease in California.

34. **Complement Fixation in Acute Poliomyelitis.**—Neustaedter and Banzhaf have obtained a specific antigen for complement fixation in poliomyelitis by digesting poliomyelitic virus with trypsin. A 5 per cent. suspension of brain and cord of monkeys that have died of poliomyelitis is filtered through a Berkefeld or Heim filter, sterile water being used as the menstruum. The trypsin is added in proportion of 1:50 and permitted to act at room temperature for three hours; 0.4 per cent. tricresol is then added to stop further action by the trypsin.

Journal of Nervous and Mental Disease, Lancaster, Pa.

October, XLVI, No. 4

- 35 *Duration and Classification of Brain Tumor. E. D. Bond, Philadelphia.—p. 241.
- 36 *Reaction of Pupil to Colored Light. J. A. Cutting, Agnew, Calif.—p. 246.
- 37 Central Atrophy; Report of Cases. J. H. W. Rhein, Philadelphia.—p. 251.
- 38 Lesions of Frontal Lobe Simulating Cerebellar Involvement, Differential Diagnosis. A. Gordon, Philadelphia.—p. 261.

35. **Brain Tumor.**—A woman of 49 had a history of convulsions for twenty-nine years, headaches for two years, and many of the usual localization symptoms of brain tumor for four months before her death. Necropsy showed a tumor which might be classed as a glioma, but which Bond says should be considered as coming from a precursor of the glia cell.

36. **Reaction of Pupil to Colored Light.**—Cutting has found that the pupil reacts differently to different colored lights, giving a greater reaction in some than in others in the following order: white, yellow, reddish yellow, green, blue and violet, thus following the luminosity of the spectral colors. There is no reaction specific to different diseases—the same law holds for the paretic as for the hysteric. There is a distinct clinical value in using the green light as a "measure" for amplitude of reaction, which cannot be obtained from white light. It is a convenient method for measuring the amount of light necessary to produce a pupillary response.

Journal-Lancet, Minneapolis

November 1, XXXVII, No. 21

- 39 Mechanical and Surgical Treatment of Anterior Poliomyelitis. A. J. Gillette and C. C. Chatterton, St. Paul.—p. 691.
- 40 Selection of Donor for Transfusion. A. H. Sanford, Rochester.—p. 698.
- 41 Carcinoma of Colon; Report of Cases. G. M. Williamson, Grand Forks, N. D.—p. 702.
- 42 Bronchoscopy and Esophagoscopy; Report of Cases. A. D. McCannel, Minot, N. D.—p. 704.

Medical Record, New York

November 3, XCII, No. 18

- 43 What American Soldier Now Fighting in France Should Know About Tuberculosis. S. A. Knopf (New York and Paris), and W. H. Welch, Baltimore.—p. 751.
- 44 Cloudy English and Cholecystostomy. D. H. Stewart, New York.—p. 756.
- 45 Premature Old Age. J. M. Taylor, Philadelphia.—p. 758.
- 46 Emergency Head Surgery. C. E. Dowman, Atlanta, Ga.—p. 760.
- 47 Protein Disorders and Convulsions. F. J. Farnell, Providence, R. I.—p. 763.
- 48 Modern Treatment of Syphilis. C. W. Shropshire and C. Waterston, Birmingham, Ala.—p. 766.

- 49 Case of Hydrophobia; Attempted Specific Medication with Immune Human Serum. O. Berghausen, Cincinnati.—p. 768.
50 Points on Nitrous Oxid. R. G. McGahey, Birmingham, Ala.—p. 769.

Michigan State Medical Society Journal, Grand Rapids
November, XVI, No. 11

- 51 Uncinariasis Experiences in Eastern Kentucky. B. N. Epler, Kalamazoo.—p. 455.
52 Medicine on Two Battle Fronts. J. D. Dunlop, Alpena.—p. 458.
53 Focal Infection. W. Northrup, Grand Rapids.—p. 462.
54 Talipes Equino Varus. E. A. Linger, Rockland.—p. 464.
55 Sudden Death in Case of Syphilitic Aortitis. A. C. Furstenberg, Ann Arbor.—p. 468.
56 Case of Hysterical Blindness. C. D. Camp, Ann Arbor.—p. 470.
57 Case of Premature Separation of Placenta Complicating Nephritic Toxemia. L. L. Bottsford, Ann Arbor.—p. 472.
58 Case of Pellagra. J. A. Elliott, Ann Arbor.—p. 475.

Missouri State Medical Association Journal, St. Louis
November, XIV, No. 11

- 59 Progress in Obstetrics. B. G. Hamilton, Kansas City.—p. 465.
60 Lumbar Puncture in Alcoholism. F. M. Barnes, Jr., and E. E. Hein, St. Louis.—p. 469.
61 Preservation of Arm Function After Operations for Carcinoma of Breast. W. T. Coughlin, St. Louis.—p. 475.
62 Plea for Less Operative Interference in Treatment of Organic Stricture of Urethra. L. Bartels, St. Louis.—p. 479.
63 Protein Indigestion in Infants. J. Zahorsky, St. Louis.—p. 484.
64 Two Cases of Idiopathic Tetanus Due to Decayed Teeth. E. W. Saunders, St. Louis.—p. 485.

New Orleans Medical and Surgical Journal
November, LXX, No. 5

- 65 Present Status of Inguinal Hernias. E. D. Martin, New Orleans.—p. 408.
66 Syphilis of Thyroid; Report of Three Cases. J. A. Storck, New Orleans.—p. 414.
67 Importance of Rest on After Results of Pelvic Infections. W. B. Chamberlin, Baton Rouge.—p. 418.
68 Repair and Treatment of Fractures. I. Colin, New Orleans.—p. 419.
69 Gastric Crises of Tabes; Report of Cases. A. L. Levin, New Orleans.—p. 425.
70 First Case of Leishmaniosis Cutanea in Venezuela. J. Iturbe, Caracas, Venezuela.—p. 430.
71 Anatomy of Cercaria of Schistosomum Mansoni. J. Iturbe, Caracas, Venezuela.—p. 433.
72 Influenza. A. J. Reynolds, Fort Necessity.—p. 434.
73 Imbecility; Asexualization as a Means of Prevention. H. L. Fougousse, Pineville.—p. 437.
74 Tetanus Resulting from Bite of Pig. J. T. Cappcl, Alexandria.—p. 440.
75 Suprarenal Syndrome in Paludism. C. Fraga, Bahia, Brazil.—p. 443.
76 Blister Beetles as Public Nuisance. A. J. Chalmers and H. H. King.—p. 445.
77 Mycetoma and Pseudomycetomatous Formations. A. J. Chalmers and R. G. Archibald.—p. 455.

New York Medical Journal
November 3, CVI, No. 18

- 78 Antitoxin for Gaseous Gangrene. C. G. Bull, New York.—p. 821.
79 Weight of Clothing and Its Relation to Weight of Child in First Five Years of Life. J. P. C. Griffith, Philadelphia.—p. 823.
80 Diaphragmatic Breathing. I. H. Hance, Lakewood, N. J.—p. 825.
81 Influence of Labor on Brain Development of Child. M. P. E. Groszmann, Plainfield, N. J.—p. 827.
82 Manic Depressive Psychoses Associated with Malignant Conditions. S. L. Immerman, Philadelphia.—p. 828.
83 New Type of Rotary Mesh Filter for Use in Deep Roentgen Therapy with Special Reference to Vesical Neoplasms. W. H. Meyer, New York.—p. 829.
84 Phlebitis of Deep Dorsal Vein of Penis. E. N. Turkus, New York.—p. 837.
85 Case of Diverticulitis of Cecum. W. R. Jackson, Mobile, Ala.—p. 838.

Oklahoma State Medical Association Journal, Muskogee
November, X, No. 11

- 86 Metastases. S. H. Landrum, Altus.—p. 421.
87 Women as Insurance Risks. J. S. Hartford, Oklahoma City.—p. 424.
88 Double Undescended Testicles; Report of Case. F. M. Sanger, Oklahoma City.—p. 427.
89 Simple Cystoscope in Diagnosis. H. Reed, Oklahoma City.—p. 429.
90 Muscle Training in Infantile Paralysis. D. J. Holland, Oklahoma City.—p. 431.
91 Acute Intestinal Obstruction. F. L. Carson, Shawnee.—p. 433.
92 Diagnosis and Treatment of Ectopic Gestation. J. H. White, Muskogee.—p. 435.

Ophthalmic Record, Chicago

November, XXVI, No. 11

- 93 Tendon Transplantation of Eye Muscles. H. W. Woodruff, Joliet.—p. 545.
94 Antityphoid Inoculations and Ocular Lesions. F. P. Calhoun, Atlanta, Ga.—p. 553.
95 Safety First in Cataract Operation. R. W. Perry, Seattle.—p. 555.
96 Unusual Case of Electric Ophthalmia. D. E. Compere, Dallas, Texas.—p. 558.
97 Extensive Plastic Ectropion Operation with Pedicled Flap. F. Allport, Chicago.—p. 559.
98 Protective Eye Shield. J. M. Patton, Omaha.—p. 561.
99 Case of Reattachment of Retina—Trepine Operation. E. M. Blake, New Haven, Conn.—p. 562.
100 Interstitial Keratitis with Special Reference to End Result. G. S. Derby, Boston.—p. 563.

Philippine Journal of Science, Manila
May, XII, Sec. B, No. 3

- 101 Varying Morphology of Bacillus Leprae and Routine Microscopic Examination of Nasal Mucus in Lepers. J. A. Johnston, Manila.—p. 115.
102 Amebic Abscess of Liver Among Filipinos. R. Abriol.—p. 121.
103 Two Cases of Balantidial Colitis. C. H. Manlove.—p. 149.

Rhode Island Medical Journal, Providence
November, I, No. 11

- 104 Stiff and Painful Shoulder; Report of Cases. R. Hammond, Providence.—p. 223.
105 Exophthalmic Goiter; Report of Cases. C. A. McDonald, Providence.—p. 227.
106 Percy Operation for Inoperable Carcinoma of Uterus and Vagina. D. J. Bristol, Jr., Boston.—p. 230.

Surgery, Gynecology and Obstetrics, Chicago
November, XXV, No. 5

- 107 *Restoration of Gastro-Intestinal Continuity by Means of Anticolie Gastrojejunostomy Following Partial Gastrectomy for Cancer of Pyloric End of Stomach. D. C. Balfour, Rochester, Minn.—p. 473.
108 Case of Section of Duodenum. P. Escudero and R. E. Pisman, Buenos Aires.—p. 477.
109 Some Causes of Occasional Failure in Operative Treatment of Chronic Gastric and Duodenal Ulcers. G. Woolsey, New York.—p. 481.
110 Duodenal Diverticula; Report of Case Associated with Duodenal Ulcer. H. P. Ritchie and G. L. McWhorter, St. Paul, Minn.—p. 485.
111 Tuberculosis of Stomach; Report of Case of Multiple Tuberculous Ulcers: Bibliography. A. C. Broders, Rochester, Minn.—p. 490.
112 Stenosis of Gastro-Enterostomy Stoma, Simulating Recurrence of Carcinoma of Stomach; Report of Two Cases. R. Lewisohn, New York.—p. 505.
113 Sterilization and Closure of Suppurating Fractures. M. Guillot and H. Woimant.—p. 507.
114 Suction Bulb Action of Gallbladder. A. Werelius, Chicago.—p. 520.
115 *End-Results of Nephrectomy for Renal Tuberculosis. W. E. Lower, and T. P. Shupe, Cleveland.—p. 522.
116 Ligature of Innominate Artery for Cure of Subclavian Aneurysm. P. F. Morf, Chicago.—p. 526.
117 Exploratory Laparotomy; Its Use and Misuse. C. H. Parkes, Chicago.—p. 528.
118 Congenital Absence of Uterus and Vagina; Report of Six Cases. E. Novak, Baltimore.—p. 532.
119 Principles Governing Spontaneous Repair and Operative Closure of Vesicovaginal Fistula. R. T. Frank, New York.—p. 538.
120 Surgical Significance of Cystoduodenal and Cystocolic Ligaments. W. Van Hook, Chicago.—p. 551.
121 Wire Banding for Fractures. F. J. Cotton and J. Duff, Jr., Boston.—p. 557.
122 Treatment of Burns and Granulating Surfaces with Paraffin Film Preparations. E. B. Haworth, Pittsburgh.—p. 558.
123 *Preliminary Report on Simultaneous Use of Indigocarmine and Phenolsulphonephthalein Tests in Surgical Diseases of Kidney. A. Peterson, Los Angeles.—p. 561.
124 Rare Developmental Anomaly (Constriction) of Rectum, with Description of Operative Technic Employed for Its Correction. M. Rabinovitz, New York.—p. 565.

107. Restoration of Gastro-Intestinal Continuity.—In the method described by Balfour the resection is carried out in the ordinary way with especial attention to such important points as the wide removal of gland-bearing tissue, the avoidance of injury to the middle colic blood supply of the transverse colon, the resection made well beyond the cancer limits, the cauterization of all cut mucous surfaces to prevent cancer cell transplantation, and the secure inversion and burial of the duodenal stump. The first loop of jejunum is procured and a point about 14 to 18 inches from the duodenojejunal

angle is marked. The jejunum is then carried up in front of the transverse colon and omentum and a segment of suitable size is chosen at the point already marked. This section of jejunum is directed so that the proximal end of the loop will be approximated to the lesser curvature of the stomach. A series of interrupted silk sutures in the serosa is used for the first line posteriorly, beginning at the greater curvature. All these sutures are placed before any are tied, and the ends of the top and bottom sutures may be conveniently left as guides. The first suture line is about one-half inch below the clamp on the cut end of the stomach, and on the side of the jejunum about three-fourths inch from the summit of the loop. The jejunum is now incised and the crushing clamp removed from the stomach. Any actively bleeding vessels are ligated. The posterior row of the anastomosis uniting the posterior wall of the stomach to the inner cut edge of the jejunum is of chromic catgut. The stitches on the gastric side should be taken after the edge which has been crushed by the clamp has been trimmed with the scissors. A second row of finer catgut may be used to advantage in the posterior line. The first chromic catgut suture is continued in front in the usual way to complete the closure. An interrupted silk suture line similar to that used posteriorly is placed anteriorly, particular care being taken to reinforce the angle of anastomosis at the lesser curvature. A few interrupted silk sutures are placed where necessary further to protect the anterior suture line and the suture at the lesser curvature, the stump of gastrohepatic omentum which contains the ligated gastric artery being utilized as a support to the gastrojejunal angle at this point.

115. Nephrectomy for Renal Tuberculosis.—This paper is based on a study of eighty-seven consecutive nephrectomies for tuberculosis of the kidney. Among these cases there were two deaths within four weeks after the operation and before the patients left the hospital. The cause of the immediate mortality in the first case was probably shock. The second patient lived three weeks after operation, necropsy revealing the fact that the remaining kidney was decidedly tuberculous. Of the cases showing a later mortality, two died of general tuberculous peritonitis, four of pulmonary tuberculosis, while the cause of death in the remaining four is not known. The longest interval between operation and death was seven years, this patient dying of pulmonary tuberculosis at the age of 37. Forty-five patients replied to letters asking for present condition. In 48 per cent. of the cases with painful and frequent urination before operation some bladder symptoms persisted, abnormally frequent urination being the most common. The history of each of these cases showed that bladder trouble had extended over a long period prior to operation. Of the 9 per cent. who reported no definite improvement in the bladder symptoms, each one had pronounced bladder involvement at the time of operation. Twenty per cent. reported that they were in perfect health and all the rest that they were greatly improved. One man, operated on eight years before, reported himself as entirely cured although his history showed that for three years previous to operation he had complained of frequent urination, a symptom which persisted for ten months after the nephrectomy. Pain in the back of a colicky nature was reported by twelve patients, while twenty-five reported pain of varying degrees in the back, side, or hip. Of the entire series forty-four had hematuria. All still had pyuria.

123. Indigocarmin and Phenolsulphonephthalein Tests.—Peterson shows that when indigocarmin and phenolsulphonephthalein are excreted simultaneously, the addition of sodium hydrate eliminates the color of the indigocarmin and brings out that of the phenolsulphonephthalein. Phenolsulphonephthalein is excreted by the kidneys in the same amount whether used alone or simultaneously with indigocarmin. The presence of indigocarmin does not interfere with the microscopic study of the specimen of urine. The growth of bacteria is not retarded by the presence of this dye in the culture. Five c.c. of a saturated solution of indigocarmin forms a suitable and safe dose for intravenous administration. A quantitative colorimetric estimation of indigocarmin can be carried out.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

October 20, II, No. 2964

- 1 *Treatment of Infected, Especially War Wounds. R. Morison.—p. 503.
- 2 *Report on Wound Treatment by Brilliant Green Paste. A. R. Short, J. S. Arkle and C. King.—p. 506.
- 3 *Use of Liquid Petrolatum in Treatment of War Wounds. H. M. W. Gray.—p. 509.
- 4 Reinfection in Syphilis; Observations on Twenty-Eight Cases. C. F. White.—p. 509.
- 5 *Medicinal Treatment of Gonorrhea. H. C. Donald and A. M. Davidson.—p. 512.
- 6 Operations on Nasal Sinuses Carried Out Through Temporary Opening in Septum (Transseptal). N. Patterson.—p. 513.
- 7 Dosage in Therapeutic Administration of Thyroid Gland Substance. A. E. Carver.—p. 515.
- 8 Case of Contracted Pelvis; Cesarean Section Thrice. A. Crook.—p. 515.

1. Treatment of Infected War Wounds.—Summary of Morison's technic: Under an anesthetic, usually open ether, cover the wound with gauze wrung out of 1 to 20 phenol and clean the skin and the surrounding area with the same lotion. Open the wound freely and, if possible, sufficiently to permit of inspection of its cavity. A guide—a finger is the best if the size of the wound permits of it, and if not a thick probe—should be introduced to the bottom of the wound so as to give a good exposure. In doing this special regard must be paid to nerve trunks and muscular branches of nerves, since the division of blood vessels, excepting the largest and of muscles of themselves does little harm as compared with that of the disability following nerve damage. Cleanse the cavity with dry sterile gauze mops, Volkmann's spoon, etc., and remove all foreign bodies. Mop the surrounding skin and the wound cavity with methylated spirit and dry it. Fill up the whole wound with a bismuth, iodoform, paraffin paste, rub it well in with dry gauze. Then remove all excess, leaving only a thin covering over the wounded surface. Dress the wound with sterile gauze and cover all with an absorbent pad, which is held in position by sticking plaster and a bandage. This dressing requires no change for days or weeks if the patient is free from pain and constitutional disturbance. Should, however, discharge come through, the stained part must be soaked in spirit and a gauze dressing wrung out of the same applied as a further covering. Redressing is very simply done. After removal of the old dressings the wound is covered with a dossil of wool soaked in spirit, and the sticky dirty looking discharge is wiped off the surrounding skin until it is clean.

2. Wound Treatment by Brilliant Green Paste.—The authors report favorably on the use of the paste introduced by Hey, consisting of brilliant green, boric acid, French chalk and liquid petrolatum. It is said to be nonpoisonous and painless. In the great majority of cases it almost completely sterilizes the wound in three days, so that secondary suture can be performed even in large wounds complicated by bony injury. Small, completely excised wounds can be sutured primarily. The wound need only be dressed about once in four days. No permanent residue is left to interfere with immediate healing. By this method they have been able to obtain healing within a fortnight of cases of compound fracture even when complicated by joint injury, big buttock wounds and deep muscle wounds. They have excised an elbow joint full of pus, and obtained primary healing in a fortnight.

3. Liquid Petrolatum in Treatment of Wounds.—The results of observations carried out in several casualty clearing stations, Gray says, show that liquid petrolatum has, almost without exception, a very beneficial action on the walls of a wound and on the tissues adjacent to the wound. It prevents development of the symptoms of inflammation in these parts and will cause such symptoms to disappear rapidly if they are already present. The skin remains or becomes normal in appearance; redness and swelling do not develop or, if present, disappear. Pain is assuaged. Performance of function becomes easier, although, of course, this is frequently restrained by therapeutic agencies and is therefore not evident.

Changes of dressings are comparatively painless. Liquid petrolatum is not antiseptic in the ordinary sense of the term. If a wound be "packed" with gauze wrung loosely out of the petrolatum, it is found that in two to four days the discharge in the wound swarms with organisms, although the surrounding parts are free from inflammation. The "wound" with the fluid part of its contents may be likened to a test tube containing nutritive medium in which organisms are thriving. In either case the addition of antiseptic will lessen or entirely inhibit the growth. If an antiseptic is dissolved or suspended in the liquid petrolatum with which the gauze pack is saturated, it is found that the wound remains or becomes sterile. Various antiseptics or mixtures of antiseptics have been used, with good effects in all cases, although these effects vary, possibly owing to selective effect of the particular antiseptic against the particular organism or to tolerance acquired by the organisms for the antiseptic employed against them. Those chiefly used up to the present are flavine, brilliant green, boric acid and iodoform. It is rather difficult to justify preference for any one. A combination seems desirable.

5. **Medicinal Treatment of Gonorrhea.**—Donald and Davidson claim that medicinal treatment of gonorrhea from a clinical and statistical point of view undoubtedly does not help but retards the cure of gonorrhea, and tends to produce chronicity.

Journal of Laryngology, Rhinology and Otology, London

October, XXXII, No. 10

- 9 Lateral Sinus Disease; Report of Three Cases. A. Ryland.—p. 305.
- 10 Some New Points in Anatomy of Nasal Septum, and Their Surgical Significance. J. L. Aymard.—p. 308.

Journal of Tropical Medicine and Hygiene, London

October 15, XX, No. 20

- 11 *Case of Espundia (Naso-Oral Leishmaniasis) and Three Cases of Kala-Azar in Sudan Treated by Intravenous Injection of Antimonium Tartaratum. J. B. Christopherson.—p. 229.
- 12 Generalized Vaccinia in Sudan Natives. A. J. Chalmers and R. G. Archibald.—p. 236.

11. **Espundia and Kala-Azar Treated by Intravenous Injection of Antimonium Tartaratum.**—Considering the difficulties which may be encountered in the operation of introducing the drug into the lumen of the vein in kala-azar patients, Christopherson advises that the smaller the quantity of fluid and, therefore, the smaller the syringe and needle required, the better, and therefore quantities which can be introduced with a hypodermic syringe with a rather large hypodermic needle are the most convenient. Stronger solutions than one-half grain to 20 minims of distilled water are liable to be irritating (1 grain tartar emetic to 40 minims sterile normal salt solution, or distilled water, can conveniently be made up and kept in a flask). As routine treatment 20 minims of such a solution may be injected, and if this is well stood, may be increased to 40 minims on the following day, and then every other day and increase of 10 minims each dose till 2 grains is reached. This for a couple of months, and then once a week for some time after. For practical purposes 3 grains may be taken as the maximum dose. The most noticeable clinical sign is the change in the native patient's skin from the dark, dirty, dry appearance characteristic of kala-azar patients, as if they had been washed with dirty water, to the normal, moist, sleek, supple condition. Increase in body weight is very noticeable. Temperature falling by lysis commences to fall a day or two after commencing injections, and remains at normal in about a fortnight. Christopherson has had good results from the use of this drug.

Lancet, London

October, 20, II, No. 4912

- 13 Relations of Tuberculosis to War Conditions. A. Newsholme.—p. 591.
- 14 *Sterilization by Dakin's Solution and Occurrence of Secondary Hemorrhage. E. F. Bashford.—p. 595.
- 15 Retraction of Blood Clots. W. d'Este Emery.—p. 597.
- 16 Gastric Atony and War Neurasthenia. J. C. McClure.—p. 600.
- 17 Diathermy for Treatment of Certain Local Abnormalities of Skin. L. W. Bathurst.—p. 602.
- 18 *Relation of Case of Cerebrospinal Fever to Positive Contacts. P. Fildes and S. L. Baker.—p. 602.

- 19 Cardiac Digital Percussion. W. Gordon and C. E. W. Bell.—p. 603.
- 20 *Nervous Cretinism. F. G. Crookshank.—p. 604.
- 21 Occurrence of "Blue Pus" in septic Wounds. T. H. Kellock and C. R. Harrison.—p. 605.
- 22 Case of Strangulated Femoral Hernia. T. E. Coulson.—p. 606.
- 23 Case of Extra-Uterine Gestation. E. A. Constable.—p. 607.

14. **Sterilization by Dakin's Solution and Occurrence of Secondary Hemorrhage.**—It would appear from Bashford's experiments as if the local action of Dakin's solution was held in check by an efficient circulation either by providing protein containing fluid or by carrying off and rendering harmless the hypochlorites as they approach living tissues without entering into combination with them, that is, killing them.

18. **Relation of Cerebrospinal Fever to Positive Contacts.**—Fildes and Baker maintain that the case of cerebrospinal fever is not specially responsible for the spread of the disease and is infected by one of the positive contacts. They look on the patient as one of the rare individuals who cannot confine the meningococci to the nasopharynx and merely "carry." Their results also appear to indicate that in such a case the cocci pass very rapidly to the central nervous system after gaining access to the nasopharynx.

20. **Nervous Cretinism.**—The nervous symptoms that are associated in the child with atypical athyreosis, Crookshank says, are to be recognized as forming degrees of the state described by McCarrison as "nervous cretinism." "Nervous cretinism" occurs in England, possibly endemically, but certainly, if not sporadically, at any rate without obvious endemic associations. In almost every case that Crookshank has seen which appears to deserve the appellation of "nervous cretinism," there has been evidence of dysthyreosis in the mother or other members of her family. The earliest manifestations of mild "nervous cretinism" are generally regarded as tetany, and occur toward the end of the second year of life (or a little later), when the child has well learned to walk and talk. Following the tetany—or stage of remittent spasm—there may ensue a stage of weakness, with tottering gait, and a more persistent spasm that passes into a condition not to be distinguished from congenital spastic diplegia or Little's disease of moderate degree. In the more severe cases mental defect is obvious almost from very early days, and the early appearance of spasm with nystagmus leads to the confident diagnosis of congenital spastic diplegia.

The relation of these cases to the group of mild nervous cretinism is shown by the familial dysthyreosis and by the at least partial response to thyroid medication; sometimes by familial incidence. The mild cases whose nervous symptoms first attract notice toward the end of the second year or thereabouts are not cretins in the ordinary sense of the term, and frequently in the beginning are docile and pleasing children. They are sometimes, however, broad-headed and their hypothyroidal quality may be manifest in the arrangement of their forehead and hair and eyebrows, and in the waxen puffiness of their skin. No claim is made for the cure of established cases of Little's disease or congenital spastic palsy by thyroid tablets; but certain cases of young children, diagnosed by specially competent physicians as congenital spastic diplegia with amentia, have definitely responded to treatment by thyroid; while cases of tetany, spasm, weak legs and so forth, recognized as corresponding to McCarrison's milder cases of nervous cretinism, have become quite cured while taking the same substance. The effects, on similar cases, of parathyroid medication, Crookshank has not yet noted.

Archives des Maladies du Cœur, etc., Paris

September, X, No. 9, pp. 401-448

- 24 *Athlete's Heart. J. Heitz.—p. 401.
- 25 *The Soldiers with Disordered Action of the Heart. L. Gallavardin.—p. 408.

24. **Athlete's Heart.**—In Heitz' case the athletic proprietor of a physical culture studio had a very large heart of the type described by Shumacker and Middleton in THE JOURNAL, April 11, 1914, as the effect of immoderate athletic sports, and

by Tørgersen in ski jumpers—a hypertrophic dilatation presumably from professional strain. But roentgenoscopy showed the aorta likewise dilated, and the Wassermann reaction was positive. The man had never had malaria or other severe infection or drinking habits; there had been a single dubious chancre ten years before but no other pathologic manifestations at any time until recently there had been some symptoms from the hypertrophied heart. This case and others cited by Heitz confirm the view that athletic training is harmless only when the myocardium has not already been damaged by some infection or intoxication. On account of the paucity of the information available in this line, strict supervision is necessary for athletes training for competitive events. It is not enough to count the pulse, measure the blood pressure and auscultate the heart, the subjective reactions must be investigated, and the thorax examined with the roentgen rays. The training should be stopped at once in case of indisposition. Those with a history of malaria or syphilis should be warned to give up training altogether when the cardiovascular apparatus seems to have been touched by the disease.

25. The "Tachycardiacs."—Gallavardin reproduces with comment most of the report recently published by the British Medical Research Committee on the soldiers returned as cases of "disordered action of the heart" or "valvular disease." In 150 cases in his own experience, the condition was serious in only two, the pulse from 110 to 150 and the blood pressure 170 to 180 mm. mercury; in all the rest no organic cause for the tachycardia could be discovered. In the grave forms the pulse ranged about 100, the pressure 160 mm., but even climbing one flight of stairs sends the pulse up to 170 or 180, and it does not subside to the former figure for five minutes or more. Sedentary service has to be found for the men in this class. Below the moderate cases, in the mild group, the pulse keeps between 60 and 80, occasionally reaching 90, with pressure of 140 or 145 mm. It may run up to 150 but subsides to the former figure in a few seconds after reclining. Men in this group can be set to driving artillery wagons and the like, to spare them from wearing a knapsack and long marching.

Gallavardin comments on the large numbers of these "tachycardiacs" we are encountering when before the war we had scarcely a suspicion of this vast field of nonorganic cardiac pathology, this tribe of men with palpitations, shortness of breath, and disordered action of the heart with no organic lesion to be found. He emphasizes that the war did not create this category of "cardiacs"; it merely has revealed them. These "cardiacs" existed just the same before the war, but they never felt the need for consulting a physician on this account, and merely sought light occupations behind counters, etc. The profession at large knew nothing of this army of nonorganic tachycardiacs, and the army physicians seem to have paid no heed to these men who were constantly dropping out of long marches and excused from carrying the knapsack. Those that did not drift into sedentary services were discharged from the army labeled endocarditis or hypertrophy of the heart. Consequently the profession during the first year of the war was amazed and skeptical at the wholesale dismissals from the army for endocarditis, tachycardia, etc., when the most skilful auscultation revealed nothing wrong. But they had to yield to the evidence, and recognize that there is a whole series of physical disabilities in this line—at least partial disability—which is at least as important as that due to organic heart disease. Infectious diseases have a great influence on the development, or rather the aggravation of these tachycardia neuroses, but a constitutional nervous predisposition is plainly evident in most of the cases. The overexcitability of the sympathetic system is not confined to the heart innervation.

He compares his 150 cases with those analyzed by the British committee, saying that time alone will tell the future of these cases. Aside from the graver cases, he does not think there is serious danger for the heart. Their rapid heart beat makes them poor runners, just as their emotional instability and trembling make them poor marksmen. Their dyspnea from exertion is never accompanied by hypertrophy

or dilatation of the heart. The probabilities are that this overexcitability of the nervous system will calm down as they grow older. He queries whether this special circulatory excitability may not predispose to vasomotor paralysis in the course of various infectious diseases, and thus be responsible for the fatal outcome. The tachycardia is regularly paired with hypertension, and this may be an element of danger, setting up stable processes of hypertension. Still further peril lies in the possibility of actual organic disease developing in a heart overworked by this tachycardia. He adds that in 500 young men, all free from organic valvular disease and tuberculosis, the pulse rate during the revision examination was from 50 to 75 in 2.6 per cent.; from 75 to 100 in 25.6; 100 to 125 in 36.6; 125 to 150 in 27.2, and from 150 to 175 in 8 per cent. All of course were emotionally excited, but the figures illustrate the wide individual variation.

Archives Mens. d'Obstétrique et de Gynécologie, Paris

July-September, VI, No. 7-9, pp. 193-272

- 26 Combined Rupture and Inversion of the Uterus. A. Brindeau.—p. 195.
- 27 *Elderly Primiparae. B. J. Kouwer (Utrecht).—p. 207.
- 28 Postpartum Eclampsia. E. Hauch (Copenhagen).—p. 224.

27. Elderly Primiparas.—Kouwer tabulates the findings in respect to 5,300 primiparas which demonstrate that the average duration of labor is from 16.6 to 17.1 hours in young primiparas, but jumps at once to 21.6 up to 25.9 hours in the elderly primiparas. The frequency of forceps deliveries increases in the same proportion. This longer duration of labor is probably, he says, the consequence of the functional enfeeblement of all the organs, including the endocrine glands which act on the uterus. This enfeeblement he ascribes to the delay in the physiologic development of the genital organs and endocrine glands, as the interval has been so long between the onset of menstruation and the completion of the cycle of functional development of the uterus. It is not necessary to assume any histologic changes in the soft parts; the trouble is merely inertia. But the amazing feature of his tabulation is that the dividing line marking off the elderly primiparas is at the age of 24. Below this, labor is physiologic; at 24 the duration averaged 21.6 hours, instead of 15.9 at 22, among 1,831 primiparas in his service. A similar dividing line of the "elderly" under 28 was evident in 3,460 primiparas at the polyclinic although the records there are not kept with equal care. An interval of six or seven years between the first menstruation and the first pregnancy ranks the woman among the "elderly."

Bulletin de l'Académie de Médecine, Paris

September 25, LXXVIII, No. 37, pp. 299-330

- 29 The Declining Birth Rate. Pinard and others.—p. 303. Continuation.
- 30 *Heart Accidents from Asphyxiating Gases. C. Fiessinger.—p. 322.
- 31 *Rubber Prosthesis for the Humerus. P. Delbet and Girode.—p. 328.
- 32 Therapeutic Action of Colloidal Sulphur. A. Cawadias.—p. 329.

30. Heart Disturbance from Asphyxiating Gases.—Fiessinger calls attention to the action on the heart of the new asphyxiating gases. They seem to be more complex than the chlorin gases which act on the respiratory tract. Their effects are more like those observed in the laboratories studying the fixation of nitrogen or in the manufacture of nitric acid. The industrial intoxication is slow and prolonged, while the intoxication from the drift gas is sudden and fulminating, but the symptoms in both are of the same cyanogen compounds type, syncopes with slowing of the pulse. This syncopal tendency is manifested at the slightest movement for months. One officer while on duty at an advanced post became intoxicated with this type of gas and was accused of simulation during the following months until the nature of his disturbances was differentiated.

With this sudden intoxication the man notices merely a fruity, apple-like odor in the air; then suddenly he feels benumbed, his limbs give way, and he feels a burning from his throat down to the pit of the stomach. Then come vomiting and drooling; increasing vertigo, the extremities icy; and unconsciousness follows, sometimes for several hours.

The pulse next day was retarded in the cases Fiessinger has seen, dropping at times to 25 or 30, but others have noted acceleration up to 100. The heart beat is weak and seems remote to the ear, but regular except occasionally a dull sound suggesting an auricular contraction not transmitted to the ventricle. The men have to lie horizontal, a syncope coming on at the least attempt to sit up. After from three to six months the pulse returns to its normal rate and, except for extreme weakness, the man can resume his ordinary life. Two soldiers presented a somewhat less grave clinical picture than this, and after their convalescence furlough had been extended one month they were almost entirely cured.

The symptoms in these cases gave the clue to the intoxication of a chemist experimenting in an industrial establishment with fixation of nitrogen from the air on aluminum, calcium and other bases, at a temperature of 1,850 C. In this case there was no appreciable improvement for a year, during which he was compelled to retain a horizontal position. At times his pulse dropped to 12; even when it was 40 the syncope returned when he attempted to sit up. With mild poisoning there are merely dizziness and slowing of the pulse. This is the cause of intoxication from automobile gases. The carbon monoxid cannot be incriminated as the amount is too small; the products of incomplete combustion of hydrocarbons seem to be exclusively involved. They act on the medulla and fatal cases are known in touring cars. Fiessinger has had several mild cases of the kind among chauffeurs; at first he ascribed the symptoms to stomach trouble and nicotine. He advises treatment of the acute intoxication with venesection and injections of etherocamphorated oil. Later the stomach should be treated with bismuth if there is hypersthenia, and the heart disturbances, when accompanied by syncope, with theobromin and small doses of caffeine. Small doses of strychnin may also render service, and bed rest should be maintained for months. Heart tonics, such as digitalis and strophanthus, seem to aggravate the condition. Some have reported benefit under epinephrin, but Fiessinger has had only uncertain results with it. In the discussion that followed, Pouchet remarked that the waste gases from automotors must be reckoned with now as one of the factors that detract from the healthfulness of city life.

31. Rubber Artificial Humerus.—Delbet and Girode bridged the long gap after resection of the humerus for sarcoma with a rod of hard rubber 15 cm. long. At the head end it was 5 cm. in diameter and only 21 mm. in the shaft. This endoprosthesis was introduced ten days after removal of the tumor. The piece proved a little too short and it had to be fastened to the lower stump with a wire instead of fitting into it as intended. The artificial humerus seems to be answering every purpose to date, two and a half months later, the arm rendering good service.

Journal de Radiologie et d'Electrologie, Paris

July-August, II, No. 10, pp. 593-640

- 33 Technic for Extracting Projectiles in the Skull or Spine. C. Villandre.—p. 593.
34 *Radiodiagnosis of Horseshoe Kidney. N. Voorhoeve (Amsterdam).—p. 599.
35 Radiologic Diagnosis of Fracture of the Spine in Men Buried under Débris. G. Détré.—p. 603.
36 The Electric Psychic Reflex. A. Zimmermann and B. Logre.—p. 610.
37 Importance of Early Roentgen Diagnosis of Tibiotarsal Dislocation. Bec and Hadengue.—p. 620.
38 Technic for Locating Projectiles in the Tissues. A. Chéron.—p. 621.

34. Radiodiagnosis of Horseshoe Kidney.—Partial fusion of the two kidneys should be suspected when the inner margin of the kidney is parallel to the spine and the interval between is abnormally narrow. The lower margin on both sides is also abnormally low, and the kidneys cannot be moved to and fro although axial movement may be possible. The lower poles of the horseshoe kidney are necessarily closer to the abdominal wall than the spine, while with normal kidneys they are back of the anterior plane of the vertebrae. This aids further in differentiation as there is an apparent displacement of the lower margin of the kidney with ventrodorsal roentgenoscopy, different from what is observed with normal kidneys.

Paris Médical

September 29, VII, No. 39, pp. 257-272

- 39 *Treatment of Wounds of the Knee at the Advanced Operating Stations. A. Schwartz.—p. 257.
40 *The Circulating and the Stationary Blood. Prével.—p. 259.
41 Work in Rehabilitating the Maimed. P. Kouindjy.—p. 263.
42 War Wounds of the Kidney. Patel.—p. 266.
43 *Capillary Drainage of the Spinal Cavity. R. A. Gutmann.—p. 269.
44 Intravenous Injections of Quinin in Treatment of Malarial Cachexia. P. Lafosse.—p. 270.

39. War Wounds of the Knee.—Schwartz protests against the frequent practice of incising the capsule and severing the patellar ligament unless conditions absolutely compel this. It is often possible to clear out the wound from the side of the knee, leaving the patellar ligament intact. This should be the routine practice when the bone has not been fractured. With shattering of the bone, resection is inevitable and it takes a long time for the lesion to heal with solid consolidation in a good position, and the man will find it painful and tedious. However, a solid, straight leg with good ankle joint, is far preferable to all the artificial legs in the world. Hence, even when the knee has been badly shattered, he makes every effort to save it from amputation.

40. The Circulating and Stationary Mass of the Blood.—Prével argues that the influence of gravity on the circulation of the blood has not been paid the attention it deserves. Even in normal conditions the mass of the blood must be regarded as in two parts, one actively circulating and the other stagnating in peripheral vessels. The actively circulating mass of the blood is all that is evident in the erect position. Under the influence of gravity, as the subject stands still, the blood stagnates, especially in the peripheral vessels. Prével describes means by which we can estimate the proportional bulk of the orthostatic circulating and the stagnant blood. General massage on the reclining subject is probably the most effectual means for getting all the blood to circulate. The proportion of stagnating blood naturally increases with defective heart or vessel action. Determination of the proportion thus shut off from the blood stream may afford valuable information in nervous shock after war wounds. His device for the purpose is a dial attached to the Pachon oscillometer.

43. Capillary Drainage of the Spinal Cavity.—Gutmann introduces into the spinal cavity six or seven silk threads, fitting them into the Potain needle with which the lumbar puncture has just been made. Once in the cavity, the free ends of the threads hold them from slipping back as the needle is withdrawn. The indications for this effectual capillary drainage are met with in septic meningitis, and he urges others to give it a trial.

Presse Médicale, Paris

September 20, XXV, No. 52, pp. 537-544

- 45 *Chronic Intestinal Trouble and the Military Service. C. Laubry and L. Marre.—p. 537.
46 *The Plantar Reflexes. L. Rimbaud.—p. 539.
47 Graft from Tibia to Close Defect in Skull. C. Villandre.—p. 540.
48 The Fifth Cusp on Molar Teeth not necessarily a Sign of Syphilis. M. Mozer and C. Chenet.—p. 541.
49 Solutions of Quinin for Injection. R. Dalimier.—p. 541.

45. Chronic Enteritis and Military Service.—Laubry and Marre comment on the difficulty of determining the fitness for service of men with bowel trouble. The general condition is the chief element in the prognosis; the weight and the temperature are more important than the laboratory findings. The tendency is to discharge from the army the men with chronic enteritis, but many of the men encountered in the hospitals in the home zone are declared cured about ten times a year. When there is merely colitis with constipation, and the general condition is good, the men should be kept under observation or sent back at once to active service. If the general condition is precarious or is growing worse, a temporary relief from army duties is indicated. If under surveillance and proper measures improvement does not follow and a special diet is required, the men should be temporarily relieved from active duty or be assigned to light duty. They urge revision of the decision at the end of three months, but insist that as much care and attention to detail should be applied at the revision as at the first examination.

A compulsory sojourn in a specialist hospital service, giving opportunity for thorough examination, should precede the final revision. This is the only way to avoid the numerous vexatious and expensive blunders made in the past.

46. The Plantar Reflexes with War Wounds.—Rimbaud seeks to systematize and estimate the importance of the reflexes induced by tapping the sole. The plantar flexion of the whole foot is identical with that of the Achilles reflex and has the same mechanism and significance. In hundreds of tests he always found this reflex abolished when the Achilles reflex was gone. Besides this tendon reflex, there is a muscle reflex, the flexion of the toes, which corresponds in the same way to the reflex induced by percussion of the tibialis anticus. Both of these reflexes give information in regard to the condition of the sciatic nerve, and especially of its popliteal branch. The disappearance of the flexion of the foot is an early sign of some lesion in the sciatic nerve, earlier even than loss of the Achilles reflex, as it is more sensitive than the latter. The toe reflex is abolished only when there are grave lesions or disease in the main sciatic or popliteal nerve, practically blocking the nerve. The loss of any muscle reflex indicates a grave lesion. With some slight lesion of the sciatic nerve, the flexion of the foot reflex may be abolished while the toe flexion is exaggerated. This plantar dissociation is thus a reliable sign of some lesion of the sciatic nerve but also that it is mild. It is thus an important guide in treatment of wounds of the thigh, etc.

Progrès Médical, Paris

September 8, XXXII, No. 36, pp. 295-302

50 *Diabetic Polyneuritis. A. Pitres and L. Marchand.—p. 295.

51 *Wire Ring for Shattered Bones. M. Sénéchal.—p. 297.

September 15, No. 37, pp. 303-310

52 Present Status of Treatment of War Wounds. A. Demmler.—p. 303.

53 Extraction of Projectiles under Screen Control. R. Didier.—p. 306.

50. Diabetic Polyneuritis.—Pitres and Marchand relate that, judging from their experience, diabetic polyneuritis develops just like ordinary polyneuritis of toxi-infectious origin. The prognosis is generally favorable. The toxic products developed in the course of the diabetes act on the nerves like any other toxic products of similar virulence. In a case described at length, ecthyma and gingivitis were the first warning symptoms of the disease. Then sugar was discovered in the urine and later the polyneuritis developed. It assumed a quadriplegic form, but it subsided as the glycosuria was brought under control. The patient was a man of 47; the painful hyperesthesia and paroxysms of pain had been most pronounced in the legs, as also the paralysis.

51. Wire Ring for Shattered Bone.—Sénéchal ties a wire around the sequesters and bone to bring the pieces into their proper relations, and relates that this wire *cerclage* has been applied in sixty-six cases to date. Sometimes he uses two or three of the wire rings. The history of some typical cases, with the roentgenograms, shows the advantages of this method of bridging the gap. He does not try to reconstitute the bone shaft, but bridges the gap with the bunched sequesters. The aim is to have the sequesters serve as a kind of splint to hold the parts in place. The plaster cast is fitted on at once, while the patient is still under the influence of the anesthetic. He always uses an open cast with high metal loops spanning the gap left at the site of the wound.

Correspondenz-Blatt für Schweizer Aerzte, Basel

September 22, XLVII, No. 38, pp. 1217-1248

54 *Results of Suprapubic Prostatectomy. F. Suter.—p. 1220.

55 Bacillary Dysentery in Switzerland. Hunziker.—p. 1226.

56 *Factitious or Real Disease. A. Haslebach.—p. 1232.

54. Suprapubic Prostatectomy.—Suter states that in his seventy-five operative cases of suprapubic prostatectomy, one patient succumbed to embolism, two to insufficiency of the kidneys and two to heart disease. The other patients all recovered and the results were excellent, aside from this mortality of 6.7 per cent. Even with the best of technics, the operation is not free from danger, but he advocates it for all just entering on regular catheter life. Especially for the younger *prostatikers*, he says, this technic is preferable as

the prognosis is better in the young, while they will have more years in which to enjoy their release from prostate trouble.

56. Differentiation of True from Factitious Painful Affections.—Haslebach comments on the common neglect of digital palpation in cases of alleged muscular, nervous and traumatic lesions. Palpation is usually most instructive in the very cases in which other methods of exploration have the least to show. We should never neglect an opportunity to exercise and perfect the "eyes in our fingertips." When a war wound or other injury does not heal in the usual time with restored function, some complication is responsible, irritation of nerves, development of adhesions, spastic hyper-tony, stagnation of blood in certain veins, or exudates or deposits in joints. Whenever a nerve is suffering at any point in its course from any of the above troubles, the circulation in the nerve is interfered with, and there may be pain, anesthesia or other symptoms at or near or remote from this point, which is always more or less tender. He seeks the tender point by making spiral movements with pressure around the suspected point. When it is reached, the finger feels a slight contraction and the patient makes an uncontrollable expression of pain and the parts under the fingers may stiffen. As every one of these nerve points has its own symptoms, so every symptom can be followed to its nerve-point source. The most commonly involved nerve points are in the orbit, temple, mastoid process, in the neck at the trachea or thyroid, in the interspaces, the ileosacral region, the pelvis, the inside of the thigh, the knee and the malleoli. Anemia, gout, rheumatism and arteriosclerosis are the principal causal factors, aside from trauma, and discovery of these tender points confirms the reality of the disturbances complained of. This is the main field for physiotherapy, especially massage and heat. In chronic cases, a severe aggravation of the symptoms follows after a few days, usually in the second week. This aggravation is almost infallible testimony to the reality of the trouble. If it does not occur after energetic treatment for ten or fourteen days, we have good reason to suspect the truth of the patient's complaints, unless he is so debilitated that the organism cannot be aroused to fight the disease.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 23, XXXVIII, No. 76, pp. 1025-1040

57 Prophylactic Value of Vaccination against Typhoid. M. Sammaritano.—p. 1025.

58 Contamination of Commercial Distilled Water for Microscopy. L. Dozzi.—p. 1040.

Policlinico, Rome

September 30, XXIV, No. 40, pp. 1205-1232

59 *Bacteriologic Diagnosis and Serotherapy of Epidemic Cerebrospinal Meningitis. O. Paleani.—p. 1205.

60 Treatment of Tetanus. S. Puglisi.—p. 1210.

61 *The Ten Commandments with Fracture of the Femur. B. Schiassi.—p. 1211.

62 Ascending Paralysis during Malta or Undulant Fever. F. d'Alessandro.—p. 1213.

63 Malaria in the Army. G. Apicella.—p. 1216.

64 Factitious Lesions of the Ears. A. F. Ratti.—p. 1217.

October, Medical Section No. 10, pp. 389-428

65 Modification of the Electrocardiogram under the Influence of Exertion. N. Pende.—p. 389. To be continued.

66 *The Oculocardiac Reflex. G. Fumarola and E. Mingazzini.—p. 404.

67 *Indicanemia. A. Fara.—p. 421. Commenced in No. 9, p. 385.

59. Epidemic Meningitis.—Paleani emphasizes the importance of making the serum from the strains of meningococci found in the cases during the epidemic. When the cerebrospinal fluid was found limpid and sterile, he took cultures to make the antiserum from the nasopharynx. For prophylactic purposes, the nasopharyngeal secretions were all that was necessary. There are liable to be numerous pseudomeningococci and parameningococci, but agglutination generally identifies them. The findings were positive in only thirty of the forty-three specimens of cerebrospinal fluid sent to him for examination during the last five months. In the other specimens pneumococci or tubercle or other bacilli were found, or else the case proved to be one of meningeal involvement in mumps, or embolic softening of the brain. True epidemic meningitis usually has more or less of a septicemic character

and he consequently administers the antiserum subcutaneously as well as intraspinally, and he advocates fairly large doses daily.

61. Fracture of the Femur.—Schiassi warns against extension with weights when the stumps are not exactly coaptated after simple fracture of the femur. Roentgenoscopy has shown that only approximately normal conditions are restored by this means. When a fracture with overlapping stumps has been reduced under general anesthesia, the plaster cast should include the foot and entire leg, the root of the other thigh and the whole of the pelvis. Roentgenoscopic control of the reduction is indispensable. If there is no suspicion of infection, this can be done while the patient is still on the operating table, before the cast is applied, examining the reduction from both the front or rear and the side. No antiseptic to date can arrest established infection in a fracture. The focus must be cleared out and drained, a counter opening made on the side opposite the wound. The leg should be immobilized but even an open plaster cast cannot be applied until the infection has become attenuated. He discusses further the technics suitable for the different varieties of fracture.

66. The Oculocardiac Reflex.—With a single exception, Fumarola's findings confirmed those of others in respect to the presence and significance of the oculocardiac reflex.

67. Indicanemia.—Fara reviews the literature on indicanemia and affirms that the evidence to date testifies that indicanemia is physiologic. It assumes pathogenic importance only when it is above the normal range. When speaking of it as a pathologic phenomenon it should be styled hyperindicanemia. In forty persons with various diseases and the healthy controls—all without azotemia—the indican content of the blood ranged from 0.32 to 1.6 mg., fluctuating besides with the diet. In one healthy subject it ran up from 0.64 to 1.28 mg. a few hours after eating 300 gm. of meat. The azotemia findings never fluctuated parallel. In thirty-two cases of nephritis without uremia, the indicanemia reached 1.67 mg., and in twenty-eight with uremia it reached 4.27 per thousand. The Obermayer technic is best for detection of indicanemia in the clinic, as it does not begin to give positive findings until the indican content is above the normal range, and thus it testifies to defective elimination by the kidneys.

Riforma Medica, Naples

September 29, XXXIII, No. 39, pp. 933-952

- 68 *Primary Prostatitis. R. Porcelli.—p. 933.
69 *Case of Aleukemic Lymphadenia Consecutive to Mumps. S. Fichera.—p. 936.
70 The Medical Students Serving in the Army. E. Maragliano.—p. 943.
71 Present Status of Rat-Bite Fever. G. Molinari.—p. 944.

68. Primary Gonococcus Prostatitis.—Porcelli's patient complained merely of a sensation of cold localized in the urethra its entire length, but nothing could be found to explain it, and he grew thin and neurasthenic. Closer examination revealed a chronic prostatitis, and gonococci were cultivated from the pus expressed. There was no history of gonorrheal urethritis, and there was much to suggest that the prostatitis was primary and had induced the sexual neurasthenia.

69. Aleukemic Lymphadenia.—The special feature of the case described was that the hypertrophy of lymphatic tissue first became apparent during convalescence from a mild case of mumps.

Revista de Medicina y Cirugia de la Havana

September 25, XXII, No. 18, pp. 477-504

- 72 Present Status of Radiotherapy in Dermatology. V. P. Castello.—p. 477.
73 Analysis of Potable Waters in Cuba. R. de Castro y Bachiller.—p. 487.

Semana Medica, Buenos Aires

August 2, XXIV, No. 31, pp. 117-148

- 74 Quackery at Buenos Aires. (Adivinacion.) A. d'Alessandro.—p. 117.
75 *Interposed Flap in Treatment of Ankylosis. E. M. Olivieri.—p. 127. Continuation.
76 Aneurysm of Mitral Valve in Man of 44. R. A. Bullrich.—p. 137.
77 Nationalization of Asistencia Publica. E. R. Coni.—p. 140.

75. Operative Treatment of Ankylosis.—Olivieri gives thirty-five illustrations of the technic and outcome of treatment of ankylosis by opening up the joint and separating the parts with a pedunculated flap of muscle or tendon tissue. The general principles are the same for all joints.

Siglo Medico, Madrid

September 22, LXIV, No. 3328, pp. 705-724

- 78 The Functioning of Kidneys Containing Calculi. A. P. Martin.—p. 706.
79 Action of Ether on Tubercle Bacilli in Sputum. M. J. Barilari.—p. 709.
80 The Lower Class Degenerate Criminal from the Psychologic Standpoint. (Los apaches.) A. Sanchez-Herrero.—p. 714.

Mitteilungen a. d. med. Fakultät der k. Univ., Tokyo

March, XVII, No. 2, pp. 187-287. German edition

- 81 *The Lipoid Products from Degeneration of Nerves. F. Shionoya.—p. 187.
82 *The Roser-Nélaton Line. I. Motoshima.—p. 269.

81. Lipoid Products of Destructive Metabolism in Degrating Nerves.—This report of Shionoya's extensive experimental research in this line is accompanied with two colored plates showing the contrast staining in sixty-seven different specimens. In most of the experiments the nerves were crushed but in a few they were cut. The work was done on cats and dogs.

82. Nélaton's Line and the Hip Joint.—Motoshima remarks that many physicians trust to the line connecting the anterior superior iliac spine and the tuberosity of the ischium as the mariner trusts his compass. They assume that invariably the tip of the greater trochanter is crossed by this line when the longitudinal axis of the femur is held at a right angle to the line. When the trochanter extends above this line, pathologic conditions are assumed as infallibly responsible for this. Motoshima has been studying the anatomic relations between them in 114 persons and measurements on numerous cadavers. The minute details of all are tabulated. They show that the irregularity of the basal points renders uncertain any deductions therefrom, especially when there is a history of rachitis. The greater trochanter extends above the line in normal conditions when the shaft of the femur is at a right angle. As a guide to the region we can accept the line as crossing the point of the greater trochanter at the point where it can be most readily palpated.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

August 25, II, No. 8, pp. 671-750

- 83 *Do Animals Feel Pain? (Voor en tegen proeven op levende dieren.) G. van Rijnberk.—p. 671. Continuation.
84 Pharmacologic Study of Action of Optochin on Heart and Vessels. G. ten Doesschate and W. S. van Leeuwen.—p. 676.
85 Crystalloid Formation in the Retina. P. J. Waardenburg.—p. 690.
86 The Domain of Psychoanalysis. G. J. Huet.—p. 700.
87 Recurring Intrameningeal Hemorrhages Simulating Meningitis in Apparently Healthy Young Physician. P. B. Westerhuis.—p. 702.

83. Do Animals Feel Pain?—The first part of van Rijnberk's study of this question was reviewed in these columns last week, page 1745. He here cites further examples, such as that if the tail or part of the body of a honey-sucking bee or male copulating shrimp or frog is cut off, the creature continues undisturbed to suck honey and the male does not release the female from his embrace. The twitching of the skin of a horse is a reflex action which occurs the same if the communication with the brain is shut off. He says further that veterinarians report that quite a considerable operation can be done on the large, herbivorous domestic animals while they are feeding and they may continue feeding without interruption. Dogs, cats and rabbits after severe operations in the laboratories are as lively and frolicsome as before so soon as the effect of the general anesthesia has passed off. He adds that dogs cannot be trained by the eyesight alone; there must always be some pleasurable or disagreeable experience connected with the act in which it is being trained. Even in man, he continues, the sensation of pain seems to be restricted to the outlying parts of the body. It is still a question whether sound organs in the thoracic and abdominal

cavities are sensitive to pain. "In short," he concludes, "the attempt to answer the question 'Do animals feel pain?'—which the layman answers glibly in the affirmative—is to step on a treacherous trapdoor which drops one into a hornets' nest of philosophy, psychology and biology."

Hospitalstidende, Copenhagen

September 5, LX, No. 36, pp. 861-884

88 *Gastric Cancer Simulating Malaria. C. Rovsing.—p. 861.

88. **Gastric Cancer Simulating Malaria.**—In both of the two cases described there were long paroxysms of fever, accompanied by vomiting once each time but with no other indications of digestive trouble. The first patient was a sailor, 47 years old, who began four years before to have attacks of fever, running up to 102 or 104 F. Then he vomited and the fever subsided. These attacks returned every third day for a time. Later the intervals became much longer and irregular. After two years of freedom they returned at three or four day intervals. There were never any signs of jaundice, and the bowel functioning seemed to be always regular. During the febrile periods he complained sometimes of pains in the lumbar regions and spine, but there was never hematuria or sand in the urine. The febrile attacks had been ascribed in turn to malaria, septicemia, pyelitis and cystitis, but finally, by exclusion, attention was focused on the stomach although no tumor could be felt. The functional tests and roentgenoscopy revealed stenosis of the pylorus from cancer.

The other patient was a man of 49 who began to have chills followed by fever running up to 104 F., occasionally accompanied by vomiting. These febrile attacks returned every third or fourth day but sometimes the fever kept up for four or five days at a time. He was treated with quinin and arsenic for malaria without results, and no parasites were found in the blood. By the fourth month he began to have a sensation of oppression in the epigastrium, nausea and vomiting after meals, with occult blood in the stools. The man was restored to clinical health by resection plus gastro-enterostomy, and he survived for over three years before death from recurrence of the adenocarcinoma. At the first operation it was found to have involved both stomach and duodenum and some lymph glands, and it pressed against the pancreas. Rovsing has found five similar malaria-like cases of gastric cancer on record. One (Halla) was a necropsy surprise after ineffectual quinin treatment of "four day fever." In one of Hampeln's three cases the patient was dismissed from the hospital as the "malaria" had proved refractory to a course of quinin treatment, but the man returned three months later with a large tumor in the epigastrium. Necropsy confirmed the cancer but no metastases could be discovered. In his other cases the cancer was evident along with the malaria-suggesting symptoms.

The lack of symptoms of dyspepsia in the early stages in these cases is misleading. In Bühring's case (1889), there were no symptoms except those suggesting malaria to the very end; necropsy disclosed an ulcerating carcinoma and abscess in the frontal lobe. This was the only one of all the cases mentioned in which there was anything to suggest pyemia. If the fever is due to absorption of a toxin produced by the cancer, one would expect to find it continuous. More probably the toxic products generated in the stomach from the retention by the closed pylorus caused the fever when they reached a certain level. The vomiting cleared out the stomach, and there was no more trouble until this level had been reached again in the course of three or four days. This assumption is corroborated by the fact that Rovsing's first patient had one or two of the febrile attacks while convalescing from the operation, each yielding immediately to lavage of the stomach. The fever is thus not a contraindication for operative measures as the cancer itself is not directly responsible for it. The prognosis of these cases is comparatively good as is evidenced by Rovsing's first case. There had been symptoms for four years and the man has been in fine health to date since removal of the adenocarcinoma in June, 1916. It was a papillomatous tumor displaying little tendency to grow down into the depths, and

was sharply circumscribed, although spreading over the lesser curvature, mostly on the rear wall and pylorus.

Ugeskrift for Læger, Copenhagen

August 30, LXXIX, No. 35, pp. 1439-1478

89 *Habitual Rectum Constipation V. T. E. H. Thaysen.—p. 1439. Commenced in No. 34, p. 1398.

89. **The Clinical Picture with Rectum Constipation.**—Thaysen, in this fifth article on habitual constipation, discusses only the clinical and roentgenologic aspects of what he calls rectum obstipation. He emphasizes that chronic constipation is not accompanied by pains unless the colon is involved, and predominantly the ascending colon. As with the latter the pains are restricted to the right iliac fossa, they are often ascribed to chronic appendicitis. Of his thirty-two patients with this "ascending constipation" the appendix had been removed on account of the persisting pains in seven. In his total series of 112 patients with chronic habitual constipation, appendectomy had been done in eleven cases and without improving conditions in any instance. When the descending colon is involved with rectum constipation, there is usually tenderness in the left side. The pains assumed the character of colic pains only in 6 of his total 112 cases. In these 6 cases of spastic rectum constipation the different parts of the colon were involved in about the same proportions. Thaysen agrees with Pinkus that the disturbances from habitual constipation are often erroneously ascribed to gynecologic lesions.

In discussing the causes of habitual constipation, he relates that in six healthy persons repeatedly examined by rectoscopy or roentgenoscopy and digital exploration of the rectum, it was never found entirely empty. The accumulating feces could stay in it for eight hours during the day and fifteen hours including the night without inducing a desire for defecation. This suggests that the reflex inducing defecation is not started by contact of the rectal mucosa with fecal matters, as some believe. This and other facts cited seem to demonstrate that the defecation impulse proceeds from the central nervous system, started by some reflex from the digestive tract, the change to an upright position in the morning or from pylorus functioning after a meal. The physiology of the sphincters is complicated, three centers having been already found that seem to regulate it, one in the sympathetic nerve ganglia in the pelvis; one in the sacral nerves, and—in apes—one in the anterior central convolution. The mechanical effect of straining at stool is reenforced by a deep inspiration position of the diaphragm and by the contraction of the pelvic floor muscles which holds the pelvic organs up and prevents their sliding down. Weakening in any of these factors favors constipation, and also the unphysiologic high seat of the water closet.

He gives the details with the roentgen findings in 6 cases of the different types of rectum constipation, that is, retention of a considerable amount of feces in the rectum for two days without defecation. Sagging of the transverse colon does not seem to be an appreciable factor in constipation of this portion of the bowel. The distance from the umbilicus was less than 5 cm. in 2 cases of this type in men, and in 6 men and 9 women with retention any where in the colon. In 4 men and 5 women with this latter type, the distance was from 6 to 9 cm.; in 9 women it was from 10 to 12, and in one woman 13 cm. One of his tables giving the details of 74 cases of rectum constipation shows that there were no pains in 20 of 29 pure cases; no pains in one of 8 cases of the same, plus retention in the ascending colon; in one of 3 cases of rectum constipation plus retention in the transverse colon, and none in 17 among 34 cases of rectum constipation plus retention in various portions of the colon from cecum to sigmoid flexure. With pure constipation in the ascending colon, pains were pronounced in 19 of 23 cases. In none of his cases of rectum constipation did he ever find the rectal sphincter abnormally contracted, not even in his 6 cases of spastic rectum constipation, but he noted an unmistakable spasm of the sphincter in 3 nervous patients with no tendency to constipation. Sphincter spasm can generally be traced to an anal fistula or hemorrhoidal tumor.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 22

CHICAGO, ILLINOIS

DECEMBER 1, 1917

THE CLINICAL COURSE AND THE DIAGNOSIS OF TRACHOMA

M. H. FOSTER, A.M., M.D.

Surgeon, U. S. Public Health Service

BOSTON

Trachoma may be described as a specific, transmissible, destructive inflammation of the conjunctiva, characterized by the formation of the so-called trachoma granulations, which may be either papillary or follicular; the ultimate formation of scar tissue; marked chronicity, and intractability to all forms of local treatment.

Various inflammations of the conjunctiva give rise to the formation of follicles that cannot be distinguished by inspection from those caused by trachoma; hence the formation of scar tissue is the one all important diagnostic feature of the disease. If trachoma had been called "scar producing conjunctivitis" much of the confusion of ideas and differences of opinion that now exist concerning the diagnosis of the disorder would never have arisen.

Clinically trachoma presents itself in two forms: (1) fulminating trachoma, and (2) slow trachoma.

The first is a very acute inflammation which comes on suddenly and is accompanied by the usual symptoms of a severe infection of the conjunctiva, that is, redness, swelling, lachrimation, photophobia, pain and marked thickening of the lids. This type of the disease is rare, and will be described more fully later on.

"Slow trachoma" seems to be the best term to apply to the ordinary forms of the disease. At first blush it would appear that "chronic" would be the proper adjective to use. But the condition referred to under the second heading may be either acute or chronic; hence the name "slow trachoma" will be used in this article to refer to all forms of trachoma except the fulminating type.

Slow trachoma is essentially a chronic and long drawn out disease, generally extending over a number of years. It may begin acutely, or the onset may be so insidious that the patient is not aware that there is anything wrong with the eyes. In a short time the granulations appear. These may be considered under two general headings, the papillary and the follicular.

The papillary granulations are minute structures somewhat difficult to describe. They are closely packed together, and so small that the naked eye does not ordinarily recognize them as discrete bodies, but gets the impression that the areas involved are swollen, uneven and "raw" looking on the surface. An area of papillary granulations somewhat resembles in appearance the surface of the tip of the normal tongue.

The follicular granulations are more or less rounded bodies ranging in size from the head of a pin to a small pea, and presenting considerable variation in appearance and structure. Some stand well above the surface, with a more or less pedunculated base; others are buried in the conjunctiva. They may be bright red, pinkish gray, pinkish yellow, or almost white; the latter are deeply buried. The red are quite firm; the yellowish are generally soft and gelatinous, and may be translucent. The last are known as the "sago grain" or "frog spawn" granulations.

The largest follicles are found in the culdesac, and often bleed slightly when the lid is everted. The entire conjunctiva may be studded or infiltrated with these bodies, or only a few isolated ones observed.

In a varying time, depending on the severity of the case, scar tissue begins to appear as fine white lines or irregular areas between the granulations. The production of scar tissue goes on slowly, and ultimately replaces the normal conjunctiva on practically the entire surface of the upper lid and the culdesac.

Slow trachoma occurs in various grades of acuity. A small percentage of the cases are benign, running their course with slight discomfort to the patient. Others are severe, with much inflammatory reaction and marked symptoms. All possible gradations between these two extremes are seen in the clinics.

A striking characteristic of the disease is the tendency to alternating periods of quiescence and exacerbations of the inflammatory process. The diagnostic lesions are always present, however, and can easily be detected by a careful examination of the inverted upper lid and culdesac.

In the late stages, cicatrization becomes an important feature. If the tarsal plate is involved, the shrinkage and resulting deformities of this structure cause entropion. When this is marked, the eyelashes rub against the cornea, producing ulceration and opacity. In this manner sight is involved, and ultimately vision may be lost.

"Trachoma is a veritable curse to the countries where the disease is endemic, its victims suffer for years and are usually incapacitated for years; many of them become blind."¹

METHOD OF EXAMINING THE EYE

Before attempting to diagnose trachoma, it is imperative that the observer should become thoroughly familiar with the appearance of the conjunctiva in both health and disease, and especially the conjunctiva of the upper lid and culdesac. To explore this part of the eye it is necessary to evert the lid and also to expose the culdesac by special manipulation. The best instrument for this purpose is the ordinary wire loop

1. Haab: External Diseases of the Eye.

glove buttoner obtainable in most clothing stores. The loop should be bent slightly so that it is curved on the flat, somewhat resembling in miniature the blade of an obstetric forceps. With practice it is possible to turn the lids very quickly and to bring down and examine various parts of the culdesac with but little discom-

over the tarsal plate. It is unusual to find such a regular and symmetrical distribution of the arteries as is shown in the illustration, which is however, a true copy of a selected eye; but this may be taken as the ideal type, and all normal eyes follow it more or less closely.

The conjunctiva over the tarsal plate in health is always redder and more granular than that of the culdesac, and in its lower part thicker and less transparent. In the upper part of the plate the meibomian glands can usually be seen under the conjunctiva as vertical yellowish lines likened to strings of very minute yellow beads.

By pressing the tip of the glove buttoner toward the examiner and putting the structures over it on the stretch, the conjunctiva can be made more or less anemic; and as this maneuver is extremely useful in diagnosing trachoma, it is very important that the physician become familiar with the appearance of the normal and the inflamed lids when subjected to this procedure.

When a normal lid is made tense by pressure with the point of the eye turner from below, the blood is forced out of the tissues and a white area appears. This spot is pure white or pink, and shades out evenly in all directions. If there are any irregularities of color present, they are faint vertical streaks running up and down, the meibomian glands. The same condition holds true of all simple inflammatory conditions of the lid. When they are pressed forward by the turner, the white area is even in color, and fades out uniformly in all directions. In trachoma, however, when the conjunctiva is made anemic in this way, it does so in a blotchy and uneven manner. The bloodless area does not fade out evenly to the pink and red of the unaltered tissue, but patches of red and white alternate in a more or less haphazard and irregular fashion. The white streaks run not only up and down, but transversely and in all directions. To get this effect it is necessary to use just the right amount of pressure, because if the force is too great the red



Fig. 1.—An old case of slow trachoma. This shows the proper method of using the glove buttoner as an eye turner in everting the upper lid and of exposing the culdesac. It is noted that about half of the culdesac is shown in this picture.

fort to the patient, provided one has a reasonable degree of aptitude.

The eye turner is held in the right hand, and the lashes of the upper lid are caught between the thumb and the forefinger of the left. The patient's head is pushed well backward by extension at the neck, and at the same time he is told to look down (Fig. 1). The lid is easily everted over the wire loop, and the different parts of the culdesac brought into view by the proper manipulation of the point.

A normal lid when examined in this manner presents an appearance as shown in Fig. 2. The conjunctiva exposed is sharply separated into two divisions, the lower part—the culdesac—and that reflected over the tarsal plate. For brevity of description, this part of the conjunctiva will sometimes be referred to as the "tarsal plate," by which term is meant the conjunctival surface of the upper lid proper, and the other part as the culdesac.

The real relations of the lid as concerns direction are of course reversed when it is everted; but in all descriptions reference will be made to the everted lid, giving the relation of the structures as they appear when the lid is in this position. The appearance and distribution of the blood supply is an important feature in the diagnosis of trachoma, and will be described in detail.

The culdesac is normally bluish pink, and contains numerous blood vessels. The conjunctiva here is thin, so that in health the arteries stand out very distinctly like cords. These vessels (in the upturned lid) run upward toward the tarsal plate, and at the bottom of the plate they anastomose by horizontal branches which form pointed arches. From these arches numerous fine vessels arise which run directly upward

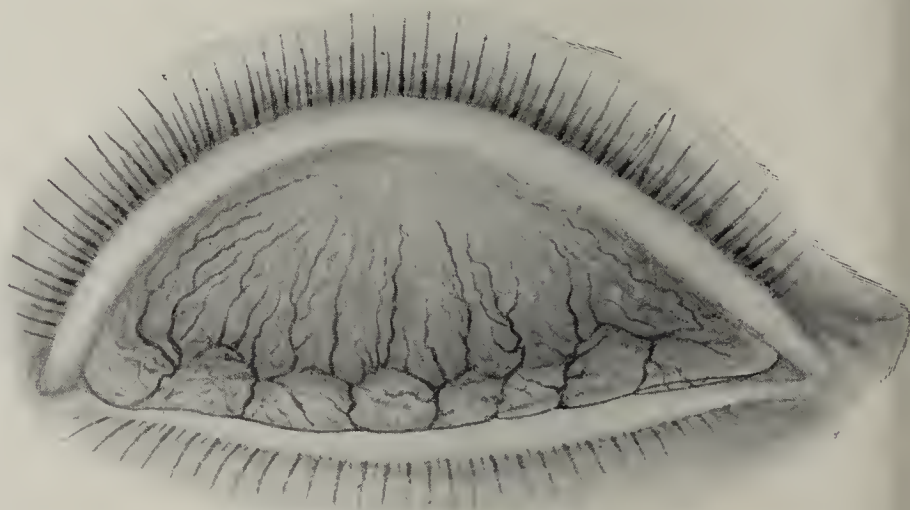


Fig. 2.—A normal eyelid. Note the lower one fifth, which is the culdesac. The conjunctiva in this region is thin and bluish pink, and the blood vessels stand out prominently like cords. The conjunctiva in the upper four fifths, covering the tarsal plate, is thicker, yellowish red, and supplied with blood vessels which run vertically upward across the plate from the anastomotic arches formed from the transverse branches of the arteries of the culdesac. The three small, whitish spots on the nasal side are areas of calcareous degeneration, and should not be mistaken for follicles.

areas will also disappear and the contrast will be lost. The pressure, therefore, is varied until we are satisfied that the conjunctiva presents a uniform appearance under all conditions of anemia. The explanation of this phenomenon is extremely simple. In health or in

the ordinary inflammations, the structure of the conjunctiva in any given area is practically uniform, that is, it is a homogeneous tissue; but in trachoma the structures are permanently changed. Scar tissue is formed, and it is deposited in irregular and more or



Fig. 3.—Upper lid of right eye. This illustration shows the appearance of a case of slow trachoma before proper pressure has been made with the eye turner. The lid is roughened and the adventitious blood vessels can be noticed running across the outer third of the tarsal plate. It is impossible, however, to make out any scar tissue when the lid is manipulated in this fashion. This should be contrasted with the same lid after the proper pressure has been applied, as shown in Figure 4.

less sharply defined patches. Between these patches are areas of highly vascular inflammatory tissue or normal conjunctiva (Figs. 3 and 4).

When pressure is made from beneath this ordinarily invisible scar tissue, it becomes white much more easily than the other elements of the conjunctiva; hence this maneuver enables us to detect it when it is present in very small amounts, that is, in the early stages of the disease. In well marked cases of long standing (Figs. 5 and 6), the scar tissue is at once apparent even to the most casual observer on simply evertng the lid; but in recent or very mild cases, the scar tissue may be present in so slight an amount as not to be apparent unless the lid is manipulated as described above. The whole conjunctiva in such patients is more or less inflamed and swollen, and the small areas of scar tissue are deep down and obscured by the inflammatory changes (Fig. 3).

The lower lids are inspected by pulling them down with the index finger and having the patient look up, meantime moving the finger slightly from side to side to roll out all parts of the lower fornix.

It cannot be positively determined that any suspected individual is free from this disease until both lids of each eye have been carefully examined in the manner just described. Certain changes on the tarsal plate are always present in trachoma; but they may be so slight that only an expert can detect them, and the upper culdesac should invariably be examined by all ordinary observers.

The specific causative agent of trachoma has not as yet been discovered, although a tremendous amount of research work along this line has been carried out.

Prowazek has described certain cell inclusions that are frequently found in smears from trachomatous eyes that have been stained by Giemsa's method. Similar inclusions are found, however, in the pus from inclusion blennorrhoea and sometimes in the genital discharges of men and women suffering from acute inflammation of these parts. Reference must also be made to Lindner's "initial bodies." These are cocci-like bodies seen in the cavities of the protoplasm of the epithelial cells. They apparently multiply, and are believed by some investigators to be living organisms. Whatever the ultimate decision may be regarding the true nature of these cell inclusions, the subject may be dismissed for the present with the statement that the finding of these bodies is so inconstant as to render the making of smears and their microscopic examination of but little practical assistance in the clinical diagnosis.

Despite occasional assertions to the contrary, there is no doubt that trachoma is transmissible from one person to another. Fulminating trachoma spreads rapidly among the crowded occupants of a vessel's steerage, as has been amply demonstrated several times on vessels arriving at Ellis Island.

The virus of slow trachoma is not as virulent as the other variety, and some individuals undoubtedly possess a high degree of resistance to it. This explains the fact that several members of a family may escape although all the rest have the disease. Deliberate and accidental inoculations in human eyes have not always resulted in producing the disease. Cases are also occasionally encountered in which but one eye is involved.

The results of the attempts to inoculate apes and

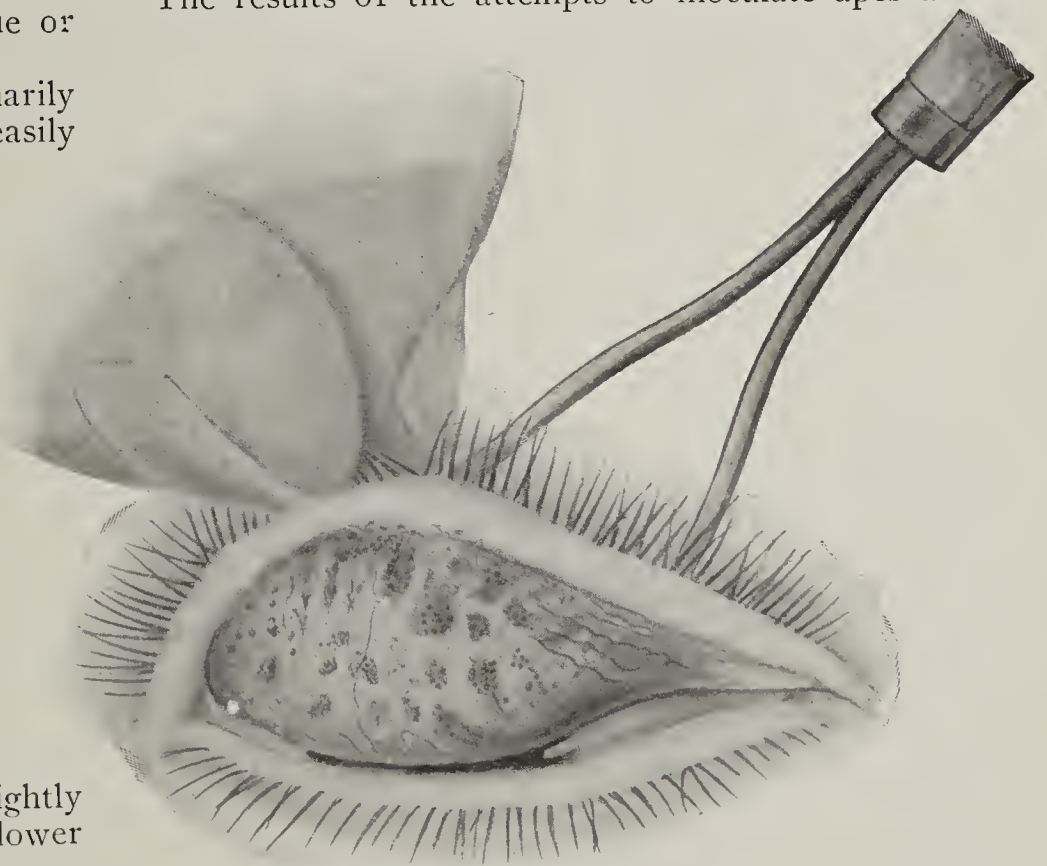


Fig. 4.—This is the same lid shown in Figure 3, but the glove buttoner has been manipulated so as to make the lid more or less anemic and bring out the scar tissue. Note the areas of papillary granulations surrounded by the bands of white scar tissue. This method of using the turner to make the lid anemic requires some practice, but is of extreme importance in detecting scar tissue in its early stages.

other animals with trachoma are inconclusive. Certain workers claim to have done so; but as the condi-

tion produced disappeared spontaneously in a few months without the formation of scar tissue, the identity of the disease produced in these animals with human trachoma has not been satisfactorily proved. The fact that inclusion bodies were found in the scrapings from the ape's eyes cannot be considered as confirmatory until the nature of these inclusions is definitely settled.

Surgeon C. H. Lavinder and I made numerous attempts to inoculate *Rhesus* monkeys and baboons with material obtained in cases of slow trachoma of the acute type. The experiments were carried on for several months, but the results were uniformly negative.

THE GRANULATIONS

Papillary Granulations.—The gross appearance of these granulations has already been described. According to MacCallan:

The papillary growths are caused by an increase in the surface area of the hypertrophic conjunctiva. The latter is thrown into folds between which correspondingly deep clefts are formed; then on cross section the folds appear as papillary ridges. The connective tissue forming the papillae is covered with a very much thickened epithelium which of course is continued on into the depressions. These depressions have thus in microscopic cross section the appearance of narrow canals lined with epithelium and were accordingly regarded at one time as tubular glands; and hence the formation of new glands was alleged to occur in trachoma.

Papillary hypertrophy as above described is not pathognomonic of trachoma; it is found in any condition of long continued irritation of the conjunctiva such as results from ectropion, spring catarrh and chronic conjunctivitis.

Follicular Granulations.—These are the larger granulations ranging in size from a pinhead to a small pea. The largest ones are found in the culdesac. There are three quite distinct types, the red follicles which are the ordinary kind, the yellow gelatinous follicles, and the buried white follicles. All three varieties may be found in the same eye.

The firm red follicle is a very common lesion in all forms of trachoma (Fig. 9). These follicles may be simply poorly defined eminences in the conjunctiva, or well marked rounded bodies. The whole upper lid may be a mass of these new formations (Fig. 11), but it is more usual to find them along the lower border of the tarsal plate (Fig. 9).

The gelatinous granulations are grayish yellow bodies, soft in consistency, and frequently translucent. Large predunculated gelatinous follicles are often

found in the culdesac. They may bleed slightly when the lid is everted. These are the so-called "sago grain" or "frog spawn" granulations (Figs. 5 and 10).

Sometimes they fuse together, forming an area of intermingled gelatinous and scar tissue. This condition is known as Stellwag's brawny edema, or the gelatinous trachoma of Stellwag. It is especially common in the culdesac, the conjunctiva in this region being very much thickened, light bluish gray, and composed of fairly smooth scar tissue infiltrated with gelatinous material (Fig. 6).

The pure white follicle is found in the tarsal region, deeply buried in the conjunctiva, showing through as a small whitish spot or point (Fig. 9). Granulations of this description are not very common; when present they are generally found in the acute type of slow trachoma. As they are very rare in the ordinary inflammations of the conjunctiva, they may be rated as having some diagnostic importance. Care must be taken, however, not to mistake the small yellow bodies, often seen in normal eyes and due to a deposit of calcareous matter, for real follicles.

The follicular granulations are extremely sluggish in slow trachoma, and may exist for months without apparent change. Similar structures are seen in various forms of inflammation of the conjunctiva, especially in follicular catarrh, and vernal conjunctivitis. They are apparently not an essential lesion

of the disease, but merely the reaction of the lymphoid elements of the conjunctiva to certain types of prolonged irritation.

The microscopic pathology of trachoma is in a somewhat chaotic state, considerable difference of opinion existing on many important points. It has been commonly taught that the follicles either ruptured and became organized,

or became organized without rupture, and that in this way the scar tissue was produced. The objection to this view is the fact that the follicles produced by other forms of inflammation, especially follicular conjunctivitis, histologically resemble very closely the follicles in trachoma, and that these structures disappear without the formation of scar tissue, or at least without producing enough scar tissue to be detected clinically. The organization of the follicles either with or without rupture does not seem sufficient to explain the amount of cicatrization found in trachoma.

From a clinical standpoint there is good reason to believe that when the virus of trachoma attacks an eye, it ultimately invades the deeper structures of the conjunctiva and frequently in old cases the tarsal plate. The organism proliferates in these deeper structures, and gives rise to products that cause a rapid hyper-

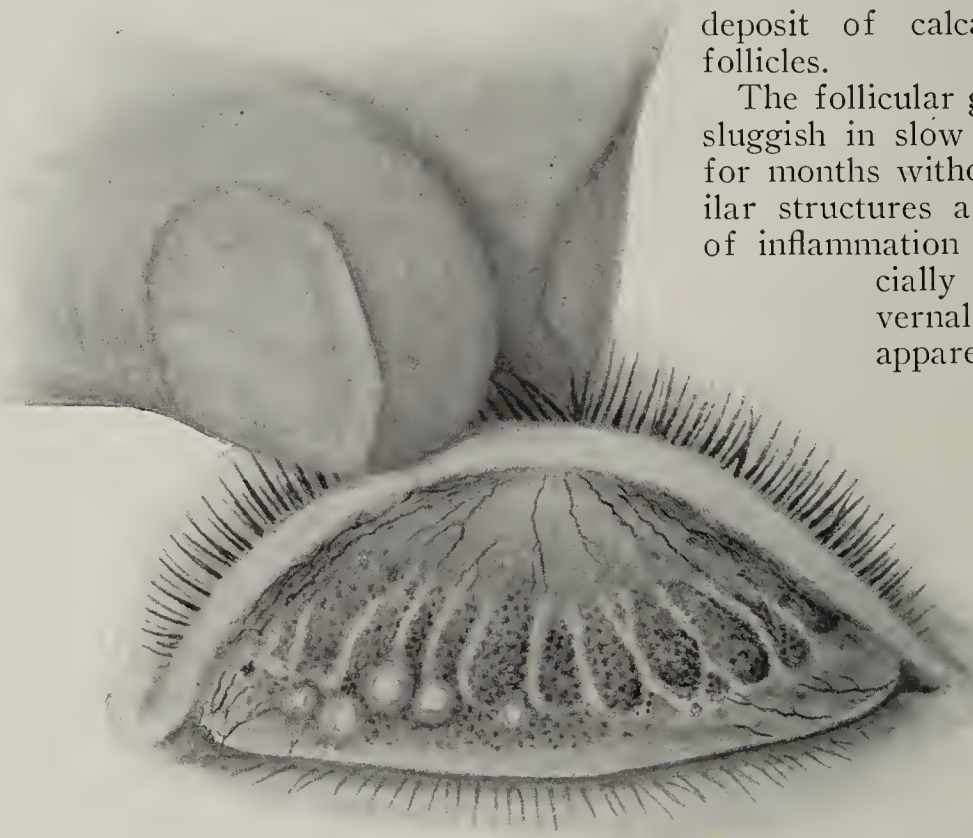


Fig. 5.—Upper lid of right eye. A typical case of slow trachoma of several years' standing. The islands of papillary granulations separated by vertical narrow lines of scar tissue are well marked. There are five large gelatinous follicles at the lower border of the tarsal plate. Note that the culdesac has been replaced almost entirely by scar tissue. The normal vertical vessels in the culdesac have disappeared, and a few adventitious vessels running in an oblique direction can be seen in the nasal side of the culdesac. There still remains some normal conjunctiva in the upper part of the lid.

plasia not only of the lymphoid elements but also of the connective tissue cells. The proliferation and organization of the fibrous elements of the conjunctiva produce the scar tissue which ultimately crowds out and entirely replaces the normal elements of the conjunctiva. The process of cicatrization, then, as pointed out by Fuchs,² is somewhat analogous to interstitial hepatitis, and *not* at all similar to the healing of an ulcer by scar tissue. As long as there is any lymphoid tissue left, the infection remains in it indefinitely. The virus does not exist in the scar tissue after the latter becomes fully organized.

Mayou asserts that by the use of certain plasma stains it is possible to distinguish histologically between many of the follicles of trachoma and those found in follicular conjunctivitis. He believes that:

The granules found in trachoma are follicular formation plus trachomatous infection, the follicles being simply an effort on the part of the tissue to produce mononuclear cells, and becoming secondarily infected with trachoma. Although, indeed, as a general rule a considerable number of them seem to be infected even in the early states, . . . yet follicles can be found in trachomatous conjunctivitis which are evidently not infected with trachoma.

This view coincides closely with the clinical course of the disease, and is probably correct. The student should clearly understand that the follicular granulations are not an essential or diagnostic feature of trachoma, but should be considered as a complication. They do, however, afford a lurking place for the virus where it proliferates or may remain latent for months.

In trachomatous eyes there is first the formation of ordinary follicles which are due to the irritation; and later on the virus invades these structures so that at first they are ordinary follicles and later on specific.

Rupture of the follicle may take place either from a thinning of the epithelium overlying it, owing to pressure from beneath, or from an interference with the blood supply by the scar tissue, causing necrosis.

The follicles are semisolid; hence, when rupture occurs, a part of the contents may escape, but not all. Septic infection of the ruptured follicle, however, is likely to occur, and the secondary inflammatory process ensuing may cause a temporary increase in size. Ultimately the follicle is destroyed by the combined action of the pyogenic organisms and the trachoma virus.

Undoubtedly some of the follicles, especially the smaller ones and those deeply buried in the conjunctiva, disappear by some process of absorption or atrophy.

Cases under treatment have been examined daily for a period of a year and a half without the rupture of any of the follicles being observed, and hence it will be apparent that the formation and rupture of the follicle is not a progressive pathologic process occurring in a more or less definite period of time.

It was formerly the custom to attempt to destroy these bodies by expression. In nontrachomatous cases, mechanical destruction of the follicles is followed by a disappearance of the condition in a comparatively short length of time. Some of the popularity of this method of treatment was probably due to cures produced in cases in which a mistake had been made in the diagnosis. Expression in true trachoma may hasten the disappearance of the larger follicular granulations, but it has no effect on the papillary granulations which are always present. A striking characteristic of trachomatous tissue is its ability to regenerate after partial destruction. The granulations may be curetted, excised, expressed or cauterized, and yet they return

with disheartening persistence. It is impossible to remove all the lymphoid tissue by these means, and any trace that is left will promptly proliferate again. Grattage, that is, scrubbing the surface of the lid and culdesac with a tooth brush, is much more satisfactory because this operation removes the granulation tissue quite thoroughly;

and the mercuric chlorid solution used on the brush is likely to sterilize what little remains. Grattage, however, cannot produce a cure when the tarsal plate is invaded by the trachomatous process, the infected tissue here being buried deep in the cartilage where the bristles of the brush cannot possibly reach it. Grattage followed some weeks afterward by removal of the tarsal plate is the procedure advo-

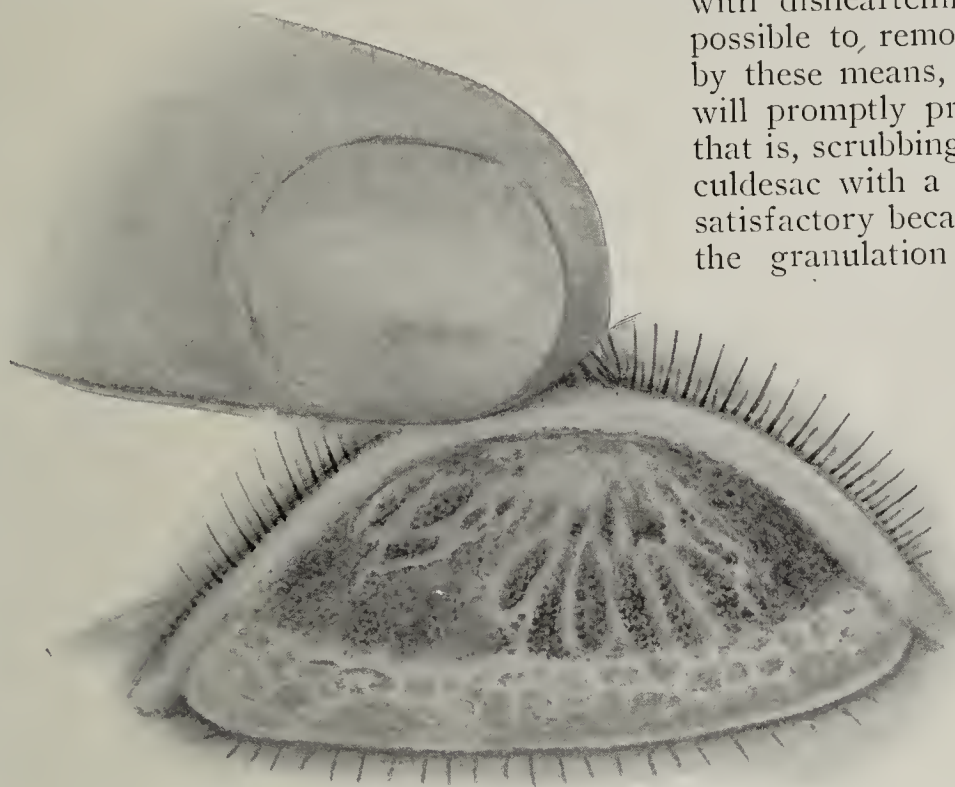


Fig. 6.—Upper lid of left eye. An old case of slow trachoma. Cicatrization is well marked. There remain, however, a few areas of papillary granulations near the center of the lid. The culdesac is completely filled up with a mass of poorly defined gelatinous granulations representing a typical case of Stellwag's brawny edema. The disease has existed for about six years.

cated by certain specialists for cases of this description.

The visible granulations in trachoma are generally limited to the under surfaces of the lids and culdesac, similar formations being very rarely seen on the bulbar conjunctiva. However, Mayou³ determined that on section the bulbar conjunctiva does show changes, and at the corneal limbus certain inflammatory and degenerative areas may be noted. When properly stained and sectioned, on microscopic examination these areas are found to contain typical trachomatous follicles. Occasionally small pits or sunken scars may be observed just outside the limbus due to the cicatrization of these areas.⁴

SCAR TISSUE

In severe cases the scar tissue begins in the culdesac and spreads most rapidly in that region. In mild cases it may first of all be detected in the inner canthus at

3. Mayou, H. S.: *The Changes Produced by Inflammation in the Conjunctiva*, Hunterian Lecture, 1906.

4. MacCallan, A. F.: *Trachoma and Its Complications in Egypt*, Cambridge, 1913.

the junction of the tarsal plate with the culdesac, and careful search should always be made in this locality in doubtful cases. On the tarsal plate it generally extends upward in narrow bands toward the edge of the lid, with islands of exuberant lymphoid tissue in between (Fig. 5). A large stellate area in the middle of the tarsus is not unusual.

In the majority of patients the extreme outer and inner borders of the plate are the last to become cicatrized. The culdesac always becomes completely

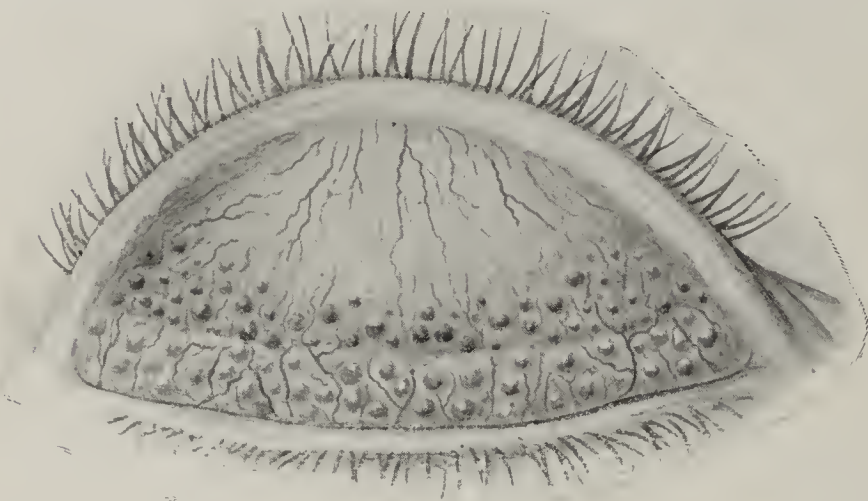


Fig. 7.—Follicular conjunctivitis, upper lid of right eye. The culdesac and the lower portion of the tarsal plate are studded with a large number of follicles. These follicles are fairly uniform in size, almost perfect hemispheres, and they appear to spring from the surface of the conjunctiva and are not buried in that structure. This form of follicular conjunctivitis is not so common as that shown in Figure 8. The diagnosis from trachoma in cases of this type is made by the fact that the conjunctiva is not thickened, that the normal blood supply is maintained, the vessels of which can plainly be seen running vertically upward in the culdesac; also by the size, appearance and superficial position of the follicles. It should be observed that there is no thickening in the conjunctiva of the culdesac, that structure being normal in the spaces between the granulations.

converted into scar tissue long before the process is completed on the upper lid. When completely organized, the scar tissue is pure white, smooth, and somewhat glistening. Usually it forms in islands which slowly spread; but very rarely the formation takes place simultaneously and at a uniform rate over the entire tarsal conjunctiva. In mild cases the process goes on very slowly, and it may be years before the lids are completely cicatrized.

Patients are occasionally encountered with a narrow band of scar tissue running horizontally across the culdesac. The strip is so even in width and sharply demarked as to appear as if made by a surgical operation. The tarsal conjunctiva is somewhat thickened, but not characteristic of trachoma. MacCallan⁴ believes that scars of this description are produced by a former attack of gonorrheal conjunctivitis, and this opinion is probably correct.

The lower lids for some reason recover much more promptly than the upper, and it is not always easy to decide whether scar tissue is present. For this reason an examination of the lower lid alone often affords but little information in slow trachoma. Many well marked and severe cases will be found in which the lower lids present absolutely no pathologic changes to the naked eye.

In fulminating trachoma, however, the lower lid is diagnostic in the early stages.

PANNUS

In all cases of trachoma, pannus is generally present. This statement is not to be construed as meaning that a leash of large blood vessels will be found running across the cornea; but that on close inspection, with

a hand lens if necessary, a fringe of very fine, almost invisible vessels invading the cornea from the conjunctiva can be detected. They are generally most marked in the upper and lower segments, but may extend completely around the corneal limbus. A more or less opaque gelatinous membrane is apt to follow the vessels onto the cornea.

Pannus is now considered as trachoma of the cornea and to be due to an invasion of that structure by the specific inflammation.

A temporary invasion of the cornea by fine vessels as described above may be encountered in a number of acute inflammations of both the cornea and the conjunctiva. According to MacCallan,⁴ the permanent pannus of trachoma may be distinguished from that due to ulcers of the cornea and a secondary variety produced by interstitial keratitis, by the following points: When due to an ulcer, the vessels are larger and are localized to one part of the cornea. The pannus produced by interstitial keratitis arises from the deeper blood vessels of the sclera, and the vessels seen on the cornea cannot be followed up and proved to be continuous with those of the conjunctiva; while in trachoma it can be determined that the fine vessels seen on the cornea are branches from the conjunctival blood supply.

Pannus of a moderate degree frequently clears up, leaving but slight evidence. When present it is merely an evidence of irritation of the cornea and the response of that tissue to inflammation, and should be considered as a corroborative and not a positive sign of trachoma.

CORNEA

In old neglected cases or those that have been very severe, it is common to find corneal opacities with extensive pannus. Many such eyes are seen among the Egyptians, Syrians, Indians and some of the mountaineers of our own country.

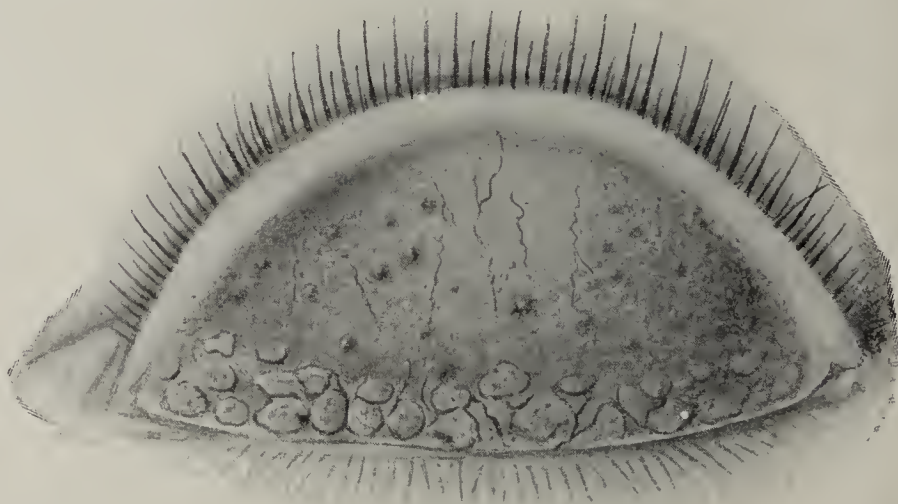


Fig. 8.—Typical case of follicular conjunctivitis, upper lid of left eye. In this patient the culdesac is filled up with a number of irregularly shaped, light colored follicles. The conjunctiva over the tarsal plate is somewhat roughened and thickened, and contains a few scattered small lymphoid follicles. Here there is a hypertrophy of the lymphoid elements of the conjunctiva with chronic conjunctivitis. The diagnosis between cases of this type and trachoma is sometimes extremely difficult. Lids of this description are very frequently found in schoolchildren, and often cause the examiner much embarrassment in making a diagnosis. Careful observation will show, however, that the normal blood vessels can still be seen here and there in the culdesac; also, that there are areas of more or less normal conjunctiva between the large follicles in that region. In such cases no scar tissue can be detected; neither is there any true trachoma pannus. The examination of the throat and nose in these patients will almost always show that there is hypertrophy of the adenoid tissue in these localities, such as enlarged tonsils or adenoids.

Ulceration of the cornea in trachoma results from two causes:

1. The trachomatous inflammation attacks the tissue of the cornea itself, or some other form of infection gains lodgment in a trachomatous eye, causing the ulcer by the usual pathologic changes.

2. The contraction of the eyelid, especially the deformity of the tarsal plate, produces trichiasis, and the inverted lashes rub on and irritate the cornea. The last seems to be the commonest cause of opacity of the cornea.

The older teaching, that the roughness of the upper lid due to the follicles was responsible for the damaged cornea, cannot be true. Hundreds of cases with eyelids fairly studded with follicles are seen in which the cornea is clear and uninjured; hence some other cause for the corneal lesions must be sought.

The invasion of the cornea by the disease itself and the trichiasis are the more likely causes. Some weight must also be given to the interference with the circulation of this structure due to the constant pressure of a deformed lid.

DEFORMITIES OF THE LIDS

Some degree of ptosis is present in almost all cases of slow trachoma of long standing, and it is especially marked in the fulminating type of the disease, the lids being greatly swollen.

In old cases the shrinkage of the scar tissue produces various deformities, and the lower edge of the lid is apt to present a wavy line instead of the normal curve with the convexity downward (Fig. 12). Such eyes have a "droopy" look, very significant to the trained observer.

In severe cases the inflammatory process does not stop at the conjunctiva, but also invades the tarsal cartilages where no ordinary applications can reach it. Scar tissue is produced here as elsewhere, and the plate may be twisted and pulled entirely out of shape by the resulting cicatrization. Entropion with trichiasis, as mentioned above, is the usual result and the most serious. In slow trachoma the disease may exist for many years before these changes become evident, and in some mild cases they never appear at all.

The conditions which have just been described are the usual lesions of trachoma. Among the rarer sequelae of severe cases of the disease should be mentioned exerosis conjunctivae, posterior symblepharon and ectropion of the lower lid.

DISCHARGE

In all trachoma there is more or less secretion; but the disease is so often complicated with other conjunctivitis that the nature of the discharge is of little importance and of no help in making the diagnosis.

CLASSIFICATION OF TRACHOMA

Various classifications based on clinical characteristics have been proposed by the different writers on trachoma. Some of them are rather complicated, and none altogether satisfactory. A common plan has been to describe the papillary, follicular and mixed forms, according to the type of granulations which predominated. As papillary granulations are always present as long as the trachoma is active, there can be no such condition as a simple "follicular" form in contradistinction to a "mixed" type, and either the "follicular" or the "mixed" subdivision should be omitted, for the terms in this instance are synonymous.

If some clinical classification of slow trachoma is desired to secure brevity of description, the term

"papillary" might be properly applied to those cases of trachoma in which no follicles can be detected by the naked eye, and "follicular" to those in which, in addition to the papillary granulations, definite follicles are present. It must be clearly understood, however, that this is a clinical classification only; because if the papillary cases are examined microscopically, true trachoma follicles will be found in the conjunctiva, but they are too small or too deeply buried to be seen on inspection.

The gelatinous trachoma of Stellwag has already been mentioned. In it there is a fusing together and gelatinous infiltration of the follicles which is more commonly found in the culdesac.

STAGES OF TRACHOMA

When the formation of scar tissue has advanced sufficiently so that it is easily observed in the conjunctiva, the eye is described as being in the beginning stage of cicatrization.

As the process proceeds and the areas of scar tissue



Fig. 9.—Recent case of slow trachoma, upper lid of right eye. The lower part of the culdesac of this eye is completely converted into scar tissue. On the lower part of the tarsal plate there is an area of poorly defined, deep red, partially buried granulations. Higher up still are a number of deeply buried small white granulations. Careful examination with the eye turner showed beginning scar tissue between the granulations over the tarsal plate. The deep buried white granulations are strongly significant of trachoma. Note the thickening of the culdesac and the absence of any visible blood vessels in that locality. This case should be studied in conjunction with Figure 8. The diagnosis of trachoma is made on the scar tissue and deeply buried white granulations, and the absence of the normal blood supply. There was also marked pannus in this case.

equal or exceed the other parts, the case is referred to as being in the advanced stage of cicatrization.

"Cicatricial lids" is the term applied to the eyes when the trachomatous tissue has been completely replaced by firm, smooth, white scar tissue. This is nature's only method of effecting a cure.

RELATION TO SURROUNDINGS, RACE AND AGE

Trachoma flourishes chiefly among the overcrowded, underfed, overworked, and those living in bad hygienic surroundings generally. No locality or race is exempt, however, and occasionally cases are found among the well-to-do and those whose method of life is above reproach from a sanitary standpoint. The age inci-

dence is extensive. I have seen a well marked case in a child under 2, and I have a patient under treatment now who contracted the disease after 63.

FULMINATING TRACHOMA

Fulminating trachoma is an acute and severe inflammation of the conjunctiva. The onset is abrupt, the upper and lower lids becoming affected practically simultaneously.

The palpebral conjunctiva is intensely red, very edematous, and much thickened. It has not the velvety appearance of a severe case of acute conjunctivitis, but is more coarsely granular; and while it may not present typical discrete follicles, its surface is markedly irregular and uneven like a piece of broken granite (Fig. 11). The ocular conjunctiva is always more or less involved, sometimes very severely; but it does not usually present any diagnostic symptoms other than those of a very intense reaction. The conjunctiva of the lower lid presents the same appearance of broken granite and appears to be superabundant, being thrown up into folds or ridges. Discrete and definite follicles may also be present in this locality.

While the lids are always very much thickened from the start in this type of the disease, the time for the appearance of the characteristic unevenness or follicles varies considerably. It may be delayed for seven or eight days, generally, however, appearing early or about the fourth day.

There is photophobia, blepharospasm, and a profuse watery discharge sometimes mucopurulent. The cornea often becomes involved either from an interference of its blood supply by the edematous and inflamed ocular conjunctiva, or by being attacked directly by the infection itself. Ulceration and infiltration may follow with widespread destruction to the corneal substance and subsequent opacities.

Fulminating trachoma is much more easily transmitted from one person to another than slow trachoma. Generally both eyes are affected, but in rare instances only one eye is involved. The period of incubation has not been definitely determined, but appears to be within eight days.

Fulminating trachoma is a rare disease; in fact, its existence has been denied by some authorities; but on a number of occasions, cases of this type of the disorder have appeared among the crowded occupants of the same steerage compartment of vessels arriving at Ellis Island.

Differential Diagnosis.—Fulminating trachoma must be diagnosed in the early stages from severe phlyctenular conjunctivitis and from acute infections of that membrane by various micro-organisms, especially the gonococcus and the diplobacillus of Morax-Axenfeld. Unless one of these specific organisms is demonstrable in a properly stained smear made from the discharge,

the diagnosis may be impossible for a few days. As soon, however, as the characteristic lymphoid enlargement has appeared, the true nature of the disease may be determined. The upper lids in severe simple conjunctivitis and phlyctenular conjunctivitis may present a roughened granular appearance which is apt to be confusing; but in these conditions the lower lids never present the same exuberance of the conjunctiva with the lymphoid follicles so well marked or so prominent as they are in fulminating trachoma. The characteristic phlyctenules in phlyctenular conjunctivitis will also assist in separating that disease. It must also be remembered that there may be an attack of phlyctenular conjunctivitis in an eye already infected with trachoma or a severe attack of acute conjunctivitis in conjunction with follicular catarrh, in which case the diagnosis is practically impossible until the acute complication has subsided. The shortest period in which scar tissue has been demonstrable in these cases by me was six weeks after the beginning of the attack. This, however, is probably unusual, scar tissue not appearing in the ordinary case of the fulminating type until several months have elapsed.

In fulminating trachoma the ocular conjunctiva is always intensely inflamed. This symptom is of material assistance in separating the disease from slow trachoma which is undergoing an acute exacerbation.

COMPLICATIONS OF TRACHOMA

An eye that is already the seat of a trachomatous inflammation may have added thereto any of the other infections to which the conjunctiva and cornea are liable. These conditions are known as "complicated trachoma," and are quite common. The trachomatous process does not protect the eye, as far as is known, from any other kind of inflammation; but, on the other hand, it appears to predispose it to certain forms. A gonorrheal infection is

very common with trachoma among the Egyptians, and spring catarrh is frequently complicated by trachoma in localities on which both diseases are common.

The addition of any other infection to a trachomatous eye causes a swelling, redness and discharge which may make the diagnosis for the time being extremely difficult or impossible. Most of these complications, however, can be subdued or overcome by appropriate treatment, maintained for a sufficient length of time, and then the true condition can be definitely determined. The clinical appearance of complicated trachoma, therefore, is that of the original disease plus the symptoms of the added infection. The rule in all such cases is appropriate treatment until the complication has subsided.

DIFFERENTIAL DIAGNOSIS OF SLOW TRACHOMA

The important diagnostic symptoms of trachoma are scar tissue, papillary granulations and trachoma fol-

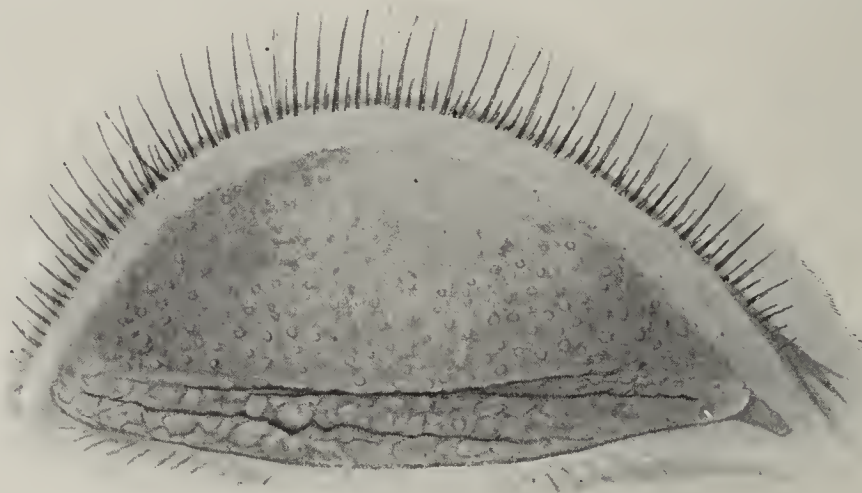


Fig. 10.—Slow trachoma of some months' standing, upper lid of right eye. The culdesac here is filled with a mass of poorly defined, semi-gelatinous granulations of a pinkish salmon color. Deep cracks can be observed between the granulations which are arranged more or less roughly in rows. The conjunctiva of the tarsal plate is much thickened, very rough, and shows numerous small granulations which can be best detected at the nasal and temporal extremities. No blood vessels are visible anywhere in the eye. No scar tissue could be detected by the most careful search. It is difficult to make a positive diagnosis of trachoma in eyes of this type at the first examination, although the appearance is strongly suggestive of that disease. Patients presenting this appearance should be given treatment for several weeks before a definite and positive opinion is given as to the nature of the disease.

licles. The most important of these is the scar tissue. It may not be present in the early stage, but sooner or later it is bound to appear. The method of searching for and demonstrating the presence of scar tissue has already been fully explained. It must be remembered in this connection, however, that scars are formed in the conjunctiva by burns from lime or other escharotics, and also by certain infections that cause sufficient inflammatory reaction to produce sloughing or ulceration of that membrane. The narrow strip running horizontally across the culdesac caused by gonorrhea has already been described. Considerable scarring also is the result occasionally of severe cases of smallpox. The scars formed by burns or ulcers, however, differ materially in appearance from those of trachoma, as they are sharply demarked and the conjunctiva is not infiltrated in the irregular manner that is found in that disease.

FOLLICULAR CONJUNCTIVITIS

There are two types of follicular conjunctivitis. The variety illustrated in Figure 7 is unusual. This form may be described as a true folliculosis without an accompanying conjunctivitis. The follicles are small, in color match that part of the conjunctiva in which they are found, glassy in appearance, very uniform in size, sharply demarked from the surrounding tissues, and appear to spring from the surface of the conjunctiva rather than to be embedded in that structure. In these cases the conjunctiva is not inflamed or thickened, but maintains its normal appearance between the follicles; and, what is of the utmost importance, the blood vessels show the same arrangement and stand out as clearly as they do in the normal eye.

The other type of follicular conjunctivitis is that shown in Figure 8. Here there are numerous follicles in addition to a low grade chronic conjunctivitis. The follicles are irregular in shape and size. The largest are found chiefly in the culdesac or on the lower border of the tarsal plate. They are not so sharply demarked as in the preceding type, and there is more or less thickening and roughening of the conjunctiva between the follicles, although not nearly so much as is found in a true trachoma. The blood supply, while somewhat obscured by the slight inflammatory reaction present, is nevertheless normal, and can be made out on proper examination.

It is this form of follicular conjunctivitis that has caused the greatest confusion in the diagnosis of trachoma, especially among schoolchildren. The process appears to be merely a part of a general hyperplasia of the lymphoid tissue throughout the entire body, for in such cases there are often found adenoids and enlarged tonsils; and the period of life in which this disease occurs corresponds to that in which there seems to be a marked tendency for all the lymphoid

tissue to proliferate on slight stimulation. The local irritation in this instance may be due to dust, foul air, gases, and even possibly eye strain.

When the characteristic scar tissue can be made out by the proper manipulation of the eye turner, it is easy to rule out follicular conjunctivitis. In recent cases the diagnosis must be made on two things: (1) the condition of the conjunctiva of the culdesac and lower one third of the tarsal plate (everted lid), and (2) the blood supply of the culdesac.

In the early stages of trachoma, the fornical conjunctiva of the upper lid is always more swollen, inflamed and rough than in follicular conjunctivitis, and no areas of normal tissue can be seen in this region or over the lower third of the tarsal plate.

No visible blood vessels can be detected in the culdesac in the beginning stages of trachoma, as the inflammatory changes obscure them. In follicular conjunctivitis the vessels may be almost hidden or considerably distorted by the follicles; but if any vessels are observed running in a *vertical or approximately vertical direction* across the culdesac, it is safe to exclude trachoma (Fig. 8).

Occasionally it may be necessary to treat the eyes for a few days with sedative and slightly astringent remedies in order to overcome a temporary inflammation before giving a positive opinion as to the nature of the case.

VERNAL CATARRH AND OTHER DISEASES

In this disease the conjunctiva of the tarsus is the seat of a number of papillae which are broader and flatter than those in trachoma. The new growths are crowded closely together, resembling somewhat a cobblestone pavement, and are frequently covered by a bluish white film. In addition to the palpebral lesions, there also may be new formations around the limbus of the cornea in the shape of uneven,

hard, gelatinous masses. The symptoms of vernal catarrh are much worse in the spring and summer than in the winter, and the history of the case often will assist in the diagnosis. The characteristic lesions are present throughout the year, but the signs of acute inflammation, that is, the redness, photophobia and lacrimation, are much ameliorated during the winter.

Some cases show involvement only of the tarsal plate, with no symptoms around the limbus of the cornea. In others the cornea is the only part affected. The secretion is generally scant, but when properly stained shows a large number of eosinophil cells.

The diagnosis from trachoma is made on the history; the appearance of the granulations, which are larger, flatter, paler and more closely packed together than in trachoma; the bluish white membrane when present, and the large number of eosinophil cells found in the discharge.



Fig. 11.—Fulminating trachoma of several months' standing. The upper lid is everted and fastened in position on the rubber eye plate by means of two sutures. The patient is under ether preparatory to the grattage operation. A good part of the culdesac can be seen, especially in the nasal half of the eye. Note the numerous granulations, which have been described under the section on fulminating trachoma as having a characteristic appearance something similar to broken granite.

The commoner inflammatory conditions of the conjunctiva likely to be mistaken for trachoma have been described in detail. Other diseases that present clinically somewhat similar lesions to trachoma and may on rare occasions have to be diagnosed from that disorder are tuberculosis of the conjunctiva, syphilis of the conjunctiva, nodules around foreign bodies and Parinaud's conjunctivitis.

Tuberculosis of the conjunctiva appears as small grayish nodules on the tarsal surface with occasional ulcers. There is apt to be swelling of the glands in front of the ear. The bacillus may be found in sections of the involved tissue or by inoculation of the material into guinea-pigs. As a general thing, the disease attacks but one eye, and is not very painful.

Parinaud's conjunctivitis is a rare disease involving in most instances but one eye. It is characterized by the formation of follicles and sometimes ulcers in the conjunctiva. A marked feature is the systemic condition, the patient at the onset having fever, chills and enlargement of the preauricular gland, which frequently goes on to abscess formation. The entire parotid region may be swollen and tender. Sometimes the retromaxillary and cervical glands are also involved. In addition to the follicles, the eyelids are swollen and hard, and the culdesac is often very red and edematous. The chills, fever and involvement of the glands differentiate this form of conjunctivitis from trachoma.

WHEN IS TRACHOMA CURED?

On this point there is a great diversity of opinion. Patients attending clinics are often discharged as cured when acute inflammatory symptoms have subsided and there is no discharge. Such cases, however, almost invariably relapse sooner or later, and the mere cessation of secretion and the acute subjective symptoms should not be taken as proof of recovery from the disease. When an eye has become infected with the trachoma virus, it is liable to a recurrence as long as any normal conjunctiva, or any lymphoid tissue in the conjunctiva remains. The infection lingers in the granulations apparently indefinitely, and some trifling local irritation or constitutional disorder may cause it to spring into renewed activity at any time, and thus produce an acute exacerbation of the disease.

A case can never be said to be certainly cured until all the conjunctiva of the upper lids has become completely replaced by smooth, white, avascular, fibrous scar tissue, and the lower lids are free from any evidences of the disease. A vascular scar tissue cannot be infected by the virus of trachoma. In treating trachoma with silver nitrate, copper sulphate, grattage, expression, etc., the cicatricial process is simply hastened by chemical and mechanical destruction of the normal and abnormal tissue of the lids and the irritation resulting from these various measures.

THE ILLUSTRATIONS

It is extremely difficult to get good illustrations of trachoma, as there are several things which interfere with accurate reproductions of the conjunctiva. In order to show the diseased area to the artist it is necessary to evert the upper lid. This procedure is more or less uncomfortable to the patient, and the lid cannot be maintained in this position for a very long period of time. The appearance and color of the conjunctiva itself changes from moment to moment on account of the varying blood supply and the irritation produced by the eversion.

Long training is essential in order that the observer should be able to grasp and appreciate quickly the very minute pathologic changes by which the different inflammatory diseases of the conjunctiva are diagnosed. It is extremely important that in all cases the culdesac should be carefully brought into view by proper manipulation of the tip of the glove buttoner. In most of the illustrations the entire culdesac is shown, but it should be remembered that in the actual work the examiner can see only one part of the culdesac at a time. Hence, in actual practice, it is impossible to get as complete a view of the diseased structures as is shown in the pictures.

The black and white drawings were made by Artist Leonard H. Wilder of the United States Hygienic Laboratory, after paintings made by S. Shimatori of actual cases occurring in immigrants at the United States Immigrant Hospital at Ellis Island, New York. They are as correct reproductions of the conditions seen as the artists could portray.

The illustrations were made three times the original size in

order that the finer details on which so much depends in the diagnosis of trachoma might not be lost in the process of reproduction. It is advised that they be studied, first of all with a minus lens of sufficient strength to bring them down to the size of a normal eyelid, in order to get the general effect, and afterward with the naked eye for the purpose of observing the finer details.

U. S. Immigration Station.



Fig. 12.—Thickening and deformity of the lids produced by a long standing case of trachoma. Note that the outer two thirds of the right upper lid presents a curve which is concave downward, while the normal eye has its concavity upward.

City Celebrates New Water Supply.—October 12, New York began its celebration of the completion of the Catskill aqueduct. This aqueduct is approximately 120 miles long and its construction has covered a period of ten years. It has been completed, however, within contract time, without a labor strike, and its cost has been kept within the original estimate. The opportunity offered by the completion of this great work for teaching important civic lessons is not being neglected. The great influence of water supply on the public health is being impressed in the school celebrations and public meetings. For this purpose a pamphlet has been prepared by the department of health at the request of the Mayor's Catskill Aqueduct Celebration Committee which is being used as a text for compositions on this subject.

CESAREAN SECTION SCARS

A HISTOLOGIC STUDY OF FOUR SPECIMENS*

ALFRED BAKER SPALDING, M.D.

SAN FRANCISCO

Originally the indications for cesarean section were limited, because delivery by laparotomy without suturing the uterus, although occasionally successful, nearly always resulted in death from hemorrhage. Suturing the uterus to prevent death from hemorrhage was followed so frequently by peritonitis that Jorg,¹ in 1806, suggested a method of extraperitoneal cesarean section which was in fact successfully performed by Ritgen,¹ in 1821. Rarely repeated cesarean section was successful in preantiseptic days, in cases in which the adhesions were sufficiently extensive to wall off the peritoneal cavity. Porro, in 1876, devised his operation for removing the uterus and suturing the cervix into the laparotomy wound. While the Porro operation greatly reduced the mortality of cesarean section, the removal of the uterus was considered to be too radical a procedure to permit of any marked increase in the list of indications for cesarean section.

But when Säger, in 1882, described his well known conservative operation, the immediate results were found to be so good in regard to fetal and maternal mortality that the original small list of indications for cesarean section was greatly increased.

It has been estimated that today cesarean section is resorted to about once in each 200 confinements, which probably is a fairly conservative statement. In hospitals and clinics the ratio may at times be even greater. For instance, at the Stanford Women's Clinic, eighteen cesarean sections have been performed in the last 2,060 consecutive confinements, or, on an average, one cesarean section for each 115 confinements.

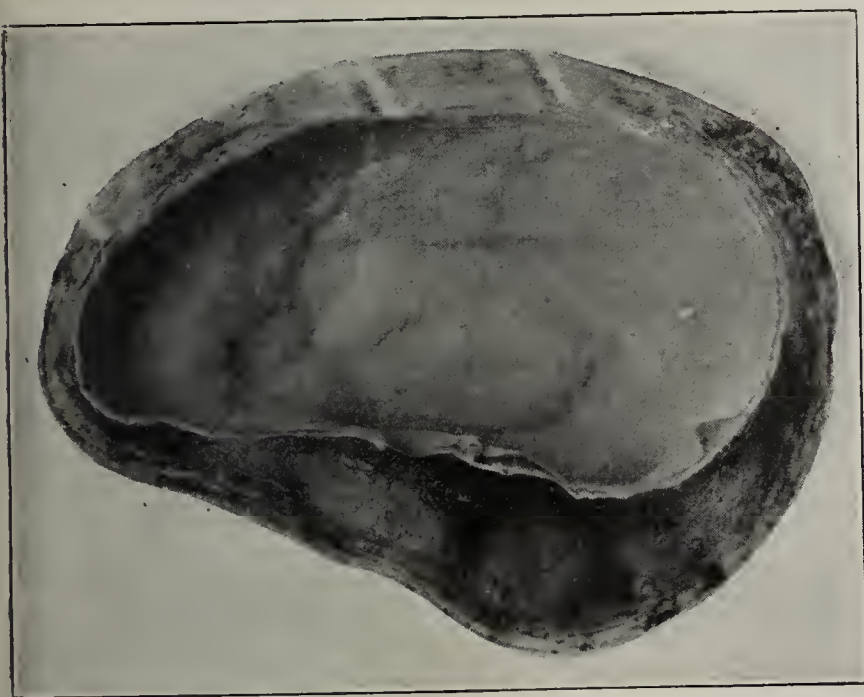


Fig. 1.—Cross section of the pregnant uterus at 18 weeks; wall outside placenta, 6 mm.; placenta, 22 mm.; wall under placenta, 5 mm.

The subsequent history of this large class of cesareanized women is a matter not only of scientific interest, but also of sociologic concern. The possi-

bility of sterility, of abortions, of almost certain sterility after the second cesarean section, as well as future rupture of the uterus, must be thought of before resorting to the comparatively simple expedient of abdominal cesarean section, when possibly some other obstetric operation, such as pubiotomy or vaginal hysterotomy, might do as well and might give to the patient a simpler obstetric future.

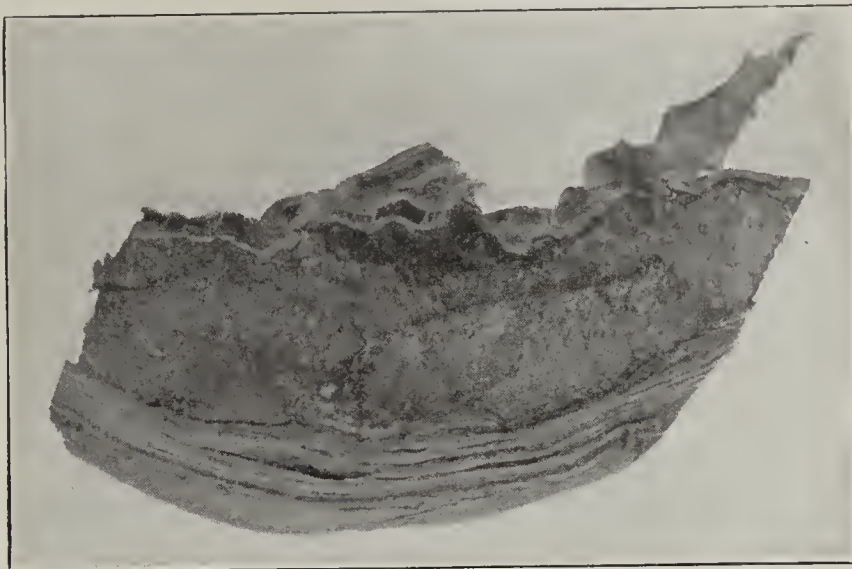


Fig. 2.—Placenta and uterine wall in first stage of labor: wall outside of placenta from 7 to 9 mm.; placenta, 22 mm.; wall under placenta, 6 mm.

After cesarean section, many patients have fever with more or less inflammation of the endometrium; many remain sterile after one cesarean section, either from choice, or because the operator has sterilized them; many abort after cesarean section spontaneously or are aborted through fear of future difficulties, while a relatively small number are repeatedly cesareanized. Some patients, after the classic Säger or Fritsch operation, occasionally have a rupture of the uterus in succeeding pregnancies. Von Leuwin,² in 1904, and Singer,³ in 1908, wrote valuable theses on this subject.

Weber,⁴ in 1910, called attention to the fact that in the Münchner Frauenklinik the percentage of uterine ruptures had increased from one in 1,476 labors previous to 1899, to one in 697 labors since 1899. He attributes this increase in the number of ruptures to injuries to the uterus caused by previous operations, particularly to injuries caused by curettage in the puerperal period. Of twenty-eight ruptures during this operative period, one was through an old cesarean scar.

Krukenberg,⁵ in 1886, reported twelve cases of rupture in twenty-four pregnancies after cesarean section.

Later Säger stated that rupture had only rarely occurred after his operation, and that when it had occurred, it was because of poor technic on the part of the operator. As a result, the early reports of rupture dealt exclusively with cases in which some other operator performed the original cesarean section. However, Wyss,⁶ in 1912, collected from the literature forty-three reports of rupture occurring

2. Von Leuwin: *Herhaaldi sectio caesarea*, Thèse d'Utrecht, 1904, and *Ann. de Gynec. et d'obst.*, October, 1904, p. 577.

3. Singer: *Des cicatrices cesariennes abdominales classiques*, Thèse de Paris, 1908-1909, p. 499.

4. Weber, F.: *Die Kompletten Uterusrupturen der letzten 50 Jahre an der Münchner Frauenklinik*, *Beitr. z. Geburtsh. u. Gynäk.*, 1910, 15, 53.

5. Krukenberg, G.: *Beitrag zur Kaiserschnittfrage*, *Arch. f. Gynäk.*, 1886, No. 28, p. 409.

6. Wyss, Albert: *Beitrag zur Uterusruptur nach Kaiserschnitt*, *Beitr. z. Geburtsh. u. Gynäk.*, 1912, 17, 336.

* From the Division of Obstetrics and Gynecology, Leland Stanford Junior University School of Medicine.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Quoted from Nürnberg: *Zur Geschichte des Extraperitonealen Kaiserschnittes*, *Zentralbl. f. Gynäk.*, 1909, No. 33, p. 899.

since 1895, and Palmer Findley⁷ has recently increased this list to a total of sixty-three. In addition to these, the following ruptures may be found reported in the literature; Banby and Gilles,⁸ Cristalli,⁹ Baisch,¹⁰ Mabbott,¹¹ Wyder,¹² Weber,⁴ Cameron¹³ (two cases), Lüsebrink,¹⁴ Bell,¹⁵ and Rongy¹⁶ (two cases).

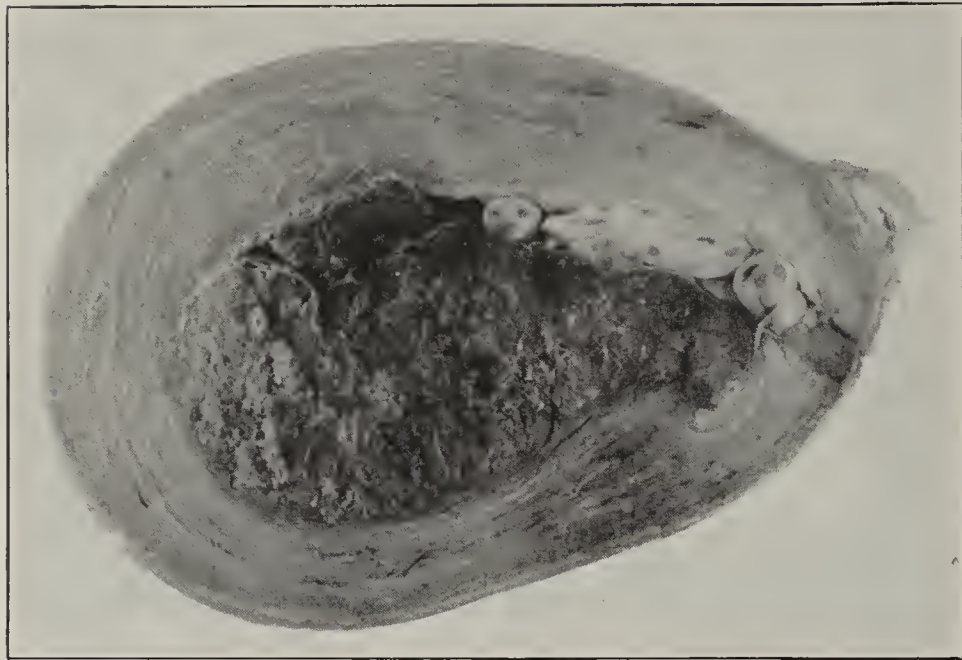


Fig. 3.—Sagittal section of the uterus and placenta in the third stage of labor: wall outside placenta, 28 mm.; placenta, 45 mm.; wall under placenta, 18 mm.

The frequency of rupture after cesarean section can at best be only roughly estimated. Couvelaire,¹⁷ quoting from von Leuwin, made the statement, which is found so often in the literature, that rupture occurs in about 2 per cent. of pregnancies after cesarean section. As a matter of fact, von Leuwin stated in his thesis that 77 patients who became pregnant after cesarean section and were not treated by repeated cesarean section gave the following history: there were 8 spontaneous, and 3 artificial abortions, 6 ruptures of the uterus (dans la cicatrice ou ailleurs [in the cicatrix or elsewhere]), 22 prematurely induced labors, 21 spontaneous labors at term, 3 symphysiotomies, 3 embryotomies, three extractions with forceps, and 2 versions with extraction. In the paragraph following, he states that of a total of 194 pregnancies, including 117 repeated cesareans with the 77 previously mentioned, there were noted 24 defective scars. Of these, 4 were completely ruptured, 14 were defective to the peritoneal coat, and 6 were partly defective. From the first paragraph, one might conclude that there were 6 ruptures in 66 cases (by excluding the abortions) or more than 9 per cent. of ruptures. Or, from the second paragraph, one could

agree with Couvelaire that the number of ruptures were four in 194, or about 2 per cent. However, the percentage (12) of defective scars agrees very well with the findings recently reported by Harrar.¹⁸ Of 50 cases of repeated cesarean section at the New York Lying-In Hospital, there were noted 8, or 16 per cent. of defective scars.

Of forty cesarean sections in private practice or in my clinic, only one patient to my knowledge has had spontaneous labor later. This patient, reported by Breitstein,¹⁹ had one normal spontaneous labor, and then the uterus ruptured spontaneously in the last month of the next pregnancy.

Laparotomy was performed by Breitstein twenty-four hours after the occurrence of the rupture, because the patient complained so little as to obscure the diagnosis. The uterus was found ruptured on the anterior wall in the old cesarean scar. The placenta lay outside on the anterior wall of the uterus. Around the edge of the rupture, there was an intense leukocytic infiltration in the decidua. The upper part of the rent was covered by the decidua vera. Around the central and lower parts, the decidua had the appearance of the serotina. The muscle in the upper part toward the peritoneum was normal.

Of the seventy-five reported cases in the literature, in only eighteen are there pathologic reports of the histology of the scars. Of these, two authors (Ekstein²⁰ and Breitstein¹⁹) report syncytial elements in the scars with good muscle healing; seven

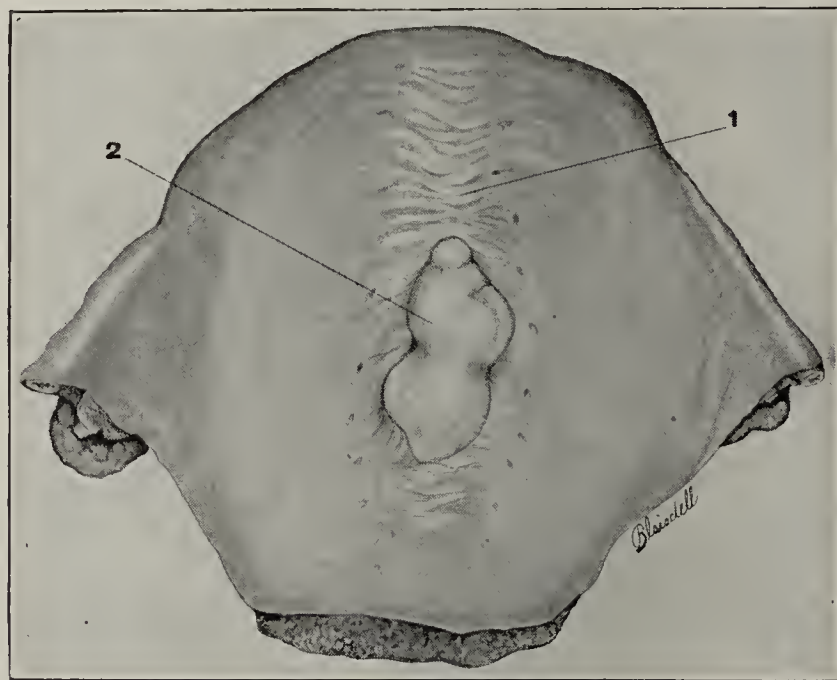


Fig. 4.—Drawing of hypothetical case to illustrate the author's idea of the cause of uterine rupture in defective cesarean section scars; 1, defective scar; 2, liquor amnii in membranes rupturing scar on principle of water edge.

(Schick,²¹ Couvelaire,¹⁷ Dahlmann,²² two cases, Fischer,²³ two cases, and Wyss⁶) report finding

7. Findley, Palmer: Rupture of the Scar of a Previous Cesarean Section, *Am. Jour. Obst.*, 1916, **74**, 411.

8. Banby and Gilles: *Arch. méd. de Toulouse*, 1903, No. 21, p. 243.

9. Cristalli, G.: *Arch. di ostet. e. ginec.*, 1906, No. 12.

10. Baisch, K.: Uterusverletzungen und Schwangerschaftsruptur, *Zentralbl. f. Gynäk.*, 1904, **59**, 1537.

11. Mabbott: Second Cesarean Section (by Dr. Tull) on a Patient with Rupture of the Uterus at Site of the First Operation, *Am. Jour. Obst.*, 1906, **54**, 853.

12. Wyder: *Cor.-Bl. f. schweiz. Aerzte*, 1905, **35**, 427.

13. Cameron, J. M.: Demonstration of Specimen of Rupture After Cesarean, *Edinburgh Med. Jour.*, 1911, **75**, 378.

14. Lüsebrink (Discussion on demonstration by Everke, *Monatschr. f. Geburtsh. u. Gynäk.*, 1913, **37**, 238) reports a case of rupture after using bags in premature labor two years after cesarean section. There was an atrophic scar.

15. Bell, J. N.: Rupture of the Uterus in Cesareanized Women, with a Review of the Literature on This Subject to Date, *Am. Jour. Obst.*, 1916, **74**, 950.

16. Rongy, A. J.: Rupture of the Cesarean Scar, *Am. Jour. Obst.*, 1916, **74**, 954.

17. Couvelaire, A.: Rupture de la cicatrice d'une ancienne opération césarienne survenue à la fin d'une grossesse compliquée d'hydramnios, *Ann. de gynec. et d'obst.*, Series 2, 1906, **3**.

18. Harrar, James: A Study of the Integrity of the Uterine Scar After Cesarean Section, *Am. Jour. Obst.*, 1912, **65**, 808.

19. Breitstein, L. I.: Rupture of the Uterus Following Cesarean Section, *THE JOURNAL A. M. A.* Feb. 28, 1914, p. 689.

20. Ekstein, E.: Die erste Spontanruptur des graviden Uterus im Bereiche der alten Kaiserschnittnarbe nach queren Fundalsschnitte nach Fritsch, *Zentralbl. f. Gynäk.*, 1904, **44**, 1302.

21. Schick, P.: Ueber einen Fall von Uterusruptur nach vorangegangenen klassischen Kaiserschnitt, *Deutsch. med. Wchnschr.*, 1911, **37**, 1690.

22. Dahlmann, Albert: Zerreißen der Gebärmutter nach Kaiserschnitt, *Monatschr. f. Geburtsh. u. Gynäk.*, 1910, **32**, 33.

23. Fischer, O.: Ueber die Ruptur des graviden Uterus in einer alten Kaiserschnittnarbe, *Ztsch. f. Geburtsh. u. Gynäk.*, 1912, **70**, 838.

placental elements in poorly healed scars. Two (Prüsmann²⁴ and Jolly²⁵) found decidual islands in the scar as the sole cause of rupture, and Wolf²⁶ reports the same finding associated with poor muscle healing. In addition, many state that the decidua approaches, as one would expect, to the peritoneum

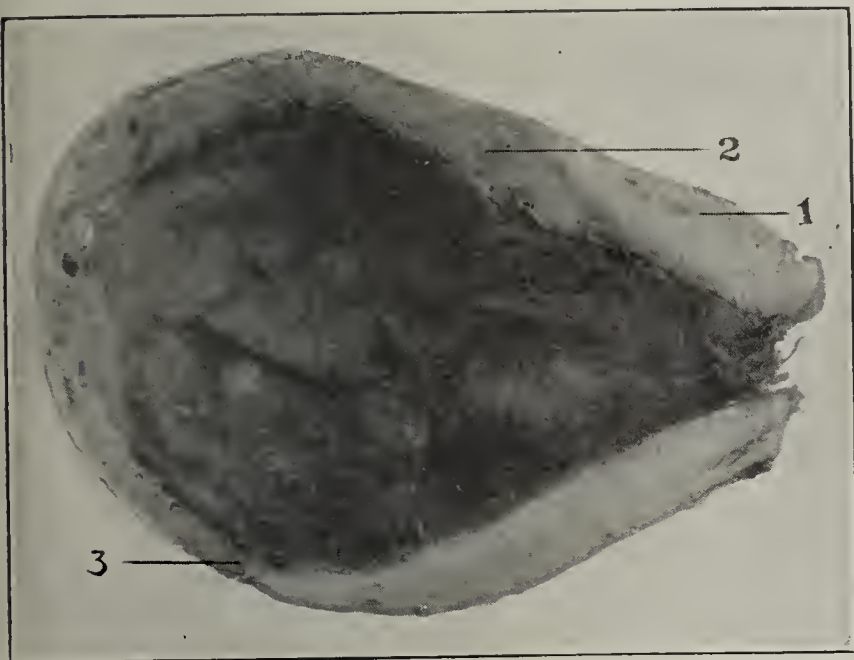


Fig. 5.—Sagittal section of the uterus and placenta with rupture of the uterus at site of old cesarean section scar: 1, thickened lower uterine segment, 21 mm.; 2, placenta, 15 mm. thick; 3, point of rupture, old scar, 2 mm.

over the surface of poorly healed scars. Of the eighteen reports, thirteen record poor wound healing as the chief cause of rupture. Clinically, vomiting in late pregnancy, cervix bags, bougies, hydramnios, overtime fetus, ulcerating ventral hernia, long labor without engagement, manual extraction of the placenta, abdominal fixation of the uterus, version and pituitary solution have been noted to explain the rupture, while several cases are reported without strain of any kind and with few of the usual symptoms of uterine rupture. Some have been found unexpectedly at operation. Couvelaire thought the rupture in his case occurred to one side of the old scar through the uterine muscle, which agrees with the clinical reports by Krukenberg⁵ and Davis,²⁷ and with the opinion of Mason and Williams,²⁸ based on animal experiments.

From 1895 to 1900, when the classic Säger operation was in universal vogue, only three cases of rupture were reported. From 1900 to 1911, during the time when many resorted to the transverse fundus incision of Fritsch, forty cases of rupture were reported. Wyss condemned all operations except the Säger operation, and believed the ruptures were due to infection and to poor technic. Several have mentioned that in the fundus, the postpartum contractions may loosen the sutures, and result in poor wound healing. German literature is full of good results following the extraperitoneal operation. Lichtenstein,²⁹ Reinhardt,³⁰ Scheffzek,³¹ Rubeska³² and Mayer³³ have

reported labors lasting from five to sixty-eight hours without rupture, while Unterberger³⁴ states that no case has yet been reported of rupture following the extraperitoneal operation. However, Wolf²⁶ reports a case of rupture after a transperitoneal operation, and Labhardt³⁵ encountered rupture in a case of placenta praevia following delivery by Dührsens incisions in a previous confinement. In Findley's list of sixty-three ruptures, ten make mention of the placental site at the time of the first cesarean section. Of these, eight incisions were made into the placenta. Twenty-two mention the placental site at the time of rupture. Of these, nineteen find the placental site in or near the rupture.

It has frequently been suggested that the incising of the placental site might lead to imperfect healing of the regenerating endometrium, as well as the possibility of the developing placental elements weakening the scar, as happens in some cases of ectopic pregnancy. Both these facts could account for the better prognosis following extraperitoneal cesarean section.

While it is plausible that the placental elements might lead to poor healing of the wound in cases in which the incision is into the placental site, there is hardly sufficient evidence available to uphold the idea that the syncytium will attack sound scar tissue any more than it does sound uterine tissue. To verify this, we studied the uterus in a girl who died when she was eighteen weeks pregnant, and found that the wall was 6 mm. thick, the placenta 22 mm. in thickness, while the thickness of the wall underlying the placenta was 5 mm. (Fig. 1). The histology of the



Fig. 6.—Low power photograph at point of rupture in Figure 5: 1, muscle wall; 2, placenta; 3, point of rupture; 4, amnion.

muscle wall differed from cesarean scars in being of looser texture, containing many more small blood vessels, less fibrous tissue, and no fibrin, except in the

24. Prüsmann, F.: Die Spontanruptur in der alten Kaiserschnittsnarbe, Ztschr. f. Geburtsh. u. Gynäk., 1905, 55, 415.

25. Jolly, R.: Uterusruptur in der alten Kaiserschnittsnarbe, Arch. f. Gynäk., 1912, 97, 229.

26. Wolf: Demonstration-Gesellschaft für Geburtshilfe und Gynäkologie zu Berlin, Ztschr. f. Geburtsh. u. Gynäk., 1914, 75, 740.

27. Davis, A. B.: Cesarean Section: A Study of a Consecutive Series of Cases, Tr. Am. Assn. Obst. and Gynec., 1913, 26, 37.

28. Mason and Williams: The Strength of the Uterine Scar After Cesarean Section: An Experimental and Clinical Study, Boston Med. and Surg. Jour., Jan. 20, 1910.

29. Lichtenstein: Extraperitonealer Kaiserschnitt und Uterusruptur-gefahr bei späteren Entbindungen, Zentralbl. f. Gynäk., 1919, No. 26.

30. Reinhardt, J. C.: Bericht über zehn suprasymphysäre Kaiserschnitte, Gynäk. Rundschau, 1910, No. 24.

31. Scheffzek, Franz A.: Die Uterusnarbe des korporealen und cervikalen Kaiserschnitts und ihre Chancen bei späteren Schwangerschaften und Geburten, Ztschr. f. Geburtsh. u. Gynäk., 1910, 67, 752.

32. Rubeska, W.: Wiederholter suprasymphysärer Kaiserschnitt, Zentralbl. f. Gynäk., 1910, 35, 1164.

33. Mayer: Zur Kasuistik des wiederholten suprasymphysären Kaiserschnitts, München. med. Wchnschr., 1911, 24, 1306.

34. Unterberger: Spontane Uterusruptur nach Sectio cesarea, Monatschr. f. Geburtsh. u. Gynäk., 1911, 34, 372.

35. Labhardt, Alfred: Ueber Uterusrupturen in Narben von früheren Geburten, Ztschr. f. Geburtsh. u. Gynäk., 1904, 53, 478.

decidua, where the chorionic elements formed attachment. The wall of the uterus in a woman dying in the first stage of labor (Fig. 2) measured from 7 to 9 mm. in thickness, except at the placental site, where it measured 6 mm.

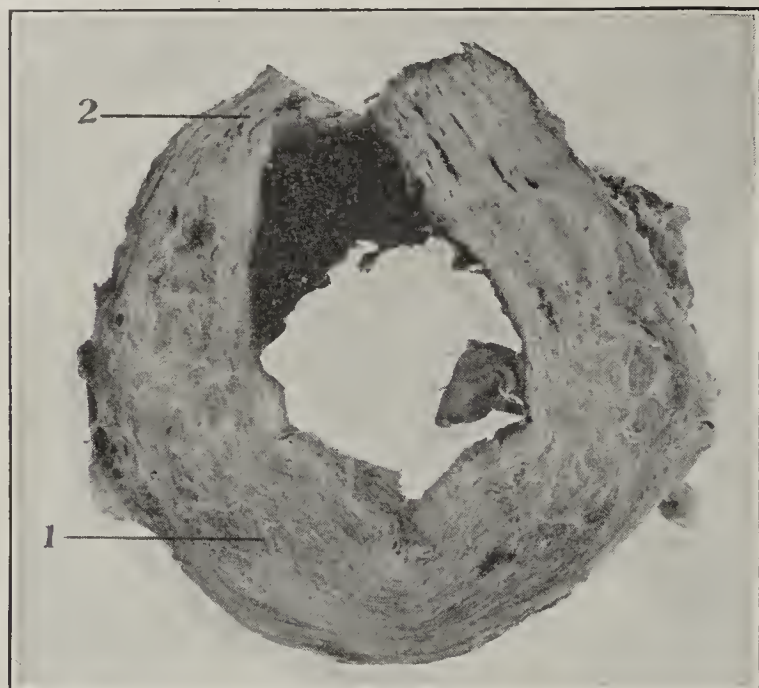


Fig. 7.—Cross section of uterus showing fresh cesarean incision and old cesarean section scar; good healing: 1, muscle wall, 26 mm.; 2, old scar, 9 mm.

From a Porro-cesarean section case (Fig. 3), the thickness of the uterine wall in the third stage of labor was found to be 28 mm. outside the placental site, and 18 mm. beneath the placenta. The thickness of the wall in the nonpregnant state was observed to be about 17 mm.

From these observations, it appears that the normal uterine muscle wall is somewhat thinner beneath the placenta than it is at other places, and it might be argued that a sound cesarean scar over the placenta would be thinned in the same proportion; but there is no histologic evidence to prove that the normal uterine wall or the well healed scar is weakened by

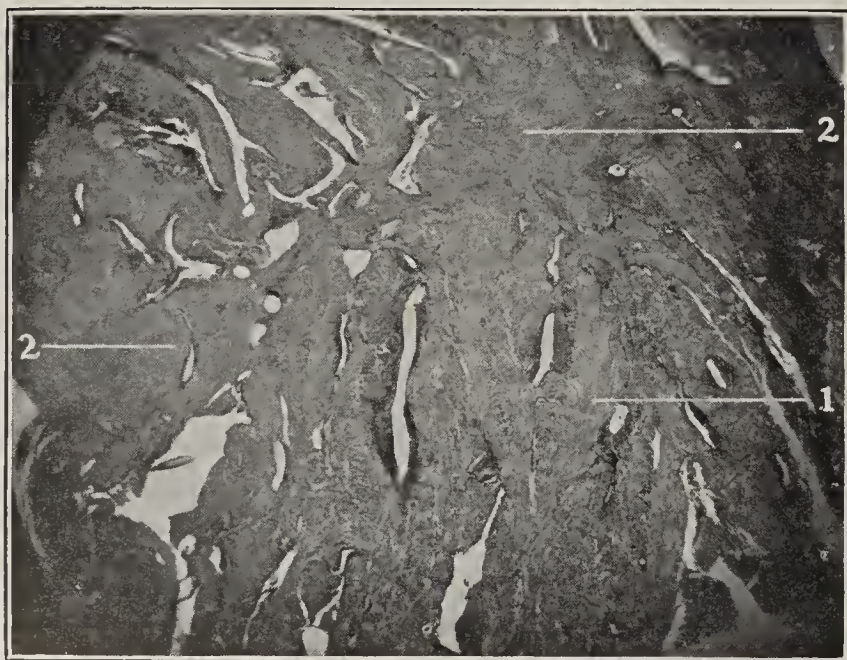


Fig. 8.—Low power photograph of old scar in Figure 7: 1, normal muscle tissue; 2, scar shows fibrous tissue; few muscle cells.

the invasion of syncytium, such as occurs in mole pregnancy and in ectopic gestation.

Histologically, the strong well healed scar is practically no different from normal uterine tissue. Defective scars, however, contain more fibrous tissue, fewer

blood vessels, less muscle tissue, less elastic tissue, and when in contact with the placenta, more fibrin deposits. The placenta may actually protect a weak scar by acting as a splint to cover the wall defect. On the other hand, a small retroplacental hemorrhage might rupture the uterus. The most plausible reason to explain actual rupture of the uterus seems to rest on mechanical principles. Given a weak scar defective near to the peritoneal coat, a small water wedge of liquor amnii (Fig. 4) will cause the uterus to rupture, on the same principle that it causes the cervix to open. Scars in the lower uterine segment are protected more than scars in the fundus from this action. Using a cervix bag which increases the intra-uterine pressure will cause added danger. In the third stage of labor, retroperitoneal hemorrhage might well cause rupture.

In this connection I desire to report the following histologic findings of cesarean section scars:

REPORT OF CASES

CASE 1.—*History*.—A white woman, aged 32, was examined in consultation at an outside hospital, Sept. 13, 1916. The patient was in her third pregnancy. In 1914, the cervix had



Fig. 9.—Cross section of uterus showing fresh cesarean incision and old cesarean section scar, good healing: 1, muscle wall, 55 mm.; 2, old scar, 28 mm.

been amputated. The first labor occurred five years ago and it was a high forceps delivery, the child being delivered dead. The second labor took place three years ago, at which time a cesarean section was performed by a general surgeon; no fever occurred during the puerperium. The present labor was due Sept. 2, 1916, and the three measurements of the pelvis which had been taken were normal. The promontory was high and was palpated with difficulty; the pubic angle was acute. Labor began September 12 at 1 a. m. with strong pains. The position was breech, and at 1 p. m., September 13, the membranes ruptured and meconium was noted in the liquor amnii. The pains stopped, and 0.5 c.c. of pituitary solution was given, causing hard pains. At 2:10 p. m., under ether, the attending physician attempted to deliver the child by breech extraction, but could not extract the head. At this point the history is vague, but the result was that the body was severed, leaving the head in utero. At 7 p. m. the patient was moribund, with rapid pulse and continuous, although moderate, bleeding from the vagina. As there were no craniotomy instruments to be had in the hospital, and as it seemed probable that the uterus containing the fetal head was both ruptured and septic, an immediate hysterectomy was done. There were many adhesions on the anterior surface of the uterus, but no rupture of the cesarean scar appeared to

be present in spite of the severe twenty-four hour labor and the use of pituitary solution. The patient died shortly after operation. After a delay of several weeks, I was able to obtain the specimen of the uterus for study. Unfortunately, the fixation of the large specimen was poor.



Fig. 10.—Low power photograph of old scar in Figure 9: 1, normal muscle tissue; 2, 2, scar is practically the same as the normal uterine wall except for slight deposit of fibrin.

Pathology.—The specimen consisted of the uterus above the internal os (containing a large fetal head), right ovary and tube. There were many adhesions over the anterior and left lateral surfaces of the uterus. The uterus measured 18 cm. transversely at the line of tubal insertion; 14 cm. anteroposteriorly, and had a length of 22 cm. On the posterior wall of the uterus on the fundus just above the line of insertion of the fallopian tubes, there was an irregular white scar, 2.5 cm. wide and about 8 cm. long, which ran transversely and a little downward from left to right. The scar seemed to be held together and protected in a splintlike manner by the attached placenta beneath. The placenta had a very large attachment over the anterior wall, fundus, and part of the posterior wall of the uterus. The wall of the uterus was thickened to 22 mm. in the lower part of the uterus, extending posteriorly to a distance of 15 cm. (just to the old uterine scar), and 10 cm. on the anterior wall above the internal os. Beneath these points over the fundus, the wall was thinned to 5 mm., except at the site of the scar, which is 2 mm. The attached placenta was 15 mm. thick (Fig. 5).

Microscopic Examination.—Sections of the uterine wall revealed fairly distinct layers of normal muscle tissue with a thin layer of decidua. The placenta was in situ, and the villi were normal. At one point, the muscle tissue thinned out to a hairlike line, beneath which there was a layer of hemorrhage which overlay the proliferating villi. In places, the thin peritoneal coat was ruptured. This was at the site of the old cesarean incision. Beyond this, the muscle wall again thickened. In the scar, distinct muscle bundles were lacking and had been replaced with wavy fibrillar connective tissue (Fig. 6).

CASE 2.—History.—A white woman, aged 20, had a simple, flat contracted pelvis, the true conjugate measuring 7 cm. Labor was due Sept. 5, 1913, but the pains began August 23.

It was a breech presentation, and the fundus measured 30 cm. above the symphysis, the presenting part being above the brim. The patient preferred the cesarean section to pubiotomy. At the operation, the incision was made in the midline below the umbilicus, and the uterine incisions in the midline on the anterior wall of the uterus into the placenta. The incision in the uterus was closed with two layers of interrupted chromic catgut (avoiding decidua), and one layer of continuous sutures. Lembert chromic suture was used in the peritoneum. Convalescence was normal, and no fever developed. Jan. 11, 1916, this patient returned to the clinic in labor with a vertex presentation. The fundus measured 34 cm., and the presenting part was above the brim. After nine hours of good labor pains without engagement of the presenting part, a Porro-cesarean section was done, as the patient requested sterilization.

The uterine incision was made in the midline on the anterior wall of the uterus into the placenta; the old incision was not visible. Convalescence was normal, and there was no fever.

Pathology.—The uterus measured 14 by 10 by 10 cm. There were no adhesions. The old scar was to the left of the recent incision and the wall was thinner and somewhat puckered. The wall of the uterus outside the old scar was 26 mm., while the scar measured 9 mm. (Fig. 7).

Microscopic Examination.—The scar showed much fibrous tissue with practically no muscle cells. There were a few blood vessels in the scar, but no decidual or syncytial elements were present. With Weigert's stain, the normal elastic elements seen in the muscle tissue were lacking in the scar. The scar appeared strong, although fibrous and shrunken (Fig. 8).

CASE 3.—History.—A white woman, aged 25, had a flat, rachitic pelvis. The true conjugate measured 9 cm., and between



Fig. 11.—Anterior surface of uterus with defective old cesarean scar, showing adhesions: 1, recent cesarean incision; 2, old cesarean section scar; 3, cervix.

the tubera ischii, 7.5 cm. The patient was delivered by cesarean section in the Cooper College Clinic, April 12, 1912. Interrupted catgut sutures and continuous Lembert sutures in the peritoneum were used. Convalescence was normal except for a fever of 101.6 F. on the day of operation. Nov. 16, 1916,

this patient reported to the Stanford Clinic in labor. The fundus measured 34 cm. above the symphysis. It was a breech presentation, but no engagement had as yet occurred, although the membranes were ruptured. After two hours of pains, the patient was delivered by Porro-cesarean section,

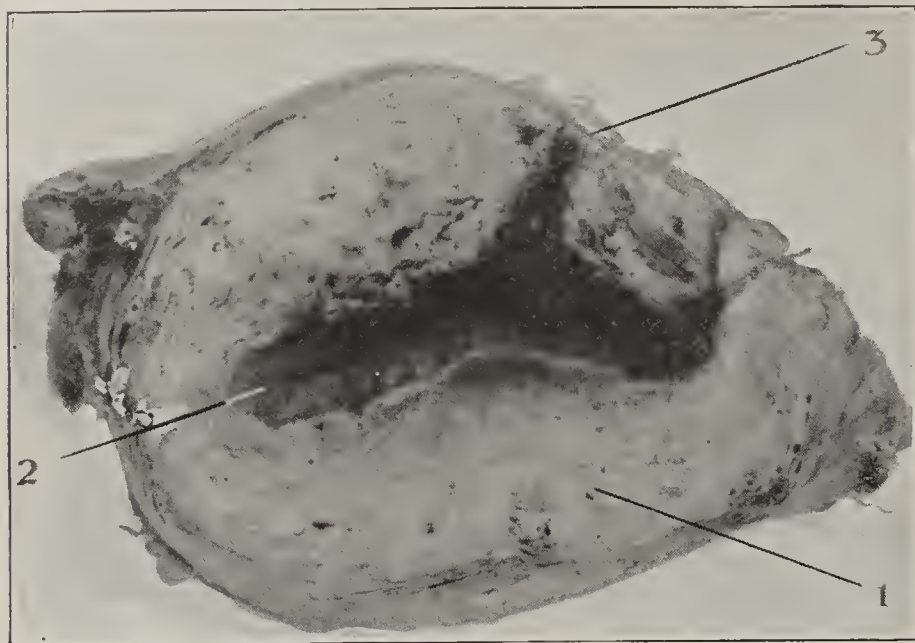


Fig. 12.—Sagittal section of the uterus shown in Figure 11, with defective old cesarean section scar: 1, muscle wall, 38 mm.; 2, decidua, 6 mm.; 3, defective scar, 1.5 mm.

as she requested sterilization, and the membranes had been ruptured since labor began. Incision was made through the right rectus below the umbilicus. There were adhesions between the uterus and the anterior wall. The uterine incision was made on the anterior wall. The placenta was located on the posterior wall of the uterus. Convalescence was normal, except for temperature of 101 F. on the first day and the eleventh day.

Pathology.—The uterus measured 11.5 by 11 by 9 cm. There were no adhesions except at the line of the old scar, which was 4.5 cm. long. The scar on the upper part of the anterior surface was in the midline, and the uterine wall in its thickest part was 55 mm. The endometrium was thick and shaggy; the scar was 28 mm. thick. The placenta was inserted on the posterior wall (Fig. 9).

Microscopic Examination.—The scar was the same as the other muscle tissue, except for slight fibrin changes and slight depression in the mucous membrane. It was stained with the van Gieson stain, hematoxylin and eosin stain and with the Weigert stain for elastic tissue. In part the muscle fibers were not quite so compact, but the amount of elastic tissue was about normal (Fig. 11).

CASE 4.—History.—A white woman, aged 26, pregnant for the second time, came to the Stanford Women's Clinic, Sept. 7, 1916, in the seventh month of pregnancy. Twenty-one months previously she had had cesarean section at term performed by a surgeon in Sacramento, after twenty-four hours of labor. The pelvis measured 24, 26, 29.5, 21 and 20 cm. The laparotomy scar extended from the ensiform around the left side of the umbilicus to a point midway between the umbilicus and symphysis. A ventral hernia occupied the line of the old incision. No history of the convalescence was available.

A Porro-cesarean section with repair of the hernia was performed, Dec. 5, 1916, at the request of the patient that she be sterilized. There were very few light adhesions encountered. The uterine incision was in the anterior wall to the left of the old scar, and the placenta was on the anterior wall of the uterus. Convalescence was normal except for a temperature of 101 F. on the day of operation.

Pathology.—The uterus, consisting of body and fundus to the internal os, measured 15 by 13 by 8 cm. The old scar was blue, 8 cm. long, 1.5 mm. thick and 15 mm. wide. The wall of the uterus opposite the old scar was 38 mm. thick, and the mucous membrane was 6 mm. thick (Fig. 12).

Microscopic Examination.—Sections of the scar revealed a thin layer of peritoneal tissue with attached adhesions.

Beneath this layer, there was a very thin layer of muscle tissue, but no fibrous tissue. There was a thin layer of decidua containing much fibrin, and attached to this was the placenta. On either side of the scar, there was much fibrin deposit enclosing decidua, fetal cells and muscle fibers. There were many masses of syncytium to be seen some distance away from the scar between the muscle bundles. There was about the same amount of elastic tissue in the scar as in the muscle tissue on either side. This was mostly associated with small blood vessels (Fig. 13).

CONCLUSIONS

1. It seems justifiable to conclude that more than 10 per cent. of cesarean section scars are defective.
2. The chief cause for the defect seems to lie in imperfect healing of the endometrium.
3. In case the incision is into the placental site, there may be imperfect healing due to the degeneration of decidua serotina, or the scar may be weakened by the inclusion of decidual tissue in the muscle wall.
4. There is not much evidence to uphold the view that the syncytium attacks the well healed scar, although two such cases have been reported.
5. The placenta is frequently found overlying the weakened scar in cases of rupture. This may produce rupture from retroplacental hemorrhage, or may act as a splint to support the weakened scar.
6. Of seventy-five reported cases, all but one were

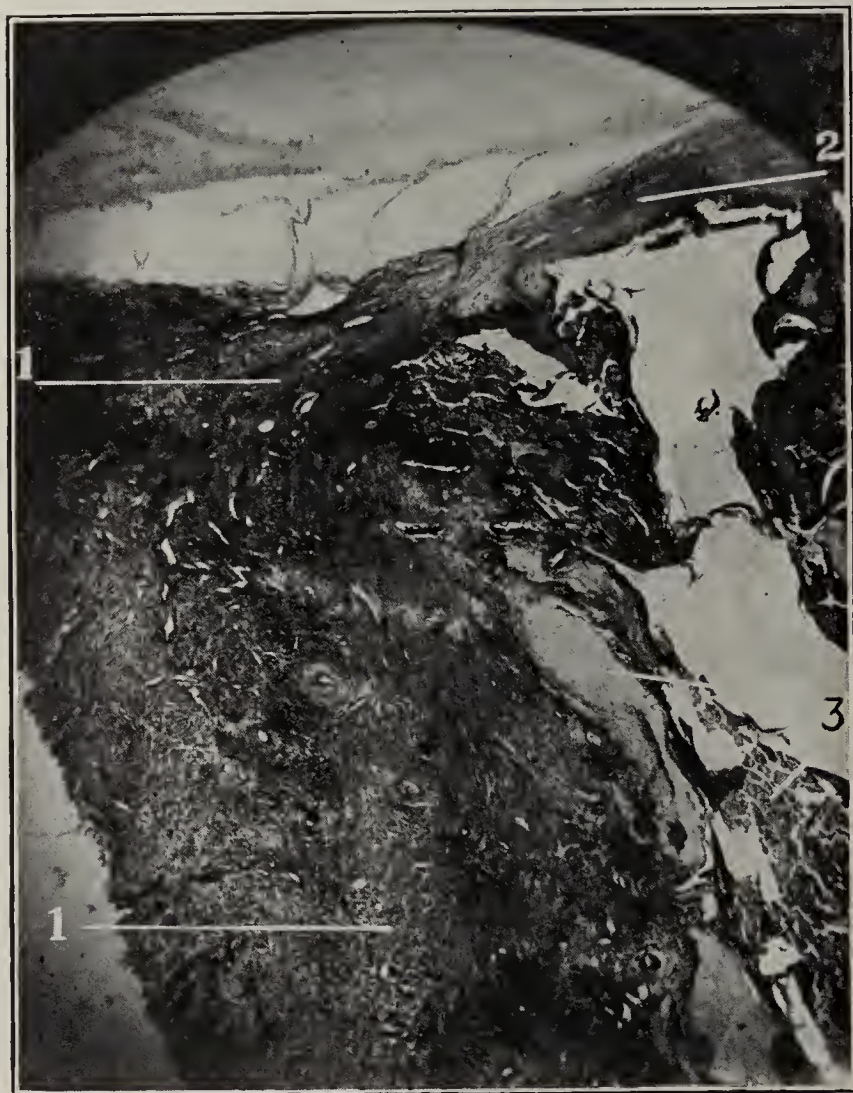


Fig. 13.—Low power photograph of old scar in Figure 12: 1, normal muscle tissue; 2, scar shows peritoneal coat with very thin layer of muscle tissue covered with decidua; 3, placenta on scar.

ruptures in the upper part of the uterus. From this it seems that the extraperitoneal cesarean section carries with it a better prognosis than the classic abdominal operation.

7. Rupture of the uterus is probably produced by the increased intra-uterine pressure forcing a water wedge into the defective scar.

8. Although well healed scars can withstand the strain of future labors, the frequency of rupture after cesarean section is so much greater than uterine rupture from other causes that the indications for cesarean section should not include such patients as can just as well be treated by the induction of labor at term, pubiotomy, vaginal hysterotomy, or other well known obstetric operations.

Lane Hospital.

ABSTRACT OF DISCUSSION

DR. J. R. LOSEE, New York: During the past four months at the New York Lying-In Hospital we have made a histologic examination of a series of cesarean section scars. This work was undertaken to determine, first, if uterine muscle would completely regenerate after being incised, and second, the actual cause of rupture late in a succeeding pregnancy. In this series the tissue was obtained from nine cases in which there was a complete or a partial rupture of the uterus, and from eleven in which the incision was made either through the old scar or adjacent to it at the subsequent operation. Of the nine cases of rupture, two presented a utero-abdominal fistula, in seven the whole scar was laid open, and in three of these the placenta and fetus were in the peritoneal cavity. There was no fat in any of the muscle cells. Of the eleven excised scars, five were moderately strong, and in four of these the placenta was attached directly beneath the wound, which fact suggests that the location of the placenta has little effect on the scar, providing there was firm union after the preceding section. There were six cases which presented rather thin scars, and the location of the placenta was equally divided, three being observed on the posterior wall and three on the anterior wall. From this series I have formulated the following conclusions:

1. The strength of the uterine scar after cesarean section depends on the absence from the wound of infection and foreign material, and on the perfect coaptation of the incised surfaces.

2. A perfectly healed wound leaves the myometrium as strong after operation as before, as far as can be determined by the histologic examination of the tissue in the line of the former incision.

3. A continuous suture in the myometrium adjacent to the decidua may assist in preventing the separation of the cut surfaces by blood clot or lochia in addition to the usual interrupted suture through serosa and myometrium.

4. The placenta in a subsequent pregnancy has little or no effect in weakening the firmly united scar, but if the scar is already weak it may accentuate this weakness.

5. Other than a small amount of fibrous tissue beneath the peritoneum, the myometrium in line with the former incision contains no scar tissue and the uterine muscle regenerates.

6. Rupture invariably takes place through the site of the former scar, and not through the adjacent muscle tissue.

7. Without definite means of estimating the strength of the uterine scar after cesarean section, subsequent pregnancies must be repeatedly observed as they approach term.

DR. ASA B. DAVIS, New York: From all parts of the obstetric world reports are accumulating of rupture of the uterus in labors subsequent to former cesarean delivery. One important factor in the lack of strength and proper union in uterine wounds is the absence of muscle sheath, on which we depend so much for strength in other lacerations, as, for instance, in abdominal closure. Another important factor is the uneven thickness, at times, of the uterine muscle, partly due to the retraction and contraction of the uterus. Many times the edges of the uterine wound are of even thickness on both sides. Then accurate apposition and closure by sutures is possible. We see cases, however, in which one side of the uterine wound may be an inch or more in thickness while the opposite side may be one third as thick in places.

Here accurate apposition is impossible. Another cause of thin scar may be found in the attempt to secure close approximation; too great tension is made on the sutures. In the healing process these sutures cut into the soft muscle and allow separation, usually more on one side of the uterine cavity. Considerable tension must be made on the sutures, otherwise there is failure of apposition throughout the whole thickness of the edges of the wound.

We find a considerable number of women in active labor subsequent to cesarean section, and often the placenta in these cases is located under the entire length of the former cesarean scar, and yet rupture of the uterus has not taken place. It is doubtful if rupture of the uterus is due to fault in any particular technic in suturing the uterine wound, because no two operators use exactly the same technic, and yet many different operators are reporting cases of rupture of the uterus in labors subsequent to cesarean delivery. Some operators feel sure that their particular method of suturing the uterus is a successful one. I had as much reason to feel that way as any one until after my thirty-ninth cesarean section. Then a rupture through the uterine scar occurred. Since then seven or eight others have been added to my list. All but one have been hours in labor; one mother died.

DR. JAMES A. HARRAR, New York: There is no question that the uterine scar is often an unknown factor in a succeeding pregnancy. We must reduce that factor (1) by avoiding the classical operation when infection is suspected; (2) by proper care in suturing the uterine incision. Rupture occurs in a weakened scar, and it is weak because the original wound sloughed, or because it was not properly sutured.

Dr. Spalding's photomicrographs are valuable because such studies are rare. But I cannot admit that they prove that the syncytial cells erode the scar, comparable to the erosion in a ruptured ectopic pregnancy. The scars were thin, some only peritoneum and mucous membrane. There was an excavation on the under surface because of poor union. But the placenta simply grew into and filled the excavation; it did not make it. Its location under the scar was merely a coincidence.

On the first division at the New York Lying-In Hospital there has been but one rupture in sixty repeated cesarean sections. A thinned scar occurred nine times. In thirty-five the scar was solid, and in fifteen additional it was not materially defective. In six with normal scar the placenta lay directly under the second incision.

Sometimes we have to suture a contracted uterus whose walls are an inch or an inch and a quarter in thickness; here the sutures must be tied firmly. Sometimes, despite ergot and pituitary extract, the uterus remains relaxed and the wall thin. Here the sutures must be tied more loosely to permit of the thickening of the tissue in the grasp of the suture when the uterus contracts down.

Carefully identify and approximate the deeper edges of the incision. The deeper edges tend to retract away from the operator's attention. Do not take too wide a bite with the running suture in the visceral peritoneum, as very wide folds of peritoneum pulled across the line of deeper sutures cause the inner edges of the wound to gape.

In repeated cesarean sections it is better to excise the old uterine scar, whether it is solid or not. A parallel incision would give us two points of doubt in a still later pregnancy, and besides, suture of scar tissue is always poor surgery.

DR. NATHANIEL R. MASON, Boston: In 1910 I carried out a series of experiments with Dr. John T. Williams on pregnant cats and guinea-pigs in the laboratory of surgical research of the Harvard Medical School, with the object of determining the relative strength of scar and uterine wall. The following method was employed: a cesarean section was performed on a pregnant animal. Then, after a period had elapsed equal to the length of pregnancy for the given animal or near the end of a second pregnancy, the animal was killed and a section of the uterine wall containing the scar tested by suspending weights to it. These weights were gradually increased until rupture of the tissue was produced. It was found that rupture invariably took place in the uterine muscle and not in the scar.

In a recent review of 393 cesarean sections performed at the Boston Lying-In Hospital between July 15, 1894, and Nov. 24, 1916, it was found that 106 of these were repeated sections. These 106 repeated sections were performed on 73 women; that is, second sections were performed on 49, third sections on 19, fourth sections on 2, fifth sections on 2 and a sixth section on 1. In many instances these repeated cesarean sections were performed before the advent of labor, but there was also a large number of cases in which the operation was performed after labors of varying length of time. In not a single instance did any one of these 106 patients come to grief, either in pregnancy or labor because of rupture of a former cesarean section scar. In a considerable number of these former cesarean section cases, normal delivery was allowed to occur, and in others labor was terminated by operative vaginal delivery, including forceps operations, breech presentations and internal podalic version followed by manual extractions. No untoward results occurred.

Dr. Charles M. Green lays stress on the importance of allowing active labor to become established before the performance of a cesarean section, in order to obtain a thickened uterine wall. He believes that sutures placed in such a wall produce a stronger, thicker scar than when placed in the thinner wall of a uterus before the advent of labor. Any marked deviation in the method of closure from the principles laid down by Sanger results in a scar of less strength. Dr. Spalding has called attention to the fact that only three cases of rupture were reported between 1895 and 1900 when the classical Sanger operation was the only one performed.

It is well known that great speed in the performance of a cesarean section has been one of the objects striven for almost universally in the past, and is still the aim of some operators, even at present. The result of this practice has left the uterus insufficiently sutured, with faulty apposition of the cut edges of its wall, and a weak thin scar has been the sequence.

Two essential points in the technic of closure of the uterine wall are to be observed. One is the inclusion of the entire thickness of the muscle of the uterus in the suture. The innermost muscular layers often retract to such an extent that great care in the suturing is necessary to secure proper coaptation of the entire length of the incision. The other point is to place a deep suture through the uterine musculature both above the upper angle and below the lower angle of the wound, because at these points splits in the muscular tissue of the uterus frequently occur in the extraction of the body and head of the child. Proper suturing of the wound and healing without infection are indispensable in securing a good scar. A well sutured scar, followed by a convalescence free from infection, can safely be subjected to the strain of subsequent pregnancies and labors. Rupture of such a scar should occur with no greater frequency than does rupture of the normal pregnant uterus.

DR. SAMUEL W. BANDLER, New York: After ordinary laparotomy, more than 10 per cent. of abdominal wounds do not heal well, so far as a good scar is concerned. We may expect the same in a hurried cesarean section. I never use chromic catgut. I do not consider it an advisable suture for such a delicate structure as uterine muscle. We should, as much as possible, operate in clean cases. The result is always better when the patient has not been examined too much and when operative vaginal procedures have not been tried. If we do not unite the lower areas of the abdominal wall, especially the peritoneum, and vomiting and straining cause the peritoneum to separate, we will, in an occasional case, have a protrusion of the intestines right through up to the skin. The same thing holds in cesarean section cases. We must pay more attention to the depths of the wound, especially the uterine lining. I always give pituitary extract before making the abdominal incision, and therefore have a firmly contracted uterus to sew. I pass No. 2 iodine catgut, often double, through the uterus half an inch from the lower end of the incision so that it comes out through the depth of the wound close to the uterine lining. The needle is then passed through one side and then through the other, catching a good hold of the uterine muscle just above the decidua. This is passed in the same manner as a subcuticular suture

is passed. At the upper end the needle then passes through the depth of the wound, coming out through the surface of the uterus half an inch or an inch above the upper margin of the wound. This suture is then pulled on and the uterine lining or decidua is brought closely together. When the ends are tied, the uterine cavity is walled off from the wound and no blood from the cavity of the uterus intrudes itself. The uterine walls themselves bleed scarcely at all, and one can leisurely sew the two raw surfaces together. As the interrupted or continuous suture is passed, the finger in the depth of the uterine wound guards the point of the needle so that it comes out as close to the uterine lining as possible, and dead spaces are thus avoided. A suture is passed to unite the peritoneal edges of the uterus, no attempt whatever being made to invert it. For several days after the operation ergotin is given by needle to keep the uterus contracted to the size it was when the operation was completed.

DR. J. H. CARSTENS, Detroit: I am glad that Dr. Bandler objected to chromicized sutures. I use plain catgut; I want it to absorb quickly. All that is needed is to keep the wound together for a few days. I think in all instances of cesarean section for narrow pelvis the patients naturally need another cesarean section. I do not wait until these patients have been in labor for two or three days. I take charge of them and get them in the hospital a week or so before the time of labor and prepare for operation before labor sets in. Then I am sure there will be no strain on the scar, and I will never have any trouble about the rupture of the scar. Once in a while a patient will wait until labor. Then I rush her to the hospital as soon as possible. The first thing I do is to rupture the membrane in order to relieve the pressure. By doing these things there will be fewer cases of rupture than otherwise.

DR. E. GUSTAV ZINKE, Cincinnati: Recently I have been thoroughly absorbed in the theories concerning the healing of the uterine incision after cesarean section and its behavior in subsequent pregnancy and labor. One of the conclusions I have reached is that it matters little what suture material we use in sewing up the wound, but that it is most important that we have an aseptic wound, that we bring the sides of the incision into perfect apposition and unite the peritoneum securely over it. This procedure is absolutely essential to a firm uterine scar.

Much has been said concerning the dictum, "Once a cesarean section, always a cesarean section." That can hold true only in those cases in which the conditions persist which made the first cesarean section necessary. When hysterotomy is performed for placenta praevia, or eclampsia, a perfect uterine scar will admit of spontaneous delivery in subsequent pregnancies.

But when do we have a perfect scar? Though Whitridge Williams and others maintain that an undisturbed recovery from a cesarean section is the best indication that the uterine wound is firmly united, does this statement hold true in every case? When there is no obstruction in the parturient canal and the presentation and position of the child are favorable, when obliteration of the cervix and dilatation of the os proceed promptly, and the first stage of labor has been completed, the cesareanized woman will deliver herself, undoubtedly, if she has a solid uterine scar. She should, however, be delivered in a hospital so that, if rupture of the wound does occur, the abdomen may be opened at once with a view to saving both lives. But in all cases in which the indications for cesarean section persist, cesarean section is the only proper operative intervention.

DR. ALFRED B. SPALDING, San Francisco: I shall not enter into any discussion concerning technic. Dr. Zinke has mentioned a point which to my mind is of the utmost importance regarding cesarean section: The growing list of indications for the operation should be curtailed. I have seen cesarean section performed on women with normal pelvis, because their physicians allowed the pregnancy to go overtime, when a dose of castor oil and quinin would have prevented cesarean section. I have seen cesarean section for breech presentation. In eclampsia the mortality is not greatly reduced by cesarean section over other obstetric procedures. In conditions such

as placenta praevia, I think we should hesitate before doing cesarean section at the first sign of hemorrhage. We should first ascertain the kind of placenta praevia we are dealing with before resorting to section. Because cesarean section is technically so easy to perform, many men not well trained in obstetrics are dabbling with something they have no business tampering with.

THE COLLOIDAL GOLD TEST

THE PREPARATION OF THE COLLOIDAL GOLD SOLUTION AND ITS APPLICATION TO DISEASES OF THE CENTRAL NERVOUS SYSTEM *

J. H. BLACK, M.D.

LOUIS ROSENBERG, B.S., M.D.

AND

R. B. McBRIDE, M.D.

DALLAS, TEXAS

I. THE PREPARATION OF THE REAGENT

J. H. BLACK, M.D., AND LOUIS ROSENBERG, M.D.

To one who has even a casual acquaintance with the literature of colloidal gold solutions, three things are at once apparent: 1. There is a general agreement that satisfactory solutions are difficult of preparation. 2. There are approximately as many variations in technic as there are workers. 3. There is unanimity of opinion that the use of the solution in the diagnosis of diseases of the central nervous system has a very definite value.

The major portion of the work done in this country has been carried on with a more or less close adherence to the technic of Lange,¹ variations being introduced by the individual worker in the effort to produce uniform results. It is quite true that many men have been able to produce satisfactory solutions—some of them with considerable regularity—but the inability to secure continued duplication of results, together with the irregular behavior of some of these apparently good solutions, makes it evident that all the conditions necessary to the production of a good solution are not known, and that the standards by which these solutions are judged are insufficient.

A very marked advance in our knowledge of these conditions was made by the report of Miller, Brush, Hammers and Felton.² They propose a method which, if carefully followed, will give uniform results, and devised means by which these solutions which appear satisfactory but are not can be detected. Our own experience led us quite early to the conclusion that their claims were well founded and their technic quite dependable. Feeling, however, that the requirements as to equipment, time and complexity of detail might serve to deter many men from as general a use of the reagent as its value deserves, we entered on this work with the purpose of determining to what extent simplification might be carried without interference with uniformity of results. The technic of others has been used on occasion to check findings and with the desire to clear up certain points, but the work of Miller and his associates was the basis of this work and was accepted as standard technic.

As soon as it was evident that this method produced uniformly good solutions, work was begun retaining the original technic with the exception of one factor, and variations in this one factor—all other conditions remaining constant—were used to determine their influence on the character of the solution. Our findings, as based on the preparation of 367 solutions, can probably best be presented by separate, brief statements relative to each factor, with tables appended detailing experimental data when it is believed such information might be of value.

Distilling Apparatus.—The apparatus used for the first thirty-nine solutions consisted of resistance glass flasks, block tin tubing, and cork connections. The tin tube was bent near one end forming a wide arc. The short vertical section of tubing projected through a tight fitting cork into the distilling flask. The long vertical section of tubing was surrounded by a condenser jacket and passed through a loose fitting cork into the receiving flask. This simple apparatus gave entire satisfaction. For the greater portion of the work a 3 gallon copper, tin-lined still was used.

Method of Distillation.—The flame is turned high and the first distillate comes over rapidly, while no water flows through the condenser jacket, the steam cleaning the tube. After about 200 c.c. with the small apparatus, and 1,000 c.c. with the larger, have come over, the flame is cut down until the water flows in discrete drops into the receiving flask. Distillation is stopped when approximately four fifths of the contents of the distilling apparatus have come over.

Number of Distillations.—Beginning with one distillation with a Stokes still followed by two in the above described apparatus, we soon found that, by carefully distilling, a single distillation with this apparatus without preliminary treatment was entirely satisfactory, and this became routine procedure. Water once distilled in a Stokes still was found to vary so widely at different times that it was not to be depended on, although, in one instance, excellent solutions were obtained by its use.

Storage of Water.—Singly distilled water has been stored at room temperature in clean resistance glass flasks and has proved satisfactory after thirty-four days. No attempt was made to determine this further. In ordinary glass the water has been found satisfactory after forty-two days. We believe that the age of carefully distilled water has no influence on the character of the gold solution. Indeed, Zsigmondy³ states that doubly distilled water improves with age through a settling of the particles contained.

Cleaning of Glassware.—New glass was used and was, of course, used for nothing else. Hot soap and water for thirty minutes was followed by careful brushing under the tap; then hot dichromic acid solution for thirty minutes followed by careful rinsing under the tap, then with distilled water. If this procedure was carried out as the initial cleansing, it was found that much of this could be omitted at subsequent times. Beakers used on one day stood over night filled with tap water and were used with satisfaction after careful brushing and rinsing. Beakers stood inverted on filter paper on the laboratory table for one week and were used after only brushing and rinsing. Good solutions resulted. Pipets used for measuring reagents were wrapped in filter paper after use and used twelve days later after rinsing with distilled water. Good results were obtained. Glassware

* Read before the Section on Pathology and Physiology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Lange: Berl. klin. Wchnschr., 1912, 49, 897; Ztschr. f. Chemotherap., 1913, 1, 44.

2. Miller, Brush, Hammers and Felton: Bull. Johns Hopkins Hosp., 26, 298, 391.

3. Zsigmondy: Colloids and the Ultramicroscope, New York, 1909.

which is not thoroughly clean is, in our opinion, the cause of the vast majority of protected solutions. Glass cleaned and used according to the foregoing statements should eliminate protected solutions with a minimum of labor.

Reagents.—Merck's chemicals were satisfactory, as were Baker's. Schering and Glatz' formaldehyd solution gave satisfaction. It was found that all reagents could be used as stock solutions. These were frequently used over a period of thirty days. Indeed, one formaldehyd solution was found satisfactory after three months. The only precautions used were to insure clean water, clean flasks kept tightly corked, and accurate measurements.

Preparation of Colloidal Solution (100 c.c. being used as a basis for discussion).—A beaker containing 100 c.c. of water is placed on wire gauze over a high flame. One c.c. of the 1 per cent. gold chlorid solution is added, followed by 0.7 c.c. of the 2 per cent. potassium carbonate. Heating is rapid, and at incipient boiling 0.5 c.c. of 1 per cent. formaldehyd is added. The solution should be vigorously stirred until reduction is complete. This should not require more than two minutes.

Comments on Technic of Preparation.—We have not found it necessary to add the gold and alkali at any particular temperature. Satisfactory solutions have been made by adding reagents to cold water and rapidly heating to boiling. The temperature at which the formaldehyd is added is, however, of much importance. If added at a low temperature, vaporization of a considerable quantity of formaldehyd may occur, leaving an amount insufficient for complete reduction of the gold. If added at a high temperature, the rapidity of the reaction is so increased that the loss by vaporization is negligible. Using the stated quantity of formaldehyd, we have obtained good solutions with equal ease at 90 C. and with vigorous boiling.

The use of oxalic acid has, in our experience proved unnecessary.

DISCUSSION

The equation representing the reactions occurring in the preparation of the colloidal gold solution is, we believe:



This equation may be proved by some results of our work, and it throws much light on other phases of the problem.

Influence of Alkali.—Calculation from the equation shows the amount of alkali required to maintain equilibrium with the gold chlorid used to be 0.01027 gm., which is contained in 0.513 c.c. of the 2 per cent. solution. It is evident that the formaldehyd is oxidized to formic acid, the amount of acid produced being neutralized by the amount of alkali over and above that required for the initial equilibrium with the gold. This added amount, according to the equation, is 0.171 c.c. of the 2 per cent. solution, making a total of 0.684 c.c. of the 2 per cent. solution required.

Table 1 illustrates a series of colloidal gold solutions made with potassium carbonate, varying in amount from 0.4 to 1.5 c.c. It will be noted that increase of alkali above 0.684 c.c.—the amount calculated from the equation—causes no shimmer, but gives beautiful solutions until more than 1 c.c. was used. Then the solutions were quite turbid and reduction occurred immediately on the addition of the formaldehyd.

These solutions were, of course, alkaline. Decrease of alkali could be carried to 0.5 c.c., at which point pale blue solutions were obtained only after prolonged heating. Theoretically, we should expect to find reduction taking place in direct ratio to the decrease in the amount of alkali, the solution becoming lighter in color as the amount of reduced gold decreases, and the limit at which reduction is completely absent

TABLE 1.—INFLUENCE OF ALKALI

| Amount of 2 Per Cent. Solution C.c. | Reaction | Character of Solution |
|-------------------------------------|----------|-----------------------|
| .4 | ..... | No reduction |
| .5 | Alkaline | Pale blue |
| .515 | Alkaline | Reddish-blue |
| .525 | Alkaline | Decided shimmer |
| .550 | Alkaline | Faint shimmer |
| .575 | Alkaline | No shimmer |
| .6 | Alkaline | No shimmer |
| .625 | Neutral | No shimmer |
| .650 | Neutral | No shimmer |
| .675 | Neutral | No shimmer |
| .7 | Neutral | No shimmer |
| .725 | Neutral | No shimmer |
| .750 | Alkaline | No shimmer |
| .775 | Alkaline | No shimmer |
| .8 | Alkaline | No shimmer |
| .825 | Alkaline | No shimmer |
| .850 | Alkaline | No shimmer |
| .875 | Alkaline | No shimmer |
| .9 | Alkaline | No shimmer |
| .925 | Alkaline | No shimmer |
| .950 | Alkaline | No shimmer |
| .975 | Alkaline | No shimmer |
| 1.0 | Alkaline | No shimmer |
| 1.25 | Alkaline | Turbid |
| 1.5 | Alkaline | Turbid |

should be somewhat below the amount calculated as required. That this is borne out by the experimental data may be seen.

Although 0.513 c.c. is the amount of alkali required for equilibrium with the gold, reduction will occur at as low as 0.5 c.c., but even at 0.525 c.c. reduction is evidently incomplete. Addition of further alkali to these bluish solutions produces an immediate change to the red of a fully reduced gold, but we were unable to get brilliant, transparent solutions in this way. We believe we are dealing here with a partial reduction of all the gold, and that the situation is analogous to the partial reduction with minimum amounts of formaldehyd which is discussed below. The partial reduction here may be explained on the basis that, according to the mass law equilibrium, there must be a few potassium carbonate molecules which by their dissociation would yield the small amount of alkali necessary to permit partial reduction. One might expect a cycle which would eventually lead to complete reduction. This, however, is prevented by the presence of the potassium chlorid (and potassium formate), which represses dissociation of the few free potassium carbonate molecules. When it is remembered that formaldehyd acts as a reducing agent only in an alkaline medium, we have a possible explanation for the behavior of the solutions which Miller and his associates found did not reduce with the stipulated amounts of reagents. Using oxalic acid, measured in drops, which probably permitted variation in amount, this probably neutralized the free alkali and prevented reduction.

Influence of Formaldehyd.—Calculated from the equation, the amount of formaldehyd required to completely reduce the gold is 0.001486 gm., the amount contained in 0.1486 c.c. of the 1 per cent. solution. Reference to Table 2 shows that the amount of formaldehyd may be increased to 5 c.c. without producing any shimmer. Decrease in amount was possible to 0.13 c.c. Below this point blue, opaque, solu-

tions resulted. Below 0.45 c.c. the solutions were alkaline. The time required for reduction varied inversely with the amount of formaldehyd. If, to those solutions whose color is unsatisfactory because of the use of insufficient formaldehyd, further formaldehyd is added after reheating the solution, beautiful *satt rot* (intensely red) solutions which are neutral in reaction may be obtained. We have been able to convert an opaque, blue, alkaline solution, made with only 0.1 c.c. formaldehyd, into a beautiful, neutral solution by this method. By reference to Table 3 it will be seen that these "corrected" solutions give typical curves with a paretic spinal fluid.

Influence of Carbon Dioxid.—With an ammonia-free water it should be evident that "the gases in the water"⁴ play no part in the determination of the quality of a solution, for carbon dioxid is produced in the reaction; and whether the temperature is maintained at 90 C. or brought to boiling is immaterial, for the difference in the carbon dioxid coefficient at 90 C. and at 100 C. is too slight to affect the solution, and even at 100 C., carbon dioxid, is not entirely removed, but has the absorption coefficient of 0.2438.⁵

Influence of Method of Heating.—Solutions made properly are neutral in reaction to alizarin. If heating has been slow and the formaldehyd is added before the boiling point is reached, vaporization of the formaldehyd will be excessive, resulting in incomplete reduction and alkalinity. Depending on the amount of formaldehyd lost by evaporation, the solution may be a deep red, a light red, or blue and opaque. These variations may be produced without varying the amount of formaldehyd, if the method of heating is changed.

Solutions made in the ordinary way, without stirring after the addition of the formaldehyd, usually do not give brilliant color without shimmer; yet stirring may be dispensed with if the solution is made in the water-bath.

TABLE 2.—INFLUENCE OF FORMALDEHYD

| 1 Per cent. Solution, Quantity C.c. | Time for Reduction | Reaction | Color |
|-------------------------------------|--------------------|------------------|-------|
| .1 | Slow | Alkaline | Blue |
| .11 | Slow | Alkaline | Blue |
| .12 | Slow | Alkaline | Blue |
| .13 | Slow | Alkaline | Good |
| .14 | Slow | Alkaline | Good |
| .15 | 2 minutes | Alkaline | Good |
| .2 | 2 minutes | Alkaline | Good |
| .25 | 15/6 minutes | Alkaline | Good |
| .3 | 12/3 minutes | Faintly alkaline | Good |
| .35 | 17/12 minutes | Faintly alkaline | Good |
| .4 | 1 1/2 minutes | Faintly alkaline | Good |
| .45 | 19/20 minutes | Neutral | Good |
| .5 | 1 1/6 minutes | Neutral | Good |
| 1.0 | 1 minute | Neutral | Good |
| 2.0 | 1/2 minute | Neutral | Good |
| 3.0 | 1/3 minute | Faintly acid | Good |
| 4.0 | 1/5 minute | Acid | Good |
| 5.0 | 1/6 minute | Acid | Good |

Since it is evident that the limits within which the alkali and formaldehyd give good solutions are wide enough to embrace any amount of inaccuracy of measurement of a careful worker, and the carbon dioxid tension can have no influence on the solution, and since the manner of heating produces such definite effect, we feel that we are justified in believing that if the technic described above is followed, solutions with shimmer—slight or excessive—can be due to only one cause, namely, slow or irregular heating.

Catalytic Oxidation of Formaldehyd by Colloidal Gold.—Lange's original technic¹ called for 1 c.c. of a 2 per cent. potassium carbonate and 1 c.c. of a 1 per cent. formaldehyd. Neutral solutions can be obtained by this method. Since this is more alkali than is required according to the equation given above, the neutrality of reaction can be explained only on the basis of the colloidal gold acting as a catalyst and causing oxidation of the formaldehyd in excess to formic acid, which then reacts with the excess potassium carbonate. Indeed, it seems probable that solutions made with smaller amounts of alkali are neutral for the same reason. If the calculated amount of potassium carbonate is used, the final reaction of the solution we would expect to be alkaline, owing to the hydrolysis of the potassium formate and the potassium carbonate liberated from its equilibrium with the gold chlorid when the latter is completely reduced. Since the solutions are not alkaline, we believe that the result is obtained through the catalytic action of the colloidal gold on the excess formaldehyd. The formic acid so formed combines with the potassium carbonate liberated and, if sufficient in amount, will also repress the dissociation of potassium formate. Proof of this supposition seems to be furnished by three facts: 1. Many solutions made by the prescribed technic may be slightly alkaline immediately at the completion of reduction, but become neutral after the lapse of a few minutes without further treatment. 2. Solutions made with a known excess of alkali may be made neutral by reheating and adding additional formaldehyd. 3. Solutions which have been standing for some time and have become alkaline may be made neutral by heating and adding formaldehyd. These "corrected" solutions give typical curves with spinal fluids (Table 3).

Correction of Solution.—It is interesting to note that, while blue solutions made with insufficient formaldehyd may be corrected, and those alkaline from preparation with excess alkali or from standing may be neutralized, and that these may be satisfactorily used in testing spinal fluids, we have not been able to correct the turbidity due to marked excess of alkali or to irregular heating.

The fact that alkaline solutions may be made neutral simply by heating and adding formaldehyd may be used to advantage in the correction of the reaction (if this is desired), in that it requires no particular accuracy of manipulation or of quantity, as the formaldehyd may be added 1 c.c. at a time until the reaction becomes definitely neutral. It may be added that if evaporation of water is considerable, either during the preparation of the solution or in correcting its reaction, water may be added to restore the original volume.

Standards for Solutions.—The standards to which a solution must conform to be adjudged satisfactory have been stated by Miller and his associates to be as follows:

1. The solution must be absolutely transparent and preferably brilliant orange red or salmon red.
2. Five c.c. of the solution must be precipitated in one hour by 1.7 c.c. of a 1 per cent. sodium chlorid solution.
3. It must be neutral when used.
4. It must give a typical reaction with a known paretic fluid.
5. It must show no more than a change to red-blue with a known normal fluid.

4. Glaser: Neurol. Centralbl., 1914, 33, 688, 748. Lee and Hinton: Am. Jour. Med. Sc., 1914, 148, 33.
5. Landolt-Bornstein: Tabellen.

Our work leads us to conclude that: 1. Solutions which are transparent, but show a slight shimmer by reflected light, may be used satisfactorily. The curve will not differ from that given by a brilliant solution. 2. If a solution is protected, so as to make it even slightly refractory to precipitation by the amount of sodium chlorid mentioned, it should not be used. 3. Solutions made with 1 c.c. potassium carbonate—0.3 c.c. above the required amount and, consequently, markedly alkaline to alizarin—give curves practically identical with those given by normal solutions (Table 3). With the technic described above we have never obtained acid solutions. It is quite possible that the acid solutions obtained by Miller and his associates were those in which they found reduction not occurring with the specified amount of formaldehyd. This was probably due to the removal, by the oxalic acid used, of the alkali required for the reducing action of the formaldehyd. If then further formaldehyd was added, the addition of 1 or 2 drops of alkali, sufficient to bring the solution to an alkaline reaction, permitted reduction. Meanwhile the very considerable excess of formaldehyd which was used was catalytically oxidized to formic acid and the reaction made acid to

TABLE 3.—CURVES OBTAINED

| | |
|--|------------|
| With Known Paretic Fluid: | |
| 1. Brilliant, neutral solution | 5555521000 |
| 2. Neutral solution with decided shimmer | 5555552100 |
| 3. Blue-red solution made with 0.1 c.c. HCHO..... | 4445555555 |
| 4. No. 3, corrected by adding HCHO | 5555555200 |
| 5. Solution made with 3 c.c. HCHO | 5555552100 |
| 6. Alkaline solution made with 0.525 c.c. K ₂ CO ₃ | 5555552100 |
| 7. Solution made with 0.5 c.c. K ₂ CO ₃ and corrected.. | 5555555200 |
| 8. Alkaline solution made with 1 c.c. K ₂ CO ₃ and 0.5 c.c. HCHO | 5555521000 |
| 9. No. 8, after standing three weeks—very alkaline to alizarin | 1223210000 |
| 10. Lange's technic—reaction neutral—used fresh.... | 5555531000 |
| 11. Lange's technic-alkaline from standing three weeks. | 2434410000 |
| With Known Syphilitic Fluid: | |
| 12. No. 1 | 1232110000 |
| 13. No. 8 | 1233210000 |
| 14. No. 10 | 2234110000 |
| 15. No. 4 | 1232200000 |
| 16. Brilliant solution alkaline from standing two months —corrected by reheating and adding HCHO | 1232110000 |

alizarin. 4. Solutions satisfactory in color and not protected should show typical curves with abnormal fluids and no change with normal fluids.

CONCLUSIONS

1. Singly distilled water may be stored satisfactorily in clean glass for many days.
2. Protected solutions are usually due to unclean glass.
3. Reagents may be used satisfactorily as stock solutions.
4. If technic is carefully followed, turbid solutions are due to slow or irregular heating and cannot be corrected.
5. Formaldehyd should be added at from 90 C. to boiling.
6. Solutions poor because of use of minimal amounts of alkali or formaldehyd may be corrected, the latter, so that they may be used clinically.
7. The use of oxalic acid is not necessary and is possibly occasionally responsible for failure of reduction.
8. The presence of carbon dioxid is of no consequence.
9. Solutions alkaline at the time of preparation or on standing may be made neutral by reheating and adding formaldehyd.
10. Solutions showing a slight shimmer may be used satisfactorily.

11. Solutions definitely alkaline at the time of preparation, if of good color, may be satisfactorily used. Those alkaline from standing give irregular curves.

II. THE CLINICAL APPLICATION OF THE COLLOIDAL GOLD TEST

R. B. MC BRIDE, M.D.

In view of the fact that the preparation of a satisfactory solution for the colloidal gold test has become a simple problem, and that the performance of the test is attended with few chances of error, it would add greatly to our diagnostic and prognostic ability if we were able to establish definite and certain behavior of the test under identical clinical conditions and circumstances. With the view of adding our data to those already accumulated, this report is made.

The cases coming under our observation will be classed as syphilitic and nonsyphilitic. Of the latter there are many, but the collection is heterogeneous and does not yet seem suitable for the basis of definite conclusions. Our experience with syphilitic diseases of the central nervous system embraces, to date, fifty-nine patients on whom 169 examinations of the spinal fluid were made. All of these gave definite clinical evidence of some central nervous system involvement. With this comparatively small number our results have shown a uniformity in some particulars that leads us to feel that they are worthy of presentation as a basis for further study.

Of the fifty-nine syphilitic cases, fifty-six gave a positive colloidal gold test. The three cases that were negative to this test were classed by our clinical findings as cerebrospinal syphilis, and gave, respectively, sixteen, twenty-one and sixty-two cells. All of these gave positive Wassermann tests of the blood, while the one showing sixteen cells gave also a positive Wassermann on the spinal fluid.

Thirty-six of the fifty-nine cases gave positive Wassermann tests on the spinal fluid. There was no parallel to be drawn here except that the paretic curve was more often associated with a positive Wassermann than was any other curve. Nineteen of the fifty-one patients whose blood was examined gave positive Wassermann tests of the blood. All of the fifty-nine cases showed a pleocytosis ranging from nine to 120 cells. There were no parallels to be drawn here, as one case of syphilitic meningitis gave 120 cells with a positive Wassermann test of the spinal fluid and a marked curve in the meningitic zone, while a case of incipient tabes gave 120 cells and the spinal fluid was otherwise negative. Later this case of tabes developed a curve in the meningitic zone with a cell count of thirty-six. Solomon and Southard⁶ have already pointed out that the colloidal gold reaction indicates one sort of physicochemical situation in the cerebrospinal fluid; the lymphocytosis indicates another type of reaction on the part of the nervous system. The number of cells accompanying a paretic curve varied from twelve to sixty, while with the meningitic curve they varied from twelve to 120. Of all our cases twenty to thirty cells was the average.

A positive globulin test was found in all cases, while reduction of Fehling's solution was seldom noted.

As to the reliability of the colloidal gold test, we found that of five cases diagnosed clinically as paresis,

6. Solomon and Southard: Jour. Nerv. and Ment. Dis., 1917, 45, 230.

all gave curves in the paretic zone. However, among eleven tabetics, the paretic curve was present in three cases; six gave meningitic curves, and two were in the syphilitic zone. Thirty-nine cases of cerebrospinal syphilis gave three negative curves with the colloidal gold test, as noted above; twenty were in the meningitic zone, and fifteen were in the syphilitic, and one, in whom paresis could not be entirely excluded, gave a paretic curve.

We believe there is no such thing as a provocative colloidal gold reaction. While several fluids showing a negative Wassermann test became positive after treatment, no change was noted in the gold test.

Red blood cells—or blood plasma—appeared, at times, to cause disturbance in the final reading, but no definite conclusion can be drawn from our series. A case of cerebrospinal syphilis with a positive Wassermann test on the spinal fluid and a syphilitic curve gave later, when many red cells were present, a paretic curve. Two cases of cerebrospinal syphilis with negative Wassermann tests on the spinal fluid and syphilitic curves gave later, with red cells present, the same curve, the blood causing no evident change. A case of tabes with positive Wassermann test on the spinal fluid and paretic curve, with red cells present, gave complete precipitation in all tubes.

Vigorous intravenous and intraspinal treatment tends to bring all positive tests on the spinal fluid toward the negative. Our experience has been that the colloidal gold test is the last to become negative, and hence is the most reliable as a prognostic guide. It is also our experience that the colloidal gold test is the earliest reliable test to be found in the spinal fluid of syphilitic patients, being frequently earlier than the Wassermann reaction. Pleocytosis and increased globulin content are excluded since they are present in all inflammatory conditions of the meninges. We have been unable in any wise to prove, but feel justified in assuming, that a given spinal fluid passes successively, during the progress of syphilitic involvement, from syphilitic to meningitic to paretic curves, and vice versa, during intensive treatment. That is to say, the condition producing the change in the state of the colloidal gold is the same in all zones and merely present to a greater or less degree. Further observation will probably prove or disprove this assumption. We have several cases that have, under treatment, receded from the meningitic to the syphilitic zone, and some of these have finally become entirely negative. A case of clinical tabes which gave a paretic curve, with a positive Wassermann test on the spinal fluid and twenty cells, gave, after treatment, a meningitic zone curve, a negative Wassermann, and thirty cells. Clinically there was much improvement.

We believe that in active syphilis of the central nervous system, a positive colloidal gold test is always accompanied by one or more other indications of involvement of the central nervous system. Pleocytosis and increased globulin are always associated, but there is no constancy of association of other tests. There are, unquestionably, cases in which the colloidal gold curve will persist after all other findings are negative. This occurs probably in those cases in which no intraspinal treatment has been given, but which have reached apparent cure with only systemic medication. In these cases we believe the curve has little or no prognostic value. The patient is probably cured. In those instances in which repeated tapping of the canal has been done, we have found that the curve,

while persisting longer than other findings, becomes negative if the patient receives a clinical cure.

CONCLUSIONS

1. A colloidal gold reaction typical for syphilis is nearly constant in cases of syphilis of the central nervous system.

2. This reaction is more delicate than the Wassermann tests on the blood and spinal fluid and more reliable than pleocytosis and globulin content. Curves are, of course, given with other conditions than syphilis, but we believe the curves mentioned above to be specific.

3. The test is the most reliable of the various tests as a diagnostic aid, and is the best guide for prognosis during treatment, probably tending to become negative in a regular and constant order.

4. Known paretics always give a paretic curve; however, there is obtained occasionally a paretic curve in other phases of central nervous system syphilis.

5. There is no provocative colloidal gold test.

6. The presence of red blood cells—or plasma—in the spinal fluid often vitiates the result of the test.

VEGETABLE FOODS FOR THE DIABETIC*

RUTH A. WARDALL

IOWA CITY, IOWA

Even a slight experience in the planning of the diet for the diabetic readily convinces one that careful thought and work along this line are needed, and that time and effort spent in an attempt to enlarge the meager diet list of such patients will be fully justified. With the necessary elimination of practically all fruits and many vegetables, because of their carbohydrate content, the diet of the diabetic becomes very much restricted and monotonous and undesirably reduced in bulk. The withdrawal of fruits and vegetables from the diet is keenly felt, and the diabetic craves the variety that is furnished by this type of food.

The usual analysis of our ordinary food materials gives their percentage composition in terms of so-called protein, fat, carbohydrate, ash and water, and from such data lists of foods have been compiled for the use of the diabetic. A familiar arrangement is that in which fruits and vegetables are classified into 5, 10, 15 and 20 per cent. carbohydrate groups, and from such lists definite portions are daily assigned to the diabetic in accord with his tolerance. Table 1, from Joslin's "Treatment of Diabetes Mellitus," gives an illustration of such a classification.

The figures of percentage composition of foods are capable of definite interpretation from the chemical, but not from the physiologic point of view. The end-products of a chemical analysis are not necessarily a safe index to the end-products of the same materials when taken as food into the animal organism. This is a well known fact, but one needs to bear it in mind when considering the amount of carbohydrate, and especially in the case of diabetes, in which the carbohydrate of the diet is so important a factor in the treatment. According to chemical constitution, cellulose and the hemicelluloses are as truly carbohydrates

* From the Sheffield Scientific School, Yale University.

as the sugars and starch, and the hemicelluloses are easily hydrolyzed with acid to the same simple sugars that result from the digestion of complex sugars and starch. Agar-agar is characterized by the hemicellulose galactan, but utilization experiments have shown that agar-agar is not to any appreciable extent a source of available carbohydrate for man. Inulin has been suggested as a possible carbohydrate for the diabetic because it yields levulose on splitting and there is some indication that levulose can be better tolerated than glucose. The higher animals have no enzyme capable of splitting inulin, and therefore its conversion into levulose in the body is dependent on the acid of the gastric juice. Lewis¹ has shown that inulin is poorly utilized by man. Intestinal fermentation attends its use, and the value of inulin in the diet is questionable. Swartz² has given numerous other illustrations of the failure of man to utilize certain complex carbohydrates.

TABLE 1.—FOODS ARRANGED APPROXIMATELY ACCORDING TO PERCENTAGE OF CARBOHYDRATES

| | 5 per Cent.* | 10 per Cent.* | 15 per Cent. | 20 per Cent. |
|------------------------------|--|--|--|--|
| Vegetables (fresh or canned) | Lettuce Cucumbers Spinach Asparagus Rhubarb Endive Marrow Sorrel Sauerkraut Beet greens Dandelion greens Swiss chard Celery Tomatoes Brussels sprouts Watercress Sea kale Okra Cauliflower Eggplant Cabbage Radishes Leeks String beans Broccoli | Pumpkin Turnip Kohlrabi Squash Beets Carrots Onions Mushrooms | Green peas Artichokes Parsnips Canned lima beans | Potatoes Shell beans Baked beans Green corn Boiled rice Boiled macaroni |
| Fruits | Ripe olives (20% fat) Grapefruit Lemons | Oranges Cranberries Strawberries Blackberries Gooseberries Peaches Pineapple Watermelon | Apples Pears Apricots Blueberries Cherries Currants Raspberries Huckleberries | Plums Bananas Prunes |
| Nuts | Butternuts Pignolias | Brazilnuts Black walnuts Hickorynuts Pecans Filberts | Almonds Walnuts (English) Beechnuts Pistachios Pine nuts | Peanuts 40 per Cent. Chestnuts |
| Misc. | Unsweetened and unspiced pickles, clams, oysters, scallops, liver, fish, roe | | | |

* Reckon available carbohydrates in vegetables of 5 per cent. group as 3 per cent, of 10 per cent. group as 6 per cent.

Since the carbohydrate-free foods are limited in number, efforts have been made to remove or reduce the carbohydrate naturally occurring in some of our foods, thereby making them suitable for the diabetic diet. The "thrice-cooked vegetables" represent such an attempt. In preparing them the water is changed twice during the cooking process and thrown away, carrying along a certain amount of soluble material. To learn something of the condition of the food after this treatment, "thrice-cooked vegetables" were prepared and analyses made to determine the extent to which carbohydrate is removable by water extraction. As might have been suspected, it soon became evident that there is a variation in the effectiveness of the method depending on the vegetable used.

A preliminary series of experiments was planned to gain a rough idea of the relative amount and nature

of the material that might be removed by water extraction. In order to facilitate the process, the solid vegetables were cut into small pieces or slices. The vegetable was well covered with cold water, heated to the boiling point, and cooked for several minutes. This first water extract was drained off, fresh cold water added, and another extract made in the same way. This process was repeated until an extract was obtained that contained no reducing substance. Each extract when drained off from the vegetable was concentrated and made up to a given volume, and then its reducing power was tested qualitatively with Benedict's solution. All of the reducing extracts were united, and a determination of the reducing substance in this total extract was made by Benedict's method for quantitative estimation of glucose. The reducing substance of the total extract was calculated as glucose. In many instances the color of the extract interfered with the quantitative test, and such extracts were therefore clarified and decolorized by the use of lead acetate, the excess of the latter being removed with hydrogen sulphid gas. The nature of the reducing substance was further tested with yeast to determine its fermentability. The residue of the vegetable, after all extractions were made, was finely ground and submitted to amylolytic digestion with saliva, and the salivary extract was tested for reducing substance. When the color did not interfere, tests for starch were made with iodine. All figures are calculated on the edible portion of the food.

Table 2 reveals the fact that at the end of the third extraction—which fairly represents the "thrice-cooked" vegetable—some of these materials were comparatively freed from reducing substance while others were not. The table also shows enough difference in the amount of reducing substance to suggest the wisdom of a choice among these illustrative vegetables in making up a diabetic diet. A dietitian recently remarked that diabetic patients do not tolerate cauliflower very well. This is not surprising in view of the fact that the cauliflower is not only comparatively rich in reducing substance, but is also slow to give this up by cooking, as evidenced by the number of extracts showing reduction. In all of these vegetables in which the extract reduces, it also ferments with yeast. No further attempt was made to identify the reducing substance. Most of these vegetables were evidently very poor in starch, for salivary digestion of the residues in very few cases resulted in an extract that showed any reducing substance. The common use of spinach in the diet of the diabetic is easily justified by the low carbohydrate content, by the ease of its extraction, and by its good color and appearance even after several extractions. Fortunately, spinach retains its flavor to an appreciable extent. Celery also deserves a place in the diet of the diabetic. The ordinary field mushrooms (*Agaricus campestris*) are unique among the foods examined. These seem suitable for use, without modification, in the most restricted diet, and may be prepared alone or in combination with other less tasty products for the sake of flavor. The value of the mushroom is in its flavor, for it is seen to have no extractable carbohydrate, and Mendel³ has shown that its nitrogen does not occur as protein, but in an unavailable form. This variety of mushroom may be found in the fields in the proper season, and it is not very difficult to cul-

1. Lewis, H. B.: Value of Inulin as a Foodstuff, THE JOURNAL A. M. A., April 20, 1912, p. 1176.

2. Swartz, Mary D.: Nutrition Investigations on the Carbohydrates of Lichens, Algae and Related Substances, Yale University Press, 1911.

3. Mendel, L. B.: The Chemical Composition and Nutritive Value of Some Edible American Fungi, Am. Jour. Physiol., 1898, 1.

tivate. Mushrooms both fresh and dried are fairly common in many of our markets and are frequently obtained at a very reasonable price.

The findings in the foregoing experiments are only preliminary to further work. The analyses should be repeated so that the results will represent averages from many more tests, and a number of other foods should be examined. The results already obtained are

As it was realized that sucrose and other disaccharids, as well as the hemicelluloses, would not be detected in the foregoing direct examination of these vegetables for reducing substances, a more detailed analysis of carrots was made comparing the results of the extractions at boiling temperature and at 60 C. in experiments in which the extracts and residues were tested for reduction both before and after hydrolysis.

TABLE 2.—RESULTS OF BOILING WATER EXTRACTION

| Vegetable | Arti-choke (French) | Aspara-gus (canned) | Carrot | Cauli-flower | Celery | Endive | Kale | Mush-room | Rhubarb | Spinach (fresh) | Spinach (canned) |
|---|------------------------|------------------------|--------|--------------|--------|--------|------|-----------|------------------|--------------------|---------------------|
| Number of extracts showing reduction test | 2 | 9 | 6 | 16 | 3 | 11 | 6 | 0 | 5 | 4 | 9 |
| Percentage of reducing substance extracted and calculated as glucose..... | Trace | 1.5 | 1.8 | 1.8 | 0.1 | 0.6 | 1+ | 0 | 0.4 | 0.2 | 0.4 |
| Fermentation of extract with yeast..... | + Very slight | + | + | + | + | + | + | 0 | + Very slight | + | + |
| Percentage of reducing substance in sali-vary extract of residue..... | 0 | 0 | 0 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Iodin test for starch in extracts..... | | | 0 | + | 0 | 0 | .... | 0 | | | |
| Total percentage of carbohydrate—average composition* | | 2.8 | 9.3 | 4.7 | 3.3 | .... | .... | 6.8 | 3.6 | 3.2 | |

* Atwater and Bryant: Chemical Composition of American Food Materials, Bull. 28, Office of Experiment Stations, U. S. Department of Agriculture.

suggestive, however, of helpful possibilities in the preparation of food for the diabetic.

Following the principle used in the extraction of the sugar beet in the commercial preparation of sugar, similar treatment of a few other vegetables has been tried in an effort either to render them free from available carbohydrate or materially to reduce the amount. In this series of experiments the vegetables were finely sliced, well covered with water at 60 C. (140 F.) and allowed to soak. At intervals of ten or fifteen minutes, the water having cooled to 45 or 40 C. (113 or 104 F.) was drained off, and fresh water at 60 C. added for the next extraction. This process was repeated until, on removal of a portion of the vegetable and thoroughly cooking it at the boiling temperature, an extract was obtained which gave no reduction test.

Table 3 gives the results of the boiling water extraction and of the extraction at 60 C. The possibilities in the latter method have not been fully tested as yet. The extraction at the lower temperature seems equally efficacious in the case of some vegetables, but it is not adapted to the preparation of cabbage, for example, and probably not to some others. The extraction at 60 C. has the advantage of impairing color and texture less than the repeated extractions with boiling water.

To the normal person, with his liberty of choice of food materials, these extracted vegetables are not unusually tempting; but to the diabetic, with his restricted range of selection, they do offer something of interest. One diabetic was so much pleased with carrots prepared by the 60 C. extraction that he has planted this vegetable in his garden to assure his supply. It is evident that vegetables could be so treated and preserved for subsequent use either by canning or drying. By the use of a current of air from an electric fan, the carrots extracted at 60 C. can be easily and thoroughly dried in three and a half hours. They retain their color perfectly when desiccated in this rapid manner, and after soaking and cooking show little variation from the fresh carrot when cooked.

It is apparent that the carbohydrate of the carrot occurs almost entirely in the form of a soluble reducing substance, for neither salivary digestion nor hydrolysis adds materially to the total reducing power. This is not the result that occurs with the beet, for instance, for the carbohydrate of the beet occurs largely in the form of sucrose, and only a trace of reducing substance is found until after hydrolysis.

TABLE 3.—EFFECT OF TEMPERATURE ON EXTRACTION

| Vegetable | Beet | Cab-bage | Car-rot | Egg-plant | Pars-nip | Pire-apple |
|--|--------|-------------------|---------|-----------|----------|------------|
| BOILING EXTRACTION | | | | | | |
| Number of extracts showing reduction test | 2 | 8 | 6 | 7 | 6 | 9 |
| Percentage of reducing substance extracted and calculated as glucose.. | Trace | 2.5 | 1.8 | 2.1 | 8.6 | 3.2 |
| Fermentation of extract with yeast.. | + | + | + | + | + | |
| Percentage of reducing substance in salivary extract of residue | | Trace | 0 | 0 | 0.4 | |
| Iodin test for starch | | | | | | |
| Fresh vegetable..... | 0 | ..... | Trace | 0 | + | 0 |
| Cooked vegetable..... | 0 | ..... | Trace | 0 | + | 0 |
| Extract..... |  | ..... | 0 | 0 | + | 0 |
| SIXTY C. EXTRACTION | | | | | | |
| Time required to free from reducing substance | 1 hour | ? Little affected | 1½ hrs. | 2 hrs. | 1 hour | 3½ hrs. |

An attempt was made to extract carrots with cold water. The finely sliced vegetable was put into a heavy bag, which was fastened to the tap, and water at full pressure was forced through the bag for twenty hours; but this plan of diffusion with cold water removed only a very small amount of the reducing substance of the carrot.

These tests are preliminary to more extended work along the same and similar lines. Other foods may well be modified by these methods, and other methods of modification may suggest themselves for trial.

CONCLUSIONS

Repeated water extraction as employed in the "thrice-washed" or "thrice-cooked" vegetables is more effective in removing carbohydrates from some foods than from others.

The effectiveness of the extraction at 60 C. in the case of the beet and carrot suggests the possible advantage of using the lower temperature in the preparation of other foods.

TABLE 4.—COMPARISON OF RESULTS OF EXTRACTIONS AT BOILING TEMPERATURE AND AT 60 C.

| | Reducing Substance per Hundred Gm. Carrots | |
|---|--|-----------------------|
| | 100 C. Ex- traction | 60 C. Ex- traction |
| Total extract: | | |
| Reducing substance before hydrolysis..... | 1.5 gm. | 1.2 gm. |
| Reducing substance after hydrolysis..... | 1.9 gm. | 1.6 gm. |
| Residue: | | |
| Reducing substance after hydrolysis..... | 0.5 gm. | 0.7 gm. |
| Reducing substance after salivary digestion | Trace | 0.14 gm. |

If the soluble carbohydrate is in an available form, the repeated extractions are justified, provided that the resulting product is still reasonably palatable. If, however, the carbohydrate is not available, as in the case of mushrooms, the process is useless.

Information concerning the nature and physiologic significance of the carbohydrate will lead to a rational method of procedure in the preparation of the foods.

PROLAPSUS UTERI AND ITS
TREATMENT *

A. J. RONGY, M.D.
Fellow of the American College of Surgeons
NEW YORK

It is not the purpose of this short paper to bring forth a new method for the treatment of uterine prolapse, nor is it my intention to enter into a detailed discussion of the technic of the various operations now in vogue. I feel that much has been said and written on the subject. To me it seems that the entire subject of pelvic hernia has in the past been viewed from the standpoint of repair only. The inventive powers of the gynecologist have been heretofore directed toward the development of a newer and better technic for the construction and their replacement of tissues and organs in the proper places. True, this resulted in the development of one of the most ideal operations, and one which may be performed in the case of the largest percentage of patients suffering from uterine prolapse, namely, "the vaginal fixation or interposition operation."

This operation, if well performed in properly selected cases, completely cures the patient. No other single or combined surgical procedure accomplishes such desirable results. It is surprising to note that many gynecologists, however, still resort to other means to correct this condition, the most troublesome to which middle-aged women are subject. Is it because the interposition operation presents a more difficult technic? Or is it because a great number of gynecologists are better trained in the older methods and refuse to progress?

It seems to me that in the light of our present knowledge there should not be a difference of opinion as to the indications and contraindications for this operation. However, while it is true that we have perfected a good surgical technic for the cure of pelvic hernia, yet it appears to me that no attempt has been made by either the gynecologist or the obstetrician to seek deeply into the causes which bring about the various degrees of hernia of the vaginal vault, resulting from childbirth. Poor obstetrics is usually the reason assigned in a large percentage of cases. Now, is this true? It has been my good fortune to be associated with large obstetric services since the days of my early training. I had unusual opportunities to observe both normal and abnormal obstetrics as it is practiced in hospitals. I also had the advantage of examining and carefully watching a large number of patients in my office during their antepartum period. I tried to correlate the size and consistency of the fetal head, the nature of the labor; whether short, spontaneous or instrumental, with the findings after a careful examination—six or eight weeks postpartum. I was soon convinced that the history of the labor, and the size of the child, very often did not coincide with the postpartum findings. Some of the most severe forms of procidentia were discovered in patients who had very easy deliveries. Again, very often few local disturbances were discovered, even after the most difficult instrumental delivery.

It seems to me that the causes for prolapse of the pelvic viscera is still not thoroughly established. Studies of the anatomy of the pelvic floor in cases of prolapse do not disclose all the etiologic factors. They simply reveal an existing condition as a result of trauma. The anatomist, during his studies, is not familiar with the obstetric history of the patient. He is unable to judge what were the mechanical factors concerned in the production of these anatomic distortions. I believe that if it were possible for the anatomist to observe the mechanical processes of a given case of labor and then study the structures of the pelvic outlet, he would reach a more definite conclusion as to the reasons why normal labor will very often cause prolapse of the pelvic viscera. To illustrate, let me quote from one of the most illuminating articles on the subject of repair of the pelvic outlet, by Haynes. He says:

The lesions considered in this paper are produced at childbirth by the passage of the child through the parturient canal, either unassisted or aided by the use of forceps.

Probably the premature application of the forceps or their faulty adjustment or ignorant use, contributes to the production of tears of the pelvic outlet. Indeed it is probable that the rarer form of rupture of the levator ani muscle close to the pelvic arch is due solely to the cutting action of the blade of the badly applied or used forceps.

At birth, then, the child must pass through the pubococcygeal loop of the levator muscle, through the gap in the perineal shelf, and through the vaginal slit in the pubococcygeal hammock. . . .

This passage is usually made without any material damage when the normal conditions affecting mother, child and time prevail by the gradual stretching of the structures composing the different layers. However, there may be such a disparity between the size of the child and the potential passageway or the birth so precipitate, that all the structures are torn through into the rectum or into the ischiorectal fossa. Between these two extremes there are all grades of lacerations.

We all agree as to the truth of these statements when generally applied, but the description, while

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

comprehensive, fails to include a very essential element of the etiology of this condition, namely, a competent and complete obstetric history of the patient. Personal observations have led me to believe that the three factors which are concerned with the production of visceral and pelvic prolapse are:

1. The construction of the bony outlet.
2. The general muscular development of the patient, especially as regards the muscles of the pelvic outlet.
3. The size of the child, particularly in cases which are overdue.

It is an established clinical fact that lacerations of the posterior pelvic segment, even when left unrepaired, do not produce prolapse of the pelvic organs. However, lacerations of the structures of the anterior portion of the pelvis will as a rule result in the prolapse of the bladder and uterus.

A study of the anatomy of the bony outlet very soon discloses the reason why, in some patients, the posterior segment is damaged, while in others the lacerations will take place in the anterior segment. The studies of Klien of the measurements of the pelvic outlet prove conclusively that the various dimensions of the bony outlet have a definite bearing on the course of labor. The relationship in the size of the anterior sagittal and the posterior sagittal line to the transverse diameter of the outlet will decide whether the head will be born at the expense of the anterior segment or of the posterior segment of the outlet. If for some reason the posterior sagittal line is contracted, the head will have to be born at the expense of the anterior segment of the bony outlet. Here the fetal head encounters the soft parts of the anterior portion of the pelvic outlet, and if the strain is too great they give way and the support of the bladder and uterus is practically removed. If, however, the anterior sagittal line is shortened and the head has to be born at the expense of the posterior pelvic segment, lacerations of the perineum will take place. A rectocele will ensue; but the actual supports of the bladder and uterus have not been interfered with.

The development of the bony pelvis is entirely neglected in the present scheme of practical medicine. The young growing girl is not given the proper care she deserves. To prepare womanhood for future motherhood requires more than passing attention. As

TABLE 1.—AGE OF PATIENTS OPERATED ON

| Age, Years | Number of Cases |
|-------------------|-----------------|
| Below 30 | 8 |
| Between 30 and 40 | 28 |
| Between 40 and 50 | 35 |
| Between 50 and 60 | 21 |
| Over 60 | 8 |
| Total | 100 |

obstetricians we must anticipate all possible defects in the development of these girls and correct them if possible. As to the muscular development and tone, it is plain that the two intracranial glands, hypophysis and epiphysis, normally exercise a remarkable influence on the nutrition and skeletal growth. A perversion or dysfunction of one or more of the internal secretions very often may be observed at a time when proper treatment will correct it. The reason for its neglect is the ignorance of the mother. If the mothers were taught that any disturbance of metabolism in the young girl, or any apparent sexual disorder, requires attention, she would seek proper medical aid. We must ignore the conventional barriers in the treatment

of the unmarried woman, as we do in the unmarried man. To modern social conditions must also be attributed an undoubted pernicious influence on childbirth. The forcing of a great number of young women to enter the industrial field early in life where they are compelled to engage in sedentary occupations prevents their physical development. This has created a large percentage of women who are unable to deliver themselves spontaneously. The size and consistency of the fetal head surely plays an important part in the causation of pelvic

TABLE 2.—RELATIVE PARITY OF PATIENTS

| Parity of Patients | Number of Patients |
|--------------------|--------------------|
| Primiparas | 5 |
| Secundiparas | 13 |
| Tertiparas | 10 |
| Quadruparas | 12 |
| Quintiparas | 6 |
| Sextiparas | 7 |
| Septiparas | 7 |
| Octiparas | 1 |
| Noniparas | 4 |
| Deciparas | 6 |
| Undeciparas | 2 |
| Duodecipara | 1 |
| Tredeciparas | 3 |
| Quattuordeciparas | 1 |
| Septendeciparas | 1 |

lacerations and relaxations. In this instance I feel that the obstetrician is entirely to be blamed. We have no right to allow a primipara to be overdue an unreasonable time. The child grows unusually large, and the cranial bones become hard and do not mold readily. These patients are exposed to the danger of dystocia when labor sets in. It can be obviated by a timely induction of labor.

Once hernia of the pelvic outlet occurs, the problem is, What means have we at our command to correct it? Many operations have been devised; none, however, answered the purpose until the interposition operation had been perfected. This operation is of comparatively recent adoption in this country. It is only a short time that the combined abdominal vaginal operations have been performed in all of these cases. The results were poor because the anatomy of the anterior vaginal wall and that of the bladder were not taken into consideration. Usually the cystocele recurred in a very short time, and the patient felt that she was subjected to a useless operation.

We must, however, realize that the technic of this operation varies with each case. The condition of the cervix, the extent of the cystocele and the size of the body of the uterus will tend to modify the various steps in the operation. To my mind, the most important single step in this operation in any given case is to decide the exact point of fixation of the anterior wall of the uterus to the roof of the vagina. Should the uterus be fixed too high, we may have undue pressure symptoms of the neck of the bladder; and if fixed too low, the patient will always have a bearing down sensation in the vagina. For the purpose of this study I collected 100 instances in which the interposition operation was performed. Ninety of these are from the gynecologic service of Lebanon Hospital, and ten from the Jewish Maternity Hospital. I included in this series only those patients that were admitted to the hospital with the diagnosis of prolapsus uteri. Patients who suffered from lesser degrees of prolapse of the pelvic viscera, and on whom this operation has been performed, are not included in this series. I feel that in those cases other methods could possibly have been substituted.

During the childbearing period it is important that these patients should be sterilized. This is accomplished by resection of the tubes from the horns of the uterus and the stitching of the cut ends into the sides of the uterus at a point slightly lower than the original tubal opening. A few of our earlier patients were not sterilized, and in some pregnancy ensued. In all these patients labor was very complicated. The dystocia was primarily due to the high situation of the sluggishly dilating cervix in the bony pelvis. The altered axis of the uterine cavity caused the presenting part to rest against the promontory of the sacrum. The force of the uterine contractions pushed the fetal part beyond the axis of the inlet and thus prevented the part from engaging itself in the true pelvis.

A number of patients aborted before the end of the third month, as the uterus was firmly adherent anteriorly and could not rise above the brim.

Table 1 gives a statistical report of the patients operated on. The average age of the patients was 43.9 years. The youngest patient was 25 years old, the oldest 68.

The number of children the patients had was stated in eighty-three cases (Table 2).

Four were never pregnant.

The date of the birth of the last child is stated in fifty-four cases in Table 3.

The menstrual history was normal and regular in seventy-one cases.

In twenty-nine cases, menopause occurred. Relief for this condition was sought soon after the patient noticed something protruding from the vagina. Seven of these patients were operated on previously for the relief of the procidentia with little or no benefit. Forty-nine patients were treated by vaginal pessaries for a period of from two to twenty years.

In a number of patients, other pathologic conditions of the uterus and adnexa were encountered. On one patient, salpingo-oophorectomy was performed. In two cases, cystic ovaries were removed. In one

TABLE 3.—TIME BETWEEN THE BIRTH OF THE LAST CHILD AND THE PERFORMANCE OF THE INTERPOSITION OPERATION

| Birth of Last Child | Number of Cases |
|--------------------------|-----------------|
| Six months after..... | 6 |
| One year | 3 |
| Two years | 5 |
| Three years | 5 |
| Four years | 6 |
| Five years | 5 |
| Six years | 1 |
| Seven years | 2 |
| Eight years | 3 |
| Nine years | 1 |
| Ten years | 1 |
| Eleven years | 2 |
| Thirteen years | 1 |
| Sixteen years | 2 |
| Seventeen years | 3 |
| Twenty years | 2 |
| Twenty-one years | 2 |
| Twenty-three years | 1 |
| Twenty-nine years | 2 |
| Thirty-one years | 1 |

case, resection of the ovary was performed. In one case, a right diseased tube was removed. In three cases, small uterine fibroids were enucleated from the uterine wall. In one case, a uterus bicornis was found.

POSTOPERATIVE COMPLICATIONS

It is interesting to note what little postoperative reaction took place in this series of cases. Most of them were fairly comfortable on the second or third day after the operation. The pain they usually suffered was that of a perineal wound. Only seven

patients had marked postoperative temperature of 103 or more. Three patients had a temperature of between 102 and 103. The remaining patients had a slight rise or normal temperature. Three patients developed edema of the vulva, which cleared up at the end of a week.

Ten days after the operation one patient developed pyelitis of the right kidney, which cleared up before she left the hospital.

One patient developed temporary insanity one week after the operation. Her condition improved when she was discharged from the hospital.

TABLE 4.—EXTENT TO WHICH CATHETERIZATION WAS EMPLOYED

| Number of Cases | Number of Days |
|-----------------|----------------|
| In 14 | 1 |
| In 12 | 2 |
| In 5 | 3 |
| In 9 | 4 |
| In 8 | 5 |
| In 2 | 6 |
| In 6 | 7 |
| In 5 | 9 |
| In 5 | 10 |
| In 5 | 11 |
| In 1 | 12 |
| In 2 | 14 |
| In 1 | 16 |

One patient developed a pelvic abscess. The pus was evacuated by an abdominal incision. A vesico-vaginal fistula developed which was closed about six weeks later.

Most of these patients have to be catheterized because of the inability of the bladder wall to contract on account of the extensive denudation and separation of the bladder from the vaginal wall and the anterior uterine surface. However, fourteen of these patients voided spontaneously.

The average period of time these patients were confined to bed was eighteen days. The average stay in the hospital was twenty-five days.

Finally, it is my firm belief that with the improvement in the practice of obstetrics, hernia of the pelvic viscera will be greatly diminished. Relative disproportion between the fetal head and the pelvis causing tedious and protracted labor must necessarily either stretch or lacerate the soft parts of the pelvis which eventually produces a prolapse of the uterus and the bladder. It is the duty of the obstetrician to recognize this condition sufficiently early so as to prevent its occurrence.

Furthermore, I feel that a great deal can be accomplished by carefully watching the development of the young girl; and as soon as disturbances, either of a constitutional or a local nature, are noticed, treatment must be promptly instituted, for only in that way can she be prepared for future motherhood.

62 West Eighty-Ninth Street.

ABSTRACT OF DISCUSSION

DR. FRANK L. NEWTON, Boston: We see many of these patients neglected, and the young women not being prepared to bear children. Pregnancy is not essential to prolapsus. One case coming under my observation is typical of many. The young woman came to our city from a neighboring state. The physician sending her said she needed hysterectomy. There was a virgin girl with prolapsed uterus who had been treated year after year with tampons and other measures. I had her examined by Dr. Fitts. When he was through I asked if he saw any necessity for doing hysterectomy. "Hysterectomy!" he said. "Why there is prolapse of the uterus, and prolapse of the stomach as well. If you take

out one, why not the other?" This case illustrates, I think, the fact that the obstetric condition is not a necessary cause of prolapse. In another case, that of an older woman, married but never pregnant, there had been prolapse for years; absolutely complete procidentia, with all the parts intact. In the treatment of prolapsus uteri we must meet the conditions. If we find a large, eroded cervix in a woman who has borne a number of children, I would amputate it thoroughly, believing that here we have a field for carcinoma. The presence of a fibroid might be an indication for hysterectomy, but do not remove the ovaries and tubes even if operation is performed through the vagina. Do your pelvic plastic work yourself; such work needs an artist. Rather let your assistant carry out the abdominal procedure.

DR. JACOB A. RUBEN, Pittsburgh: Until a method gives us 100 per cent. permanent cures in prolapsus uteri, the last word has not been said on its treatment. Preparing a woman to be a mother is an enormous field in itself, which I will not touch on. I only want to call attention to the big factors underlying the causes of prolapse. It occurs primarily under two fundamental conditions: (1) the destruction or weakening of the muscular support of the pelvis; (2) the displacement of the uterus from pointing backward toward the hollow of the sacrum. In a woman who has borne two or more children, the muscles of the urogenital diaphragm are reduced to connective tissue. The levator ani alone forms the pelvic diaphragm. If in such a woman the levator muscle is torn through, we have the primary condition favoring prolapse. Physiologically and anatomically speaking, the key to all prolapse operations must be the construction of a high, muscular perineum and the replacing of the uterus and bladder in their normal positions.

DR. HARRY ARANOW, New York: In a study of 4,000 or 5,000 cases I have been convinced that while a tear of the perineum may be a cause of prolapsus in some cases, in the majority of instances it is not. In a complete laceration of the perineum there is rarely a prolapse. It is the woman with a long, narrow chest and a thin abdominal wall who is likely to have prolapsus whether she has had a bad tear or not.

I have had the good fortune to have the care, in subsequent confinements, of two interposition cases in which operation was performed by Dührssen in this city. There were no complications. Of course I would not advise anybody to perform an interposition operation in a young woman. I simply mention the two cases which came under my care as house surgeon. Dr. Dührssen closed up the peritoneum very carefully and brought the uterus forward as we used to do in ventral suspension.

The operation of interposition is a very complicated procedure, with many factors to be considered. I had one case in which the woman was between 70 and 80 years of age, with complete prolapsus. The cervix was suspicious in appearance, the uterus exceedingly small. The patient was sent to me for an interposition operation. I said it was impossible. Instead I performed a Mayo vaginopelvic fixation operation, bringing the two round ligaments across, making a bridge for the bladder, and the woman made an uneventful recovery. Again, in a case of this sort, with a large heavy uterus, one cannot perform an interposition operation; nor in a very young woman who has not had children and who is anxious to have them. Interposition without sterilization is rather dangerous.

DR. HARVEY P. JACK, Hornell, N. Y.: Perhaps some day we may know more about the internal secretions and be able to administer the particular one needed. Speaking practically, however, we are faced with a young woman of from 20 to 25—several of whom I have had—with complete prolapsus. Are you going to subject that woman to hysterectomy with the consequent nervous conditions? Are you going to do an interposition operation with all its dangers? No. Amputate the cervix, shorten the round ligaments and allow that woman to go on. You have not and cannot cure her. You have given her a chance that she may develop and bear babies and be a regular woman. It is not right to allow the teaching to go out that the interposition operation ought ever

to be considered. Some men may be able to do it, but when they succeed they beg the question; they do a suspension. We have no right to condemn these young women to difficult labors or the inability to have children. We must deal with the practical things until we know more of that which is not now understood. Therefore, I think this section should condemn absolutely the interposition operation. You can cure the prolapsus without it and leave the woman with a function.

DR. ABRAHAM J. RONGY, New York: To my mind there are two causes for prolapsus—indirect and direct. I believe that the young girl, as soon as she reaches puberty, ought to be obliged to see whether she is developing properly. I believe the question of the internal secretions will solve the matter in the near future, and that we shall be able to influence growth and development. Regarding the interposition operation, in a young woman of 25 or 26 who has had one or two children and is anxious to have more, I never advise operation. I try, rather, some form of pessary to help her, and advise that after she is through having babies such operation might be considered. In a woman who has had two or three children and who is not anxious to have more, the interposition operation comes into play and there is no operation that does the work so well. I firmly believe that intra-abdominal pressure has very little influence on prolapsus; it acts as a secondary factor when things are once relaxed and out of place. Dr. Spalding of San Francisco said that in a number of cases in the second stage of labor when the labor became tedious he separated the perineum down to the rectum in order to shorten the labor. In these cases when the head has been born at the expense of the anterior segment, I think it will be the ideal plan to separate the posterior pelvic segment and the perineum in order to allow the head to come down to the posterior part of the pelvis and not stretch the supports of the uterus.

THE INTRAVENOUS PHLORIZIN TEST*

MARTIN KROTOSZYNER, M.D.

AND

WILLIAM E. STEVENS, M.D.

SAN FRANCISCO

Phlorizin is a glucosid which was discovered by de Koninck in 1855. It is derived from the root-barks of various fruit trees, which, when brought to boiling in acid mediums, give off a glucose called phlorose, and a glycogen, the so-called phloretin.¹ Phlorizin occurs in minute and slightly pinkish crystals, and is sparingly soluble in cold water, alcohol and ether, but freely soluble in hot water from which solution it crystallizes out on cooling.² In 1885, von Mehring³ found that phlorizin produces glycosuria in man. Ten years later the first statement in regard to the renal origin of phlorizin glycosuria was made by Zuntz,⁴ who, after introducing cannulas into the ureters of a dog, exposed one kidney, into the renal artery of which phlorizin was injected, with the result that sugar appeared first and in greater amount from the ureter of the injected kidney. That phlorizin diabetes undoubtedly originates in the kidney was, later on, proved by Pavy, Brodie and Sian's⁵ experiment. After removal of all abdominal viscera except the kidneys of a dog, phlorizin was injected, with the result that no increase in the quantity of blood sugar

* Read before the Section on Genito-Urinary Diseases at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Kapsammer: *Nierendiagnostik und Nierenchirurgie*, 1, 87.

2. New and Nonofficial Remedies, *THE JOURNAL A. M. A.*, July 3, 1909, p. 33.

3. Von Mehring: *Centralbl. f. d. med. Wissensch.*, 1885.

4. Zuntz: *Arch. f. Anat. u. Physiol.*, 1895.

5. Pavy, Brody and Sian: On the Mechanism of Phlorizin Glycosuria, *Jour. Physiol.*, 1903.

ensued, while the urine contained a large amount of sugar.

Less convincing as regards exact proofs were experimental investigations aiming at localization of sugar formation in the kidney. Seelig,⁶ after transforming glucose in the kidney into phenylglucosazone, studied onset and extension of sugar formation microscopically, and from the appearance of large numbers of glucosazone needles at and around the collective tubules, he concluded that sugar excretion occurred almost entirely by means of these channels. Nussbaum,⁷ who had found that the glomeruli of the frog kidney were exclusively supplied by the renal artery, concluded, from the absence of sugar in the urine after ligation of that vessel, that sugar formation occurred solely in the glomeruli. Nussbaum's find-

of phlorizin internally. This method of administration was soon afterward branded as inefficacious by Magnus Levy,¹² who pointed out that phlorizin, by these means, reached the kidneys in an already broken form, and who, after hypodermic injection of the drug, observed glycosuria in various forms of pathologic kidney conditions. In 1899 Achard and Delamare,¹³ on the basis of fundamental experimental investigations, stated that reduction or total absence of phlorizin glycosuria was characteristic of kidney diseases complicated by definite loss of renal parenchyma. On these facts Casper and Richter¹⁴ based their application of the test in the form of hypodermic or intramuscular administration of the drug in conjunction with ureteral catheterization. In this way they were able to study the action of the drug separately on

TABLE 1.—RESULTS OF BLADDER TEST BY MEANS OF INTRAVENOUS INJECTIONS OF 2 C.C. OF 0.5 PER CENT. PHLORIZIN IN NORMAL CASES

| Number | Sex* | Age | Diagnosis | Appearance Minutes | Fifteen-Minute Periods | | | Remarks |
|--------------|------|-----|--------------------------------|-----------------------|------------------------|--------|-------|---|
| | | | | | First | Second | Third | |
| 1 | ♂ | 26 | Chronic prostatitis..... | 12.5 | 0.72 | 0.36 | 0.04 | Qualitative determination with Fehling's solution |
| 2 | ♂ | 52 | Pelvic osteosarcoma..... | 9 | 0.54 | 0.15 | 0.0 | |
| 3 | ♂+♀ | 63 | Carcinoma vesicæ..... | 6.5 | 0.9 | 0.4 | 0.0 | Quantitative determination with Lohnstein's saccharimeter |
| 4 | ♂ | 28 | Bilateral inguinal hernia..... | 8 | 1.11 | 1.7 | 0.31 | |
| 5 | ♂ | 40 | Sexual neurasthenia..... | 6 | 0.7 | 0.28 | 0.21 | |
| 6 | ♂ | 33 | Sec. syphilis..... | 10 | 0.6 | 0.2 | 0.0 | |
| 7 | ♂ | 32 | Sexual neurasthenia..... | 6 | 1.4 | 0.4 | 0.0 | |
| 8 | ♂ | 27 | Sexual neurasthenia..... | 4.5 | 2.2 | 1.6 | 0.25 | |
| 9 | ♂ | 42 | Chronic prostatitis..... | 6 | 0.64 | 2.8 | 0.2 | |
| 10 | ♂ | 24 | Chronic pelvic gonorrhea..... | 8 | 3.75 | 2.66 | 0.62 | |
| Average..... | | | | 7.65 | 1.25 | 1.05 | 0.16 | |

* In this column ♂ denotes male and ♀ female.

TABLE 2.—RESULTS OF BLADDER TEST BY MEANS OF INTRAVENOUS INJECTIONS OF 2 C.C. OF 0.5 PER CENT. PHLORIZIN IN PATHOLOGIC CASES

| Number | Sex | Age | Diagnosis | Appearance Minutes | Fifteen-Minute Periods | | | Remarks |
|--------------|-----|-----|---|-----------------------|------------------------|--------|-------|--|
| | | | | | First | Second | Third | |
| 1 | ♂ | 62 | Prostatic hypertrophy..... | 26 | 0.3 | 0.06 | 0.05 | No reduction with Fehling's after 99 minutes |
| 2 | ♂ | 77 | Rightsided calculous pyonephrosis | 7.5 | 1.6 | 0.6 | 0.0 | |
| 3 | ♂ | 35 | Rightsided renal tuberculosis.... | 25 | 0.1 | 1.6 | 0.3 | No reduction after 2 hours |
| 4 | ♂ | 69 | Prostatic hypertrophy; complete retention | 11 | 1.6 | 0.3 | 0.14 | |
| 5 | ♂ | 73 | Prostatic hypertrophy; chronic myocarditis | 8.5 | 1.7 | 0.94 | 0.4 | Reduction ceased after 90 minutes |
| | | | | | 1.6 | 0.01 | 0.0 | Reduction ceased after 90 minutes |
| 6 | ♂ | 68 | Carcinoma of prostate..... | 10 | | | | Reduction ceased after 40 minutes |
| 7 | ♂ | 76 | Carcinoma of prostate..... | 30 | 0.1 | 0.1 | 0.0 | |
| 8 | ♂ | 70 | Carcinoma of prostate..... | 20 | 0.7 | 0.3 | 0.0 | No reduction after 55 minutes |
| 9 | ♂ | 60 | Prostatic hypertrophy; chronic nephritis | 15 | 0.3 | 0.0 | 0.0 | |
| 10 | ♂ | 63 | Cancer of bladder; leftsided pyelonephritis | 11 | 0.1 | 0.0 | 0.0 | No reduction after 60 minutes |
| Average..... | | | | 16.4 | 0.81 | 0.391 | 0.089 | |

ings, though, were refuted by the investigations of Adami⁸ and later on by those of Beddard,⁹ who discovered anastomoses between the renal artery and vein in the frog kidney, while the observations of Hellin and Spiro¹⁰ on phlorizin sugar excretion in rabbits with experimental nephritis pointed to the epithelial cells as the principal seat of renal sugar formation. Thus the problem of exact localization of renal glycosuria, which would have cleared up many points of apparent incongruity in the application of the phlorizin test, is still awaiting its final solution.

In 1896, G. Klemperer,¹¹ who was the first to use phlorizin on renal lesions in man, reported absence of glycosuria in chronic nephritis after giving large doses

either kidney, and to utilize the test as a comparative index of functional renal capacity in unilateral kidney lesions. According to their statement, the phlorizin test measures the quantity of functioning renal parenchyma and, by these means, that of renal capacity, the percentage of excreted sugar corresponding to the amount of functioning parenchyma of the kidney. When these statements failed to be entirely corroborated by personal observations of various authors, and particularly after Israel's¹⁵ demonstration of kidneys that had been found barren of phlorizin glycosuria, though possessing functioning parenchyma, Casper and Richter¹⁴ modified their views, stating that absence of phlorizin glycosuria was significant of an advanced degree of renal incapacity,

6. Seelig: Deutsch. med. Wchnschr., 1900.
7. Nussbaum: Arch. f. Anat. u. Physiol., 1906.
8. Adami: Jour. Physiol., 1885, 6.
9. Beddard: Jour. Physiol., 1902, 28.
10. Hellin and Spiro: Arch. f. exper. Path. u. Pharmakol., 1897, 38.
11. Klemperer, G.: Verhandl. d. Ver. f. inn. Med. zu Berlin, 1896.
12. Levy, Magnus: Verhandl. d. Ver. f. inn. Med. zu Berlin, 1896.
13. Achard and Delamare: Soc. de Biol., 1899, 21, 1.
14. Casper and Richter: Funktionelle Nierendiagnostik., Berlin-Wien, 1901.
15. Israel: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1903.

while its quantity was directly proportional to that of the functioning parenchyma of the kidney.

For the application of the test, the following technic was finally adopted: As soon as both ureters are catheterized, 2 c.c. of a 0.5 per cent. phlorizin solution (0.01 gm. of the drug) are injected hypodermically, one thigh being preferably selected as the site of injection. Only fresh solutions, never more than two weeks old, are used, and thorough dissolving of phlorizin crystals is effected by placing the phlorizin container in a water bath from which it is removed the moment the boiling point is reached. The phlorizin solution is then drawn directly from its container into the syringe and at once injected. The appearance of sugar, which normally occurs about fifteen to twenty minutes, and not later than thirty minutes after phlorizin injection, is ascertained by means of test tubes containing small amounts of heated Fehling's

mer's¹⁶ book. Omission of a description of technical details in textbooks and publications on the subject is, according to our experience,¹⁷ probably responsible for the often reported failures in obtaining glycosuria, whereas we in our extensive practical work with the test have had no difficulty in that direction.

The test was soon recognized as one of our most important means for estimating relative kidney function. Israel,¹⁸ who always maintained a skeptical attitude toward the real value of functional kidney tests, designated the test as a welcome addition to our diagnostic armamentarium, and Albarran¹⁹ concedes to the method real usefulness. Barth²⁰ considers the test particularly important for the diagnosis of difficult cases, and Kapsammer²¹ claims for the phlorizin test first rank among renal functional methods. Greene and Brooks²² designate the test the most practical of functional methods, a view from which they

TABLE 3.—RESULTS OF RENAL TEST IN NORMAL CASES: COMPARATIVE VALUES OF PHLORIZIN

| No. | Sex | Age | Diagnosis | Fifteen-Minute Periods | | | | | | Remarks |
|--------------|-----|-----|-------------------------------------|------------------------|------|--------|-------|-------|------|---|
| | | | | First | | Second | | Third | | |
| | | | | R. | L. | R. | L. | R. | L. | |
| 1 | ♀ | 28 | Chronic urethritis and trigonitis.. | 1.06 | 1.22 | 0.2 | 0.3 | 0.00 | 0.00 | No reduction with Fehling's after 37 min. |
| 2 | ♀ | 40 | Chronic prostatitis..... | 4.0 | 3.0 | 3.6 | 1.2 | 0.2 | 0.0 | No reduction after 35 minutes |
| 3 | ♀ | 42 | Functional polyuria..... | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | No reduction after 35 minutes |
| 4 | ♀ | 30 | Chronic prostatitis..... | 2.0 | 2.0 | 1.0 | 1.0 | 0.12 | 0.12 | Trace figured as 0.1 |
| 5 | ♀ | 45 | Chronic prostatitis..... | 1.52 | 1.68 | Trace | Trace | 0.0 | 0.0 | |
| 6 | ♀ | 35 | Chronic pelvic peritonitis..... | 1.56 | 1.4 | Trace | 0.5 | 0.0 | 0.0 | |
| 7 | ♀ | 30 | Sexual neurasthenia..... | 1.36 | 1.38 | 0.64 | 0.98 | 0.0 | 0.15 | No reduction after 75 minutes |
| 8 | ♀ | 38 | Chronic prostatitis..... | 4.8 | 4.0 | 0.2 | 0.2 | 0.01 | 0.01 | |
| 9 | ♀ | 35 | Chronic prostatitis..... | 1.25 | 1.0 | 0.25 | 0.2 | 0.0 | 0.0 | |
| 10 | ♀ | 40 | Balanoposthitis..... | 1.7 | 2.0 | 1.24 | 1.56 | 0.92 | 1.14 | No reduction after 70 minutes |
| Average..... | | | | 1.95 | 1.79 | 0.73 | 0.6 | 0.12 | 0.14 | |

TABLE 4.—RESULTS OF RENAL TEST IN PATHOLOGIC CASES: COMPARATIVE VALUES OF PHLORIZIN

| No. | Sex | Age | Diagnosis | Fifteen-Minute Periods | | | | | | Remarks |
|--------------|-----|-----|-----------------------------------|------------------------|------|--------|-------|-------|------|---|
| | | | | First | | Second | | Third | | |
| | | | | R. | L. | R. | L. | R. | L. | |
| 1 | ♂ | 56 | Bilateral nephrolithiasis..... | 0.18 | 0.12 | 0.0 | 0.0 | 0.0 | 0.0 | No reduction with Fehling's after 37 min. No reduction after 40 minutes No reduction after 45 minutes No reduction after 78 minutes Trace counted as 0.01 |
| 2 | ♀ | 30 | Rightsided hydronephrosis..... | 0.9 | 1.1 | 0.5 | 0.3 | 0.01 | 0.0 | |
| 3 | | 28 | Bilateral hydronephrosis..... | 0.8 | 0.56 | 0.02 | 0.03 | 0.18 | 0.01 | |
| 4 | | 43 | Bilateral pyelonephritis..... | 0.66 | 0.52 | 0.2 | 0.04 | 0.0 | 0.0 | |
| 5 | | 46 | Rightsided hydronephrosis..... | 0.35 | 1.9 | Trace | Trace | 0.0 | 0.0 | |
| 6 | | 30 | Rightsided calculous pyonephrosis | 0.3 | 1.7 | 0.0 | 1.15 | 0.0 | 0.88 | |
| 7 | | 36 | Rightsided pyohydronephrosis.... | 0.1 | 0.8 | 0.0 | 0.6 | 0.0 | 0.5 | |
| 8 | | 46 | Bilateral hydronephrosis..... | 0.59 | 0.56 | 0.3 | 0.2 | 0.35 | 0.28 | |
| 9 | ♂ | 32 | Rightsided pyelonephritis..... | 0.42 | 0.62 | 0.28 | 0.35 | 0.1 | 0.2 | Microscopically: Many pus cells on right side; only a few pus cells on left side |
| 10 | ♂ | 26 | Leftsided nephritis..... | 0.52 | 0.48 | 0.2 | 0.06 | 0.1 | 0.05 | |
| Average..... | | | | 0.48 | 0.83 | 0.15 | 0.27 | 0.07 | 0.19 | |

solution, and urine portions for quantitative sugar determination are collected during the next fifteen to thirty minutes, during which period phlorizin sugar excretion is known to be at its climax. Thus, the whole test can, in most instances, be finished in about an hour.

Inaccurate dosage, resulting from loss of water, or precipitation of crystals on cooling of the phlorizin solution, is obviated by strict adherence to these technical details, which must be carried out under trained supervision. Quantitative sugar determination is afterward done by means of Lohnstein's saccharimeter, for which only 0.5 c.c., or about 8 minims, of urine suffice; in order to insure accuracy of comparative results, three saccharimeters, two for both renal urines and the third for distilled water as control, are employed.

The literature contains either insufficient or no data concerning the technic of phlorizin application, of which we can find only brief mention in Kapsam-

mer's¹⁶ book. Our own results with the test were most gratifying, and careful comparison with the results from other functional tests, especially from phenolsulphonephthalein, brought forth this statement:²³ The phlorizin, phenolsulphonephthalein and urea tests show in normal cases almost identical values for both kidneys, and exhibit in pathologic cases a striking parallelism of diminished functional values. As compared with the phlorizin method, the phenolsulphonephthalein test is subject to fewer technical errors and is less time-consuming, while the possibility of exact quantitative estimation of excreted sugar renders the

16. Kapsammer: Nierendiagnostik und Nierenchirurgie, 1, 92.
17. Krotoszyner: Am. Jour. Dermat., 11, 9.
18. Israel: Berl. klin. Wchnschr., 1902.
19. Albarran: Exploration des fonctions rénales, Paris, Masson, 1905.
20. Barth: Arch. f. klin. Chir., 1903, 71.
21. Kapsammer: Nierendiagnostik und Nierenchirurgie, 1, 100.
22. Greene and Brooks: Diseases of the Genito-Urinary Organs, Philadelphia and London, 1917, p. 85.
23. W. E. Stevens: The Comparative Value of Modern Functional Kidney Tests, THE JOURNAL A. M. A., May 16, 1914, p. 1544.

phlorizin test much more reliable than the phenolsulphonephthalein test.

THE INTRAVENOUS TEST

Thus, the cumbersome technic and the length of time required for its performance appeared to be the most important objectionable features tending toward sidetracking or even eliminating the hypodermic phlorizin test in favor of the more commodious and expeditious phenolsulphonephthalein method. Success in meeting the first drawback depended obviously on the possibility of bringing the glucosid to the cystoscopic room in a vehicle in which it could be kept indefinitely in solution without, by precipitation of

dious method of phlorizin application for large urologic clinics in which routine renewal of ampules could easily take place every month. For the average urologist, however, we advise the use of tablets, which we finally succeeded in devising, and which were made for us after the following formula: phlorizin, 0.01 gm., and sodium chlorid sufficient to make 0.03 gm. Phlorizin injection by means of these tablets is a simple and expeditious procedure. The tablet is placed in the barrel of an all-glass Luer syringe, into which, after adjustment of the needle, 2 c.c. of hot distilled water are drawn up, and injection is made as soon as, by shaking, thorough dissolving of the tablet has been effected.

TABLE 5.—COMPARATIVE RESULTS OF PHLORIZIN, PHENOLSULPHONEPHTHALEIN AND UREA IN NORMAL CASES

| No. | Sex | Age | Diagnosis | Phlorizin | | | | Phenolsulphonephthalein | | | | Urea | | Remarks |
|--------------|-----|-----|---------------------------------------|------------|-----|----------|------|-------------------------|------|----------|-------|--------|--------|---|
| | | | | Appearance | | Amount % | | Appearance | | Amount % | | R. | L. | |
| | | | | R. | L. | R. | L. | R. | L. | R. | L. | | | |
| 1 | ♀ | 32 | Urinary frequency; trigonitis | 6 | 6 | 1.48 | 1.48 | 10 | 7 | 4 | 3 | 0.009 | 0.011 | Quantitative phenolsulphonephthalein determinations made with Hellige colorimeter Comparative urea determination made with Doremus ureometer |
| 2 | ♂ | 28 | Chronic prostatitis | 7 | 6.5 | 1.56 | 1.36 | 2.5 | 2.5 | 13 | 14 | 0.015 | 0.016 | |
| 3 | ♀ | 35 | Urinary frequency; trigonitis | 6.5 | 6.5 | 1 | 1 | 4 | 4 | 25 | 15 | 0.001 | 0.001 | |
| 4 | ♀ | 40 | Cystitis; vaginal catarrh | 5 | 5 | 0.4 | 0.4 | 3 | 3 | 4 | 4 | 0.003 | 0.003 | |
| 5 | ♀ | 24 | Chronic pelvic gonorrhea | 4 | 4 | 0.3 | 0.3 | 3 | 3 | 12 | 15 | 0.001 | 0.001 | |
| 6 | ♂ | 38 | Chronic prostatitis | 5 | 5 | 0.5 | 0.54 | 5 | 5 | 12 | 5.5 | 0.015 | 0.014 | |
| 7 | | 29 | Sexual neurasthenia | 9 | 9 | 1.56 | 1.66 | 6 | 7 | 11.5 | 11.0 | 0.0026 | 0.0032 | |
| 8 | | 34 | Caruncle at meatus | 5.5 | 6 | 0.5 | 0.36 | 3 | 3 | 10 | 8 | 0.0052 | 0.0056 | |
| 9 | | 36 | Chronic prostatitis | 5 | 5.5 | 0.72 | 0.52 | 4 | 4 | 4 | 6 | 0.016 | 0.015 | |
| 10 | ♀ | 26 | Urinary frequency; chronic urethritis | 5 | 4.5 | 0.6 | 0.4 | 4 | 4 | 18 | 25 | 0.007 | 0.012 | |
| Average..... | | | | 5.8 | 5.8 | 0.86 | 0.8 | 4.45 | 4.25 | 11.35 | 10.65 | 0.075 | 0.08 | |

TABLE 6.—COMPARATIVE RESULTS OF PHLORIZIN, PHENOLSULPHONEPHTHALEIN AND UREA IN PATHOLOGIC CASES

| No. | Sex | Age | Diagnosis | Phlorizin | | | | Phenolsulphonephthalein | | | | Urea | | Remarks |
|--------------|-----|-----|-------------------------------|------------|-----|----------|-------|-------------------------|-----|----------|-------|-------|--------|---|
| | | | | Appearance | | Amount % | | Appearance | | Amount % | | R. | L. | |
| | | | | R. | L. | R. | L. | R. | L. | R. | L. | | | |
| 1 | ♂ | 30 | Rightsided renal neoplasm | 7 | 6 | 0.08 | Trace | 4 | 3.5 | Trace | Trace | 0.004 | 0.0012 | Trace of phlorizin, figured as 0.01; trace of phenolsulphonephthalein, figured as 0.01; trace of urea, figured as 0.001 |
| 2 | ♀ | 28 | Bilateral pyelonephritis | 6.5 | 6 | 0.8 | 0.56 | 6 | 7 | 2 | 9.5 | 0.002 | 0.004 | |
| 3 | ♂ | 27 | Rightsided hydronephrosis | 8 | 14 | 0.3 | 1.7 | 7 | 7.5 | 4 | 6 | 0.001 | 0.0024 | |
| 4 | ♀ | 33 | Leftsided pyelonephritis | 5 | 5 | 1.74 | 0.86 | 4.5 | 5 | 12.5 | 4 | 0.028 | 0.015 | |
| 5 | ♂ | 46 | Rightsided hydronephrosis | 14 | 5 | 0.6 | 0.2 | 5.5 | 3.5 | 4.5 | 5.5 | 0.012 | 0.01 | |
| 6 | ♂ | 27 | Leftsided renal tuberculosis | 5 | 4.5 | 0.58 | 0.0 | 7 | 7 | 2.6 | 0.04 | 0.02 | 0.009 | |
| 7 | ♀ | 30 | Leftsided pyonephrosis | 5 | 20 | 1.0 | Trace | 3.5 | 25 | 18 | Trace | 0.02 | Trace | |
| 8 | ♂ | 34 | Rightsided renal tuberculosis | 7 | 8.5 | 0.37 | 2.4 | 4 | 4.5 | Trace | 17 | 0.013 | 0.022 | |
| 9 | ♂ | 56 | Bilateral nephrolithiasis | 13.5 | 6.0 | 0.18 | 0.12 | 4.5 | 4 | 3 | 6 | 0.006 | 0.008 | |
| 10 | ♀ | 35 | Rightsided pyonephrosis | 10.5 | 8 | 1.3 | 3.5 | 3 | 3 | 7.5 | 8 | 0.005 | 0.012 | |
| Average..... | | | | 8.1 | 8.3 | 0.69 | 0.93 | 4.9 | 4.7 | 5.4 | 5.6 | 0.011 | 0.0117 | |

phlorizin crystals, losing its efficacy, and at the same time insuring the uniformity of results which generally attends the employment of phenolsulphonephthalein. For these purposes we experimented, at first, with ampules, similar to the familiar type in use for the phenolsulphonephthalein test, and containing the required amount of phlorizin in a nonprecipitating, 0.25 per cent. solution, as recently suggested by Greene.²⁴ However, by extensive experimentation, including comparative tests with fresh phlorizin solutions, it was found that ampule efficacy became vitiated in the course of time, four months constituting the limit, after which it was either considerably lessened or entirely extinct. While, therefore, not recommending ampule administration for general use, as involving the risk of inaccuracy, we would, nevertheless, suggest the exclusive use of this most commo-

Elimination of loss of time, which would remove the second obstacle to the general acceptance of the phlorizin test, appeared the more imperative, since intravenous administration of phenolsulphonephthalein had of late become established as a rapid and safe comparative functional method. It was only natural that we attempted to attain this end by the same intravenous route.

It was obviously from the start incumbent on us to establish the safety and innocuousness of this mode of phlorizin administration. In the literature we could find only one reference disclosing untoward results of large intravenous doses, that of Leschke,²⁵ who observed experimentally in rabbits grave clinical symptoms (spasms, paralysis of heart and respiration). The same author's statement that, after intra-

24. Greene: New York Med. Jour., August, 1915.

25. Leschke: Arch. f. d. ges. Physiol. (Pflüger's), 1910, 132, 319.

venous administration of large doses of phlorizin, an integral part of the drug was traceable in the blood of nephrectomized animals, was refuted by Glaesner and Pick,²⁶ who, on the basis of their repeated experimental work, insisted that no trace of enormous phlorizin quantities, up to 3.0 gm., could be found in the blood of nephrectomized animals. Neither did Biedl and Kolisch²⁷ nor Herszky²⁸ observe symptoms of kidney irritation or disagreeable by-effects and after-effects consecutive to large doses of phlorizin. For clinical purposes Albarran¹⁹ first advocated the use of comparatively large phlorizin doses (0.02 gm.), which, later on, Casper and others²⁹ recommended for cases in which ordinary doses failed to produce reactive glycosuria.

Since, therefore, small doses, which we administered in the beginning of our work, were productive only

was obtained after the ordinary dose, was never followed by untoward by-effects and after-effects. Several hundred normal and pathologic cases were tested in this way in order to obtain reliable data on average time of appearance, acme of excretion, and disappearance of intravenous phlorizin glycosuria. After laborious compilation of our cases we finally decided to utilize for tabulation case groups of equal numbers and representing, wherever feasible, different observations of the same type. By these means we were able to obtain particularly gratifying results for purposes of group comparison.

BLADDER TEST

The bladder test for determination of total renal permeability by means of intravenous phlorizin injection is performed in the following manner: The blad-

TABLE 7.—RESULTS OF RENAL TEST IN NORMAL CASES: COMPARISON OF PARALLEL VALUES ON BOTH SIDES FOR PHLORIZIN, PHENOLSULPHONEPHTHALEIN AND UREA

| No. | Sex | Age | Diagnosis | Phlorizin | | Phenol-sulphone-phthalein | | Urea | | Phlorizin Values Compared | Phenol-sulphone-phthalein Values Compared | Urea Values Compared | Remarks |
|--------------|-----|-----|-----------------------------------|-----------|-------|---------------------------|-------|--------|-------|---------------------------|---|----------------------|---|
| | | | | R. | L. | R. | L. | R. | L. | | | | |
| 1 | ♀ | 30 | Urethral caruncle | 0.4 | 0.47 | 4 | 4 | 0.003 | 0.003 | 1.0 : 1.2 | 1.0 : 1.4 | 1.0 : 1.0 | Trace of phenolsulphonephthalein counted as 0.1 |
| 2 | ♀ | 24 | Chronic pelvic peritonitis | 0.3 | 0.3 | 12 | 15 | 0.001 | 0.001 | 1.0 : 1.0 | 1.0 : 1.25 | 1.0 : 1.0 | |
| 3 | ♂ | 27 | Chronic prostatitis | 1.24 | 0.9 | 12 | Trace | 0.014 | 0.014 | 1.0 : 1.5 | 1.2 : 1.0 | 1.0 : 1.0 | |
| 4 | ♂ | 26 | Sexual neurasthenia | 0.5 | 0.54 | 12 | 5.5 | 0.015 | 0.014 | 1.0 : 1.01 | 2.2 : 1.0 | 1.07 : 1.0 | |
| 5 | ♂ | 32 | Chronic prostatitis | 2.0 | 2.0 | 12 | 12 | 0.016 | 0.017 | 1.0 : 1.0 | 1.0 : 1.0 | 1.0 : 1.06 | |
| 6 | ♀ | 30 | Enteroptosis | 1.16 | 1.4 | None | 3 | 0.007 | 0.009 | 1.5 : 1.2 | 1.0 : 3.0 | 1.0 : 1.3 | |
| 7 | ♂ | 33 | Chronic prostatitis | 1.3 | 1.2 | 15 | 15 | 0.016 | 0.015 | 1.1 : 1.0 | 1.0 : 1.0 | 1.07 : 1.0 | |
| 8 | ♂ | 46 | Sexual neurasthenia | 0.4 | 0.35 | 18 | 18 | 0.001 | 0.001 | 1.1 : 1.0 | 1.0 : 1.0 | 1.0 : 1.0 | |
| 9 | ♀ | 35 | Urethritis and trigonitis | 0.84 | 0.84 | 17 | 14 | 0.056 | 0.06 | 1.0 : 1.0 | 1.2 : 1.0 | 1.0 : 1.07 | |
| 10 | ♀ | 40 | Urethral caruncle and hemorrhoids | 1.48 | 1.48 | 4 | 3 | 0.0095 | 0.011 | 1.0 : 1.0 | 1.33 : 1.0 | 1.0 : 1.16 | |
| Average..... | | | | 1.02 | 1.091 | 2.27 | 1.22 | 1.014 | 1.059 | | | | |

TABLE 8.—COMPARATIVE PHLORIZIN AND PHENOLSULPHONEPHTHALEIN WITH REFERENCE TO QUANTITY OF RENAL URINES IN NORMAL CASES

| No. | Sex | Age | Diagnosis | Phlorizin | | | Phenolsulphonephthalein | | | | | Quantity of Renal Urines Compared | Remarks |
|--------------|-----|-----|-----------------------------------|-----------|------|-----------------|-------------------------|------|-----------|-----|-----------------|-----------------------------------|---|
| | | | | Per Cent. | | Values Compared | Quantity | | Per Cent. | | Values Compared | | |
| | | | | R. | L. | | R. | L. | R. | L. | | | |
| 1 | ♀ | 48 | Urethral caruncle | 3.4 | 2.5 | 1.0 : 0.7 | 40 | 20 | 12 | 6 | 2.0 : 1.0 | 2.0 : 1.0 | Ureter catheters of equal caliber were employed |
| 2 | ♀ | 40 | Vaginal catarrh; trigonitis | 1.0 | 1.0 | 1.0 : 1.0 | 20 | 10 | 25 | 15 | 1.7 : 1.0 | 2.0 : 1.0 | |
| 3 | ♀ | 29 | Chronic prostatitis | 4.0 | 3.0 | 1.3 : 1.0 | 7 | 3.5 | 9 | 5 | 1.8 : 1.0 | 2.0 : 1.0 | |
| 4 | ♀ | 36 | Chronic urethritis and trigonitis | 0.84 | 0.84 | 1.0 : 1.0 | 28 | 20 | 17 | 14 | 1.2 : 1.0 | 1.4 : 1.0 | |
| 5 | ♀ | 42 | Vaginal catarrh; trigonitis | 0.2 | 0.2 | 1.0 : 1.0 | 13 | 11 | 7 | 6 | 1.2 : 1.0 | 1.2 : 1.0 | Phenolsulphone-phthalein tests done after phlorizin |
| 6 | ♂ | 35 | Phosphaturia | 4.5 | 3.5 | 1.3 : 1.0 | 12 | 12 | 14 | 16 | 1.0 : 1.1 | 1.0 : 1.0 | |
| 7 | ♂ | 45 | Chronic prostatitis | 4.8 | 4 | 1.2 : 1.0 | 7 | 10 | 4 | 6 | 1.0 : 1.5 | 1.0 : 1.4 | |
| 8 | ♂ | 24 | Sexual neurasthenia | 1.18 | 1.08 | 1.1 : 1.0 | 12 | 18 | 2.5 | 6 | 1.0 : 2.4 | 1.0 : 1.5 | |
| 9 | ♂ | 40 | Balanoposthitis | 0.92 | 1.14 | 1.0 : 1.2 | 8 | 7 | 10.5 | 9.5 | 1.1 : 1.0 | 1.1 : 1.0 | |
| 10 | ♂ | 46 | Sexual neurasthenia | 1.65 | 1.7 | 1.0 : 1.03 | 10 | 9 | 13 | 13 | 1.0 : 1.0 | 1.1 : 1.0 | |
| Average..... | | | | 2.2 | 1.8 | 1.09: 0.99 | 15.7 | 12.0 | 11.4 | 9.6 | 1.2 : 1.0 | 1.38: 1.09 | |

of sugar values of such minute quantities as to be practically valueless for purposes of comparative estimation, we did not hesitate to increase the dose cautiously until, by numerous tests on healthy and diseased individuals, we ascertained the fact to our full satisfaction that intravenous phlorizin administration in doses sufficiently large to insure satisfactory duration and intensity of sugar reaction was absolutely harmless and not attended by untoward sequelae. The dose of 0.01 gm. phlorizin, contained in our tablets, was found to be entirely sufficient for ordinary purposes, and even injection of the double dose, which was repeatedly made in cases in which no glycosuria

der is emptied by introduction of a catheter which is left in situ, and 1 cg. of phlorizin is injected into one of the arm veins. Testing for sugar is begun at once by letting a few drops of urine flow into test tubes containing a few cubic centimeters of heated Fehling's solution, until typical sugar reaction occurs. The average results of the test under normal and pathologic conditions may be gleaned from Tables 1 and 2. In cases with normal renal permeability sugar appeared in about seven minutes and in cases with pathologic or reduced renal capacity not earlier than fifteen minutes. In both types of cases, sugar excretion was at its acme during the first fifteen minute period, was markedly reduced during the second, and was very low or had disappeared during the third period.

26. Glaesner and Pick: Arch. f. d. ges. Physiol., 1910, 133, 82; 135, 176.
27. Biedl and Kolisch: Eighteenth Congress f. inn. Med., Wiesbaden, 1900.
28. Herszky: Med. Blätter, 1902.
29. Salomon: Berl. klin. Wchnschr., 1909, No. 51.

Our extensive work with the bladder test, which we intend to continue in the future, disclosed in many instances such inconclusive and even contradictory results as to be useless for tabulation. Many problems concerning significance of delayed appearance or entire absence of glycosuria, and relation of percentage to absolute quantity of sugar excretion, are still waiting for their solution. More conclusive evidence is particularly needed with regard to phlorizin as compared with phenolsulphonephthalein estimation. We therefore wish to limit the discussion at this time to a few facts which in the course of our investigations appeared to be fairly well settled.

In normal cases, sugar reaction generally ceased forty-five minutes after its appearance. In pathologic cases, sugar was traceable for considerably longer periods, extending to more or less than an hour, and in a few instances even to two hours. Delayed appearance, which never exceeded seventy-five minutes, did not seem to run parallel to length of sugar reaction. In a few pathologic cases the acme of excretion occurred at a later period than in the normal. In quite a number of cases of arteriosclerosis, contracted kidney, and cancer of the prostate, no sugar reaction occurred, and in only a few of them could delayed and

proof of normal renal capacity. But we fully endorse Greene's³² recent statement that delayed appearance of phlorizin sugar rarely occurs in healthy individuals, and we consider persistently delayed onset of phlorizin glycosuria indicative of impairment of renal function.

In a few cases of hematuria in old prostatitis in whom the phenolsulphonephthalein test was impracticable, prompt phlorizin sugar appearance furnished a most welcome prognostic aid for operative indications. In a large number of this type of cases, on the other hand, persistent absence of glycosuria rendered the test useless.

To sum up, in the bladder test the time method of sugar appearance is of value, while quantitative methods are useless. The bladder phlorizin test is not a successful rival to the well-defined, quantitative bladder phenolsulphonephthalein test.

THE RENAL TEST

The technic of the intravenous phlorizin test for determination of comparative renal permeability is identical with that of the bladder test. As soon as bilateral ureteral catheterization is performed, phlorizin is injected and the appearance of sugar is noted

TABLE 9.—COMPARATIVE PHLORIZIN AND PHENOLSULPHONEPTHALEIN WITH REFERENCE TO QUANTITY OF RENAL URINES IN PATHOLOGIC CASES

| No. | Sex | Age | Diagnosis | Phlorizin | | | Phenolsulphonephthalein | | | | | Quantity of Renal Urines Compared | Remarks |
|--------------|-----|-----|-------------------------------|-----------|------|-----------------|-------------------------|------|-----------|-----|-----------------|-----------------------------------|---|
| | | | | Per Cent. | | Values Compared | Quantity | | Per Cent. | | Values Compared | | |
| | | | | R. | L. | | R. | L. | R. | L. | | | |
| 1 | ♀ | 28 | Bilateral pyelonephritis | 0.8 | 0.56 | 1 : 0.7 | 1.5 | 6.5 | 2 | 9 | 1 : 4.5 | 1.0 : 4.3 | Trace of phenol-sulphonephthal-ein counted as 0.1 |
| 2 | ♀ | 30 | Rightsided renal tuberculosis | 0.37 | 2.4 | 1 : 6.5 | 10 | 30 | Trace | 17 | 0.1 : 1.7 | 1.0 : 3.0 | |
| 3 | ♀ | 27 | Rightsided hydronephrosis | 0.3 | 1.7 | 1 : 5.5 | 14 | 8 | 4 | 6 | 1 : 1.5 | 1.75: 1.0 | |
| 4 | ♀ | 30 | Rightsided renal neoplasm | 0.03 | 1.47 | 1 : 5 | 3.5 | 13 | Trace | 13 | 0.1 : 1.3 | 1.0 : 3.7 | |
| 5 | ♀ | 56 | Bilateral nephrolithiasis | 0.18 | 0.12 | 1.5 : 1 | 16 | 7.5 | 3.5 | 8 | 1 : 2 | 2.1 : 1.0 | |
| 6 | ♀ | 33 | Rightsided pyonephrosis | 1.3 | 2.5 | 1 : 3 | 16 | 3.5 | 7.5 | 8 | 1 : 1 | 4.7 : 1.0 | |
| 7 | ♀ | 46 | Rightsided hydronephrosis | 0.35 | 1.9 | 1 : 5 | 14 | 7 | 14 | 6 | 2.3 : 1 | 2.0 : 1.0 | |
| 8 | ♀ | 30 | Rightsided pyelonephritis | 0.9 | 1.1 | 1 : 1.2 | 6 | 2 | 13 | 4 | 3.0 : 1 | 3.0 : 1.0 | |
| 9 | ♀ | 25 | Rightsided ureter stone | 1.2 | 0.88 | 1.5 : 1 | 26 | 39 | 10 | 14 | 1 : 1.5 | 1.0 : 1.5 | |
| 10 | ♀ | 30 | Rightsided hydronephrosis | 0.36 | 2.0 | 1 : 5.5 | 3.5 | 10 | Trace | 9 | 0.1 : 9 | 1.0 : 2.9 | |
| Average..... | | | | 0.58 | 1.56 | 1.1 : 3.4 | 11.0 | 12.6 | 5.4 | 9.4 | 1.6 : 5.1 | 1.8 : 2.0 | |

faint sugar reaction be obtained on injection of the double dose of phlorizin. In a few of these cases, in which absence of phlorizin glycosuria persisted, initially poor values of cryoscopy and blood urea gradually approached more normal points coincident with improvement of clinical symptoms. Simultaneous phenolsulphonephthalein tests performed in this type of cases always showed delayed appearance and low, but definitely determinable, phenolsulphonephthalein values. While, on repeated testing, phlorizin sugar appearance and quantity showed such a bizarre and irregular curve as to be void of prognostic significance, phenolsulphonephthalein appearance and output, on the other hand, in the same cases assumed the characteristic curve of rising values coincident with improvement of clinical symptoms.

Equally unsatisfactory at our hands was the result of the numerously performed estimations of the total amount of phlorizin glycosuria and of the comparative determination of percentage and absolute quantity of excreted sugar, and, like Casper,³⁰ we do not attach to these procedures any practical value. We also agree with Blum and Prigl,³¹ in refusing to accept unreservedly Kapsammer's statement that normally prompt appearance of phlorizin glycosuria is an absolute

on both sides. It was found that intravenous phlorizin glycosuria, when urine is collected directly from the kidneys, appeared normally about five minutes after injection. Quantitative comparative sugar determinations are then made by means of Lohnstein's saccharimeters in the previously described manner.

Tables 3 and 4 show graphically the average acme, decrease and disappearance of sugar excretion in the comparative test.

Average figures for normal cases show a striking parallelism of comparative appearance and percentage in all three tests, with differences so insignificant as to be negligible.

In the group of pathologic cases, the average of phlorizin appearance was considerably delayed on both sides, while figures for sugar percentage on both sides were somewhat smaller than those found in normal cases. Phenolsulphonephthalein, on the other hand, appeared in pathologic cases about equally as early as in normal cases, while the difference of phenolsulphonephthalein quantity amounted to almost half of that found in normal cases. The average bilateral urea values were considerably reduced as compared with those of normal cases. Averaging of values on the pathologic against those on the normal

30. Casper: Handbuch d. Cystoskopie, 1911, p. 328.
31. Blum and Prigl: Wien. klin. Wchnschr., 21, 22.

32. Greene: Hospital Bull. of the Dept. of Publ. Char. of New York, January, 1917.

side for phlorizin and phenolsulphonephthalein gives a ratio of about 1:4, showing also for pathologic cases a fair parallelism of these tests.

Table 7 was prepared in order to ascertain which of the three tests produced the most uniform comparative figures, establishing it, by these means, as the most accurate and thus the most reliable index of relative kidney function.

In normal as well as in pathologic cases, sugar excretion was at its acme during the first fifteen minute period, was markedly reduced during the second period, and was very low or had entirely disappeared during the third period. Sugar reaction in renal urines had, as a rule, disappeared after forty-five minutes in normal and pathologic cases, and persisted to an hour or longer (seventy-eight minutes in one instance) in only a few observations of the latter type. Since the acme of intravenous phlorizin glycosuria is reached almost immediately after its appearance, and since, for comparative quantitative sugar determination with Lohnstein's saccharimeters, very small urine quantities (less than 1 c.c.) suffice, the time required for the performance of the test is, under favorable conditions, shorter than in any other functional method based on injection of a foreign substance.

For the purpose of comparing the intravenous phlorizin with other well established functional tests, the two most popular methods for comparative estimation of renal function, the phenolsulphonephthalein and urea tests, were chosen. The results of these investigations appear in Tables 5 and 6.

The ratio for comparative values of urea, phlorizin and phenolsulphonephthalein in normal cases was 104:107:187. Thus urea, an end-product of metabolism, naturally excreted by the kidneys, showed almost equal values on both sides (100:104), phlorizin, a foreign substance injected for measuring renal function, running a close second (100:107), while phenolsulphonephthalein, a dye used in the same fashion as phlorizin, showed marked discrepancy of parallelism (100:187).

The most important reason for this phenomenon is, without doubt, the unequal amount of urine which both kidneys under normal conditions may, and as every experienced cystoscopist knows, actually do secrete during the same period of time. Leaking of urine alongside the ureter catheter, temporary plugging of its lumen by mucus or a blood clot, and the often occurring unilateral reflectory auria or polyuria are additional factors in causing quantitative differences in renal urines, collected during certain time periods, as necessary for quantitative phenolsulphonephthalein determination. For the comparative phlorizin test, on the other hand, only determination of the amount of sugar excretion at a certain period of phlorizin glycosuria is needed, since it is well known that both healthy kidneys excrete simultaneously about the same amount of sugar. Tables 8 and 9 serve to illustrate this point.

In normal cases the average ratio for comparative phlorizin and phenolsulphonephthalein values was 100:110, and 100:120, respectively, while the average ratio for quantities of renal urines was 100:150. In pathologic cases the ratio for comparative phlorizin and phenolsulphonephthalein values was 100:300 and 100:170, respectively, this striking incongruity apparently being due to differences in renal urine quantities, the average of which showed a ratio of 100:270.

The wide discrepancy of the ratio of renal urine quantities between normal and pathologic cases is most decidedly due to the more frequent occurrence of reflectory unilateral polyuria in the pathologic cases, which, according to Albarran, is observed only rarely in persons with healthy kidneys.

In cases of advanced unilateral pyonephrosis (stone, tuberculous, etc.), when occasionally only a few drops can be collected from the diseased side, and in unilateral hematuria, the intravenous phlorizin test always furnished us with the desired information as regards comparative renal function, which not infrequently was either missing or unsatisfactory with other methods. In renal urines we have not observed absence of phlorizin glycosuria, which, as previously mentioned, so often occurred in application of the test on bladder urines.

The ideal aim of functional renal diagnosis tends toward determination of the absolute and largest amount of work which each kidney is able to perform. Since this ideal is not practically available at present, we must be content with methods that, like the phlorizin test, are able to demonstrate the comparative working capacity of each kidney. We hope that the improvement of the test by intravenous administration will serve to secure for it its well earned place among recognized functional methods for determination of comparative renal function. Functional kidney diagnosis is still in its infancy, and can be advanced only by critical consideration of the relative value of the various functional methods, and only in this way will survival of the fittest for practical purposes eventually result.

CONCLUSIONS

1. The intravenous phlorizin test, with our simplified technic, is a commodious and expeditious procedure.
2. In normal cases, sugar appears within seven minutes in bladder urine, and within five minutes in renal urines. The acme of sugar excretion sets in within a few minutes, and its disappearance occurs within forty-five minutes after phlorizin injection.
3. As a test for total renal permeability (bladder test) its usefulness is limited. The prompt appearance of sugar generally indicates normal function, and persistently delayed appearance is characteristic of impaired renal function. Quantitative determination of total sugar excretion is useless.
4. As a test for comparative renal function, the intravenous phlorizin test gives more accurate, and thus more reliable, results, while its technic is as simple and less time consuming than that of the phenolsulphonephthalein test.

999 Sutter Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. THOMAS AND BIRDSALL, AND
KROTOSZYNER AND STEVENS

DR. ROBERT H. GREENE, New York: Any investigations I have carried on as regards the permeability of the kidney have been from the standpoint of the surgeon, and I have endeavored rather to keep away from the work of the physiologic chemist. I have not felt qualified for it, and I have desired to try to find things which were easy to do, and which would give me some idea as to the condition of my patient in a very short time, and whether or not the work of a physiologic chemist should be brought into any particular case.

Several years ago I tried in the wards at the hospital cryoscopy, methylene blue and phlorizin in connection with ure-

teral catheterization, and I found that the phlorizin test was the most practical. Later, when phenolsulphonephthalein came to the front, in a comparative series of cases, some of which were medical and some surgical, I tried to find out in a rather rough and ready way which was the most accurate, phenolsulphonephthalein, phlorizin, or the estimation of the nitrogen in the urine compared with the nitrogen in the blood. I also have carried on some little studies on indigocarmin. Indigocarmin, in my experience, is a useful test in connection with ureter catheterization, but it is not as useful in a rough and ready way because it is not elastic enough. The series of cases in which I tried phlorizin, the estimation of the nitrogen in the blood compared with the nitrogen in the urine, and the phenolsulphonephthalein test showed a marked resemblance in the results obtained. The ratio of difference between the three methods was very slight indeed. The most accurate was the estimation of the nitrogen in the blood compared with the nitrogen in the urine; but, of course, this last is work that has to be carried on by a physiologic chemist. The phlorizin test was second and the phenolsulphonephthalein third.

DR. B. S. BARRINGER, New York: We all have certain reasons for certain tests. At Bellevue we use three tests, the phlorizin, the percentage urea, and the indigocarmin, for three different reasons. We believe that phlorizin—and that comes first in our estimation—gives a good quantitative estimation, an absolute ratio of what both kidneys are doing. We use the percentage urea test only in comparing the output of the two kidneys, because it gives some sort of a vague index of the relative power of each kidney to concentrate urea. We use the indigocarmin test because it is an easy test to use with the cystoscope, and we can make a diagnosis at times without ureter catheterization, simply by means of the cystoscope in the bladder.

I think when all has been said and done that we cannot depend on the functional tests alone. For instance, if we are going to perform a prostatectomy and we find the phenolsulphonephthalein is low and the blood nitrogen high, we are cautious about operating; but it does not necessarily mean that we do not operate.

DR. ABRAHAM HYMAN, New York: We have employed most of these tests as a routine, and have practically come down to the use of indigocarmin, phenolsulphonephthalein, and the examination of the blood for urea and nitrogen retention. The phenolsulphonephthalein test we do not use in conjunction with ureteral catheterization; a two to three hour bladder specimen is examined so as to obtain an indication of the total output of both kidneys. Indigocarmin combined with ureteral catheterization has been found the most practical, simple and reliable of all the functional tests. Whereas all these tests are of value, and more so if three or four of them are applied, too much stress should not be placed on the results; patients with negative tests should not always be refused operation. During the past few years a few patients with no indigocarmin and phenolsulphonephthalein output, and a number with very slight function, have been successfully operated on for serious renal and prostatic disease. All such operations should be performed under nitrous oxid and oxygen anesthesia. Ether will often turn the balance in the wrong direction.

DR. WILLIAM F. BRAASCH, Rochester, Minn.: It is a difficult matter to place any definite comparative value on the phlorizin, the indigocarmin and the phenolsulphonephthalein tests. As far as phlorizin is concerned, my experience has been with the old method of subcutaneous injection, and I think Rowl.ree and Geraghty have shown the fallacy of these tests. The method of Dr. Krotoszyner is entirely different. It sounds very promising, and I mean to try it out thoroughly.

There is no doubt that, as a routine procedure, phenolsulphonephthalein is more accurate as an aid to differential diagnosis than indigocarmin. But I believe that indigocarmin, when injected intravenously, has its value. Not infrequently I find it valuable to employ both indigocarmin and phenolsulphonephthalein simultaneously. This would seem impossible because of the difficulty of making colorimeter tests, but the difficulty was obviated by Dr. Anders Peterson, who suggested a method by which the blue color could be removed. He

found that by simply adding sodium hydroxid the blue color disappears and the colorimeter test for phenolsulphonephthalein may be continued.

DR. ANTON G. RYTINA, Baltimore: I have had very little or no experience with phlorizin, a fair amount of experience with indigocarmin and quite an extensive experience with phenolsulphonephthalein. There is no question whatever that indigocarmin has a place, but for comparative values I feel that it does not compare with phenolsulphonephthalein.

DR. HERMAN L. KRETSCHMER, Chicago: Some years ago when the phenolsulphonephthalein test was first introduced we ran a small series of cases, comparing the phenolsulphonephthalein, the indigocarmin, and the phlorizin tests. At that time we were not estimating the output of indigocarmin; we merely took the time of appearance of the blue dye and the time of appearance of the sugar. Our results were rather uniform as regards time of appearance, all three tests running quite uniform; that is, where there was a delay in time of appearance, the delay was the same for all three tests.

Because of the ease with which one could read the phenolsulphonephthalein figures, we have since then been adhering to the phenolsulphonephthalein in our work.

One of the speakers called attention to the fact that the phenolsulphonephthalein figures occasionally might be very low. I think it was Keyes a few years ago who called attention to the fact that the presence of the ureteral catheters caused a disturbance of the renal function, so that the phenolsulphonephthalein may be low and the function good. In all cases in which the phenolsulphonephthalein figures are very low (I recall one or two instances in which the output from the side which was to remain was only 2 per cent.) I make a second test later, getting the whole bladder urine.

DR. GEORGE W. STARK, Syracuse, N. Y.: For about two years I have been using a combined functional test which I believe gives us a better insight as to the reserve power of the kidney than any other test mentioned. It is also a vascular and tubular test—the introduction of water into the circulation together with the phenolsulphonephthalein test. It is not necessarily new.

This test is based on the fact that the viscosity of the blood is absolutely constant, the urine being the varying factor. The normal figures are based on thirty normal cases. The patient is given no water for two hours previous to the test; then a pint of Saratoga Vichy is given. A catheter is left in the bladder and the urine collected for fifteen minutes. The normal case runs 20 c.c.; specific gravity about 1.024. In about half an hour after this extra water is thrown into the circulation all the reserve power of the kidney is brought into play. Under this forced excretion, normally in the third quarter there is excreted about four times the amount that we had in the first quarter. This corresponds to our experimental work on kidneys (that is, one can remove three fourths of the kidney substance and have an animal live). This hypersecretion continues for about an hour and then gradually decreases. Corresponding to this increased secretion is a lowering of the specific gravity to about 1.004 or 1.005. In other words, this shows the ability of the kidney to dilute and concentrate, and is a vascular test. In nephritis, the first quarter is somewhat less, usually under 20 c.c., while in the third quarter there may be increased elimination under forced water drinking, and very little change in the specific gravity, depending on the amount of kidney substance destroyed. Thus, if we get an elimination of 15 c.c. in the first quarter, and an elimination of 30 c.c. with but a slight change in the specific gravity, we assume that about 50 per cent. of the kidney substance is gone.

This test in conjunction with the phenolsulphonephthalein test, I believe, will give a better insight as to the extent of the injury to both the glomeruli and the tubular system of the kidney, and also as to the reserve power of the kidney.

DR. JOHN T. GERAGHTY, Baltimore: In our work with functional tests it has been our purpose, not so much to duplicate the tests that give us the same information, but to try to employ tests that give us information that we will not get from any one test. For that reason we test the excretory power of the kidney, which we do best with phenolsulphone-

phthalein. Indigocarmin and all these substances practically run parallel. It is simply a question of which can be read the best. They are all excreted by the same mechanism of the kidney. But we want to know, besides the excretory capacity of the kidney, any retention which may be present. It is perfectly possible for a kidney to have very markedly decreased excretion and at the same time to be able to excrete the substances that are necessary; so we make a test for retention. We select for this purpose the urea. Urea, creatinin and total nitrogen run practically proportionate. At present we are using urea because the method is simple. The concentrating power of the kidney is another function. So these three tests are all valuable, each different from the others. If there is a markedly increased excretion there will be, as a rule, retention. The concentrating power of the kidney is just as specific a function as the excretion of phenolsulphonephthalein itself, or of urea. It has been known for many years that the concentrating power of the kidney is one of the first things that suffer. There is probably only one disease in which the concentrating power is interfered with and the kidneys normal, and that is diabetes in syphilis.

DR. MARTIN KROTOSZYNER, San Francisco: I cannot agree with Dr. Thomas' sweeping condemnation of cryoscopy, a method which, while it will never become popular among urologists on account of its difficult technic, is nevertheless one of the best tests for the determination of the functional capacity of the kidneys that we possess. On the basis of my constantly growing experience with that method, I venture the statement that in the comparatively few doubtful cases where functional tests are of paramount value, cryoscopy probably gives the most accurate prognostic information of all the tests at our command.

In closing I would once more ask you to try the intravenous phlorizin test on your own patients, as I think it possesses great advantages for comparative determination over other tests. I have not included the indigocarmin test in the tabulated comparative estimations, since that test is not applicable to quantitative determinations and thus is less flexible and less accurate than other tests. For purposes of comparative functional determinations I consider of the retention tests, the urea test, and of the excretion tests, the intravenous phlorizin test, the most commodious and accurate. Particularly in doubtful cases the simultaneous application of the comparative urea, phenolsulphonephthalein, and phlorizin tests is apt in almost every instance to give adequate data on relative kidney function.

DR. B. A. THOMAS, Philadelphia: First answering Dr. Krotoszyner, I did not mean to infer that cryoscopy was absolutely valueless, but I do say, so far as its application to the total urine and blood is concerned, that this is practically true, which is the matter of importance relative to prostatectomy. Doubtless in the experience of a few it may still be serviceable so far as individual urines are concerned, but not of any more value than the information to be obtained from the employment of phenolsulphonephthalein or indigocarmin. Unfortunately it affords no more information than the more modern tests and adds difficulty in the technic.

I agree thoroughly with what Dr. Geraghty has said, that what we want to know respecting these various tests is which is simplest, most practical and most reliable. This is the avowed object of the paper. Undoubtedly, with some the results are sufficiently uniform that there need be no particular discrimination. Frequently a second test may and should be utilized to supplement and confirm the findings of the first. Certainly any one will admit that two or more tests are of more value than a single one.

I am just as anxious to adopt the best functional kidney test as any man here, but I have not been shown by my own experience that phenolsulphonephthalein is superior to indigocarmin so far as ease of application, interpretation or reliability of results go. The advantage of indigocarmin is the simplicity of its application. In the past our experience has been largely with the employment of indigocarmin intramuscularly, although recently we have been experimenting considerably with the intravenous use of this substance, using one tenth to one fifth of the intramuscular dose. Employed

in this way intramuscular pain, the only objection, comparatively, with phenolsulphonephthalein, is overcome. If merely unilateral kidney function be desired, simple cystoscopy and the observance of the onset of the dye from the respective ureters—chromo-ureteroscopy—suffices to provide the desired information. If quantitative output be desired from the respective sides, obviously the ureters must be catheterized, as in the case of any other functional test, but this requirement with indigocarmin is the exception and not the rule. Herein lies the simplicity and practicability of the indigo test. I have seen cases in which one could not introduce into the ureteral orifices other than the tips of No. 5 catheters. Under such circumstances I defy any cystoscopist to apply the phenolsulphonephthalein test unilaterally. Yet it was a simple matter to determine the functions of the respective kidneys by employing indigo. Thus, in not a few instances, it is impossible to use any test that depends on synchronous bilateral ureteral catheterization.

FACIAL PARALYSIS FOLLOWING PASTEUR ANTIRABIC TREATMENT

REPORT OF A CASE OF FACIAL DIPLEGIA WITH
ONSET SEVENTY-THREE DAYS AFTER THE
BEGINNING OF PROPHYLACTIC
INOCULATIONS *

ROBERT L. LEVY, M.D.

BALTIMORE

A report of "treatment paralysis" following anti-rabic inoculations should in no sense be regarded as casting the slightest doubt on the advisability of carrying out the Pasteur treatment in cases in which it is indicated. Though hundreds of thousands of persons have, by this means, been prevented from developing an almost surely fatal disease, there are records of only 150 cases in which paralyzes have followed its use. Of these patients, twenty-five died.¹

It is desirable, however, that such cases be placed on record in order that a true estimate of their frequency may be made and, if possible, some light thrown on their obscure etiology.

The following history is of interest, first, because of the occurrence of isolated facial diplegia, an unusual form of "treatment paralysis," and, secondly, because of the remarkably long latent period between the beginning of treatment and the development of paralytic phenomena.

REPORT OF CASE

History.—A. U. N. (Med. No. 36828), a white man, aged 37, storekeeper, from Plymouth, N. C., was admitted to the medical service, Nov. 14, 1916, with paralysis of the face and pains in the head. The family history was unimportant. There had been no nervous diseases in the family. The general health of the patient had been good, though he was of extremely nervous temperament. At the age of 9 he had what his physician called "hemorrhagic fever," and at 21, 27 and 32, gonorrhea. He denied syphilis. He was a heavy smoker but a very moderate user of alcohol. He had been married eight years. There had been no children.

Aug. 20, 1916, he was scratched on the arm by a supposedly rabid dog, which died a few days later. The wounds were cauterized with phenol. The head of the animal was sent by express to the laboratory of the North Carolina Board of Health, and examination of the brain revealed no Negri

* From the Medical Clinic of the Johns Hopkins Hospital.

1. A review and critical analysis of this group of cases may be found in Remlinger: *Ann. de l'Inst. Pasteur*, 1905, **19**, 625. Simon: *Centralbl. f. Bakteriol., Orig.*, 1913, **68**, 72. Fielder, F. S.: *THE JOURNAL A. M. A.*, June 3, 1916, p. 1769. Geiger, J. C.: *THE JOURNAL A. M. A.*, Feb. 17, 1917, p. 513.

bodies. In spite of this assurance, he became extremely apprehensive and, against the advice of his physicians, insisted on taking the Pasteur treatment, which he received at the State laboratory in Raleigh from Aug. 31 to Sept. 19, 1916. On the fourth day of treatment he began to have sensations of "something crawling under his skin," first in one place, then in another. In addition, there were "neuralgic" pains in the lumbar region and in the muscles. These symptoms had persisted. Two weeks before admission he began to feel muscular twitchings, especially in the head, neck and legs. Six days before coming to Baltimore, a severe bitemporal headache appeared, and had not been relieved by sedatives. On rising in the morning, three days before admission to the hospital, he noticed that the left side of his face was paralyzed.

Physical Examination.—The patient was extremely neurotic and much concerned about his condition. He frequently

The urine contained no albumin, sugar or casts. Blood examination revealed: red blood cells, 4,346,000; white blood cells, 5,800; hemoglobin (Sahli), 82 per cent. The differential count was normal. The Wassermann reaction on the blood serum was negative.

November 20, the condition was unchanged. There was no further paralysis. Psychic symptoms were abating.

Lumbar puncture was performed. A clear fluid was obtained, containing eight cells and no excess of globulin. The Wassermann and colloidal gold reactions on the fluid were negative.

November 22, electrical examination of the facial muscles gave the following findings: Feeble response was obtained through the nerve on the left when stimulated with the faradic current. Direct stimulation of the muscles with the faradic current caused some contraction, but excitability was markedly decreased. When stimulated directly with the galvanic cur-

TABLE 1.—REPORTED CASES OF FACIAL PARALYSIS FOLLOWING ANTIRABIC TREATMENT

| Case No. | Author | Demonstration of Rabies in Biting Animal | Age of Patient* | Facial Paralysis | | | Result | Remarks |
|----------|-------------------------------|--|-----------------|-----------------------------------|-----------------------------------|--------------------|---|---|
| | | | | Noted | | Extent | | |
| | | | | Days After Bite | Days After Beginning of Treatment | | | |
| 1 | Darkschewitz ¹ .. | No | 28 | 30 | 7 | Bilateral | Recovery after 6 months | Patient alcoholic; left-sided facial paralysis appeared two days after right |
| 2 | Pfeilschmidt ² ... | Patient not bitten | 24 | About 60 after supposed infection | 24 | Bilateral | Recovery in about 3 weeks | Patient syphilitic and very neurotic; did a necropsy on a rabid dog, and though uninjured, took treatment prophylactically; illness began on the eleventh day of treatment, after which no further injections were given; interval of four days between paralysis on the two sides; at time of complete diplegia, taste disturbed over anterior third of tongue |
| 3 | Borger ³ | No | ? | 25 | 24 | Unilateral (right) | Well in 14 days | Illness began with sciatica on sixteenth day of treatment; injections continued; associated with the facial paralysis there was dulling of the sensation of taste |
| 4 | Jochmann ⁴ | Yes | 30 | 22 | 18 | Unilateral (right) | Well in 14 days | Illness began with sciatica on eighteenth day of treatment; still complained of paresthesias of legs on discharge from hospital |
| 5 | Hasseltine ⁵ | Questionable; probably yes | 52 | 22 | 23 | Bilateral | Recovery in 3 weeks | Paralysis developed after exposure to cold wind; patient alcoholic; interval of one day between paralysis on the two sides |
| 6 | Fielder ⁶ | Yes | 37 | 53 | 18 | Bilateral | Recovery after a few weeks | Interval of three days between paralysis on the two sides |
| 7 | Fielder ⁶ | Questionable | Adult | 54 | 23 | Unilateral (right) | Recovery after 4 weeks | |
| 8 | Fielder ⁶ | Questionable | Adult | 53 | 31 | Unilateral (right) | Recovery after 2 weeks | |
| 9 | Fielder ⁶ | Questionable | Adult | 29 | 16 | Unilateral | Complete recovery after 6 months | Illness began with pain and weakness in legs |
| 10 | Geiger ⁷ | Yes | Adult | 21 | 17 | Unilateral | Traces 9 months later | |
| 11 | Levy ⁸ | No | 37 | 84 | 73 | Bilateral | No improvement after 3 weeks in hospital; traces 9 months later | Patient very neurotic; interval of eleven days between paralysis on the two sides; at time of complete diplegia, dulling of taste over anterior two-thirds of tongue |

* The patients were all men with the exception of Case 10, in which the sex is not noted.

1. Darkschewitz: Neurol. Centralbl., 1898, 17, 98.

2. Pfellschmidt: Neurol. Centralbl., 1908, 27, 1066.

3. Borger: Geneesk. Tijdschr. f. Nederl. Indië, 1911 (edited by Simon)

4. Jochmann: Deutsch. Ztschr. f. Nervenhe., 1913, 47 and 48, 267.

5. Hasseltine: Pub. Health Rep., 1915, 30, 2226.

6. Fielder: THE JOURNAL A. M. A., June 3, 1916, p. 1769.

7. Geiger: THE JOURNAL A. M. A., Feb. 17, 1917, p. 513.

8. Levy: Present report.

became lacrimose during the recital of his history. The temperature, both on admission and subsequently, was normal. He was large and well nourished. There were several pigmented scars about the left elbow, evidently the remains of his carbolized wounds.

There was complete left facial paralysis, without sensory disturbance on either the face or the tongue. There was marked lacrimation from the left eye.

The pupils reacted normally. There were no eye-muscle palsies. The eyegrounds were normal. The heart and lungs were clear. The blood pressure was 142 mm. of mercury systolic and 92 diastolic. The liver and spleen were not felt. There were no fibrillary twitchings; no muscular weakness or atrophy. Neurologic examination, save for the facial paralysis and slightly exaggerated deep reflexes, was negative.

A special nose, throat and ear examination revealed no abnormalities. Both cochlear and vestibular divisions of the eighth nerves were intact.

rent, the muscles responded more slowly on the left side than on the right, and there was decreased excitability. Cathodal closing contraction was greater than anodal closing contraction.

November 27, the patient complained of stiffness of the right corner of the mouth and of an increase in the "feeling of something crawling over the body." There was slight weakness of the lower right side of the face.

November 28, the entire right side of the face was paralyzed, except for the right frontalis muscle, which contracted slightly. There was great difficulty in keeping food within the oral cavity. The expression was mask-like.

November 30, the patient was very nervous. Control of the right half of the face was now completely lost. He was having local electric treatment every other day.

December 4, the patient complained of numbness of both legs. There was no objective sensory disturbance over the body. There was marked dulling of taste sensation over the

anterior two thirds of the tongue on both sides. He frequently mistook bitter for sweet, salt for sour, etc., and was much concerned about his condition. He left the hospital at his own request. He was advised to continue electrical treatment to the face at home.

A note from the patient's physician, June 25, 1917, stated that "Mr. N. is not taking any treatment now. He is very little better, judging from the appearance of his face."

The following extracts from a letter received, Nov. 20, 1916, from Dr. C. A. Shore, director of the Laboratory of Hygiene of the North Carolina State Board of Health, furnish further interesting data:

"Mr. N. received antirabic treatment in this laboratory from August 31 to September 19, inclusive. I do not think that Mr. N. needed this treatment and I strongly advised against it. In the first place, the suspected dog did not bite him, but merely scratched his arm, on August 20. The dog died, according to Mr. N.'s statement, on August 24. The head was expressed to us; the brain was in good condition when received and the microscopic examination failed to show any Negri bodies.

"We have treated 1,620 patients in this laboratory, and from this number, excluding that of Mr. N., there has been only one case of paralysis. This developed on the fourteenth day of treatment. The patient had a complete paralysis of the lower limbs and partial paralysis of the muscles of the arms and trunk. I have never been sure whether it was a case of infantile paralysis or a paralysis resulting from the antirabic treatment. The patient was 15 years old at the time and made a complete recovery.

"The schedule of treatment which we use in this laboratory at present is that recommended by the Hygienic Laboratory of the U. S. Public Health Service."

COMMENT

A majority of cases of "treatment paralysis" have developed while the patients were receiving the injections; about one quarter, according to Simon, within seven days thereafter. Fielder cites an instance of facial paralysis with onset thirty-one days after beginning treatment, and Geiger a case of neuritis, with spasmodic contraction of the neck muscles, occurring forty-five days after the first inoculation.

In spite of the fact that in the case here reported seventy-three days elapsed between the beginning of treatment and the onset of paralysis, there can be no reasonable doubt as to the direct relationship between the antirabic therapy and the facial diplegia. Symptoms began after the fourth injection and were similar to those described in other instances of "treatment paralysis." Furthermore, the gradual development of paralysis of the right side of the face while the patient was under careful supervision in the hospital ward makes it highly unlikely that this was an example of simple Bell's palsy.

In the literature are to be found records of ten other cases of isolated facial paralysis following antirabic treatment. These are collected in the accompanying table.

An analysis of the table brings out the following points:

1. In at least three instances, the biting animal was proved nonrabid.
2. All cases in which complete data are available occurred in adult males.
3. The earliest appearance of the facial paralysis was on the seventh day, the latest, exclusive of the present case, was on the thirty-first day after beginning treatment.
4. In six cases the facial paralysis was unilateral, in five bilateral.

5. In the bilateral cases, an interval of from one to eleven days elapsed between the development of paralysis on the two sides. In no instance were both sides of the face paralyzed at onset.

6. Dulling of taste over the anterior portion of the tongue accompanied the facial paralysis in three instances.

7. Nine of the eleven patients recovered. In two cases there were traces of paralysis nine months later.

8. Of 150 reported cases of treatment paralysis, eleven, or 7.3 per cent., have been of the isolated facial variety.

The etiology of these paralyzes is still in doubt. The various theories as to their causation have recently been adequately discussed by Fielder, who sums them up as follows: "There is no doubt that in most of the cases, at least, the symptoms are caused, not by street virus infection, modified by the treatment, but by the treatment itself either through the medium of fixed virus infection or through the action of a toxin, or both. In any event there must be a special idiosyncrasy on the part of the patient. Otherwise the cases would be enormously more frequent than they are." Alcoholic, syphilitic and neurotic individuals are said to be particularly susceptible.

Obviously no special form of therapy based on etiologic considerations can be carried out.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

BORCHERDT'S MALT SUGAR.—A mixture containing approximately maltose 87.40 per cent., dextrin 4.35 per cent., protein 4.40 per cent., ash 1.90 per cent., moisture 1.95 per cent.

Actions and Uses.—Borcherdt's malt sugar may be used where maltose is indicated in the feeding of infants, particularly in the treatment of constipation. The nutritive value of 500 Gm. of Borcherdt's malt sugar corresponds to approximately 1,985 calories.

Dosage.—It may be used in all milk mixtures in the same proportions as lactose (sugar of milk), that is, one ounce of Borcherdt's malt sugar (two tablespoonfuls) to a 20 ounce mixture.

Manufactured by The Borcherdt Malt Extract Co., Chicago. No U. S. patent. U. S. trademark No. 64467.

Borcherdt's malt sugar is prepared by the action of malt diastase on starch.

It is a yellowish-brown powder having a malt odor and a sweet taste. It is somewhat hygroscopic and very soluble in water.

If a few drops of iodine test solution be added to an aqueous solution of Borcherdt's malt sugar, a reddish-violet but not a blue color is produced.

The maltose content of Borcherdt's malt sugar is determined according to the method described in U. S. Dept. of Agric., Bureau of Chem., Bulletin No. 107, page 46.

The protein content of Borcherdt's malt sugar is calculated from the nitrogen content ($N \times 6.25$) as determined by the method described in U. S. Dept. of Agric., Bureau of Chem., Bulletin No. 107, page 5.

TYRAMINE-ROCHE — Para - Hydroxy - Phenyl - Ethyl - Amine Hydrochloride. — $\text{OH.C}_6\text{H}_4.\text{CH}_2.\text{CH}_2.\text{NH}_2.\text{HCl}$. — The hydrochloride of the base para-hydroxy-phenyl-ethyl-amine $\text{OH.C}_6\text{H}_4.\text{CH}_2.\text{CH}_2.\text{NH}_2$ obtained synthetically.

Action, Uses and Dosage.—See New and Nonofficial Remedies, 1917, p. 105, under Tyramine.

Manufactured by F. Hoffmann-La Roche & Co., Basel, Switzerland (The Hoffmann-La Roche Chemical Works, New York). No U. S. patent or trademark.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address . . . "Medic, Chicago"

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SATURDAY, DECEMBER 1, 1917

A PROBLEM CONCERNING EDIBLE FATS

"The great changes which the theories of the science of nutrition have undergone in the course of the past few years," we are reminded by Halliburton and Drummond¹ of London, "are now being rewarded by valuable practical applications of laboratory results to the great problems of animal nutrition, and the national welfare. Such a problem is that which deals with the determination of the relative value as food-stuffs of dairy butter and its numerous substitutes." These authors have accordingly undertaken to expand our knowledge in this field by a study of the nutritive value of margarins and butter substitutes with reference to their content of the fat-soluble accessory growth substance.

It deserves to be emphasized that the association of food hormones or vitamins with certain naturally occurring fats, whereby somehow they promote growth in experimental animals, was originally described by American investigators: McCollum and his associates at the University of Wisconsin, and T. B. Osborne and Lafayette Mendel in New Haven. The British investigators in reviewing the progress made in this new field of investigation, confined so largely to this country, point out that although our knowledge of the substance itself is as yet scanty, we are in possession of certain information as to its occurrence. It is present in butter,² butter fat,³ butter oil,⁴ egg yolk,⁵ cod liver oil,⁶ the lower melting point fractions of beef fat,⁴ and kidney and heart fat.⁷ On the other hand, it is apparently absent from the majority of oils of vegetable origin, since olive oil,⁸ almond oil,⁶ corn

oil, sunflower seed oil, bleached cottonseed oil and linseed oil⁹ were unable to replace such a fat as butter in the experimental rations used. The only animal fat as yet found to be entirely deficient in the substance is lard.¹⁰

The high prices that the usual household fats have demanded in recent times have brought into prominence a large number of so-called butter substitutes. The recent increase in their consumption may truly be called enormous. The higher priced margarins are usually derived from animal fats. Oleo-oil forms their basis. Vegetable oleomargarins are prepared by the utilization of some inexpensive vegetable oil, such as coconut oil, peanut oil, cottonseed oil, sesame oil or maize oil, as a basis. Liquid oils are also being converted into edible fats by the process of hydrogenation. The so-called nut butters or pastes are also replacing the more expensive butter.

The conclusions of the research by Halliburton and Drummond have been thus formulated: The fat-soluble accessory growth substance is present in beef fat and "oleo-oil," and is present in margarins prepared on such a basis. Such margarins are nutritively the equivalent of butter. Coconut oil, cottonseed oil, arachis oil and hydrogenated vegetable oils contain little or none of this accessory substance; hence margarins prepared with a basis of these fats have not an equal nutritive value to that of butter. Nut butters prepared from crushed nuts and vegetable fats are similarly not equal to butter. Lard substitutes prepared from vegetable oils are equal to lard in their nutritive value, both alike being destitute of the fat-soluble accessory substance.

Despite the importance of these researches and the unquestioned information which they furnish in harmony with many data already established by American investigators, we believe that in fairness to the many useful butter substitutes and margarins now available, a word of caution should be uttered. No one has questioned the edibility and the high degree of digestibility of essentially all of these products that have been examined as to their alimentary utilization. In this respect, like the familiar fats, they leave little to be desired. Oleomargarin has long been immune from attack on the ground of poor digestibility by its numerous frequently unfair detractors. On the other hand, the fat-soluble food hormones or vitamins are reported to be present in the leaves of green vegetables as well as in the milk, butter and eggs that are commonly found in the usual dietary. A liberal varied ration is thus likely to avert danger of lack of vitamins. We must not go to the extreme of forgetting the calorific value of fats quite aside from their content of food accessory substances.

1. Halliburton, W. D., and Drummond, J. C.: The Nutritive Value of Margarines and Butter Substitutes with Reference to Their Content of the Fat-Soluble Accessory Growth Substance, *Jour. Physiol.*, 1917, **51**, 235.

2. McCollum, E. V., and Davis, M.: *Jour. Biol. Chem.*, 1913, **15**, 167.

3. McCollum, E. V., and Davis, M.: *Jour. Biol. Chem.*, 1913, **15**, 167. Osborne, T. B., and Mendel, L. B.: *Jour. Biol. Chem.*, 1913, **15**, 311.

4. Osborne, T. B., and Mendel, L. B.: *Jour. Biol. Chem.*, 1915, **20**, 379.

5. Osborne, T. B., and Mendel, L. B.: *Jour. Biol. Chem.*, 1913, **15**, 311; *ibid.*, 1913, **16**, 423.

6. Osborne, T. B., and Mendel, L. B.: *Jour. Biol. Chem.*, 1914, **17**, 401.

7. McCollum, E. V., and Davis, M.: *Jour. Biol. Chem.*, 1915, **21**, 179.

8. McCollum, E. V., and Davis, M.: *Jour. Biol. Chem.*, 1913, **15**, 167. McCollum, E. V., Simmonds, N., and Pitz, W.: *Am. Jour. Physiol.*, 1916, **41**, 361.

9. McCollum, E. V.; Simmonds, N., and Pitz, W.: *Am. Jour. Physiol.*, 1916, **41**, 361.

10. McCollum, E. V., and Davis, M.: *Jour. Biol. Chem.*, 1913, **15**, 167. Osborne, T. B., and Mendel, L. B.: *Jour. Biol. Chem.*, 1913, **16**, 423.

The real danger appears in connection with the enforced rations of the poorer classes. For them, with their limited opportunities of purchase, the main conclusion of Halliburton and Drummond, that among the current products the butter substitutes that can best replace butter presumably are the margarins made of so-called "oleo-oil" from beef fat, seems more pertinent. As the London investigators remark, in ordinary times the consumption of beef dripping, which is considerable among the poor, would to a large extent supply the lacking properties of a vegetable-oil margarin. But at the present time beef itself is expensive, and the opportunities of obtaining dripping are therefore minimized. At the same time the three important foods for children (milk, butter and eggs) have risen in cost, so as to be almost prohibitive to those with slender incomes. The vegetable oil margarins still remain comparatively cheap, and the danger is that unless measures are taken to insure a proper milk supply for infants at a reasonable charge, these infants may run the risk of being fed, so far as fat is concerned, entirely on an inferior brand of margarin, destitute of the growth-promoting accessory substance. Therefore, Halliburton and Drummond conclude, it would be truer economy even for the poor to purchase smaller quantities of an oleo-oil margarin if they cannot afford the luxury of real butter.

ON KEEPING THE FAITH

In the *Deutsche medizinische Wochenschrift* for May 18, 1916, appeared a letter signed by Dr. J. Schwalbe, the editor, which has become famous. While at that time the *Wochenschrift* was coming to this office more or less regularly, that particular issue was not received; and the efforts made to secure a copy were fruitless. A copy of the letter recently came into our hands. This letter is not only one of the important historical documents of the war, but it gives a revealing flash of the spirit that must rule in Germany before that nation can be readmitted to fellowship in the world-state. The facts of the case are clear and simple. The official reason given by the German government in 1914 for declaring war on France was that French aviators had dropped bombs in the vicinity of Nürnberg before any other outbreak of hostilities. This was officially denied by the French government. And there the matter practically rested for the outside world until the publication of Schwalbe's letter in May, 1916. From this letter we quote:

In my article "French-National Medicine" (No. 11, p. 327, line 1) I mentioned among other things—in political justification and in reply to the accusations of our enemies—that a French aviator had dropped bombs on Nürnberg prior to the declaration of war. I am apprised in a statement which Privy Councilor Riedel of Jena secured from the magistrate of Nürnberg that my memory had failed me to some extent in this matter: Not at all; I read in the newspapers of August 2, 1914, the news item that on that day, according to the statement of the officers of the

Nürnberg railroad—forwarded by the semiofficial Bavarian correspondent, Hoffman—to the effect that aviators had been seen on the Nürnberg-Kissingen line of the railway and on the Nürnberg-Ansbach line, and that they had dropped bombs on the right of way. However, further correspondence between Privy Councilor Riedel and the magistrate of Nürnberg has demonstrated that this assertion, which hitherto has never been corrected, and which has been generally accepted by us as evidence of infraction of the rights of nations on the part of French aviators, is in fact erroneous. The Nürnberg magistrate, under date of April 3, 1916, writes as follows: "The army authorities here have no knowledge of any bombs having been dropped by enemy aviators on the Nürnberg-Kissingen and Nürnberg-Ansbach lines either before or since the declaration of war. All statements and news items to the contrary have been proved to be false."

I consider it to be my self-evident duty to make this correction now. It frees the French of the blame which has been placed on them in consequence of this false piece of news.

In the rest of the letter Dr. Schwalbe discusses the "war state of mind," particularly the credence given by the other side to unverified rumors and accusations against the enemy. Dr. Schwalbe frankly avows in this letter that there is no evidence whatever that the Nürnberg bomb-dropping ever occurred. It is hardly conceivable, therefore, that this reason for declaring war could have been put forward by the German government in good faith. No one can look on it as other than a deliberate attempt at deception. Indulgence in fantasies is not a weakness of Prussian officials. The alleged Nürnberg bomb-dropping will take its place in human history along with the forged Ems telegram as a monstrous perversion of human ethics and fair dealing.

Germany can but reap the consequences of repeated official falsification of this sort. We in this country have not forgotten the perjured testimony, perhaps suborned, to which the German government appealed to show the presence of guns on the *Lusitania*; we have not forgotten the childish attempt to controvert the accusations made relative to the torpedoing of the *Sussex* by reproducing a "sketch" made by a submarine commander. The insincere talk of peace in December, 1916, which was later admitted by the German chancellor to have been merely a blind in order to give time for the building of more submarines, is still fresh in our minds. The discrepancy between the profession of good will and friendship by official German representatives in this country and the mesh of intrigue, bribery, arson and worse in which they were really busying themselves can never be forgotten. Where is now the *deutsche Treue*? Who can trust the word of the German government?

This untrustworthiness of official Germany is one of the outstanding facts of the present situation and is one of the principal obstacles to peace. The world in arms against Germany has been taught by Germany herself to suspect every offer of negotiation and to see a dagger concealed in every olive branch. What new trick is afoot? is the question that springs unbidden in the minds of millions whenever a responsible German official hints of peace, of compromise, of dis-

armament. The situation is a terrible one for humanity; it is much more terrible for the German nation. It demonstrates what some one has called the moral bankruptcy of official Germany. What can be worse for a man or for a nation than to be disbelieved, distrusted and suspected in every word and action, of bad faith? It is for this reason that a large part of the civilized world is determined to fight until a decision is reached. No other course is possible. The stake is civilization itself, the honorable intercourse of intelligent human beings.

We know well that not all Germans participate in this worship of treachery and double dealing. The Schwalbe letter is one piece of evidence that no fear of consequences can deter some bold voices from speaking out for truth and fair play. It is in some degree a credit to the fundamental integrity of the medical profession that one of the most candid and momentous confessions of error should come from one of its members. Dr. Schwalbe has kept faith with us, and we send him all honor. Every one must wish that more protests could be raised in Germany against German official trickery and official falsehood. Truth is of the essence of our scientific work, and many of us have felt keen sorrow that larger numbers of our German friends and colleagues were not keeping the scientific faith. It is the only way. Otherwise German science and German honor will become a byword and a hissing. Already men talk of "German faith" and a "German peace."

SEX HORMONES IN FETAL LIFE

From time to time reference is made in a popular way to a superstition that if twins are of opposite sexes, the female is sterile. How unfounded this belief is in the case of human twins appears from an old investigation of Simpson in Edinburgh. He investigated the family history of 123 married women born twin to males, of whom 112 had families and eleven had none. The proportion of childless marriages was not greater than in the general population. It may be that the mistaken notion is derived by analogy from what is known to be the case among cattle. There the facts are different. In about nine tenths of different-sexed twins the female is sterile. Such females among cattle are commonly known as freemartins. The phenomenon is not known to occur among other species.

Lillie¹ of the University of Chicago has furnished a highly probable explanation of this peculiarity of sterility of the female of different sexed twins. It has been assumed by some that the freemartin is merely a modified male. The evidence now furnished by Lillie indicates with more than probability that the

freemartin is by heredity a true female. He has concluded that it is modified by the sex hormones of the male twin, which circulate in both individuals during fetal life owing to secondary fusion of the chorions and anastomosis of the fetal circulation of the two individuals.

The question naturally arises as to why there is not a reciprocal relation between two opposite sexed twins. If their blood intermixes why do not the sex hormones of the female exert an effect to alter the male? The answer is presumably to be found in the earlier differentiation of the sex glands of the male in the development of the individuals so that they can exert an influence through the liberation of hormones before the ovary begins to develop. The previous differentiation of the testis thus leads to suppression of specific ovarian tissue from the beginning, in the female; hence the limitation of the freemartin condition to that sex.

The sterility of the female of two-sexed twins—a phenomenon due to the circulation of the blood of the male twin in the female, owing to peculiar fetal vascular connections in twin pregnancies—is limited to cattle because these anatomic conditions are rarely if ever duplicated in other species. Fusions of adjacent chorions are occasionally found in multiparous animals; but there are no vascular connections. In some mammals the conditions of placentation are such as to prohibit chorionic fusion. The problem arises as to how it happens that the sex hormones of the mother, which numerous facts indicate to be responsible for secondary sexual characters,² do not affect the reproductive system of the unborn sons. Lillie concludes that the embryo is in some way protected from these hormones circulating in the maternal blood. Either, he says, there is a cessation of production of sex hormones during fetal life, or they are neutralized in some way, or the placenta is impervious to them. The last supposition seems most probable to Lillie.

There is a broad biologic import to these studies. In the lower forms of life, reversibility of sex has been experimentally demonstrated. In the freemartin, a hereditary female, the internal organs of reproduction are usually predominantly male in character, and the external organs usually of the female type. Evidently the male hormones that reach the female fetus do not cause the development of any structure that is not represented embryologically in the normal female; the hormones act in this case merely by inhibition or stimulation of normal embryonic rudiments. To quote Professor Lillie:

For their proper evaluation the results concerning the freemartin should be associated with other studies indicating that

1. Lillie, F. R.: The Free-Martin: A Study of the Action of Sex Hormones in the Foetal Life of Cattle, *Jour. Exper. Zool.*, 1917, 23, 371.

2. What Determines the Development of the Secondary Sexual Characters? editorial, *THE JOURNAL A. M. A.*, Feb. 17, 1912, p. 484; The Modification of Secondary Sexual Characters, Feb. 21, 1914, p. 618; The Corpus Luteum and Secondary Sex Characters, July 24, 1915, p. 337.

zygotic determination of sex is not irreversible predestination, but a quantitative overbalance in the direction of one sex or the other. Sex determination is controllable within variable limits in certain groups, to which mammals must be added as a result of the present study. To determine the means, limits and subsequent results of such control is now one of the most important tasks of biology.

CERTIFIED MILK AND THE BACILLUS OF CONTAGIOUS ABORTION

Certified milk is the term applied to "milk produced under sanitary conditions of exceptional excellence, by the most painstaking methods and under constant supervision and inspection of a medical milk commission." The certified milk of the present day is essentially the outcome of the efforts of the medical profession, and the establishment of such a grade of food product from the dairy has unquestionably had a most wholesome influence for the betterment of the general milk supply and the raising of its sanitary quality. As the herds of cattle involved are systematically subjected to a tuberculin test, and the certified milk that the nontuberculous cows produce is expected to contain less than 10,000 bacteria per cubic centimeter when delivered, such milk has come to have the reputation of being safe even when used in the raw state.

In an investigation lately conducted at the University of California Medical School by Fleischner and Meyer,¹ attention has been directed to the adequacy of the safeguards against the dissemination of bovine tuberculosis as they have been introduced into the highly organized scheme of dairy hygiene fostered by the medical milk commissions. The presence of tubercle bacilli in unheated market milk of the usual quality has often been demonstrated. In the certified milk produced in the San Francisco Bay regions, tubercle bacilli are not present in sufficient number to infect guinea-pigs, the usual test subject, with tuberculosis. If this observation proves to be of more general validity, Fleischner and Meyer maintain that there is no necessity for pasteurizing certified milk on account of any danger that it may possess as a disseminator of bovine tuberculosis to infants.

Quite unexpectedly, however, the California investigators found that *Bacillus abortus*, which is held responsible for infectious abortion observed among cattle, is, for practical purposes, always present in the certified milk produced in the San Francisco Bay regions. Fleischner and Meyer believe it to be not unlikely that in many previous milk tests for tubercle bacilli, the anatomic lesions of bovine abortion disease in the guinea-pig were mistaken for tuberculosis. Furthermore, they say, if *B. abortus* is present in certified milk to the extent evident from these experi-

ments, it is difficult to consider it pathogenic for infants, without, so far as is known, ever having produced recognizable lesions on postmortem examination.

Even if the consensus of the scanty evidence now available is against any probable pathogenicity of *B. abortus* of cattle for man, it must be admitted that there are too few studies on the possible significance of this organism from the standpoint of human health. The California investigations are likely to start renewed consideration of the status of unpasteurized certified milk. There are chapters relative to milk hygiene that seem never to be closed. Revision is, however, the sign of progress toward the best that present day knowledge affords.

Current Comment

THE DEVELOPMENT OF THE MAMMARY GLAND

That the growth of the mammary gland during pregnancy is determined by some form of chemical stimulation rather than through nervous influence seems to be established beyond question. Precisely where the effective agent or the specific hormone that induces growth of the tissue is produced has been somewhat debated. It is essential to distinguish clearly between the developmental changes in the mammary gland, on the one hand, and the factors leading to secretion, on the other. Thus it has been suggested that the stimulus which results in the production of milk is in reality inhibitory in character. By preventing secretion it is assumed to permit the continued growth of the glandular tissue. Lane-Clayton and Starling,¹ whose pioneer investigation in this field is well known, thought that the growth of the mammary gland in their experimental animals was due to the presence of the fetus. The evidence now seems to be conclusive that the corpus luteum—the tissue produced in the ovary as the result of the discharge of an ovum—exerts the influence responsible for the growth changes in the mammary gland during the first part of pregnancy.² But since the gland continues to develop throughout the period of pregnancy, while it has been believed that the corpus luteum tends to undergo regressive changes before parturition, the explanation for the later developmental progress has been in question. Ancel and Bouin attributed it to a hormone produced by a special tissue, the myometrial gland, reputed to make its appearance in the wall of the uterus at the site of implantation of the placenta and last until the end of pregnancy. The possibility that the placenta might be a potent source of the growth stimulus has also been considered. The latest experiments of Captain Hammond at the School of Agriculture in Cam-

1. Lane-Clayton, Janet, and Starling, E. H.: Proc. Roy. Soc., B, 1906, 87.

2. Ancel, P., and Bouin, P., Compt. rend. Soc. de biol., 1909, 66. Hammond, J., and Marshall, F. H. A.: The Functional Correlation Between the Ovaries, Uterus and Mammary Glands in the Rabbit, with Observations on the Estrous Cycle, Proc. Roy. Soc., B, 1914, 87, 412.

1. Fleischner, E. C., and Meyer, K. F.: Observations on the Presence of the Bacillus Abortus Bovinus in Certified Milk, Am. Jour. Dis. Child., September, 1917, p. 157.

bridge, England,³ indicate that in rabbits, at least, the corpus luteum, contrary to the generally accepted opinion, is active during the second half of pregnancy, and that it controls the entire development of the mammary gland. There is a definite correlation between the development of the corpus luteum and the increase in weight of the mammary gland. Indirectly the fetus plays some part, since it appears to be responsible for the continued performance of the corpus luteum. The reputed significance of the myometrial glands is lost in view of their inconstant occurrence. Experiments in which the fetuses were removed without destruction of the maternal placenta have shown among others that the latter is not the source of the stimulus which causes the glandular phase of the mammary gland. There is no evidence that the secretory stage is due to anything different from that which causes the growth changes. Apparently, Hammond says, the secretion of milk results whenever the influence causing the glandular growth is removed or lessened in amount. In this case, then, milk secretion takes place in correlation with the involution of the corpus luteum.

TAXES—JUST AND UNJUST

In war it is essential that every citizen give freely of his time and strength to the cause. It is also his duty to pay the taxes that war renders necessary, cheerfully and promptly, without any thought of evasion. Nevertheless, if by error in judgment, or error not intended, there is legislation that results in inequality in taxation, so that one individual is burdened while another in practically the same condition escapes, it is proper to urge on our legislators the need of correction. As some of our readers know, Section 209 of the present war tax law directs that in addition to the income taxes and surtaxes, there shall be an additional tax of 8 per cent. in the case of professional men after an exemption of \$6,000. The result is a manifest injustice in that a physician who has no other income but that produced by his own earnest efforts pays this tax of 8 per cent., in addition to the normal income and surtax, whereas the youth who has inherited from his father an amount of money that enables him to live in ease on the interest derived therefrom is not so taxed. Section 209 is a penalty on brains and hard work, and favors inherited wealth. Senators and representatives have acknowledged that it was slipped in without its effects being appreciated or without their knowledge, as a last minute addition after the final conference, and that at the coming session in December an effort will be made to correct or amend Section 209. When Congress convenes, an endeavor will be made to eliminate this "joker" from the law. Physicians whose gross annual income exceeds \$6,000 are, of course, interested in this proposition, and should bring influence to bear on their congressmen to get a bad law rescinded.

MEDICAL PIONEERS OF KENTUCKY

The issue of the *Kentucky Medical Journal* for November 1 is an historical number, edited by Dr. J. N. McCormack. "Recognizing that history, after all, is little more than a succession and tactful combination of selected biographies," the editor has undertaken the "task of collecting and preserving in a somewhat permanent form such still available data . . . as might . . . be useful as the foundation of such a history of that day as would be worthy of the actors whose momentous deeds it recorded." The volume is largely a compilation of biographic sketches recording the professional work of the several subjects and is grouped under the following heads: the McDowell Group, the Transylvania University Group, the University of Louisville Group, and the General Kentucky Group. It is profusely illustrated with portraits of Kentucky physicians, many of whom gained recognition as leaders in the American medical profession. These memoirs of physicians who accomplished so much for scientific medicine in the Middle West under inadequate facilities must be an inspiration for the present and future research work in both the art and the science of medicine. This particular issue of the *Kentucky Medical Journal* contains over one hundred and seventy pages and is deserving of the highest praise not alone from an editorial point of view, but also from its general mechanical and typographic arrangement and make-up. Kentucky has set an example for other state associations to follow.

Effect of High Prices on the Consumption of Milk.—To determine to what extent the high price of milk had affected its consumption among the children of the poor, an investigation was made in October under the joint auspices of the Department of Health, the New York Association for Improving the Condition of the Poor and a Committee on Milk appointed by the mayor, among 2,200 New York families each containing from two to six children, or 12,439 individuals in all. Of these 4,467 were adults and 5,438 were children under 6 years. The total amount of milk purchased by these families was 3,193 quarts as against 4,797 quarts a year ago. This decrease was partially offset by the daily purchase of 141 tins of condensed milk. The amount of milk which physiologists and pediatricists have estimated as the normal amount required by all of the persons considered is 8,194 quarts. It was found in the investigation that 121 families were getting more milk than a year ago, 599 families were getting the same amount, 1,480 families were getting less, and 420 families were now getting more condensed milk. Of the families getting less milk, over half (969) were getting from 25 to 50 per cent. less. Two thousand one hundred and forty-eight children under 6 years of age were drinking tea and coffee. The foregoing is set forth in the *Weekly Bulletin* of the Department of Health, Nov. 3, 1917. The commission appointed by Mayor Mitchel to investigate and report on the possibility of preventing a further increase in the price, or of lowering the present high price, which was 14 cents as against 9 cents a year ago, in their representations to the dairymen's league made the following statements (same publication): 1. The present high cost of milk has reduced the total supply of the city by approximately 25 per cent. 2. In many sections of the city it has reduced the quantity of milk used as much as 50 per cent. 3. In some sections of the city the quantity used by infants and children has been reduced below the minimum which the best medical science considers necessary for the maintenance of health. 4. There has been a recent increase in infant mortality which the health department believes to be due to a decreased use of high grade milk.

3. Hammond, J.: On the Causes Responsible for the Developmental Progress of the Mammary Glands in the Rabbit During the Latter Part of Pregnancy, *Proc. Roy. Soc., B*, 1917, **89**, 534.

Medical Mobilization and the War

MEDICAL MISSIONS FOR ROUMANIA

A medical mission under command of Col. Walter D. McCaw, Manila, P. I., M. C., U. S. Army, consisting of medical officers and nurses, has been organized by the Surgeon-General for service in Roumanian hospitals. Colonel McCaw will report to the American minister at Jassy.

According to the *British Medical Journal*, a Japanese medical corps of 100 men has gone to Roumania to help control the epidemic of typhus in that country, with headquarters at Jassy.

AMERICAN SPAS AND THE WAR

In England and France the military authorities are making use of the hydrologic resources of the spas of those countries in the treatment of convalescent soldiers. Dr. Guy Hinsdale has called attention to the extensive use of these spas by the English and the French, and suggests that an inventory of American hydrologic resources should be taken.

THE CARREL-DAKIN TREATMENT OF WOUNDS

Report of Special Committee Appointed by the Director-General of the British Army Medical Services

A committee appointed by the director-general of the British Army Medical Services for the purpose of investigating and reporting on the Carrel-Dakin treatment of wounds has made its report (*British Medical Journal*, 1917, 2, 597). The hospitals visited were Carrel's, which at the time of the visit was under the surgical care of Guillot; the clinics of Tuffier and Chutro in Paris; the American Ambulance in Paris, and Mrs. Depew's Hospital at Annel. In Carrel's, Tuffier's and Chutro's clinics, only Dakin's fluid is used. In the Annel Hospital, three fluids are used with Carrel's tubes—Dakin's fluid, eusol¹ and ether. The committee was assured that good results were obtained from each of them. The committee points out that it is evident that in estimating the value of the Carrel-Dakin treatment, care must be taken to appraise quite separately the method of applying the antiseptic and the antiseptic employed. While convinced that the use of Carrel's tubes, as the committee saw them employed, is a very valuable means of applying an antiseptic fluid to a wound, the committee is not satisfied that Dakin's fluid is markedly superior to eusol, and was prepared to find that other antiseptics can be used with advantage by the Carrel method.

The results of the Carrel-Dakin treatment, as seen in a large series of unselected cases, were remarkably good. The most striking evidence of the value of the treatment seen by the committee was a printed notice put up in a prominent place in Tuffier's wards, said to be the expression of his own opinion after a considerable experience of the Carrel-Dakin treatment. The notice is as follows:

"Tout blessé qui suppure a le droit d'en demander la raison a son chirurgien" (every patient whose wounds suppurate has the right to demand an explanation of his surgeon).

The committee is of the opinion that the Carrel-Dakin method of treatment, if carried out thoroughly, is full of promise, and believes that it will (1) diminish the dangers incidental to sepsis, including secondary hemorrhage; (2) hasten the patient's convalescence; (3) lessen the liability to stiff joints and cicatricial deformities; (4) enable the patients to leave the hospital with better general health than they otherwise might, and that (5) when secondary operations become necessary, these operations are more likely to be free from septic complications than when some other system of primary treatment has been adopted.

1. Eusol (Edinburgh University solution) is an acid solution of hypochlorites prepared by shaking 12.5 gm. of chlorinated lime, and 12.5 gm. of powdered boric acid with 1 liter of water. The mixture is allowed to stand for some hours, and is then filtered.—Useful Drugs, 1916, p. 44.

NEWS OF BASE HOSPITALS IN FRANCE

Notes of Interest Gathered During a Tour of Several British and French Hospitals

[In a personal note accompanying this communication Captain Hirschman says: "I am sending herewith a report of observations I made while on special detail in one of the busy districts of France. It was considered of sufficient interest to the Chief Surgeon, Lines of Communication, American Expeditionary Forces, France, to have it sent to, and read by, the Medical Staff of all the base hospitals. . . . We of the Harper Hospital Unit, of Detroit (Base Hospital No. 17), are fortunately situated in an old city full of historical interest. The main building of our hospital is an old seminary building, which adapts itself very readily to hospital purposes. We are enlarging our hospital to 1,200 bed capacity."]

In all the hospitals the Carrel method of using hypochlorites is universally employed in the treatment of all infected wounds, and also as a prophylactic treatment for all wounds of which the slightest doubt is entertained. Punctured wounds are converted into incised wounds, all badly bruised tissue is excised, and Carrel-Dakin solution is started at once. Plenty of rubber tubing must be used, and the skin surfaces around the wounds well protected by gauze saturated with petrolatum. It must be remembered that the Carrel-Dakin tubes are used to bring the solution in contact with every portion of the wound, and are not used in any sense as drainage tubes. The solution is used at room temperature and not by the so-called drop method.

Bacterial counts are made daily or every other day until the number of micro-organisms is reduced to one half to a field. When this time arrives, physiologic sodium chlorid solution, or artificial serum, as the French call it, may be substituted for the Carrel-Dakin solution. In some cases the wound is sutured at this time with satisfactory results. Some British hospitals use an iodoform-bismuth petrolatum paste as a dressing following the Carrel-Dakin treatment.

HOSPITAL TRAINS

Some very beautiful examples of color photography and ordinary photography with the use of the yellow filter were observed. Very few end-results were seen because of the necessity of evacuating the hospitals as soon as patients can be transported comfortably to England for convalescence.

The hospital trains as used by the British are models of completeness and sanitary excellence. They consist of passenger coaches of the finest type, more like the American car than anything else seen on this side of the water. The ordinary hospital train consists of one car with compartments for the commanding officer, his one or two assistants and the nursing sisters, along with mess and bathing facilities for each group, an operating and dressing room car, a car for baggage and supplies, a varying number of ordinary coaches for the ambulant patients, and coaches provided with racks on which the stretchers containing the recumbent patients are placed. These racks are so constructed that three tiers of stretchers can be accommodated on each side of the aisle.

One of these hospital trains will accommodate as many as 500 or 600 patients. A patient is never removed from the stretcher from the time he is placed in the ambulance at the evacuating point until his reception on the hospital ship, and in some cases until his arrival at the convalescent hospital in England. The skill, ease and rapidity with which patients are handled is remarkable, and the happy expressions on the faces of even the severely wounded and seriously ill is the best evidence of the satisfactory manner in which the transportation of the sick and wounded is being carried out.

The hospital ships are equipped in much the same manner as the hospital trains, large wards taking the places of the rack cars.

The Carrel-Dakin treatment is carried on in hospital trains and ships just as carefully as in stationary hospitals. Minor operations and dressings are done with great success in the operating rooms of both classes of invalid transport.

The majority of the cases in the hospitals in this district are medical rather than surgical, the proportion being about 60:40 per cent. The average stay of the patient in the hospital is from eight to ten days. The principal diseases found are trench fever, pyrexia (of unknown origin), pneumonia, pleurisy, gas infection, gastro-enteric infections, kidney and heart diseases, and other diseases as met in civil practice.

SURGICAL NOTES

One thing that has impressed the observer in his tour of the hospitals has been the fine team work between the various medical officers as observed everywhere, and nowhere to

better advantage than in British General Hospital No. 1, which is manned by Americans. The American base hospital unit as organized at present has a well balanced medical staff representing all of the specialties. This has been taken advantage of in the treatment of all patients, so that each specialist is enabled to give his best efforts to those to whom his services are of the greatest value, and to bear his share of the routine ward work, which is cared for by all.

While our hospital units were organized primarily to care for 500 patients, unusually heavy convoys have increased the number of patients to over twice the original capacity. Experience has proved that the number of medical officers, from twenty-six to twenty-eight, is sufficient even for the increased number of patients cared for at times; but both the nursing and the enlisted staffs are inadequate to the demands thrown on them. Instead of sixty-five nurses, 100 would be the proper number to give adequate nursing service with justice both to patient and to nurse, while fifty additional enlisted men would be able to care for the extra 500 patients without difficulty.

The utilization of railroad stations, hotels and other large buildings has worked out in a very satisfactory manner. Most of the buildings seen by the observer have been wonderfully well adapted to hospital purposes. Extra ward space has been provided by the building of temporary huts accommodating from twenty to forty patients each.

Separate hospital buildings are provided for sick and injured officers, and also in a large center like Havre a special hospital is operated for sick nursing sisters.

Isolation hospitals and convalescent camps also serve their useful needs, and a new convalescent hospital capable, I understand, of accommodating up to 40,000 patients, is now being built by the British at ———.

ORGANIZATION

A surgical ward containing from forty to eighty beds is in charge of a senior and a junior medical officer and a supervising nurse with three assistants. The usual hours for nurses' duty are from 7:30 a. m. to 8 p. m. with a half hour off for noon meal, breakfast being taken before going on duty and dinner when coming off duty in the evening. If work is light, an hour for recreation is allowed in the latter part of the afternoon. In British General Hospital No. 1 at ———, a number of nurses' aides, having from one to two years' experience, are utilized and give great satisfaction. They do everything for the patients except surgical dressings and administration of medicines, and relieve the graduate nurses of a great deal of work, thus allowing them to assist the surgeons in making surgical dressings.

When a convoy arrives from the front, patients are taken from the hospital train to the hospital usually in motor ambulances, are sorted out according to their field diagnosis cards, and are allowed to rest for a couple of hours. Then each patient is bathed carefully, dressed, and a more definite diagnosis made. Unless operation or the roentgen ray is urgent, these are put off until the following day. All patients receive a preliminary dose of 500 units of antitetanic serum at the casualty clearing station, and a second dose in the hospital in from six to ten days after the first injection.

A wound, whether sutured or not, which presents local tenderness and infiltration and is not necessarily edematous and visibly infected, is incised at once and the incision carried through fascia or aponeurosis so as to allow the muscle to bulge freely. Carrel-Dakin treatment is started at once as a prophylactic measure. Many wounds of large size are not treated thus, but are exposed to sunlight with great success. A large shell wound of the thigh or buttock, for instance, will be given all the sunlight the patient can stand by moving his cot to the most exposed location, shading his face and covering the part with mosquito bar. This treatment is also very efficacious for extensive burns.

In the dressing of painful wounds, a very valuable method of anesthetizing the patient is used without danger, even though required daily. The formula of the anesthetic is: ethyl chlorid, 5 c.c.; chloroform, 1 c.c.; ether, 24 c.c. A piece of flannel cloth is saturated with the entire amount and placed over the patient's face. This is covered with another piece of flannel, and this in turn is covered with oil silk containing a small aperture, fitting over the nostrils. This is tied around the patient's face with a bit of tape or rubber tubing. The anesthesia produced will last for ten minutes, and the dressing can be started on the second breath. This anesthesia is apparently devoid of danger, is not accompanied by unpleasant complications, is followed by no deleterious after-effects, and is welcomed by the patient.

It has been found of great value, although the officer of the day attends to all emergencies, to have him call the physician or surgeon in charge of the ward if a severe hemorrhage or unusual emergency arises at night. The officer of the day occupies a special bedroom at night which is known to every one so that no time is lost in reaching him if needed.

In all of the hospitals visited, both French and English, the supply of anesthetics, instruments and paraphernalia generally seemed to be ample.

The food in all hospitals was of good variety, the quantity ample, and its preparation very satisfactory.

In hospitals not housed in permanent buildings, both wooden huts and canvas tents of various types are utilized. It has been observed that canvas tents with double walls allowing an air space of from 4 to 6 inches between are much warmer than wooden huts.

DISPOSAL OF REFUSE

It was noted with interest that in the disposal of garbage and kitchen refuse, every effort is made to save all of the fats and drippings. As these are separated from the rest of the garbage, they are run into tanks containing water which is slowly and constantly changing. The fat rises to the surface of the water and at intervals is skimmed off, gathered up and saved for glycerin making. The rest of the garbage is incinerated.

In some places large settling pits are dug, and are filled with old tin cans which have been previously flamed. Wash water and other liquid refuse from laundries and kitchens are allowed to drain into the ground through these pits.

Nothing has been observed in any of the hospitals, barracks or camps visited which in any way can compare with the latrines as devised and used by the American Army. Incineration of the feces is the method of disposal, and while it in itself is undoubtedly very satisfactory, it involves an unnecessary amount of labor in the cleaning out of latrine cans and the conveying of this material to the incinerators. A disagreeable and unhealthy stench is produced during the whole process, which is entirely obviated by the method of the American Army. The same criticism applies to urinals. The urinals observed usually consisted of ordinary galvanized iron or tin troughs which receive no other attention than an occasional flushing.

DELOUSING STATIONS

The delousing stations, which are important adjuncts of every hospital, consist of portable steam sterilizing outfits into which the clothing of new patients is placed. All clothes are subjected to steam sterilization at 215 F. for from one hour to an hour and a quarter, and then allowed to dry out in the sterilizer for forty minutes thereafter.

Some hospitals have been achieving very satisfactory results in the treatment of infected wounds, particularly of joints and sinuses, by the injection of eusol, which is a solution of chlorinated soda somewhat similar to the Carrel-Dakin solution but of greater germicidal power. This is injected directly into the diseased area every two hours or through tubes, the same as the Carrel-Dakin solution.

In some institutions ether was the anesthetic of choice, while in others nitrous oxid and oxygen was the anesthetic most frequent used.

SUTURING OF WOUNDS

One thing noted by the observer has been the amount of unnecessary surgery and after-treatment as well as undue prolongation of hospital confinement and subsequent unnecessary absence from the line, a large part of which can be avoided. This is due to too much unnecessary suturing of wounds in the casualty clearing stations.

While it is recognized that hemorrhage must be checked, sometimes by ligature and again by suture, immediate closure of wounds in these stations is to be severely condemned. Many infected wounds seen by the observer have required immediate reopening, removal of sutures and Carrel or similar treatment, because of the stitching done in the casualty clearing stations.

A great deal of unnecessary time and labor is spent in work which only has to be undone and which really is to the detriment of the patient. In many cases wounds really should be enlarged and packed instead of closed in order to afford opportunity for cleansing and drainage. The minimum amount of suturing consistent with safety from hemorrhage should be employed. A further treatment of the wound should be left to the hospitals farther back from the line. As suturing takes time and material, this work is not only unnecessary but also harmful, and is a break in the chain of efficiency which should not obtain in our system of medical relief.

BRITISH GENERAL HOSPITAL FOR VENEREAL DISEASES

British General Hospital No. 39 is a large institution of over 3,000 beds devoted entirely to the treatment of syphilis, gonorrhea and chancroid. Four hundred of these beds are for officers. This is one of four similar hospitals conducted by the Royal Army Medical Corps for the treatment of these diseases. It is situated in the suburbs of ——— amid beautiful surroundings. It consists of huts, bungalows and tentage, the streets are well paved and perfectly drained, rows of shrubs and flowering plants line these streets, and has everything conducive to the comfort of the inmates.

A well equipped operating room with special wards for surgical patients is one of the many good features of the institution. The salvarsan room contains six tables with arm rests, irrigator stands, etc., and the intravenous treatment is frequently given to six patients at the same time. The intramuscular injection of neosalvarsan is used in a great many more cases than the intravenous—of old salvarsan—and with most excellent results.

The number of syphilis patients treated in this hospital since Jan. 1, 1915, was 11,500. To these patients were administered over 89,000 injections of salvarsan and neosalvarsan. The number of cases of dermatitis and jaundice developing was only 152, and the number of deaths occurring in this whole series was either ten or eleven.

As a result of the treatment in this hospital, the number of troops returned to the front effective for duty was over 11,000; while the number invalided to England in the last year was only seventy, which is but a fraction of the number heretofore sent home.

The French and English preparations similar to neosalvarsan and old salvarsan have proved fully as efficacious, and the standard treatment for syphilis in this hospital consists in the combination of the intramuscular injection of a suspension of metallic mercury in sterile oil and water in conjunction with the intramuscular injection of neosalvarsan, as well as the intravenous use of old salvarsan.

The Wassermann test is used in all cases before the men return to the front; but patients symptomatically cured even though exhibiting a positive Wassermann reaction are nevertheless returned to the front because they are again effective for the full military duty.

The proportion of cases of syphilis to gonorrhea is 1:3. Gonorrhea here as elsewhere has proved more resistant to treatment than syphilis. The recent cases are treated with a 1:4,000 solution of potassium permanganate, used in the ordinary way as urethral irrigations. The cases of long standing are being treated with gonococcus vaccine, which is made in the hospital laboratory, and also by means of urethral bougies impregnated with any one of the various salts commonly used for the purpose.

On inquiry as to why venereal prophylaxis was not carried out in the British Army as it is in the American, I was informed that public sentiment in Great Britain had not as yet been educated up to the same point as in America, and that the frank discussion of these matters was still more or less taboo. One of the medical officers in charge made the statement that he feared that a soldier contracting a venereal disease and not reporting for prophylactic treatment, as required in our army, would by endeavoring to conceal his condition so neglect himself as to become a more difficult case when concealment was finally no longer possible.

The other three hospitals devoted entirely to this purpose and conducted by the British Army are just as busy as No. 39, so that the enormous number of noneffectives caused by prevalence of venereal disease can be easily demonstrated.

As the startling prevalence of venereal diseases in France has been demonstrated by the experience of the armies stationed here, it is hoped that in spite of our excellent measures of prophylaxis the American expeditionary force will have sufficient hospitals in readiness for the treatment of such of our forces as become infected in spite of all our preventive measures.

THE MICRO-ORGANISM SUPPOSED TO BE RESPONSIBLE
FOR SO-CALLED TRENCH FEVER

The most interesting thing observed during my several visits to British General Hospital No. 1 has been the research work being carried on in the hospital laboratory by Captain Pappenheim, M. R. C.

He has isolated a disk-like organism from a number of patients suffering from trench fever, and has grown this organism on artificial mediums as well as on blood serum.

It is found in the periosteum and around the blood vessels of the tibialis anticus muscle but not in the muscle fibers

itself, and also is easily found in the stomach walls of the body louse.

The organism, as stated above, is disk-shaped, is about one-thirtieth to one-fortieth the size of a red blood corpuscle, and is best observed when overlying the corpuscle. It stains with the Wright-Giemsa stain (heated), and also with hematoxylin after being fixed with Zenker's solution. It will also stain with hot Azure 2, Ziehl-Neelsen (without much discolorization) and hot ordinary weak carbol-fuchsin. It will not stain with eosin or Gram's stain except faintly. The organisms are evidently protoplasm.

This organism is cultivated by dropping a small fragment of periosteum removed from the tibia into a slant agar culture tube. After four days' incubation a dark cottony cloudiness will appear just below the junction of the agar and the water of condensation. The organism becomes encapsulated in eight days, and appears in a sort of hanging drop formation in the tube. Under the high power, the disk when superimposed on a red blood corpuscle looks not unlike a small crescent-shaped nucleus occupying about one fifth of the area of the disk, the balance being very faintly outlined but nevertheless visible. As many as six will be found in a field. In the organisms which are evidently older, the so-called nucleus appears to be split into a number of sections of irregular shape. These older organisms are distinctly encapsulated.

As stated above, the organism has been found in every case of trench fever in the periosteum of the tibialis anticus, where the pain of the disease is located. It has also been found in the blood in a few cases. Efforts are now being made to perfect the technic of blood culture in this work. The organism has been found with great ease also in the body louse as found on patients returning from the front, and has best been demonstrated in sagittal sections of the stomach wall of the louse.

A preliminary report has been prepared, and it is expected this will be published in a forthcoming number of the *British Medical Journal*.

The work is being carried on in a painstaking manner by Captain Pappenheim and his associates, and it is hoped that other hospital units will find it of sufficient interest to investigate these findings and prove or disprove the connection of this new organism with so-called trench fever.

LOUIS J. HIRSCHMAN, Captain, M. R. C.

U. S. Base Hospital No. 17, American Expeditionary Force, France.

NEWS OF THE TRAINING CAMPS
At Fort Riley

The second three months' period of this medical officers' training camp is nearly completed. The closing of the training camp at Fort Benjamin Harrison and the preparation for the next class of student officers at the camp have resulted in a number of changes in the staff of instructors. Lieut.-Col. H. F. Piper, M. C., comes here from Fort Benjamin Harrison as assistant commandant in general charge of instruction and in charge of student companies. Major H. M. Snyder, M. C., from Fort Benjamin Harrison, is to take command of Hospital Train No. 24. Major F. R. Hill, M. C., is to have charge of the professional examination of reserve officers. Major William H. Tefft, M. C., has been ordered here from Fort Douglas, Utah, to take command of Evacuation Hospital No. 7. Major Robert H. Duennner, M. C., has been ordered from Honolulu to Fort Riley to organize and command Hospital Train No. 25.

Meanwhile, preparations for new companies and for cold weather are going forward steadily. The barracks are being lined with tar paper and sheathing, and every effort is being made to have them warm and comfortable before the winter begins. Yet in spite of the lateness of the season, the beautiful Indian summer weather continues. Day after day of clear sunshine makes the outdoor work and especially the maneuvers a delight.

REGIMENTAL AND BRIGADE MANEUVERS

Following two weeks of training in equitation, each student company is given one week in regimental and brigade maneuvers and one week on a division problem. The first week, various student officers are detailed as regimental and battalion surgeons, and are given written orders directing them to proceed to certain locations designated on the map and to select suitable sites for regimental aid stations. Other student officers are detailed as commanding officers of ambulance companies, and are told to select a location for a

dressing station under certain definite conditions. Other men are sent out with compasses and maps, and are told to find a regimental commander stationed at a point designated on the map and to report to him at a certain hour. In the brigade problem, brigade, regimental and battalion surgeons are appointed, ambulance companies and field hospitals are taken out and moved according to previously issued orders, and all the details of a regimental or brigade problem are worked out. But it is division maneuvers that are most fascinating. Here two companies of student officers are taken out, all the instructors are on staff duty, and all the field hospital and ambulance companies with their entire personnel and equipment are in the field, together with four or five hundred to impersonate wounded. The field of operations extends from Ogden on the east to Junction City on the west, and from North Gate to the Washington Street bridge, an area of about 30 square miles. The colonel himself is in command, and every one prepares for an all day ride.

Right after breakfast, the horses are brought up from the stables, each equipped with saddle bags. In one is the bag of oats that is to form the midday meal for the horse. In the other bag goes the lunch for the rider. The cooks have risen earlier than usual, and have made an incredible number of sandwiches. No thin and ladylike sandwiches are these, with wafer-like slices of bread and a delicate lettuce leaf between, but large, husky slices of camp bread with cheese, ham, roast beef or canned beef between them. The first day, some of the unwise arise from a hearty breakfast and scorn these mammoth hunks of nourishment, or take only a single package. But one day's riding is enough to impress on the shortsighted medical officer the amazing shrinkage that a sandwich can undergo. One that is too large to carry at 7 a. m., is so small by 12:30 that at least three are necessary to convince one that one has had any lunch. Thereafter preparedness is each man's motto. Not only does he fight with the cook to get two packages, but he even tries the time worn yarn about "the fellow in the cot next to mine didn't have time to get any and wants me to get his for him." Some, foiled by the watchful cook, wait a decent interval and then return for a second helping, with elaborate and carefully assumed innocence. But all get enough and the saddle bags are soon bulging, not only with packages of sandwiches, but also with oranges, apples, cakes of chocolate and boxes of cookies and crackers. Canteens, filled with water, tea or coffee, according to the taste of the owner, are swung to the saddle, stirrups are adjusted, girths are tightened and horses are looked over carefully, sometimes it must be admitted with some trepidation, for not all physicians are bold and dashing riders when they come here.

PREPARATION FOR BATTLE

Meanwhile, the field hospitals and ambulance companies, long lines of motor trucks or of mule drawn wagons, have come up and are waiting orders to move. The enlisted men go by in heavy marching order and halt in the road beyond. Then the headquarters automobile appears, orders are distributed to each commanding officer, and one by one the various commands move off to their stations. Only the headquarters staff is left, and finally it receives orders to report at Randolph Hill at 8:30. So off we go on a 4 mile ride. This is the Blue day, and we rode over the entire field yesterday, so every one knows where to go. A Blue army with its base at Manhattan is marching to attack a Red army that is defending Junction City. Randolph Hill, the highest point in the northeast quarter of the reservation, is Blue headquarters. From the top, one can view the entire field. It is a clear, sharp November morning. The sun is just getting up above the hills. The mist lies thick in the valleys, but the wind blows sharp and chill on the hill top. Sheepskin lined coats and heavy gloves feel good, though later on when the sun gets higher, even a khaki blouse will be too heavy.

The staff is gathering on the hill, each group as it comes up dismounting and giving the horses to the orderlies, who lead them to the rear. All gather about the colonel, who as division surgeon is in command of the entire sanitary force. Maps are spread out on the grass, and the Blue position traced out. Soon orderlies on horseback or on motorcycles begin to appear. The battle is on. Each commanding officer as he reaches his position reports to headquarters and receives further orders. Each detachment commander is given several sealed envelopes to be opened at 9, 10, 11 and 1:30. In them are orders for him to carry out, by which the progress of the battle is carried on. As each report reaches headquarters, the situation is discussed and members of the staff

are asked to suggest a proper solution. As one commander after another reports heavy casualties, the director of ambulances or the director of field hospitals is called on to establish dressing stations, evacuate the wounded, or set up hospitals. An orderly is sent with a message to an ambulance company, awaiting orders several miles away, to advance by a certain road and take care of the wounded. The orderly disappears. Half an hour or an hour goes by without apparent result. Field glasses are brought out, and the road on which the ambulance train is to appear is closely watched. Finally some one shouts, "There they are," and far away, over the crest of the hill, appears the head of the column. Slowly the ten motor ambulances, the trucks and supply wagons, the automobiles and motorcycles wind across the ridge in a long procession and disappear in the valley below. Discussion is now heated. Did the commander expose himself and his train to the Red artillery fire on Morris Hill? If so, is he *hors de combat* or not? Finally, everybody agrees that "Ambulance Company 19 is all shot to hell," and that it is time for lunch anyway. So this interesting but convenient battle stops for lunch. Saddle bags are opened and everybody drops down on the dry, warm grass. Surely those sandwiches can't be as large as they were a few hours ago. Those who have secured a double supply congratulate themselves, while the less thrifty vow that tomorrow they will do likewise. Canteens are passed around, and cigarets, cigars and pipes are produced. By 1:30 the battle is resumed, and by 3 the Blue army is in full retreat, with a large number of wounded that must be cared for by the regimental surgeons, the dressing stations and the hospitals. How are they doing their work? At 3:30, the colonel folds up his map and draws on his gloves. "Mount up, gentlemen. We will ride the Blue battle line." And off we go. All the positions are carefully examined, the location of the regimental aid stations and dressing stations criticized, and the various problems involved discussed. From one position to another we go, sometimes by road or lane, more often across country, working back from point to point until we reach the Blue base, perhaps 8 or 10 miles behind the battle line. Here are gathered all the field hospitals, ambulance companies and sanitary troops. Tents are all pitched in perfect alinement; stoves are unpacked; even operating tables with instruments and basins are ready. Ambulances and motor trucks are parked in long rows. The men that are on field rations are cooking their supper, but all rise and stand at salute as the staff rides past. In front of each company are two flags, the Stars and Stripes and the Red Cross, twin emblems of Liberty and Mercy. We ride past the twenty-four big ward tents, the kitchens, the officers' tents and the long line of pup tents of the men, and finally in the glow of the early evening turn toward camp and supper, tired but feeling sure that of all the good things at Fort Riley, division maneuvers are the best.

DISEASE CONDITIONS AMONG TROOPS IN THE UNITED STATES

Extracts from Telegraphic Reports Received in the Office
of the Surgeon-General for the Week Ending
Nov. 16, 1917

| | |
|--|----------------|
| 1. Total strength of troops | 1,065,418 |
| Admission rate per 1,000 (disease only) | annual 1,412.7 |
| Non-effective rate (all camps) | 34.9 |
| 2. National Guard, strength (camps) | 391,199 |
| Admission rate per 1,000 all camps (disease only) | annual 1,697.3 |
| Non-effective rate all camps (all causes) | 42.6 |
| Camps showing admission rate for disease higher than average: Camps Beauregard, Wheeler, Bowie, Kearney, Sevier and Cody. | |
| Camps showing non-effective rate all causes higher than average: Camps Wheeler, Beauregard, Bowie, Sevier, Kearney, Shelby, Cody, and MacArthur. | |
| 3. National Army, strength (camps) | 413,487 |
| Admission rate per 1,000 all camps (disease only) | 1,427 |
| Non-effective rate all camps (all causes) | 28.5 |
| Camps showing admission rate for disease higher than average: Travis, Pike, Funston, Jackson, Lewis, Dix and Dodge. | |
| Camps showing non-effective rate all causes higher than average: Camps Pike, Funston, Travis, Jackson, Lewis and Dodge. | |
| 4. Venereal Disease— | |
| Admission rate Regulars | annual 94.3 |
| Admission rate National Guard (camps) | annual 74 |
| Admission rate National Army (camps) | annual 95.3 |
| Camps National Guard having rate above average: Camps Kearney, Beauregard, Wheeler, Sheridan, Logan and Doniphan. | |
| Camps National Army having rate above average: Camps Jackson, Lee, Gordon, Sherman and Travis. | |
| 5. Number of cases of pneumonia | 399 |
| Highest number in any one camp | (Pike) 54 |
| Number of cases of meningitis | 48 |
| Highest number in any one camp | (Funston) 13 |

6. SPECIAL DISEASES REPORTED DURING THE WEEK ENDING
NOV. 16, 1917

| Division | Pneumonia | Dysentery | Malaria | Venereal | Paratyphoid | Typhoid | Measles | Meningitis | Scarlet Fever | Strength of Command |
|----------------------|-----------|-----------|---------|----------|-------------|---------|---------|------------|---------------|---------------------|
| 27th, Wadsworth... | 4 | ... | ... | 31 | ... | ... | ... | ... | ... | 31,895 |
| 28th, Hancock... | 1 | ... | ... | 30 | ... | 1 | 1 | ... | ... | 28,776 |
| 29th, McClellan... | 4 | ... | 2 | 18 | ... | ... | 2 | ... | ... | 26,588 |
| 30th, Sevier... | 45 | ... | 4 | 19 | 1 | ... | 790 | 5 | ... | 27,356 |
| 31st, Wheeler... | 47 | ... | 6 | 46 | ... | ... | 975 | 2 | ... | 22,681 |
| 32d, MacArthur... | 2 | ... | 1 | 26 | ... | 1 | 45 | ... | 2 | 26,616 |
| 33d, Logan... | 10 | ... | 4 | 51 | ... | 2 | 4 | ... | 1 | 32,764 |
| 34th, Cody... | 4 | ... | ... | 14 | ... | ... | 160 | ... | 1 | 25,758 |
| 35th, Doniphan... | 20 | ... | 1 | 43 | ... | ... | 31 | 4 | 1 | 25,674 |
| 36th, Bowle... | 52 | ... | 1 | 34 | ... | 1 | 734 | 1 | 1 | 25,641 |
| 37th, Sheridan... | 7 | ... | ... | 40 | ... | ... | 24 | ... | 1 | 24,192 |
| 38th, Shelby... | 14 | ... | 4 | 37 | ... | ... | 360 | ... | ... | 29,344 |
| 39th, Beauregard... | 10 | ... | 15 | 41 | ... | ... | 918 | 2 | ... | 16,750 |
| 40th, Kearney... | 5 | ... | ... | 100 | ... | ... | 38 | 1 | ... | 24,503 |
| 41st, A. L. Mills... | 6 | ... | ... | 27 | ... | ... | 32 | ... | 3 | 22,661 |
| 76th, Devens... | 1 | ... | ... | 20 | ... | ... | 6 | ... | ... | 26,500 |
| 77th, Upton... | 1 | ... | ... | 11 | ... | ... | ... | ... | ... | 24,332 |
| 78th, Dix... | ... | ... | ... | 28 | ... | 10 | ... | ... | ... | 16,600 |
| 79th, Meade... | ... | ... | ... | 15 | ... | ... | 11 | ... | ... | 32,687 |
| 80th, Lee... | 6 | ... | 2 | 178 | ... | 3 | 34 | 3 | ... | 34,520 |
| 81st, Jackson... | 4 | ... | 1 | 181 | ... | ... | 285 | ... | ... | 15,414 |
| 82d, Gordon... | 2 | ... | ... | 65 | ... | 1 | 74 | 1 | ... | 27,789 |
| 83d, Sherman... | 6 | ... | ... | 72 | ... | ... | 5 | 2 | ... | 33,063 |
| 84th, Taylor... | 11 | ... | ... | 27 | ... | ... | 62 | 1 | ... | 25,152 |
| 85th, Custer... | ... | ... | ... | 6 | ... | ... | 30 | ... | 1 | 15,457 |
| 86th, Grant... | 4 | ... | ... | 17 | ... | ... | ... | 3 | 1 | 24,702 |
| 87th, Pike... | 54 | ... | 5 | 19 | ... | ... | 611 | 10 | 12 | 22,387 |
| 88th, Dodge... | 11 | ... | ... | 3 | ... | ... | 27 | ... | 3 | 22,866 |
| 89th, Funston... | 45 | ... | 1 | 40 | ... | ... | 118 | 15 | ... | 26,645 |
| 90th, Travis... | 32 | ... | 9 | 63 | ... | ... | 697 | ... | ... | 32,208 |
| 91st, Lewis... | 11 | ... | ... | 13 | ... | ... | 19 | ... | ... | 35,165 |

| | Regulars, U. S. Army, in U. S. only, 1916 | | Regulars in U. S. week ending Nov. 16, 1917 | | Nat'l Guard, All Camps, week ending Nov. 16, 1917 | | Nat'l Army, All Camps, week ending Nov. 16, 1917 | |
|---|--|--------|--|-------|--|--------|---|--------|
| | Cases | Rate | Cases | Rate | Cases | Rate | Cases | Rate |
| Admissions, dis- eases only, an- nual rate per 1000 | | 613.00 | .... | 822.6 | .... | 1697.3 | .... | 1427.0 |
| Pneumonia..... | | 2.59 | 24 | 5.6 | 211 | 28.0 | 188 | 23.6 |
| Dysentery..... | | 3.97 | 3 | 0.7 | .... | .... | .... | .... |
| Malaria..... | | 12.52 | 7 | 1.6 | 38 | 5.0 | 19 | 2.4 |
| Venereal..... | | 91.00 | 403 | 94.3 | 557 | 74.0 | 758 | 95.3 |
| Paratyphoid..... | | 0.31 | .... | .... | 1 | 0.1 | .... | .... |
| Typhoid..... | | 0.21 | .... | .... | 5 | 0.6 | 15 | 1.9 |
| Measles..... | | 20.29 | 117 | 27.3 | 4054 | 539.9 | 1988 | 250.0 |
| Meningitis..... | | 0.29 | .... | .... | 15 | 1.9 | 33 | 4.1 |
| Scarlet fever..... | | 0.59 | 21 | 4.9 | 10 | 1.3 | 17 | 2.1 |

7. Deaths by causes: pneumonia, lobar, 73; bronchopneumonia, 2; cerebrospinal meningitis, 10; tubercular meningitis, 1; meningitis following mastoid operation, 1; tuberculosis, pulmonary, 3; appendicitis, 2; nephritis, 2; diabetes mellitus, 1; pyemia, 1; empyema, 1; malaria, 1; typhoid fever, 1; dysentery, 1; diphtheria, 1; pleurisy serofibrinous, 1; hemorrhage from gastric ulcer, 1; sarcoma of pelvis, 1; suicide, 4; traumatism, 13.

NEWS OF THE CANTONMENTS

Thirty-First Division, Camp Wheeler, Macon, Ga.

BASE HOSPITAL NOTES

Major Richard Weil, chief of the medical service, died on Nov. 19, 1917, of pneumonia, contracted in line of duty. Undoubtedly conscientious work had much to do with his illness and untimely demise. His character, ability and personality greatly endeared him to all the officers, men and patients with whom he came in touch. Brief military honors were given the remains.

The Surgeon-General of the Army and staff visited the hospital, November 23 and 24. In addition to his personal staff, Dr. W. H. Welch of Johns Hopkins University accompanied him in an advisory capacity.

The porches are all screened with canvas and the patients seem happy and content and do not complain of the cold. The permanent stoves have been installed in practically all of the buildings. The officers' and isolation wards are now occupied, leaving the psychiatric ward only without patients.

Heavy clothing is coming at last, and it is hoped that pneumonia will decrease as a result of its arrival.

The hookworm treatment is being generally given, when chenopodium can be secured. This also will, it is hoped, reduce the amount of pneumonia.

SCARLET FEVER AND MENINGITIS

Scarlet fever has appeared in camp, there being in the hospital ten cases. Only two new cases of meningitis have developed since last week.

MEASLES

The epidemic of measles is drawing toward a close. Over 2,800 cases of measles have been treated in the base hospital. The high water mark was 1,201 cases in hospital. The greatest number received in one day was 175 cases. The number of deaths from bronchial pneumonia complication has amounted to a trifle more than 1 per cent. No middle ear or other complications have occurred, excepting bronchial pneumonia, and possibly tuberculosis.

PNEUMONIA

Pneumonia is the fatal disease of the camp and has not decreased with the decrease in measles. The total number of cases of lobar pneumonia has been 243. Of these practically 25 per cent. followed measles, and 75 per cent. was independent of measles. The percentage of deaths has been 11. Of eighty-eight cases, of which the type was determined by inoculating mice, seventeen were of Type I, six of Type II, five of Type III, and sixty of Type IV. A careful study of all pneumonia cases is being made and it is believed that much light will be thrown on the epidemiology of this disease. The theory that it is infectious and that cases are transmitted from other cases, either by direct or intermediate infection, is being insisted on by Colonel Duncan, the division surgeon.

VISITORS

Many distinguished visitors have been drawn to the camp recently; partly by reports of the epidemic of pneumonia.

Mr. W. J. Harris and Senator Hoke Smith were visitors on Wednesday. The daughters of Gen. Joe Wheeler were here on Monday.

On Friday, Surgeon-General Gorgas arrived from Washington, D. C., accompanied by Majors Victor Vaughan, T. C. Janeway, William H. Welch of Johns Hopkins University and Colonel Howard of the Surgeon-General's Office. The Surgeon-General and Majors Welch and Vaughan addressed all the medical officers at 2:30, and all the field officers of the division at 4 o'clock.

Colonel Fisher, medical inspector, was in the camp on Sunday and Monday, going on afterward to Jacksonville.

ONE HUNDRED AND SIXTH SANITARY TRAIN

The equipment of the train has been greatly augmented by the receipt during the past week of three complete equipments for ambulance companies and one equipment, complete, for field hospitals. The motor ambulances for Ambulance Company No. 123 have also arrived, have been assembled and are now in operation. The latter part of last week a consignment of ten Indian motorcycles with side-cars were delivered. This completes probably the motor equipment that will be delivered at this station. The Dodge cars for the motor companies and the directors have not and probably will not come.

The regular weekly social of the train was held in the recreation hall, Wednesday evening, and was largely attended. A most enjoyable evening was had to the strains of the orchestra of the Florida Field Hospital, which is now completed by the acquisition of a snare drum and base drum.

The process of eliminating from the train the large number of accumulated mascots, ranging from wolfhounds to Chihuahua dogs, goats, pet possums and rabbits, is progressing to a successful finish. The next few days will see the completion of this work.

NOTES

Coughs and "colds" are widespread in the camp and in this whole region. The dust, from the continued dry weather, seems to be a factor in the spreading of these coughs.

The Thirty-First Division has finally received a definite name, the Dixie Division, with the insignia CD, two D's, one reversed.

The work of the vice commission and of the local committee has finally begun to bear fruit in a cleaning up of Macon hotels, and in lessening the number of streetwalkers.

There is general comment on the poor class of men furnished by the draft. Many from the rural districts are miserable physical specimens, some with anemia from malaria, other from hookworm, others poorly developed, and all falling an easy prey to measles, pneumonia, or any other infectious disease. Although the weather is not at all bad, being rather fine, there is much sickness among the 10,000 drafted

men; but very little among the 11,000, old guardsmen. While Camp Wheeler is called a National Guard camp, it is now almost one-half National Army, and will be three-fifths National Army when filled to war strength.

The Thirty-First Division has sent no patients to any hospital outside the camp. All patients, from the beginning, have been handled here, first in the field hospitals and later in the base hospital, which has cared for more than twice its rated capacity.

Thirty-Fifth Division, Camp Doniphan, Fort Sill, Okla.

Camp Doniphan and its base hospital were subjected to official inspection this week; Col. William R. Lewis looked after the sanitary conditions of the camp and Major M. Black, M. R. C., investigated the base hospital. Owing to the lateness of the authorization of necessary funds, the sewerage system has not yet been installed, and this will delay the completion of the hospital, it is estimated, for another month and one half to two months; in the meantime concrete cesspools are installed for some of the wards and the quarters for the staff.

The meeting of Wednesday night, November 14, was devoted to discussion of the venereal disease problem. Lieutenant C. A. Coleman, speaking from an extensive experience in private practice, outlined briefly what he believed to be essentials in the handling of the venereal disease problem of the Army. The paper was received with a great deal of interest, and was discussed by officers of the field as well as members of the staff of the base hospital.

Friday night, Capt. Lee H. Bailey of the British Army spoke on the use of the bayonet; though more military than medical, the paper nevertheless was listened to with a great deal of interest.

DISEASE INCIDENCE

The number of infectious diseases unfortunately is still on the increase, over forty pneumonia patients being treated at the hospital at this time. The past week also had two deaths from meningitis to record, one of which showed generalized infection due to the *Diplococcus intracellularis*. Though both of these cases were brought to treatment promptly, the serum treatment proved of no avail. Owing to the still incomplete state of the laboratory, it has not been possible to make satisfactory bacteriologic examination to determine the particular strain of the meningococcus; therefore it cannot be stated whether the death of these patients must be assigned to the presence of a foreign strain of the meningococcus or whether the serum used was defective.

Thirty-Eighth Division, Camp Shelby, Hattiesburg, Miss.

The medical organization of the Thirty-Eighth Division, which consists of National Guard troops from Indiana, Kentucky and West Virginia, is now almost complete.

The regimental infirmaries are being equipped with a modified Wolfe ward unit which gives a well equipped hospital of twenty beds for each regiment. Hotel ranges are supplied for the kitchens, and heating stoves are being installed.

On Monday and Thursday nights, meetings for all medical officers are held. Monday nights are devoted to medicomilitary subjects, and Thursday nights to purely professional papers with reports and presentation of clinical cases, of which there are an abundance in the base hospital.

BASE HOSPITAL

The base hospital is complete with the exception of the ceiling of the wards. On account of the present epidemic of measles, it is now crowded to its utmost, and the tentage of three field hospitals has been pitched to care for men with mild cases, thus relieving the congestion of the wards. The ward tents are floored, and have stoves and iron beds. In this camp, experience has proved that measles patients do fully as well under canvas as in buildings.

MEASLES

This camp, as well as many others, is suffering from an epidemic of measles. The disease, however, seems to be of a mild type, often running an afebrile course. There have been only two cases of pneumonia in 500 cases of measles, and no other complications. In an effort to control this epidemic, very strict orders have been issued regarding sanitation of tents, personal hygiene, and physical inspections. Although these orders are well carried out, they seem to have little or no effect on the development of new cases. Climatic conditions, dust and smoke, and the age of troops, together with the arrival of drafted men from other camps, no doubt have much to do with the continuation of the disease.

PNEUMONIA

There have been about sixty cases of pneumonia, principally of the lobar type and running a clear cut typical course. The death rate is low, only about 4 per cent., and the infection does not seem to be of a virulent type. The laboratory work of differentiating the various strains of pneumococci is now under way, and in a short time it will be possible to administer specific serum therapy in suitable cases.

MENINGITIS

During the month of October, six cases of meningitis developed in this command. Four were in one regiment and appeared within three days. The regiment was promptly moved to an isolation camp; rigid quarantine was instituted, and under the direction of a medical officer every man in the organization gargled his throat and douched his nose twice a day with Dobell's solution. As rapidly as possible, members of the companies in which the cases appeared were examined for carriers. When these were found, they were isolated from all others and given intensive treatment with dichloramin-T until negative cultures were secured. This prompt action evidently cut short an epidemic that was reaching alarming proportions. The cases were of moderate severity, with only one death.

PERSONAL

The office of the division surgeon is busy with routine work, special instructions, inspections, etc. Lieut.-Col. Robert M. Blanchard is the division surgeon; Major Larue D. Carter, division sanitary inspector, and Capt. Abraham C. L. Percefull, assistant to the division surgeon.

Colonel Blanchard, Majors Hibbitt and Grant of the sanitary train, and Majors Crawford and Lathrop of the base hospital staff recently returned from the meeting of the Southern Medical Society, held at Memphis, Tenn. It was hoped that Colonel Goodwin of the British Army would give this camp a visit; but it could not be arranged, much to the disappointment of all officers.

Social activities among the medical officers have been curtailed on account of the immense amount of work on hand. All are cheerful and happy, however, and not growing stale in their duties.

Eightieth Division, Camp Lee, Petersburg, Va.

November 5, the regular course of instruction of medical officers and Medical Department enlisted men was put into effect. The course prescribes thirty-eight hours' work a week, and is being carried out by the sanitary train and regimental detachments. The work of the sanitary train is handicapped because no enlisted men have as yet been available for one ambulance company and three field hospitals.

A most interesting clinic was held at the base hospital on November 22, which was attended by the medical officers of the division and the base hospital. Major Ewing Day, M. R. C., described the functions of the semicircular canals and the various nerve paths leading from the canals to the brain. Major Day also demonstrated the Bárány test on a normal individual and also on a man who had become deaf as a result of cranial injury. Major William L. Peple, M. R. C., gave an illuminating talk on appendicitis, stating that twenty cases had been admitted to the base hospital since its opening and all had been operated on and were doing well. Capt. Joseph B. Sayles, M. R. C., showed an interesting case of pellagra and one of favus.

A regular meeting of the medical officers attached to the division and base hospital is being held weekly on Wednesday afternoons at which administrative affairs are discussed. Thursday evenings a clinical meeting is held at the base hospital.

At the clinical meeting, November 15, Major Ross Moore, M. R. C., chief of the neurologic section of the base hospital, demonstrated a series of cases showing types of mental cases and diseases in the Army. Two neuropsychopaths, one hypochondriac, two dementia praecox patients and two with paranoid personality were shown. The officers were much interested in the clinic, and there was general discussion as to whether any of the men demonstrated should remain in the Army.

NEUROLOGIC EXAMINATIONS IN THE DIVISION

During the last ten days the routine neurologic examination of enlisted men in this division has been begun in earnest. Capt. J. M. W. Scott of Schenectady, N. Y., has been acting as neurologist to the base hospital ever since its opening, two

months ago. About November 1, Lieut. Bennett A. Burks of Alabama, Lieut. Dudley C. Kalloch of Ossining, N. Y., and Major Ross Moore of Los Angeles arrived for the purpose of making this routine examination.

Approximately 20,000 out of the 33,003 troops in camp have already been examined by the psychologists. The final discards from this examination, the mental defectives of such low degree as to be considered unfit for duty by the psychologists, are being studied by Major Moore and his assistants to determine their final disposition.

During the early weeks of psychologic testing, the mental age of 10 years was gradually settled on by Captain Scott and the psychologists as being the lowest average level for Army service. This conclusion was based on studies of companies that were composed to a large extent of American born men of American born parents. Studies made during the last ten days of some companies from western Pennsylvania and West Virginia, composed in large proportion of foreign born men, mostly illiterates, are showing that a mental age of 10 years is too high. Many men have been accepted for the Army who can neither read nor speak English, but who are expert workmen in steel mills, etc., and whose mental age lies between 8 and 10 years. The general conclusion at present, therefore, is that foreign born illiterates of a mental age of 8 years and upward will make good Army material, while 10 years and upward is the low limit for American born illiterates. The differentiation is a very real one, and is graphic evidence of how men differ in their ability to react to surroundings. The many American born illiterates of these examinations have had opportunities for intellectual betterment but have not profited by them or have even retrograded, while many of these foreign born illiterates have had no such advantages but are eager to secure what they can now. In these large group tests the proportion of illiterates included is great enough to make a difference of two years in the age of acceptance between American and foreign born illiterates. This phase of the investigation is still young. Other conclusions may be reached after further study. Another and a larger psychiatric and neurologic study now in process of accomplishment is the study of the enlisted men with a view to the elimination of the unfit. The latter are the pathologic, neuropaths and psychopaths, and the insane. The feeble-minded are being inexorably detected by the psychologists, and their final disposition is easily accomplished. The detection of the psychopaths and neuropaths is quite another matter. The plan in use at the present is as follows: Work is done by regiments in regimental infirmaries. The regimental medical officers are asked to hand in the names of men who have been noted as acting queerly in some way, or to be unable to fit themselves into the Army life well enough to get along—men who seem unable to learn the drill, etc.—and all men suspected of malingering. These men are studied individually by the neurologists, the evidence of their company commanders is taken, they are put through drill and other tests, and are often sent to the base hospital neurologic wards for observation. In other cases they are returned to the ranks for two weeks for further training. It is thought that this procedure will ultimately eliminate a large proportion of the neurologically unfit.

HEALTH OF THE DIVISION

The general health of the division remains good although an outbreak of mumps and measles, limited to two regiments has increased the sick rate. There are sixty-four cases of measles and one hundred and thirty-one cases of mumps. There have been twenty cases of pneumonia and only one death, and eight cases of cerebrospinal meningitis with but one death.

VENEREAL DISEASES

Effort is being made to secure a report of every new case of venereal disease whether the man is, in hospital, quarters or doing duty. In order to study carefully the work of each infirmary, a weekly report on prophylaxis and venereal disease is rendered by each organization surgeon. The prophylactic treatments given during the week are grouped into those given within an hour, one to two hours, two to four hours, four to eight hours and over eight hours. The number of cases of gonorrhea, chancroid or syphilis which occur in spite of prophylaxis are reported and grouped according to the time the prophylactic treatment was given. Cases that were undoubtedly infected prior to enlistment are classified separately as are also cases that have developed in men who fail to take prophylactic treatment. Prophylaxis stations are maintained in Hopewell, Va., a city of 15,000 people, 6 miles away and in Petersburg, four miles away, a city of 30,000.

By means of the reports it will be possible to learn the proportion of cases occurring in the various commands before and after enlistment, the efficacy of prophylaxis early and late and the extent of immorality, and finally the definite number of cases of syphilis, gonorrhea and chancroid.

Eighty-Fourth Division, Camp Zachary Taylor, Louisville, Ky.

ATHLETIC TRAINING

Compulsory athletic training has been added to the schedule of daily life at Camp Zachary Taylor. Heretofore, the soldiers have spent eight hours a day at drill; now one hour a day at athletics will be substituted for an hour of drill. From 10:30 to 11:30 each day, compulsory athletics on a scientific and systematic basis will be indulged in. There will be physical drill or calisthenics, boxing and wrestling, football, blocking, charging and tackling, obstacle and relay racing, basketball, volley ball, baseball and soccer football. An athletic officer has been appointed in each regiment, separate battalion and independent unit, who are charged with supervision and direction of the physical training, with a Louisville man, Capt. George R. Ewald, as division athletic officer. Eight men are in the hospital because of injuries received in these exercises, two with fractures of the clavicle.

CONSCIENTIOUS OBJECTORS

Sixty members of the Mennonite faith from Illinois sprang a surprise on the division paymaster when they refused to accept their pay. They are conscientious objectors, and are called absolutists, as they object to serving in the Army in any capacity. The only work they are performing is keeping their quarters clean.

MEASLES

Heavy punishment is being meted out by the summary court martial in the Three Hundred and Thirty-Sixth Infantry to men who break the quarantine for measles and go into the city without leave. Three men recently tried in Company D were sentenced to ninety days in the guard house and three months' loss of pay. The epidemic as far as new cases are concerned is about over. One death has occurred from a complicating bronchopneumonia. Each organization has received orders to be prepared to send its men to the base hospital, on request of the division surgeon, for the psychologic examination. Every man in camp will eventually be put through these tests.

AMBULANCE COMPANIES

Ambulance equipment for the Three Hundred and Ninth Sanitary Train has arrived, and this organization will perform the ambulance service for the entire camp. Four companies of the sanitary train are known as ambulance companies; two more motor drawn units, and the other two derive their power from the famous Army mule. Ambulances will call at 9 o'clock each morning and 3 o'clock each afternoon at all regimental infirmaries and transfer patients to the base hospital. Two ambulances are kept on duty at the base hospital day and night.

First Lieut. Lynn T. Hall of Ambulance Company No. 355 has been designated as attending surgeon of the Infantry School of Arms. He will maintain a dressing station near the school, and will have an ambulance ready at all times.

NURSING SERVICE

More Red Cross nurses have reported to Major J. A. Worthington, the nursing staff now numbering thirty-four. A meeting was held on the 19th at the Children's Free Hospital for the purpose of stimulating interest in Red Cross nursing and recruiting for the base hospital at Camp Zachary Taylor. A reception to the Army nurses on duty was held after the meeting. A number of the nurses assigned to Base Hospital No. 40, Lexington, Ky., have asked for transfer to the base hospital at Camp Zachary Taylor pending foreign orders.

REPORTS OF MEDICAL OFFICERS

Several medical officers from the base hospital attended the meeting of the Medico-Chirurgical Society, November 16. Major Hamburger made a brief report of the epidemic of measles that has been so prevalent in two regiments, and now has begun to spread among those attached to the hospital, one nurse, one medical officer in the eye section, and several hospital attendants being affected. The rashes have been almost uniformly severe, a large percentage being hemorrhagic. There have been a number of complicating broncho-

pneumonias, and the marked early cyanosis in these cases has been an outstanding feature. In the fatal cases the necropsy findings in the lung have been uniformly a most diffuse riddling of the lung with patches of bronchopneumonia and a great amount of exudate everywhere.

The seven meningitis patients are doing well under the serum treatment; four are convalescent. The lobar pneumonia patients have progressed well, with a very small percentage of deaths.

Lieutenant Alexander, who has had long training in the laboratory side of pneumonia in Boston, New York and Baltimore, reported that 65 per cent. of the lobar pneumonias have been found due to Types I and II, and that these organisms are not found in normal mouths. The bronchopneumonias are due to a typical Type II, and Types III and IV, and these types are found normally in healthy mouths. On this theory more consistent and regular oral hygiene and antisepsis will be used in the measles cases particularly. A good deal of polyvalent serum has been used, and a shipment of Type I serum has just been received. The cases at Rockefeller Hospital under the specific serum treatment reduced mortality from 30 per cent. to 5. The polyvalent serum is used before the type of organism is known. It is purposed to standardize the various types of serums received from the manufacturers. In the tests some of the serums have been found useless *in vitro*. It is hoped that all can be standardized.

Major Wilder and Captain Littig of the ophthalmologic staff at the hospital occupied the program of the regular meeting of the ophthalmologic society, on the 15th.

BASE HOSPITAL

The base hospital, now nearly completed in every detail, occupies 85 acres and sixty-seven buildings, with 1,000 beds. Sixty-five physicians, 288 enlisted men and thirty nurses care for the 560 patients now in the hospital.

Eighty-Eighth Division, Camp Dodge, Des Moines, Iowa

An intensive course of training for all medical officers has been outlined by Lieutenant-Colonel Shook, the division surgeon, pursuant to an order from the Surgeon-General. Excellent lectures have already been given by Major Miller on "Foreign Protein Therapy"; Major Ruth on "Treatment of Fractures of Head and Neck of Femur"; Captain Baehr on "War Psychiatry"; Captain Glomset on "Carriers," with special reference to typhoid, diphtheria, epidemic meningitis and pneumonia, and by Major Todd on "Practical Hints to Military Medical Officers on the More Common Diseases and Treatment of the Eye, Ear, Nose and Throat."

The Camp Dodge Medical Society, composed of all the medical officers of this cantonment, has been formed with Major Todd as president. Meetings are being held weekly. Interesting and instructive papers have been given by Contract Surgeon Feil and Captain Franing.

Major John Ridlon was in camp about ten days ago, and gave a series of lectures and demonstrations to medical and line officers.

NEWS NOTES

Col. Charles Dircle of the Medical Department of the French Army and Col. T. H. Goodwin of the British Medical Service visited and inspected this cantonment some time ago. They report that the camp and type of work being done is excellent. Each officer spoke before the meeting of the Polk County Medical Society on that date, and gave some interesting and vivid descriptions of modern warfare.

Major Alexander Cooper of Fort Oglethorpe, Ga., has been assigned as commanding officer of the base hospital.

Major E. O. Craft has been assigned as commanding officer of the base hospital at Presidio, Calif. He was highly commended by the commanding general for his excellent work of organizing and commanding the base hospital at this camp.

Capt. E. C. G. Franing of Galesburg, Ill., has been given detached service at Chicago, to attend the special course on fractures given there.

Capt. L. L. Henniger of Council Bluffs, Iowa, has been transferred to Fort Porter, N. Y.

Lieut. John Voss and M. C. Frazier have been given detached service at Chicago, to attend a special course on oral surgery.

BASE HOSPITAL

The base hospital moved into permanent quarters, October 25 and 26. The new hospital is situated at the northwestern end of the camp, close to the village of Herrold.

It is composed of thirty-two buildings, built about a central quadrangle about 100 yards wide and 150 yards long. These buildings are all connected by closed corridors.

Eighty-Ninth Division, Camp Funston, Fort Riley, Kan.

INCLEMENT WEATHER

The weather at this camp was a subject of great disparagement during the latter part of October. It was typical winter weather, accompanied by snow storms, and, as the heating plants were not installed, one often had to go to bed to keep warm. At present we are having beautiful, warm winter days and clear nights, and it is unnecessary to heat the barracks, excepting for a short time each morning.

INSPECTION

Col. W. P. Chamberlain, M. C., and Col. George E. Bushnell, M. C., of the War Department, have just completed a tour of inspection of the camp, and they have expressed themselves favorably regarding the condition of the cantonment. They could hardly believe that the number of new cases of venereal disease contracted by men after coming to this camp was so low. Since the camp was started, there have been but five, and prophylactic treatments have been likewise sparingly called for, although every man in the division has been properly instructed on the subject.

QUARANTINE

With regard to the prevention of disease in this camp, a quarantine has been established between the Ninety-Second and the Eighty-Ninth divisions, and the men from the two do not intermingle, conducting all drills and duties separately. As another step, all of the roads, dirt or macadamized, have been well oiled and rendered dustless.

MENINGITIS

By taking frequent and systematic cultures, a number of meningococcus carriers among the new troops have been apprehended and isolated, and as a result few new cases of meningitis are expected.

Ninety-First Division, Camp Lewis, American Lake, Wash.

The cantonment at Camp Lewis is on a prairie 16 miles southwest of Tacoma; it is $2\frac{3}{4}$ miles long by 1 mile wide. The soil is composed of much small rock and gravel, and the drainage is excellent. Construction was started, June 20, 1917, and completed, according to the original plan, September 15. There are 1,600 buildings all told on the ground, 35 miles of water pipe, and 35 miles of sewer line. Lieut.-Col. Peter C. Field, M. C., is division surgeon, Lieut.-Col. Lloyd L. Smith, M. C., division sanitary inspector, and Major Eugene G. Northington, M. C., commanding officer, of the base hospital. The remaining medical officers belong to the Medical Reserve Corps, and hail from all parts of the West and particularly from the Northwest. There are 166 medical officers, 20 contract surgeons, 38 dental officers and 15 veterinarians.

The sanitary condition of this camp is excellent. Very few cases of acute contagious diseases have appeared. The prevailing diseases are those of the upper respiratory tract: bronchitis, tonsillitis and pharyngitis.

The following officers are in charge of the different services of the base hospital: Major Eugene G. Northington, M. C., commanding officer; Major Herbert M. Greene, M. R. C., adjutant; Major Calvin S. White, M. R. C., chief of the medical service; Major John J. Kyle, M. R. C., chief of the ophthalmic division; Capt. Ernest L. Bickford, M. R. C., chief of the laboratory service; Capt. Edward A. Rich, M. R. C., chief of the orthopedic service; First Lieut. Horace J. Whitacre, chief of the surgical service, and Capt. Rawlins Cadwallader, M. R. C., post exchange and mess.

The operating room and roentgen-ray room are completed in every detail and are running in smooth order. The hospital is fully equipped throughout with steam heat and electric lights. There are now attached to the hospital, 40 medical officers, 30 female nurses and 240 hospital corps men. The base hospital and sanitary train occupy about 40 acres.

Nearly all cases of venereal diseases were contracted before the men arrived at camp. Only two new cases have been reported. Practically the entire command is vaccinated against smallpox; typhoid and paratyphoid prophylaxis has been given. All new men are marched from the train to the receiving tent, where they are carefully examined for contagious and venereal diseases.

ORDERS TO OFFICERS OF THE MEDICAL CORPS

To Camp Beauregard, for duty, Lieut. ERNEST E. ALLGEYER, New Orleans.

To Camp Sheridan, base hospital, from Plattsburg Barracks, Capt. GEORGE W. JEAN.

To Camp Mills, as inspector instructor of sanitary personnel and on completion to return to his proper station, Major CONDON C. McCORMACK.

Col. GEORGE E. BUSHNELL, to the following named camps to inspect the work of tuberculosis examiners and on completion to his proper station, *Camp Beauregard, Camp Pike, Camp Funston, Denver, Colo., Camp Dodge, Camp Grant.*

Major EDGAR KING, to the following named places for duty in connection with the development of special hospitals, and on completion to his proper station, *Long Beach, Asbury Park.*

Major EDGAR D. CRAFT, to *San Francisco*, Letterman General Hospital for duty, from Camp Dodge.

Lieut.-Col. CHARLES F. CRAIG, to be relieved from duty at the dept. laboratory, Fort Leavenworth, Kan., and to the following camps to inspect the Public Health Laboratory work, and on completion to proper station: *Camp Dodge, Camp Grant, Camp Custer, Camp Sherman, Camp Taylor, Camp Funston.*

Col. BASIL H. DUTCHER, be relieved from duty in the Panama Canal Dept. and to *Washington, D. C.*, to report in person to the Surgeon-General for duty.

Col. HENRY C. FISHER, to the following named places to make sanitary inspections, and on completion to his proper station, *Camp Wheeler, Camp Beauregard, Camp Shelby, Camp Jackson, Camp Sevier.*

Col. DAVID BAKER, relieved from duty at El Paso, Tex., and to *Camp Sheridan* for duty in command of the base hospital.

Lieut. GEORGE W. BELLER, relieved at Fort Casey, Washington, and to *Seattle*, for duty as medical member of examining board and recruiting officer.

Lieut.-Col. WILL L. PYLES, relieved at Fort Niagara, N. Y., and to the following named places to inspect buildings and sites under consideration for use as hospitals, and on completion to his proper station, *Rochester, N. Y., Dansville, N. Y., Avon, N. Y.*

Major LEARTUS J. OWEN, relieved at Letterman General Hospital, San Francisco, Calif., and assigned to station in *Washington, D. C.*

Lieut.-Col. WILLIAM R. MONCRIEF, to *New York* for duty, and on completion to his proper station.

Major WILLIAM E. HALL, relieved in the Panama Canal Dept. to *Governors Island, N. Y.*, for duty.

Lieut. EDWARD A. COATES, JR., relieved at Fort Des Moines, Ia., and to *Fort Riley* for duty.

Lieut.-Col. JOHN R. BOSLEY, relieved at Fort Ontario, N. Y., and to *Hot Springs, Ark.*, for observation and treatment.

Major WILLIAM H. TEFFT, to *president of examining board, Fort Riley*, for examination for promotion, from Fort Riley.

Major WILLIAM L. HART, to *Baltimore, Md.*, to inspect the Maryland State Hospital Train, and on completion to return to his proper station.

ORDERS TO OFFICERS OF THE MEDICAL RESERVE CORPS

Alabama

To Annapolis Junction, Md., from Camp Wheeler, Lieut. WILLIAM M. PIERCE, Tusculumbia.

To Camp Beauregard, as a member of board for special examination of command for tuberculosis, Lieut. FLOYD L. ABERNETHY, Flomaton.

To Fort Logan H. Roots, Ark., for duty, from Fort Oglethorpe, Lieut. CLAUDE C. McLEAN, Birmingham.

To Fort Oglethorpe, for duty, from Camp McClellan, Lieut. WILLIAM W. BURNS, Selma.

To Fort Riley, Kan., for instruction, Lieut. DUKE C. BRADFORD, Birmingham.

To New York City, Neurological Institute, for intensive training in brain surgery, from Camp Greenleaf, Lieut. FRANCIS M. INGE, Mobile.

To Springfield, Mass., for duty, from Fort Benjamin Harrison, Lieut. HENRY BOXER, Birmingham.

Arkansas

To Camp Dodge, for examination of command for tuberculosis, from Fort Benjamin Harrison, Capt. PERRY C. WILLIAMS, Texarkana.

To Camp Joseph E. Johnston, for duty, from Fort Oglethorpe, Lieut. ERTON E. POYNOR, Green Forest.

To Fort Oglethorpe, for duty with Evacuation Hospital, No. 5, Lieut. MAHLON D. OGDEN, Little Rock.

To Fort Riley, Kan., for instruction, Lieut. CAP J. CARTER, Sherrill.

To Washington, D. C., Government Hospital for the Insane, for special training, from Surgeon-General's office, Capt. EDWIN P. BLEDSOE, Little Rock.

To his home and honorably discharged on account of being physically disqualified for active service from Camp Greenleaf, Lieut. TRUE S. BURGESS, Russellville.

California

To Camp Doniphan, base hospital, from Jefferson Barracks, Capt. CARO W. LIPMAN, San Francisco.

To Camp Fremont, Palo Alto, Calif., Base Hospital No. 47, Capt. HAROLD SIDEBOTHAM, Santa Barbara.

To Camp Lewis, Tacoma, Wash., for duty, Lieut. FREDERICK A. COLLIER, Los Angeles.

To San Francisco, Calif., for duty examining troops for tuberculosis, from Camp Kearney, Capt. JOSEPH A. PARKE, San Diego; WILLIAM R. P. CLARK, JAMES L. WHITNEY, San Francisco.

To New York City, Neurological Institute, for intensive training in brain surgery, from Camp Lewis, American Lake, Wash., Major ALANSON WEEKS, San Francisco.

Canal Zone

To Army Medical School, Washington, D. C., for instruction, Lieut. WILLIAM B. FOSTER, JR., Ancon.

Colorado

To Boston, Mass., for duty, from Camp Lewis, American Lake, Wash., Major WALTER A. JAYNE, Denver.

To Camp Sherman, as member of board for special examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. ORION A. GRANTHAM, Johnstown.

To his home and the inactive list of the Medical Reserve Corps, Lieut. JAMES R. ARNEILL, Denver.

Connecticut

To Camp Sherman, as member of board for special examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. EDWIN S. BENNETT, New Canaan.

To Newport News, for duty, Lieut. LLOYD L. NAURER, New Haven.

To New York City, Neurological Institute, for intensive training in brain surgery, from Camp Upton, Major WILLIAM F. VERDI, New Haven.

District of Columbia

To Camp Jackson, base hospital, Lieut. HENRY MAYES, Washington.

To Fort Myer, Va., for duty with the Twelfth Field Artillery, Major CHARLES L. G. ANDERSON, Washington.

To Fort Riley, for duty with Evacuation Hospital No. 7, from Fort Oglethorpe, Capt. THOMAS W. O'REILLY, Washington.

Florida

To Camp Hancock, base hospital, from Camp Greenleaf, Lieut. ROBERT E. BALDWIN, Tampa.

To Fort Oglethorpe, for duty, from Camp Wheeler, Lieut. HENDLY F. HORNE, Jacksonville.

To Fort Riley, for duty, from Fort Des Moines, Capt. MORETON H. AXLINE, St. Petersburg; Lieut. CHARLES L. KENNON, Jacksonville.

To Tenaflly, N. J., base hospital, from Camp Wheeler, Lieut. WILLIAM H. G. MACKEY, Jacksonville.

To Washington, D. C., American University, for duty, from Camp Greenleaf, Capt. FREDERICK C. MOOR, Tallahassee.

To the inactive list on account of being physically disqualified for active service, from Fort Oglethorpe, Lieut. HEBER P. NEWMAN, Bartam.

Georgia

To Atlanta, Ga., dept. laboratory, from Rockefeller Institute, Lieut. ALLEN H. BUNCE, Atlanta.

To Camp Gordon, base hospital, from Camp Wheeler, Lieut. FRED B. RAWLINGS, Sandersville.

To Fort Oglethorpe, for duty, from Walter Reed General Hospital, Capt. THOMAS C. DAVISON, Atlanta; from Camp Wheeler, Lieut. JOHN TERRELL, JR., Canon; from Chickamauga Park, Lieut. EGBERT M. TOWNSEND, Tilton.

To Fort Porter, N. Y., United States Army General Hospital No. 4, for duty with Hospital Unit "A", Lieut. WALTER E. HOLMES, JR., Macon.

To New York City, Post-Graduate Medical School and Hospital for instruction in urology and dermatology, Capt. JOHN M. SIGMAN, Macon.

To Rockefeller Institute, for instruction, and on completion of this course to return to his proper station, from Fort Oglethorpe, Capt. GEORGE A. TRAYLOR, Augusta, and on completion of this course to Atlanta, Ga.; dept. laboratory, Lieut. ALLEN H. BUNCE, Atlanta.

To be honorably discharged on account of being physically disqualified for active service, from Fort Des Moines, Lieut. GEORGE W. P. JOHNSON, Savannah.

Idaho

To Camp Funston, for duty, from Fort Riley, Lieut. ROBERT S. KNEESHAW, St. Maries.

To Fort Omaha, Neb., United States Army Balloon School, for duty, Capt. FRANCIS H. POOLE, Pocatello.

Illinois

To Army Medical School, Washington, for duty, Lieut. CARL W. CLARK, Chicago.

To Boston, Mass., for instruction in orthopedic surgery, from Camp Grant, Lieut. CLARENCE A. JACOBSON, Chicago, from Fort Oglethorpe, Lieut. TORRANCE REED, Chicago.

To Camp American University, for duty, from Fort Benjamin Harrison, Lieut. FREDERICK E. ROBERG, Joliet.

To Camp Bowie, base hospital, from Rockefeller Institute, Capt. FREDERICK LUDWIG, Great Lakes.

To Camp Dodge, for duty, from Fort Riley, Lieuts. CHARLES A. CIBELIUS, FREDERICK G. TEST, Chicago; for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. TIMOTHY C. WEBER, West Salem.

To *Camp Doniphan*, base hospital, from Fort Riley, Lieut. JOHN M. KRASA, Chicago.

To *Camp Funston*, for duty, from Fort Riley, Capt. WILFRED H. GARDNER, Bloomington; for examination of command for tuberculosis, from Fort Benjamin Harrison, Capt. CHARLES H. POWELL, Old Ripley; Lieut. CLARENCE W. CHAPIN, Weldon.

To *Camp Grant*, base hospital, from Fort Benjamin Harrison, Lieuts. BENJAMIN F. ZOBRIST, Camargo; LORAN E. ORR, Petersburg; as member of board for examination of command for tuberculosis, from Camp Bowie, Lieut. ROBERT S. BERGHOFF, Chicago.

To *Camp Greene*, for duty, from Fort Benjamin Harrison, Lieuts. HERBERT G. HEMPLER, Creal Springs; RALPH E. POTTER, Loraine; for duty from Fort Morgan, Lieut. FREDERICK T. RICE, Chicago.

To *Camp Lee*, for duty, from Fort Oglethorpe, Lieuts. HULITT J. WYCKOFF, Chicago; from Philadelphia General Hospital, WILSON K. DYER, Kankakee.

To *Camp Logan*, base hospital, from Fort Benjamin Harrison, Lieut. ARTHUR B. CONNOR, Wheaton.

To *Camp McArthur*, base hospital, Lieut. EUGENE Y. YOUNG, Mansfield.

To *Camp McClellan*, for temporary duty, from Evans Dental Institute, Philadelphia, Pa., Lieut. WILLIAM H. MALEY, Galesburg.

To *Camp Pike*, *Little Rock*, base hospital, from Fort Benjamin Harrison, Lieut. ROBERT B. MILLER, Rock Island.

To *Camp Sherman*, for temporary duty from Evans Dental Institute, Philadelphia, Pa., Lieut. RALPH E. KLECKNER, Mattoon.

To *Camp Taylor*, for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. WILLIAM S. NEEDHAM, Hanna City.

To *Camp Upton*, base hospital, from Fort Benjamin Harrison, Lieut. CLYDE F. BACCUS, Woodstock.

To *Chicago, Ill.*, for instruction and on completion to return to Fort Sheridan for duty, from Fort Sheridan, Lieut. WILLIAM A. CLARK, Chicago.

To *Fort Oglethorpe*, for duty, from Camp Dix, Lieut. EVERETT P. COLEMAN, Canton.

To *Fort Riley*, for instruction, Lieut. ROBERT S. WISHARD, Wheeler; for duty, from Fort Des Moines, Lieut. LEE C. GATEWOOD, Chicago; for duty with Evacuation Hospital No. 7, from Plattsburg Barracks, Lieut. JAMES H. VETTER, Chicago; from Washington University, St. Louis, Mo., Lieut. EDWIN W. HIRSCH, Chicago.

To *New York City*, Neurological Institute, for intensive training in brain surgery, from Camp Pike, Capt. WILLIAM FULLER, Chicago.

To *Portland, Ore.*, for instructions and assignment to squadrons now being organized, from Fort Worth, Tex., Lieut. JOEL E. TOOTHAKER, Ladd.

To *Richmond, Va.*, for duty, from Fort Benjamin Harrison, Lieut. RALPH R. TRUEBLOOD, Lawrenceville.

To *Rochester, Minn.*, for instruction and on completion of course to Camp Beauregard, from Fort Benjamin Harrison, Lieut. THOMAS B. KELLY, Du Quoin; on completion to Camp McClellan, Lieut. WILLIAM L. MENG, Belleville; on completion to Camp Sherman, Lieut. RAYMOND M. KELLY, Chicago; on completion to Fort Sheridan, Lieut. LUTHER B. HIGHSMITH, Flat Rock.

To *Rockefeller Institute*, for instruction and on completion of course to Roosevelt Hospital, for a further course of instruction, and on completion of course to Fort Logan for temporary duty, from Fort Benjamin Harrison, Capt. VERNON C. DAVID, Chicago.

To *his home* and honorably discharged on account of being physically disqualified for active service, Lieut. EDWARD E. EDMONDSON, Mt. Vernon; from Fort Benjamin Harrison, Lieut. EARL R. COCHRAN, Rockton.

Indiana

To *Camp Dodge*, for duty, from Fort Benjamin Harrison, Capt. HARRY B. WILLIAMS, Mace.

To *Camp Grant*, base hospital, from Fort Benjamin Harrison, Lieut. WARREN W. HEWINS, Evansville.

To *Camp Lee*, for duty, from Philadelphia, Pa., Capt. ALFRED P. ROOPE, Columbus.

To *Camp Meade*, for duty, from Fort Benjamin Harrison, Lieut. JAMES O. RHEA, Linden.

To *Camp Shelby*, for duty, Lieut. IVAN E. BRENNER, Winchester.

To *Camp Sheridan*, for duty, from Camp Pike, Capt. Allen Hamilton, Fort Wayne.

To *Camp Sheridan*, as member of board for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. AMZI W. HON, Indianapolis.

To *Camp Travis*, for duty, Lieut. GEORGE L. MARSHALL, Bourbon.

To *Camp Wheeler*, for duty, from Fort Benjamin Harrison, Capt. JAMES W. DUCKWORTH, Indianapolis; Lieut. JOHN W. PAHMEIER, Indian Springs.

To *Fort Oglethorpe*, for duty, from Camp American University, Lieuts. LLOYD A. ELLIOT, Elkhart; from Fort McClellan, Lieut. ELMER C. SINGER, Fort Wayne.

To *Fort Omaha, Neb.*, for duty with balloon squadrons for overseas, from Fort Benjamin Harrison, Lieuts. FREDERICK L. DARROW, East Haven; CHARLES R. ELFERS, New Augusta.

To *Honolulu, Hawaii*, for duty, from Fort Benjamin Harrison, Lieuts. JAMES H. JOHNSON, Connorsville; EUPY K. SCHURTZ, Waterloo.

To *New York City*, Neurological Institute, for intensive training in brain surgery, Capt. THOMAS M. JONES, Anderson; to Post Graduate Hospital for instruction in urology and dermatology, Lieut. ASHTON M. BALDWIN, Marion.

To *Portland, Ore.*, for instructions and assignment to squadrons now being organized from Fort Worth, Tex., Lieut. CARLOS C. ROZELLE, LeGrange.

To *Rochester, Minn.*, for instruction and on completion of course, to Camp Sevier, Lieut. LLOYD H. SIMMONS, Millersburg.

To *Tenafly, N. J.*, for duty in Ice Plant Company, No. 301, from Fort Benjamin Harrison, Lieut. CHARLES W. ASHLEY, Bicknell.

Honorably discharged on account of being physically disqualified for active service, Major ORANGE G. PFAFF, Indianapolis.

Honorably discharged from Camp Custer, Lieut. GARLAND D. SCOTT, Sullivan.

Iowa

To *Boston, Mass.*, for orthopedic instruction, from Camp Greenleaf, Lieut. GARNETT S. FELT, New Providence; from Fort Snelling, Lieut. EDWARD S. PARKER, Idagrove.

To *Camp Custer*, base hospital, from Fort Benjamin Harrison, Lieut. WILLIAM H. BETTS, Madrid.

To *Camp Dodge*, Des Moines, Ia., for duty, from Fort Des Moines, Capt. HANS HANSEN, Logan.

To *Camp Sherman*, Chillicothe, Ohio, Eighty-Third Division as member of board for examination of command for tuberculosis, from Camp Greenleaf, Lieut. HARRY C. NICHOLS, Carson.

To *Camp Upton*, Yaphank, L. I., N. Y., for temporary duty, base hospital, Lieut. HAROLD L. BRERETON, Emmetsburg.

To *Fort Logan H. Roots*, Ark., for duty, from Fort Benjamin Harrison, Lieut. ORSON A. KELLOGG, Dows.

To *Fort Riley*, Kan., for instruction, from Camp Dodge, Capt. JAMES J. DALY, Decorah.

To *New York City*, from Philadelphia, for duty in connection with the physical examining unit, and on completion to proper station, Major SUGEN R. LEWIS, Dubuque.

To *New York City*, Neurological Institute, for intensive training in brain surgery, Capt. HENRY A. GRAY, Keokuk; from Fort Riley, Lieut. FREDERICK W. SALLANDER, Fort Madison; to report to the chief surgeon, aviation section, for temporary duty, and on completion to Garden City, L. I., from Fort Benjamin Harrison, Lieut. VICTOR E. BOLLINGER, Mt. Pleasant.

To *his home* and the inactive list on account of being physically disqualified for active service, from Camp Dodge, Lieut. ROBERT C. MOLISON, Marshalltown.

Kansas

To *Camp Devens*, Ayer, Mass., for temporary duty, from Evans Dental Institute, Philadelphia, Lieut. IVAN R. BURKET, Winfield.

To *Camp Jackson*, Eighty-First Division, Columbia, S. C., for duty, from Fort Riley, Kan., Major JOHN E. HEWITT, Wakefield.

To *Camp Mills*, Garden City, L. I., N. Y., from Gas Defense School, Fort Sill, Okla., Capt. GEORGE W. LEE, Yates Center.

To *Fort Riley*, Kan., base hospital, for duty, from Medical Officers Training Camp, Fort Riley, Lieut. CHARLES V. HAGGMAN, Scandia.

To *New York City*, Cornell Medical College, for instruction in military roentgenology, Lieut. GEORGE E. KNAPPENBERGER, Mankato.

To *Rock Island*, for duty, from Fort Riley, Lieut. RALPH C. HENDERSON, Erie.

To *his home* and the inactive list on account of being physically disqualified for active service, Lieut. JAMES B. DONNELL, Kinsley.

Kentucky

To *Camp Lee*, Petersburg, Va., base hospital, from Camp Greenleaf, Lieut. JAMES M. TAULBEE, Lexington.

To *Camp Meade*, Annapolis Junction, Md., for duty, from Camp Meade, Lieut. MORTON M. MOSS, Bowling Green.

To *Camp Shelby*, Hattiesburg, Miss., for duty, from Camp Wheeler, Lieut. JOHN P. WHEELER, Carrollton.

To *Camp Sheridan*, Ala., for temporary duty, from Evans Dental Institute, Philadelphia, Lieut. FREDERICK L. KOONTZ, Louisville.

To *Camp Sherman*, Chillicothe, Ohio, for duty, from Fort Benjamin Harrison, Lieut. HENRY H. DUKE, Louisville.

To *Camp Taylor*, Louisville, Ky., as member of board for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. EDWIN W. MONTGOMERY, Vince Grove.

To *Fort Oglethorpe*, for duty, from Camp Wheeler, Lieut. JOHN P. WHEELER, Carrollton.

To *Fort Ontario*, N. Y., for duty with Field Hospital No. 28, from Camp Devens, Lieut. ARTHUR W. ALLEN, Somerset.

To *Honolulu, Hawaii*, for duty, from Gas Defense School, Fort Sill, Okla., Capt. SAM F. PARKER, Somerset.

To *Morrison, Va.*, for duty, from Fort Benjamin Harrison, Lieut. UREY G. DAVIS, Hopkinsville.

To *New York City*, Neurological Institute, for intensive training in brain surgery, Capt. CHARLES FARMER, Louisville.

To *Rochester, Minn.*, for instruction and on completion of course to Fort Oglethorpe, base hospital, from Fort Benjamin Harrison, Lieut. CLIFFORD E. HARKEY, Paducah.

Louisiana

To *Camp Beauregard*, Alexandria, La., for duty, from Camp Wheeler, Lieuts. WILLIAM T. MCNEESE, Angie; Lieut. FREDERICK L. FENNO, New Orleans, as member of board for examination of command for tuberculosis, Lieut. GEORGE H. UPTON, New Orleans.

To *Camp Upton*, Yaphank, L. I., N. Y., base hospital, from Rockefeller Institute, Lieut. PAUL K. RAND, Alexandria.

To *Fort Leavenworth*, Kan., for duty, from Camp Wheeler, Lieut. WILEY R. BUFFINGTON, New Orleans.

To *Fort Riley*, Kan., for duty with Evacuation Hospital No. 7, from Fort Oglethorpe, Lieuts. DOLLIE O. SHERMAN, Clarke; ROBERT P. MCGOWAN, New Orleans.

To New York City, Neurological Institute, for training in brain surgery, Capt. WILLIAM M. PERKINS, New Orleans.

Maine

To Boston, Mass., for instruction in orthopedic surgery, from Camp Upton, Lieut. RAYMOND V. N. BLISS, Bangor.

To Camp Sherman, Chillicothe, Ohio, as member of board for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. SUMNER C. PATTEE, Searsport.

To Fort McPherson, Ga., base hospital, from Fort Benjamin Harrison, Lieut. CHARLES D. McDONALD, Portland.

To Fort Oglethorpe, for duty, from Camp Devens, Major WILLIAM L. COUSINS, Portland.

To Rockefeller Institute, for instruction, and on completion of course to United States Army General Hospital No. 1, for temporary duty, Lieut. ROYCE V. JOSSELYN, Portland.

Maryland

To Army Medical Museum in connection with supplying illustrations for lecture work, Major ROBERT T. TAYLOR, Baltimore.

To Camp Greene, Charlotte, N. C., base hospital, from Camp Wheeler, Lieut. ALEXANDER McC. STEVENS, Easton.

To Camp Lee, Petersburg, Va., base hospital, from Fort Myer, Lieut. HENRY L. SMITH, Baltimore.

To Camp McClellan, Anniston, Ala., for duty, from Fort Oglethorpe, Lieut. FRANK B. HINES, Chestertown.

To Camp Meade, Annapolis Junction, Md., base hospital, Lieut. HOWARD H. WARNER, Baltimore.

To Camp Sherman, Chillicothe, Ohio, base hospital, from Fort Des Moines, Major FRANK MARTIN, Baltimore.

To Fort McHenry, Md., for duty in the United States Army General Hospital No. 2, from Rockefeller Institute, Lieut. JOHN F. LUTZ, Baltimore.

To Fort Oglethorpe, Ga., for instruction, Lieut. FRANK L. JENNINGS, Baltimore.

To Fort Porter, N. Y., for duty, from St. Elizabeth's Hospital, Washington, D. C., Capt. DANIEL C. V. STUART, Jr., Baltimore.

To Fort Riley, Kan., for duty with Evacuation Hospital No. 7, from Camp Sheridan, Major DON P. PETERS, Baltimore.

To New York City, Neurological Institute, for training in brain surgery, from Fort Oglethorpe, Lieut. GEORGE W. BISHOP, Govaris.

To Rockefeller Institute, for instruction, from Fort Oglethorpe, Lieut. CLAUDE D. HAMILTON, Sykesville.

To Walter Reed General Hospital, Takoma Park, D. C., for instruction in tuberculosis examinations, Lieut. ISRAEL J. FEINGLES, Baltimore; SAMUEL NEWMAN, Baltimore.

To his home and the inactive list on account of being physically disqualified for active service, from Hoboken, N. J., Lieut. JAMES A. ETHERIDGE, Baltimore.

To his home and honorably discharged on account of being physically disqualified for active service, from Camp Sevier, Greenville, S. C., Lieut. GEORGE McLEAN, Baltimore.

Massachusetts

To Army Medical School, for duty, Lieut. WILLIAM F. GREANEY, Holyoke.

To Boston, Mass., for duty from Fort Benjamin Harrison, Major WILLIAM COGSWELL, Haverhill; to Boston City Hospital for instruction and on completion to Camp Meade, base hospital, Capt. GEORGE C. PARCHER, Sangus Center; for instruction and on completion to Camp Devens, base hospital, Lieut. DAVID D. SCANNELL, Boston.

To Camp Devens, for duty as president of the tuberculosis board, Major JOSEPH H. PRATT, Boston; for duty, Lieut. ANDREW NICHOLS, Boston.

To Camp Dodge, for examination of command for tuberculosis, Lieut. ROGER W. SCHOFIELD, Worcester.

To Camp Gordon, Atlanta, Ga., as member of board for examination of command for tuberculosis, from Walter Reed General Hospital, Capt. FRANCIS R. BURKE, Quincy.

To Chickamauga Park, Ga., for duty with the 110th cavalry, from Camp Devens, Lieut. ABRAHAM K. YOOSUF, Worcester.

To Fort Oglethorpe, Ga., base hospital, from Fort Benjamin Harrison, Capt. PEER P. JOHNSON, Beverly; from Camp Devens, Capt. ISAAC S. F. DODD, Pittsfield; Lieut. ROBERT L. JONES, Lowell; from Fort Banks, Lieut. WALTER M. GRANDALL, Lawrence.

To Fort Sam Houston, Texas, for duty in the department laboratory, from Rockefeller Institute, Lieut. GEORGE H. BIGELOW, Boston.

To Camp Travis, Fort Sam Houston, Tex., base hospital, Lieut. DAVID M. HASSMAN, Boston.

To New York City, Post-Graduate Hospital, for instruction in urology and dermatology, Lieut. OSCAR F. COX, JR., JAMES H. GETTINGS, Boston; to Rockefeller Institute, for instruction in laboratory work, Lieut. DAVID L. BELDING, Boston.

To be honorably discharged, Capt. CADIE PHIPPS, Boston.

To the inactive list from Evans Dental School, Philadelphia, Capt. RALPH C. WIGGIN, Cambridge.

Michigan

To Camp Alfred Vale, Little Silver, N. J., for duty, from Fort Benjamin Harrison, Lieut. JOSEPH L. DES ROSIERS, Detroit.

To Camp Beauregard, Alexandria, La., base hospital, Lieut. JACK R. BOLASNY, Detroit.

To Camp Custer, Battle Creek, Mich., for temporary duty, from Evans Dental Institute, Capt. RALPH E. BALCH, Kalamazoo.

To Camp Dodge, for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. WILBUR A. GRIFFITH, Coldwater.

To Camp Gordon, Atlanta, Ga., for temporary duty, from Evans Dental Institute, Philadelphia, Lieut. BERNHARD FRIEDLAENDER, Saginaw.

To Camp McClellan, Anniston, Ala., for duty, from Philadelphia General Hospital, Lieut. ARTHUR R. TEMME, Detroit.

To Fort Oglethorpe, Ga., for duty, from Fort Benjamin Harrison, Lieut. FREDERICK S. BAIRD, Bay City.

To Fort Omaha, Neb., for duty, from Fort Benjamin Harrison, Lieut. WAYNE R. BEARDSLEY, Jones.

To Fort Riley, Kan., for duty, from Fort Des Moines, Iowa, Capt. WARREN P. MORRILL, Benton Harbor; from Fort Riley, Lieut. EDWARD P. WAID, Salem; for duty with Evacuation Hospital No. 7, from Fort Benjamin Harrison, Lieut. ALBERT V. BRADEN, Ishpeming.

To Fort Sheridan, Ill., for temporary duty, from Fort Benjamin Harrison, Lieut. JAMES RHINES, Laurium.

To Mineola, L. I., N. Y., Hazelhurst Field, for duty, from Syracuse, N. Y., Lieut. WARD F. SEELEY, Detroit.

To Rochester, Minn., for instruction, and on completion to Camp Green, base hospital, from Fort Benjamin Harrison, Lieut. KENDALL B. REES, Bedford.

Minnesota

To Camp Bowie, Fort Worth, Tex., base hospital, Lieut. ALEXANDER JOSEWICH, Minneapolis.

To Fort Logan H. Roots, Ark., for duty, from Fort Screven, Ga., Lieut. JOHN H. SCHROEDER, Minneapolis; from Fort Riley, Lieut. JOHN B. CLAIR, Winsted.

To Fort Oglethorpe, Ga., for duty, from Fort Sheridan, Lieut. GEORGE D. RICE, St. Cloud.

To Fort Riley, Kan., for duty, from Camp Funston, Lieut. HENRY E. DOUGLAS, Hutchinson.

To New York City, Cornell Medical College, for instruction in military roentgenology, Lieut. DOUGLAS F. ROBBINS, Minneapolis.

To Portland, Ore., for instructions and assignment to squadrons now being organized, from Fort Worth, Tex., Capt. JOHN C. STALEY, St. Paul.

To Rochester, Minn., for instruction, and on completion of course to Camp Dodge, base hospital, Lieut. ERWIN C. FITZ, Truman.

Mississippi

To Camp Meade, Annapolis Junction, Md., from Camp Wheeler, Lieut. TIMOTHY D. WELCH, Ellisville.

To Fort Leavenworth, Kan., for duty, from Camp Wheeler, Lieut. EUGENE R. SHURLEY, Stover.

To Fort Oglethorpe, for duty, from Camp Wheeler, Lieut. ARMON F. WICKS, Okolona.

Missouri

To Camp Funston, Fort Riley, Kan., for examination of command for tuberculosis, from Fort Benjamin Harrison, Capt. EDWARD H. JOHNSON, St. Louis.

To Camp MacArthur, base hospital, from Fort Riley, Lieut. JOHN H. ARMSTRONG, St. Louis.

To Camp McClellan, Anniston, Ala., for duty, from Phipps Clinics, Baltimore, Lieut. CHARLES H. BURDICK, St. Louis.

To Camp Sherman, Chillicothe, Ohio, base hospital, from Fort Benjamin Harrison, Lieut. FRANK M. SHAFER, Osburn.

To Camp Wadsworth, Spartanburg, S. C., for duty, from Philadelphia General Hospital, Lieut. JAMES LEWALD, St. Louis.

To Fort Oglethorpe, Ga., for duty, from Mineola, Lieut. CLYDE O. BROWN, St. Louis.

To Fort Riley, Kan., base hospital, from Rockefeller Institute, Lieut. PAUL M. KRALL, Kansas City.

To Pittsburgh, for instruction in military roentgenology, from Fort Logan H. Roots, Ark., Lieut. JAMES E. DEWEY, Springfield.

Montana

To Fort Riley, Kan., for instruction, Lieut. GEORGE E. LOW, Round Up; for duty with Evacuation Hospital No. 7, from Fort Oglethorpe, Lieut. HOUSTON H. PARSONS, Sidney.

Nebraska

To Camp Funston, Fort Riley, Kan., for duty, from Fort Riley, Lieut. CLARENCE MOLSEED, Omaha; JESSE C. PAINTER, Schuyler.

To Fort Omaha, Neb., aviation section, signal school, for duty, Lieut. FRANK W. SCOTT, Lodgepole.

To Rock Island, for duty, from Fort Riley, Lieut. ELBER E. CONE, Oxford.

New Hampshire

To Camp McClellan, Anniston, Ala., base hospital, from Fort Benjamin Harrison, Lieut. WILLIAM C. E. NOBLES, Littleton.

To Camp Sherman, Chillicothe, Ohio, as member of board for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. FRANK B. FOSTER, Peterboro.

To Fort Clarke, Texas, for duty with the sanitary train, from Fort Benjamin Harrison, Major GEORGE V. FISKE, Manchester.

To Fort Logan H. Roots, for duty in the United States Army General Hospital, from Camp Beauregard, Capt. GEORGE M. WATSON, Manchester.

To Garden City, L. I., camp hospital, Capt. CHARLES A. LAMSON, New London.

New Jersey

To Camp Dix, Wrightstown, N. J., for duty, from Fort Benjamin Harrison, Capt. ANDREW F. McBRIDE, Paterson; Lieut. LANCELET ELY, Somerville.

To Camp Funston, Fort Riley Kan., for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. CHARLES ENGLANDER, Cedar Grove.

To *Camp Greenleaf*, Fort Oglethorpe, Ga., for duty with Evacuation Hospital No. 6, from Camp Sevier, Lieut. GEORGE BLACKBURNE, Newark.

To *Camp Lee*, Petersburg, Va., as member of board for examination of command for tuberculosis, Capt. MAURICE ASHER, Newark.

To *Camp McClellan*, Anniston, Ala., for duty, from Camp Wheeler, Lieut. WILLIAM JAMES, German Valley.

To *Camp Meade*, Annapolis Junction, Md., for duty, from Neurological Institute, N. Y., Lieut. JAMES P. SANDS, Trenton.

To *Camp Sherman*, Chillicothe, Ohio, base hospital, from Fort Benjamin Harrison, Lieut. NATHAN FURST, Newark.

To *Fort Logan H. Roots*, Ark., for duty in hospital, from Fort Benjamin Harrison, Lieuts. EDMUND W. ILL, Newark; JAMES G. DONNELLY, Paterson.

To *Fort McPherson*, Ga., for duty, Lieut. PHILIP E. BRUNDAGE, Grantwood.

To *Fort Oglethorpe*, for duty, from Fort Wadsworth, Lieut. GEORGE W. VANNATTA, East Orange; from Camp Wheeler, Lieut. ARTHUR H. TEMPLE, Passaic.

To *Chicago, Ill.*, University of Chicago, for a two weeks' course of instruction in the treatment of pneumonia, and on completion to his proper position, from Camp Sherman, Lieut. HAROLD I. GOSLINE, Trenton.

To *Honolulu, Hawaii*, for duty, from Gas Defense School, Fort Sill, Okla., Lieut. IRVING E. CHARLESWORTH, Bridgeton.

To *New York City*, Neurologic Institute, for training in brain surgery, from Camp Greenleaf, Lieut. AARON G. BALDWIN, Newark; to *New York Post Graduate Hospital* for instruction in urology and dermatology, Lieut. CHARLES P. LINGLE, Arlington.

To *Philadelphia, Pa.*, University Hospital, for instruction, and on completion to his proper station, from Camp Greene, Lieut. ADOLPH VON P. FARDELMANN, Jersey City.

To *Rochester, Minn.*, for instruction, and on completion to Camp Hancock, base hospital, from Fort Benjamin Harrison, Lieut. HENRY G. SMITH, Cedar Grove.

To *his home* and honorably discharged on account of his inaptitude for the service, Capt. CARL N. WINTSCH, Newark.

To *his home* and the inactive list on account of being physically disqualified for active service, from Fort Des Moines, Lieut. JAMES R. Stroud, Jersey City.

New Mexico

To *Camp Cody, N. M.*, for duty, Capt. EARL S. BULLOCK, Lieut. ERNEST A. DUNCAN, Silver City.

New York

To *Army Medical School*, Washington, D. C., for duty in the bacteriological laboratory, from Rockefeller Institute, Lieut. HARRY C. SCHMEISSER, New York City.

To *Boston*, Boston City Hospital, for instruction and on completion to United States Army General Hospital No. 1, New York City, for duty in the base hospital, from Fort Ayer, Lieut. WATSON A. LAWRENCE, Valhalla; on completion of the course at Boston City Hospital, to *United States Army General Hospital No. 1*, Williamsbridge, N. Y., for temporary duty, Lieut. JOSEPH L. MCGOLDRICK, Brooklyn; for duty from Camp Upton, Lieut. GESSEL WOLF, New York City.

To *Camp Bowie*, Fort Worth, Tex., base hospital, from Camp Greenleaf, Capt. WILLIAM R. MAY, New York City.

To *Camp Devens*, Ayer, Mass., as member of board for examination for tuberculosis, from Camp Bowie, Lieut. HERMAN JUDKOWITZ, Brooklyn.

To *Camp Dix*, for duty, from Fort Benjamin Harrison, Lieut. HAMILTON M. SOUTHWORTH, Old Chatham.

To *Camp Dodge*, Iowa, base hospital, from Fort Benjamin Harrison, Lieut. SAMUEL TOPKINS; for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. OSCAR S. ESSENSEN, New York City.

To *Camp Doniphan*, Fort Sill, Okla., base hospital, from Fort Oglethorpe, Lieut. WEBB W. WEEKS, New York City.

To *Camp Funston*, Fort Riley, Kan., for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. EUGENE CALVELLI, New York City.

To *Camp Gordon*, Atlanta, Ga., for duty, from Camp Taylor, Lieut. RICHMOND R. HOLT, New York City.

To *Camp Grant*, Rockford, Ill., as member of board for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. CYRENIUS A. NEWCOMB, Newark.

To *Camp Greene*, Charlotte, N. C., for duty, from Vicksburg, Miss., Major JOHN T. SPRAGUE, St. George.

To *Camp Jackson*, Columbia, S. C., for duty, from Philadelphia, Capt. CARL EGGERS; for duty in base hospital, from Fort Benjamin Harrison, Lieuts. ROBERT W. PETTIT, New York City, GEORGE B. UBEL, Salamanca.

To *Camp Joseph E. Johnston*, Jacksonville, Fla., for duty, from Fort Oglethorpe, Lieut. NATHAN ROSENTHAL, New York City.

To *Camp Lee*, Petersburg, Va., as member of board for examination of command for tuberculosis, Capt. STEPHEN A. MAHADY, Utica. Lieuts. NELSON M. HOLDEN and LOUIS D. STERN, Brooklyn; FRANCIS ARGUS, Buffalo.

To *Camp Meade*, Annapolis Junction, Md., base hospital, from Camp Meade, Capt. WALDEMAR T. BROWNE, Brooklyn.

To *Camp Merritt*, Tenafly, N. J., base hospital, from New York City, Capt. HAROLD L. HUNT, New York City.

To *Camp Mills*, Garden City, L. I., N. Y., for temporary duty, Major JOSEPH COLLINS, New York City.

To *Camps Shelby*, Beauregard, Logan, Fort Sam Houston, Camps Travis, MacArthur, Bowie, Doniphan, Pike, from Camp Jackson, Major RICHARD H. HUTCHINGS, Ogdensburg.

To *Camp Sheridan*, Montgomery, Ala., base hospital, Capt. A. L. BENEDICT, Buffalo; from Camp Mills, Capt. GEORGE P. COOPER-NAIL, Bedford.

To *Camp Sherman*, Chillicothe, Ohio, as members of board for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieuts. BYRON C. SHULTS, Albany, and HOWARD C. MURPHY, Herkimer; for temporary duty at the base hospital, from Camp Upton, Lieut. ALBERT C. DURAND, Ithaca.

To *Camp Upton*, Yaphank, L. I., N. Y., for duty, from Benjamin Harrison, Capt. WALTER H. VOSBURG, Dunkirk; for examination of command for tuberculosis, from Walter Reed General Hospital, Capt. JOSEPH R. CULKIN, Rochester.

To *Camp Wheeler*, Macon, Ga., base hospital, from Fort Oglethorpe, Capt. JAMES F. NAGLE, New York City; for temporary duty, from Philadelphia General Hospital, Lieut. PERCY L. DODGE, Poughkeepsie.

To *Cleveland, Ohio*, for instruction and on completion to Fort Riley; for temporary duty, from Fort Riley, Capt. NATHANIEL P. BREED, Douglaston.

To *Fort Banks*, Mass., for duty, from Camp Upton, Lieut. WILLIAM J. WANSBORO, Albany.

To *Fort Benjamin Harrison*, Ind., base hospital, Lieut. WALTER F. MACKLIN, New York City.

To *Fort Jay*, N. Y., for duty, from Camp Upton, Lieut. ALBERT C. MARGULIES, Brooklyn.

To *Fort Logan H. Roots*, Ark., for duty in the United States Army General Hospital, Major BRUCE G. PHILLIPS, New York City; for duty in the hospital, from Fort Benjamin Harrison, Lieuts. WILLIAM C. CAUBLE and JOHN J. MADDEN, Brooklyn.

To *Fort Meyer*, Va., for duty, from Camp Gordon, Lieut. ABRAHAM I. LOWENTHAL, New York City.

To *Fort McPherson*, Ga., for duty, from Fort Benjamin Harrison, Lieut. JOHN F. HOLDEN, White Plains.

To *Fort Niagara*, N. Y., for duty as gas instructor, from Fort Sill, Lieut. EDWARD F. GILLICK, Niagara Falls.

To *Fort Oglethorpe*, Ga., for duty, from Camp Dix, Major HOWARD D. COLLINS, New York City; from Camp McClellan, Major JOHN C. A. GERSTER, New York City; from Camp Dix, Capt. JAMES W. JAMESON, New York City; from Fort Andrews, Capt. SYLVESTER F. O'DAY, New York City; from Camp MacArthur, Lieut. JOSEPH E. RAI, New York City; from Fort Jay, Lieut. ALBERT C. MARGULIES, Brooklyn. For duty with Evacuation Hospital No. 5, Lieuts. THOMAS J. KIRWIN and ROSCOE C. WEBB, New York City; from Fort Benjamin Harrison, Lieut. HENRY B. SIGLAR, New York City. For duty in Evacuation Hospital No. 6, from Washington University, St. Louis, Lieut. JAMES T. HARRINGTON, Poughkeepsie.

To *Fort Riley*, Kan., for special duty, and on completion to his proper station, from the office of the Surgeon-General, Capt. GEORGE DRAPER, New York City. For temporary duty from Fort Benjamin Harrison, Lieut. ROY J. MARSHALL, Rome; from Fort Leavenworth, Lieut. DAVID M. KAPLAN, New York City.

To *Fort Sam Houston*, Texas, for duty, from Fort Benjamin Harrison, Lieut. LOUIS J. SOKOL, New York City.

To *Mineola*, L. I., Hazelhurst Field, for duty, from Syracuse, N. Y., Lieuts. EARL H. EATON and LAURENT G. FEINIER, New York City.

To *New York, N. Y.*, for duty in connection with the development of special hospitals, and on completion of this duty to his proper station, Major THOMAS W. SALMON, Staten Island. For the purpose of enlisting the enlisted personnel of *Base Hospital No. 48*, Major WILLIAM T. HOLMUTH, New York City. *Neurological Institute*, for intensive training in brain surgery, Majors MARTIN B. TINKER, Ithaca, and ALEXANDER NICOLL, New York City; and Capt. GEORGE A. PECK, New Rochelle, and GEORGE S. BRITTEN, Syracuse. For duty as instructor in orthopedic work, from Camp Upton, Capt. BRAINERD H. WHITBECK, Brownville. *Roosevelt Hospital*, for instruction, and on completion to *Fort Riley* for duty in Evacuation Hospital, No. 7, Capt. ARCHER D. BABCOCK, Syracuse. *Bellevue Hospital*, for instruction, and on completion to *Fort Slocum* for temporary duty, from Fort Slocum, Lieut. PERCY H. WILLIAMS, New York City; on completion of course at *Bellevue Hospital*, to *U. S. Army General Hospital*, for duty, Lieut. ARMSTRONG C. PRATT, New York City; on completion of the course at *Bellevue Hospital*, to *Walter Reed General Hospital*, for duty, Lieut. MAURICE D. BARNETTE, Watertown. For instruction in laboratory work, from Camp Greenleaf, Lieut. ROBERT E. WALSH, New York City. For duty with the *First Depot Battalion*, Lieut. DONALD M. GILDERSLEEVE, Brooklyn.

To *Plattsburg Barracks*, for duty in connection with the examination of candidates for aviation, from Toronto, Canada, Capt. WILLIAM W. LAING, Brooklyn. For temporary duty, and on completion, to his proper station, Capt. GEORGE F. COTT, Buffalo. For duty, and on completion to his home and the inactive list, Lieut. EDWARD F. MEISTER, Buffalo.

To *Rochester, Minn.*, for instruction, and on completion of this course to *Camp Gordon*, Lieut. FRANK A. WALDER, Lockport. On completion of the course at Rochester, to *Camp Hancock*, base hospital, from Fort Benjamin Harrison, Lieut. PAUL M. PARKER, Rochester; to *Camp Lee*, Lieut. MILLARD F. SHAFER, Cobleskill; to *Camp Shelby*, Lieut. LEROY D. SOPER, Smyrna; to *Camp Taylor*, base hospital, Lieut. PHILIP GORDON, Rochester; to Fort Snelling, from Fort Benjamin Harrison, Lieut. NORMAN P. BENTLEY, Cape Vincent.

To *Rockefeller Institute*, N. Y., for instruction, from Fort Oglethorpe, Lieut. NOLAN E. LEAKE, New York City. For instruction in laboratory work, and on completion to *Base Hospital No. 3*, *First N. Y. Field Hospital Armory*, for duty, Lieut. BERNARD S. DENZER, New York City.

To Washington, D. C., for duty in the office of the Surgeon-General, Capt. CYRUS B. CRAIG, New York City.

To the inactive list from Rockefeller Institute, Major GEORGE BAEHR, New York City.

To his home and the inactive list from Rockefeller Institute, Capt. MORRIS B. BEECROFT, Albany; on account of being physically disqualified for active service, Capt. MALCOLM E. HOUSE, Cuba.

To his home and honorably discharged on account of being physically disqualified for active service, from Fort Benjamin Harrison, Lieut. JAMES H. BLAKENEY, Brooklyn; from Fort Riley, Lieut. SAMUEL W. HOUSTON, Wolcott.

North Carolina

To Annapolis Junction, Md., from Camp Wheeler, Lieuts. NUMA H. CREWS, Henderson, and HECTOR M. PERSON, Saulston.

To Army Medical School, bacteriologic laboratory, from Rockefeller Institute, Lieut. HICKMAN RAY, Raleigh.

To Camp American University, Washington, for duty, from Walter Reed General Hospital, Lieut. JOHN S. McKEE, Raleigh.

To Camp Bowie, Fort Worth, Texas, base hospital, from Camp Greenleaf, Lieut. DARIUS C. ABSHER, Mount Airy.

To Camp Greene, Charlotte, N. C., base hospital, from Fort Oglethorpe, Lieut. CICERO J. ELLEN, Greenville.

To Camp Greenleaf, Fort Oglethorpe, Ga., for instruction, from Camp Jackson, Columbia, S. C., Lieut. RACK F. BENTHALL, Ahsokie.

To Camp Lee, Va., for duty, from Camp Lee, Lieut. BENJAMIN F. CLIFF, East Flat Rock.

To Camp Wadsworth, Spartanburg, S. C., for temporary duty, from Philadelphia General Hospital, Lieut. ADLAI S. OLIVER, Greensboro.

To Fort McPherson, Ga., for duty with Hospital Unit "O" from Fort Oglethorpe, Capt. WILLIAM ALLAN, Charlotte; Lieut. CHARLES I. ALLEN, Wadesboro.

To Fort Morgan, Ala., for duty, from Fort Oglethorpe, Lieut. THOMAS S. McMULLAN, Hertford.

To Fort Oglethorpe, for duty, from Camp Greene, Lieuts. WILLIAM W. GREEN, Tarboro; from Camp Sevier, ROBERT A. MOORE, Charlotte; from Camp Wheeler, CHARLES L. SWINDELL, Wilson; from Richmond Medical School, ROLAND S. CLINTON, Rocky Mountain.

To New York City, Post-Graduate Hospital, instruction in urology and dermatology, Lieut. JOSEPH W. HOOPER, Wilmington.

To Washington Barracks, to examine recruits in his specialty, from Gettysburg, Pa., Lieut. ALBERT DURHAM, Charlotte.

To Washington, D. C., for duty, from American Expeditionary Forces, France, Lieut. EDWARD B. BEASLEY, Fountain.

North Dakota

To Camp Taylor, as member of board for the examination of command for tuberculosis, Lieut. HERBERT B. WENTZ, Verona.

Ohio

To Camp Custer, Battle Creek, Mich., base hospital, from Fort Benjamin Harrison, Lieut. MURRAY B. MCGONIGLE, Toledo.

To Camp Dix, Wrightstown, N. J., base hospital, from Rockefeller Institute, Lieut. HAROLD O. RUH, Cleveland.

To Camp Dodge, Des Moines, Iowa, base hospital, from Fort Benjamin Harrison, Lieuts. EDGAR H. JOHNSTON, Alexandria; CARLTON D. POSTLE, Columbus; for examination of command for tuberculosis, WILEY T. SPRAGUE, Athens.

To Camp Funston, Fort Riley, for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. MARION WHITACRE, Cincinnati.

To Camp Greenleaf, Fort Oglethorpe, Ga., for instruction, from Camp Wheeler, Capt. SAMUEL HINDMAN, Columbus.

To Camp Hancock, Augusta, Ga., base hospital, from Rockefeller Institute, Lieut. ROY P. FORBES, Cleveland.

To Camp Jackson, Columbia, S. C., base hospital, from Fort Benjamin Harrison, Lieut. RICHARD S. MOYNAN, Columbus.

To Camp Kearney, Linda Vista, Calif., base hospital, from Fort Benjamin Harrison, Lieut. MELVILLE D. SOASH, Westerville.

To Camp MacArthur, Waco, Texas, for duty, from Fort Sill, Capt. ROY K. EVANS, McGuffey.

To Camp Taylor, Louisville, Ky., as member of board for examination of command for tuberculosis, Lieuts. CHARLES B. HAMMA, Springfield; from Fort Benjamin Harrison, ROBERT CLARKE, Cleveland; IRWIN W. MAYBERRY, Scottown.

To Camp Upton, Yaphank, L. I., N. Y., base hospital, from New York Post Graduate Hospital, Lieut. ALVAH S. McLAIN, Lakewood; for duty, from Evans Dental Institute, Philadelphia, Lieut. ARTHUR J. McCracken, Bellefontaine.

To Camp Wheeler, Macon, Ga., for duty, from Fort Benjamin Harrison, Lieut. REEVES W. DECROW, Sciotoville; from Philadelphia General Hospital, Lieut. HARRY H. McCLELLAN, Dayton.

To Cleveland, Ohio, for instruction, and on completion to Camp Greene, base hospital, Capt. HARRY T. MILLER, Springfield; to Camp McClellan, base hospital, Lieut. THOMAS H. BROWN, Toledo.

To Fort Oglethorpe, Ga., for duty, from Camp Sherman, Lieuts. GEORGE M. LOGAN, Akron; RALPH B. THOMPSON, Solon.

To Fort Omaha, Neb., for duty, from Fort Benjamin Harrison, Lieut. PAUL F. DAVIDSON, Cleveland.

To Fort Riley, Kan., for instruction, Lieuts. WILLIAM J. TOPMOELLER, Cincinnati; ARTHUR H. HIXSON, Columbus; from Fort Benjamin Harrison, Lieut. EDWARD KUCK, Cincinnati.

To Hot Springs, Ark., for duty in the Army and Navy General Hospital, from Fort Screven, Ga., Lieut. JOHN H. SCHROEDER, Cincinnati.

To Jefferson Barracks, St. Louis, Mo., for duty in his specialty, Lieut. GEORGE H. REEVE, Cleveland.

To New York City, Post-Graduate Hospital, for instruction in urology and dermatology, Lieut. WILLIAM N. TAYLOR, Columbus.

To Rochester, Minn., for instruction, and on completion to Camp Gordon, Lieut. JEFFERY J. VEGA, National Military Home; on completion to Camp Taylor, Lieut. GALE C. GUTHRIE, Uhrichsville; on completion to Camp Wadsworth, Lieut. DONALD DE C. SHIRA, Larue; on completion to Camp Wheeler, Lieut. WILLIAM M. SHAPIRO, Toledo.

To his home and honorably discharged on account of being physically disqualified for active service, Major BURT W. WILSON, Youngstown.

To the inactive list, from Evans Dental School, Philadelphia, Lieut. LOUIS H. SCHRIVER, Cincinnati.

Oklahoma

To Atlanta, Ga., Department Laboratory, for duty, from Rockefeller Institute, Lieut. EDWARD B. BROOKS, Shawnee.

To Camp Lee, Petersburg, Va., as member of board for examination of command for tuberculosis, Lieut. LOUIS L. JACOBS, Vivian.

To Fort Riley, Kan., for duty with Evacuation Hospital No. 7, from Camp MacArthur, Lieut. SIMS D. BEVILL, Poteau.

To Camp Sherman, base hospital, Lieut. CHONNER P. CHUMLEY, Washington.

To Philadelphia, for orthopedic instruction, from Camp Alfred Vail, Lieut. WILLIS K. WEST, Oklahoma City.

To report to the commanding general, Southern Division, for assignment to duty, Lieut. MARVIN E. STOUT, Oklahoma City.

Pennsylvania

To Camp Meade, Annapolis, Md., from Camp Wheeler, Lieuts. JACOB J. SCHWEGLER, Kennett Square; FRANK R. WHEELLOCK, Scranton.

To Army Medical School, Washington, D. C., for instruction, Lieut. JAMES C. HARDING, Philadelphia; for duty in the bacteriologic laboratory, from Rockefeller Institute, Lieut. JOHN W. GOODSSELL, New Kensington.

To Camp Custer, Battle Creek, Mich., base hospital, from Fort Benjamin Harrison, Lieut. FRANK H. KELLY, McKeesport.

To Camp Devens, Ayer, Mass., as member of board for examination of command for tuberculosis, Capt. DANIEL M. HOYT, Philadelphia.

To Camp Funston, Fort Riley, for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. MAURICE I. STEIN, New Bloomfield.

To Camp Greene, Charlotte, N. C., for duty, from Fort Benjamin Harrison, Lieut. WARREN STIRLING, Philadelphia.

To Camp Meade, Annapolis, Md., for duty, from Camp Wheeler, Lieut. WILLIAM F. CRAIG, Philadelphia.

To Camp Shelby, Hattiesburg, Miss., base hospital, from Fort Oglethorpe, Lieut. THOMAS W. GRAYSON, Pittsburgh.

To Camp Upton, Yaphank, L. I., N. Y., base hospital, from Allentown, Pa., Capt. JOHN A. HAWKINS, Pittsburgh.

To Camp Wadsworth, Spartanburg, S. C., for temporary duty, from Philadelphia, Capt. ERNEST M. VAUGHAN, Royersford.

To Camp Wheeler, Macon, Ga., base hospital, from Camp Greenleaf, Lieut. CORTLAND W. W. ELKIN, Pittsburgh.

To Fort Clarke, Texas, for duty, with the Sanitary Train, from Fort Benjamin Harrison, Capt. CAREY J. VAUX, Pittsburgh.

To Fort Leavenworth, Kan., for duty, from Camp Wheeler, Lieut. WILDER J. WALKER, Wilkinsburg.

To Fort Logan H. Roots, Ark., for duty in the United States Army General Hospital, from Gettysburg, Capt. CLIDE L. CURLL, Pittsburgh.

To Fort Oglethorpe, Ga., for instruction, from Rockefeller Institute, Lieut. PHILIP F. WILLIAMS, Philadelphia.

To Fort Riley, Kan., for instruction, from Camp Sheridan, Capt. CHARLES B. REITZ, Allentown.

To Fort Sam Houston, for duty in the department laboratory, from Rockefeller Institute, Lieut. ERNEST J. ATEN, Pittsburgh.

Honolulu, Hawaii, for duty, from Fort Benjamin Harrison, Lieut. RAY M. ALEXANDER, Bolivia.

To Newport News, for duty, from Fort Monroe, Lieut. MAURICE GOLDBERG, Philadelphia.

To New York City, Neurological Institute, for intensive training in brain surgery, from Surgeon-General's Office, Capt. FLOYD E. KEENE, Philadelphia; to Post-Graduate Hospital for instruction in urology and dermatology, Capt. WARREN WALKER, Philadelphia; Lieuts. JACOB R. BROBST, Bloomsberg; DAVID S. GRIM, Reading.

To New York City, Neurological Institute, for intensive training in brain surgery, Lieuts. NATHAN R. GOLDSMITH, Philadelphia; from Camp Greenleaf, MARSHALL C. RUMBAUGH, Dorranceton.

To United States Army General Hospital No. 4, for duty with Hospital Unit "A," Lieut. WILLIAM C. POWELL, Bryn Mawr.

Honorably discharged on account of being physically disqualified for active service, Capt. JOHN C. D'ACOSTA, JR., Philadelphia.

Honorably discharged, Lieut. CHARLES S. ROTTNER, Philadelphia.

To his home and honorably discharged on account of being physically disqualified for active service, Capt. LAUREN C. THOMAS, Latrobe.

To the inactive list, from Camp Greenleaf, Lieut. SAMUEL MCCLARY, Philadelphia.

Rhode Island

To Camp Dix, Wrightstown, N. J., for duty, from Fort Benjamin Harrison, Capt. THOMAS F. SCANLON, Providence.

To Camp Logan, base hospital, from Camp Beauregard, Capt. ROSWELL S. WILCOX, Providence.

To Camp Upton, Yaphank, L. I., N. Y., for examination of command for tuberculosis, from Walter Reed General Hospital, Lieut. NORMAN B. COLE, Newport.

To Morrison, Va., for duty, from Fort Benjamin Harrison, Lieut. BENJAMIN J. BUTLER, East Providence Center.

South Carolina

To Fort Logan H. Roots, Ark., for duty, from Gettysburg, Pa., Capt. LAWRENCE R. CRAIG, Dillon.

To Fort McPherson, Ga., for duty with Hospital Unit "O," from Camp Greene, Charlotte, N. C., Lieut. ROBERT H. CRAWFORD, Rock Hill.

South Dakota

To Fort Oglethorpe, Ga., for duty, from Fort Riley, Lieut. LINDSAY Z. FLETCHER, Montrose.

Tennessee

To Army Medical School, Washington, D. C., for duty in the bacteriologic laboratory, from Rockefeller Institute, Lieut. ANDREW B. JONES, Nashville.

To Camp Lee, Petersburg, Va., for temporary duty, from Philadelphia General Hospital, Lieut. HOWARD M. FRANCISCO, Nashville.

To Fort McPherson, Ga., for duty with Hospital Unit "S," Capt. ALBERT W. HARRIS, Nashville.

To Knoxville, Tenn., to report to the recruiting officer for duty, Lieut. REESE W. PATTERSON, Knoxville.

New Orleans, Charity Hospital, for instruction, and on completion to Fort Worth, Texas, base hospital, Lieut. PAUL H. FAUCETT, Columbia.

To New York City, Post-Graduate Hospital, for instruction in dermatology and urology, from Camp Lee, Lieut. BENJAMIN C. ARNOLD, Jackson.

Texas

To Camp Bowie, Fort Worth, Texas, base hospital, from Camp Greenleaf, Lieut. CALVIN W. DAVIS, Long View.

To Camp Kearney, Linda Vista, Calif., base hospital, Lieut. WILL M. SCHULTZ, Georgetown.

To Camp Meade, Annapolis Junction, Md., for temporary duty, from Evans Dental Institute, Philadelphia, Capt. JOSEPH E. JOHNSON, Kirvin.

To Camp Taylor, Louisville, Ky., base hospital, from Evans Dental Institute, Philadelphia, Major WILLIAM E. HALL, Texas City.

To Fort Riley, for duty with Evacuation Hospital No. 7, from Camp Grant, Lieut. GEORGE L. LANGWORTHY, Lakeview.

To Fort Sam Houston, for duty in the department laboratory, from Rockefeller Institute, Lieut. RICHARD C. CURTIS, Temple.

To Garden City, L. I., N. Y., for duty, from San Antonio, Texas, Lieut. DOUGLAS S. EDWARDS, San Antonio.

To Morrison, Va., for duty, from Richmond, Va., Lieut. HENRY F. WILKINS, Fort Worth.

To report by wire to the Commanding General, Southern Department, Lieut. CHARLES F. CLAYTON, Lubbock.

To report in person to the governor, Panama Canal, for assignment to duty, from Panama Canal Department, Lieut. PAUL J. CONNOR, Madisonville.

Utah

To Camp Gordon, Atlanta, Ga., as member of board for examination of command for tuberculosis, from Camp Greenleaf, Lieut. GEORGE E. McBRIDE, Magna.

Vermont

To Camp Greenleaf, Fort Oglethorpe, Ga., for instruction, Lieut. DENNIS J. SHEEHAN, Lyndonville.

To Camp Sherman, Chillicothe, Ohio, as member of board for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. ROLLIN D. WORDEN, Montgomery Center.

Virginia

To Camp Lee, Petersburg, Va., for duty, Lieuts. OLIVER C. BRUNK, Richmond; JULIUS J. HULCHER, Richmond; GEORGE S. BURT, Roanoke; for duty in the base hospital, from Fort Benjamin Harrison, Lieut. JUNIUS E. WARINNER, JR., Richmond.

To Camp Taylor, Louisville, Ky., base hospital, from Evans Dental Institute, Lieut. SAMUEL P. CAST, Portsmouth.

To Camp Upton, Yaphank, L. I., N. Y., for examination of command for tuberculosis, from Walter Reed General Hospital, Lieut. THOMAS N. DAVIS, Lynchburg.

To Fort Oglethorpe, for duty with Evacuation Hospital No. 3, from Camp Greenleaf, Lieut. WILLIAM L. BRENT, Colonial Beach.

To Fort Omaha, Neb., for duty, from Fort Benjamin Harrison, Lieut. GRANVILLE EASTHAM, Rapidan.

To Fort Riley, Kan., base hospital, from Fort Benjamin Harrison, Lieut. ROBERT J. STYER, Jetersville.

Washington

To Army Medical School, Washington, D. C., for duty in the bacteriologic laboratory, from Rockefeller Institute, Capt. AUSTIN U. SIMPSON, Seattle.

To Fort Des Moines, Iowa, from Camp Robinson, Sparta, Wis., Capt. IRA C. BROWN, Seattle.

To his home and honorably discharged on account of being physically disqualified for active service, from Camp Lewis, Lieut. CHARLES S. NOBLE, Seattle.

West Virginia

To Camp Lee, Petersburg, Va., as member of board for examination of command for tuberculosis, Lieut. DAVID P. SCOTT, Ashland.

Wisconsin

To Camp Custer, Battle Creek, Mich., as member of board for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. IRVING A. MYERS, Cottage Grove.

To Camp Dodge, Des Moines, Iowa, for examination of command for tuberculosis, from Fort Benjamin Harrison, Lieut. CHARLES H. MEYST, Burlington.

To Camp Pike, Little Rock, Ark., for base hospital, from Fort Benjamin Harrison, Lieut. CHARLES B. RYDELL, Superior.

To Cleveland, Ohio, for instruction and on completion to Camp McClellan, base hospital, Lieut. GUSTAVE E. ECK, Lake Mills.

To Fort Logan H. Roots, Ark., base hospital, from Fort Benjamin Harrison, Lieut. LEO H. FLYNN, Eau Claire.

To Fort Oglethorpe, for duty, from Camp Meade, Capt. RALPH KAYSON, Plymouth.

To Fort Riley, Kan., for instruction, Capt. CHARLES A. CRITCHLOS, Mellen.

To New York City, for instruction, and on completion to Rochester, Minn., for instruction, Lieut. THOMAS J. SNODGRASS, Janesville;

to Post-Graduate Medical School for instruction in urology and dermatology, from Fort Ethan Allen, Lieut. ELIAS BIBBY, Milwaukee.

To Pittsburgh, Pa., for instruction in military roentgenology, Capt. GENTZ PERRY, Amery.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Dinner to Base Hospital Staff.—At a banquet given at the Los Angeles Athletic Club, November 8, by 125 physicians of Los Angeles and vicinity, the guest of honor was Dr. Rea E. Smith, and sixteen other physicians of Los Angeles who make up the base unit for war service. Dr. Walter Lindley officiated as toastmaster.

Personal.—Dr. George A. Zorb, a member of the resident staff of the Receiving Hospital, Los Angeles, has been seriously ill from septicemia, due to an operation wound, but is now convalescent.—Dr. Clarence A. Wills, San Leandro, for many years superintendent of the Alameda County Infirmary, Oakley, has resigned to enter the military service.

CONNECTICUT

Personal.—The directors of the Gaylor Farm Sanitarium, New Haven, have voted a leave of absence for six months to the superintendent, Dr. David R. Lyman, who is going to France to study tuberculosis conditions.—Dr. J. E. Radding has been appointed assistant to Dr. James B. Dinnan, superintendent of the State Sanatorium, Meriden, succeeding Dr. Cole B. Gibson, who has entered military service.

Dietitians Organize.—The Connecticut Association for Dietitians has recently been organized. The object of the organization is to promote closer cooperation between dietary departments and allied departments. While the founders are hospital dietitians only, membership is open to all who have contributed to and are interested in the advancement of dietetics. It is thought that there is a great need of better trained dietitians, and that this can be accomplished by close work among physicians, hospital superintendents, heads of home economics departments and hospital dietitians. At the November meeting, held at Grace Hospital, New Haven, the following officers were elected: president, Miss E. M. Geraghty, New Haven; vice president, Miss Laura Siegel, Stamford, and secretary-treasurer, Miss Ethel C. Pipes, Hartford.

ILLINOIS

Personal.—Harold B. Fromme, Peoria, has been appointed quarantine officer by the state director of health, and detailed to duty at Camp Grant, Rockford, succeeding P. E. Cooney.

Health of Chicago.—November 24, fifty-four new cases of diphtheria and six deaths from this disease were reported to the health department. Infantile paralysis is rapidly disappearing. The health department is urging citizens to boil water, as recent severe storms have made the lake water of doubtful purity. Chlorination is being resorted to as a means of controlling the contamination.

Control of Venereal Diseases.—Rules for the control of venereal diseases in Illinois, including placarding of immoral houses, provided especially to protect troops quartered in the state were announced by Dr. C. St. Clair Drake, state director of health. The regulations include reports of all cases of venereal diseases and the placarding of all premises suspected

of being used for immoral purposes, the provision of proper medical care for indigent infected persons, and the prohibiting of engaging in any occupation the nature of which is such that it may be borne to others of any person having active infectious venereal disease. Penalties of a fine up to \$200 or imprisonment in jail, not to exceed six months, or both, are provided for violation of the regulations.

Antituberculosis Meeting.—At the ninth annual meeting of the Illinois Association for the Study and Prevention of Tuberculosis, held in Champaign, November 9, the following officers were elected: president, Dr. George Thomas Palmer, Springfield (reelected for the seventh term); vice presidents, Dr. William A. Evans, Chicago; Ethan Allen Gray, Chicago; Cecil M. Jack, Decatur, and Lewis C. Taylor, Springfield; secretary, Dr. Jeanette C. Wallace, Peoria; treasurer, Mr. David R. Forgan, Chicago; executive committee, new members: Dr. James W. Pettit, Chicago; Mrs. Joseph T. Mason, Aurora, and George W. Perkins, Chicago, and holdover members, Mrs. A. L. Adams, Jacksonville; Dr. Edward W. Fiegenbaum, Edwardsville, and Dr. Orville W. McMichael, Chicago.

INDIANA

District Meeting.—The annual meeting of the Seventh Indiana Councilor District Medical Association was held in Danville, November 21. Dr. Samuel E. Earp was elected president; Dr. Murray N. Hadley, secretary, and Dr. Thomas B. Eastman, councilor, all of Indianapolis.

Personal.—Drs. Eric A. Crull, Adam L. Schneider and Abraham J. Kesler, all of Fort Wayne, have been appointed members of the board of health of that city.—Dr. Benjamin F. Tettters, Middlebury, who was operated on recently, is reported to be making satisfactory progress toward recovery.

State Housing Laws.—The state board of health has issued orders to the city boards of health of Gary, Whiting, Hammond, East Chicago and Indiana Harbor that they take immediate steps to enforce the state housing laws. If the cities do not respond, the state board will take charge and enforce the laws in an effort to clean up the "gross insanitary conditions" in those cities.

New Isolation Hospital.—Plans have been submitted to the city board of health, Indianapolis, for a new contagious disease hospital to cost from \$90,000 to \$100,000. Investigation will start at once to see if money will be available for the construction of the building at this time. While the present facilities for the treatment of persons with contagious diseases are inadequate, it is not believed that the building can be constructed at this time, owing to the lack of funds.

IOWA

Hospital Unit Mobilizes.—Hospital Unit K, Council Bluffs, was mobilized at Fort Porter, N. Y., November 14, and is being equipped for service. This unit consists of twelve medical officers, one head nurse, twenty female nurses and fifty enlisted men. The medical personnel consists of the following reserve officers: Major Donald Macrae, Jr., director, Council Bluffs; Capt. F. Earl Bellinger, general surgery, Council Bluffs; John W. Shuman, chief medical officer, Sioux City; Louis L. Henninger, eye, ear, nose and throat, Council Bluffs, and Chalmers A. Hill, orthopedic surgery, Council Bluffs; Lieuts. John S. McAtee, genito-urinary surgery; Robert S. Moth, adjutant, medical, and Louis E. Hanisch, general surgery, Council Bluffs; Aldis A. Johnson, pathologist and bacteriologist, and George P. Pratt, medical, Omaha; Robert C. Crumpton, medical, Webster City, and Albert E. Sabin, medical, Kirkman.

Personal.—Lieut. Daniel J. McCarthy, M. R. C., U. S. Army, Davenport, who recently started for Roumania, has arrived safely in Moscow, Russia.—Dr. Emil O. Ficke, Davenport, formerly the county physician, has been appointed a member of the Board of Commissioners for the Insane of Scott County, to succeed Dr. John A. DeArmand, deceased.—Drs. James M. Fettes, William T. Shepard, G. Henry Mammen, William W. Larsen and Martin J. Joynt, all of LeMars, have united to form the LaMars Clinic, which will be located on the second floor of the Royal Building.—Dr. James B. Miner, Augustus F. Kober, Julius Niemack and Raymond W. Stober, all of Charles City, have been elected directors of the Cedar Valley Hospital, Charles City.—Dr. Mark F. Boyd, professor of preventive medicine and hygiene in the State University of Iowa, Iowa City, has accepted the position of head of the department of bacteriology in the University of Texas, Galveston.

MARYLAND

Personal.—Lieut. James M. Shields, formerly of Colorado, has been stationed at the base hospital at Fort McHenry, where he will have charge of the eye, ear, nose and throat ward.—Dr. Alexander R. Mitchell, Monkton, has been appointed health officer of the seventh district of Baltimore County.—Dr. James A. Nydegger, U. S. P. H. S., Baltimore, delivered an address on the "Relation of the Rural Schools to National Health," at the Maryland State Teachers' Association. Dr. Nydegger claims the insanitary condition of our rural schools is the chief cause of the poor physical condition of so many young men who have been drafted and found to be unfit for military service.—Dr. William S. Thayer, who has been in Petrograd for several months with the American Red Cross Mission, is on his way back to the United States.

Report of Lunacy Commission.—At the semiannual meeting of the State Lunacy Commission with the boards of managers of the State Institutions for the Insane and Feeble-minded and the Board of State Aid and Charities, held, November 22, in Baltimore, the report of the commission showed that there were in the twenty institutions under the supervision of the commission, on Sept. 30, 1917, 5,196 patients, or one patient to every 262 of the population of Maryland. There were admitted during the biennial period, 4,557 patients. The total number of patients discharged and died during the biennial period was 4,194, leaving a net increase of 363 patients for the two years. During the past five years there has been an average yearly net increase of 150 patients. The report on the after-care work for the past year showed that a saving of \$10,693 had been made by paroling patients under the supervision of the after-care agent and making them more or less self-supporting. In all 124 patients were paroled under the supervision of this department. As a result of a preliminary survey of the feeble-minded, conducted through the cooperation of the Committee on the Prevention of the Feeble-minded, it was recommended that a complete survey of this class of defectives be made throughout Maryland, during the coming year. The report urges that farm colonies be established at the state institutions to supply sufficient beds for the rapidly increasing number of insane and feeble-minded at the lowest possible per capita, as well as to increase the farming activities of the institutions.

MISSOURI

Correction.—The statement in a recent issue that Dr. William A. Clark, Jefferson City, had been appointed physician to the penitentiary was erroneous. Dr. Clark is only acting as prison physician at the request of the board until the board can decide on a permanent appointment.

Free Syphilis Clinics.—The health department of St. Louis has completed plans for establishing free syphilis clinics under municipal control. All persons affected with syphilis in its infectious stage will be urged to go to the municipal clinic for treatment where at least two injections of salvarsan will be administered. An active campaign of education will be conducted to familiarize the people with the importance of these clinics and the benefits of early treatment of syphilis. It is the first instance of municipal clinics for syphilis to be established in this country.

Personal.—Dr. Alfred B. Miller, Macon, had a narrow escape from serious injury, when the front wheels of his automobile ran into an open gulley, the bridge having been broken down by a traction engine. He managed to stop his car on the brink, though the front wheels were extending over at least a foot.—Dr. Robert F. Hyland, St. Louis, suffered severe injuries on November 15, when his automobile collided with a motor truck.—Dr. Clarence A. McGuire, Kansas City, now on duty at a base hospital in France, has recovered from the injuries he suffered at the time Dr. Fitzsimmons was killed by a bomb dropped from a German aeroplane.

NEW YORK

Personal.—Dr. Joseph S. Lewis, Buffalo, suffered a fracture of the clavicle and other injuries in a collision between his automobile and a street car, November 14.—Dr. Edward Danforth, Bainbridge, who is in the military service in France, is reported to be ill.

Dinner Given Bissell.—The first health officers' class of the University of Buffalo gave a complimentary dinner to Dr. William G. Bissell, Buffalo, bacteriologist and chief of the bureau of laboratories of the Buffalo Department of Health and his assistants, at the Hotel Statler, November 21. Dr. Fowler A. Watters, Lockport, officiated as toastmaster, and

addresses were delivered by Dr. Thomas H. McKee, dean of the University of Buffalo, on "The Attitude of the University of Buffalo Toward Health Officers and Their Work," and by Dr. William G. Bissell, on "The Need of a Closer Union Between Civil Laboratories and Rural Communities, and How to Obtain It." At the conclusion of this program, impromptu speeches were made.

New York City

Bellevue Hospital Unit Mobilizes.—The Base Hospital Unit of Bellevue Hospital has mobilized its 300 members at the Twelfth Regiment Armory. Among the personnel of the unit are thirty-five doctors and eighty-three nurses.

Reclamation Gymnasium.—Cornell University Medical College announces that it is about to establish a reclamation gymnasium in which classes will be conducted for men who have been rejected from the army and navy services on account of minor physical defects.

Flower Hospital Raises Flag.—Flower Hospital recently unfurled a service flag, carrying 120 stars, the gift of Major William Tod Helmuth and Mrs. Royal S. Copeland. As a part of the ceremony of presentation, 300 medical students in uniform paraded in the vicinity of the hospital.

Enforcement of Antispitting Law.—Health Commissioner Emerson has ordered police departments to enforce the antispitting law and to arrest all who spit in public places. In a letter to Chief Magistrate McAdoo he asks that the police magistrates act with determination in imposing suitable sentences on all such offenders.

The Hospital Intern Problem.—At a meeting of the Public Health Committee of the New York Academy of Medicine, regarding the hospital intern problem, the following resolution was adopted and endorsed by the president on behalf of the academy:

Resolved, That the Public Health Committee of the New York Academy of Medicine suggest to the Surgeon-General of the United States Army the desirability of a change in the wording of the "Circular of Information on the Completion of Internships of Commissioned Officers (Form I-1)," permitting the period of internship to terminate in December of the year following graduation instead of in July of that year. Permission to remain on the inactive list for the period named should, of course, be granted only "if the exigencies of the service permit."

Personal.—Dr. Katherine B. Davis, who was recently appointed head of the New York Parole Board by Mayor Mitchell, has resigned to accept the general secretaryship of the Rockefeller Bureau of Social Hygiene.—Capt. Bertram DeN. Cruger, who is a member of the parole board, at present on leave of absence as a captain in charge of a depot brigade at Camp Upton, has been appointed to the position of head of the parole board for a term of ten years at a salary of \$7,500 a year.—Dr. Theron J. Vosburgh has been appointed superintendent of the city farm at Warwick, which is conducted by the Board of Inebriety, to succeed Dr. Charles S. Stokes, who resigned a short time ago. The position carries a salary of \$5,000.

Plan to Reduce the Number of Physically Unfit Sent to Camps.—Charles E. Hughes, chairman of the District Board of Appeals for New York, has appointed a committee of five physicians whose duties will be to try to find a way of reducing the number of physically unfit men sent to the National Army cantonments. The members of this committee are Drs. Ernest L. Hicks, George E. Doty, James E. Shuttleworth, Herman T. Radin and James S. Waterman, Brooklyn. The appointment of this committee was made at the suggestion of Dr. Robert L. Dickinson, Brooklyn, assistant chief of the Medical Committee on National Defense. It is said that from 2 to 9 per cent. of the men sent to the camps have been rejected after their arrival at the cantonments.

The Nursing Situation in New York.—The Standing Committee on Nursing of the Mayor's Committee of Women on National Defense has made a survey of the nursing situation in this city. Their census shows that there are in New York City 17,377 people engaged in some form of nursing service. Of this number 6,459 are graduate registered nurses and 3,849 are graduate nurses who are not registered. One in four of the registered nurses is enrolled with the Red Cross Nursing Service, making 1,701 Red Cross nurses who may be called on for war service. Probably 1,000 of these will be needed during the year. The pupil nurses who will be graduated during the year number 824; this leaves about 150 whose places will not be filled by new graduates. Several hospitals in order to meet the demand have taken larger classes than usual, Bellevue Hospital having initiated a plan of taking a certain number of pupil nurses who bear their own living expenses. Several hospitals are offering a shorter

course to college women whom it is hoped will be qualified to take responsible positions in institutions and in the public health field. The report urges qualified young women to take up the profession of nursing in the training schools and prepare to fill the gaps in the nursing service that will be left open as the war goes on.

NORTH DAKOTA

Personal.—Dr. Charles H. Aylen, Drayton, left, November 14, for Winnipeg, to enter the Canadian Army Medical Corps.

Compulsory Vaccination.—North Dakota has had a compulsory vaccination law for several years, but it has never been enforced. Compulsory vaccination will be required in the schools of the state, this year, for the first time in its history. Reports to the state board of health, according to the *Bulletin* for October, indicate that at the present time, about 90 per cent. of the schools have observed the requirements.

OHIO

Sanatorium Completed.—The Fountain Park Sanitarium in Champaign County is now ready for occupancy. The building is three stories in height, erected at the approximate cost of \$80,000.

Personal.—Dr. Abraham J. Shoemaker, Columbus, has resigned as night physician at the state penitentiary.—Dr. Sterling B. Taylor, Columbus, has assumed his duties as chief surgeon of the Toledo and Ohio Central and Zanesville and Western Railroads, with headquarters in Columbus.

Hospital Notes.—The old Schwartz Castle, Columbus, has been remodeled and opened as the Columbus Maternity Hospital. Dr. A. Livingston Stage is president of the corporation, which is not for profit. The hospital is open to all reputable physicians.—The effort adequately to care for charity patients at the hospitals of Marion was begun, October 20, by the city members of the Marion County Medical Society. By means of this organization all charity cases approved by the Marion Social Service League will be treated at the Marion General Hospital, or the Orchard Hospital. Dr. Auguste Rhu was selected as chief of staff, and Dr. Dana O. Weeks, secretary.

PENNSYLVANIA

Personal.—Dr. John L. Sagerson, Johnstown, who was painfully injured in an automobile accident, November 14, is reported to be doing well.—Lieut. G. Franklin Bell, M. R. C., U. S. Army, Williamsport, who has been ill at the cantonment camp, Greenville, S. C., is reported to be convalescent.

Medical Aid Society Elects.—At the annual meeting of the Aid Association of the Philadelphia County Medical Society, November 12, Dr. Samuel D. Risley was elected president, succeeding Dr. Jacob R. Shellenberger, relieved at his own request, and the following officers were reelected: vice president, Dr. Edward E. Montgomery; secretary, Dr. Lewis H. Adler, Jr.; treasurer, Dr. John B. Turner; consultant, Francis C. Adler, and directors, Dr. Isidor P. Strittmatter, William S. Wray and William T. Hamilton.

TEXAS

Changes in Regents' Board.—Dr. Ralph Steiner, Austin, has been appointed a member of the board of regents of the University of Texas, and Dr. S. J. Jones, Salado, has resigned as a member of the board.

The State Board and the State Journal.—An arrangement has been made by which the matter heretofore contained in the *Monthly Bulletin* of the Texas Board of Health will be printed in the *State Journal of Medicine*, which is owned by the state medical association. This is similar to the arrangement in Ohio. The separate bulletin of the department is to be discontinued.

Society Meeting.—At the annual meeting of the Fourth District Medical Society, held in Brownwood, November 10, Dr. Joseph E. Dildy, Lampasas, was elected president, and Dr. J. William Blasdell, Ballinger, secretary. Coleman was selected as the place of meeting for next year.—At the semiannual meeting of the South Texas District Medical Society, held in Beaumont, October 11, Dr. James E. Thompson, Galveston, was elected president; Dr. Wil T. Williams, Beaumont, vice president, and Dr. Albert H. Braden, Beaumont, secretary-treasurer. Houston was selected as the next place of meeting.

Bureau of Rural Sanitation.—The Texas State Board of Health has created a Bureau of Rural Sanitation whose

activities will be devoted to directing, supervising and assisting in rural health work. Dr. Platt W. Covington, Marquez, has been placed at the head of the department. From \$3,000 to \$6,000 will be spent this year in intensive community health work in the rural districts of the counties agreeing to employ four local assistants at \$50 a month each, for a period of four, eight or twelve months. These assistants are to work with a staff of trained sanitarians furnished by the state and the International Health Board, the state legislature having made an appropriation of \$90,000 for joint work with the International Health Board for intensive measures against preventable diseases in the rural districts. The following counties have made appropriations, under the foregoing arrangements, to carry on this work: Harris, Dallas, McLennan, Bexar, Jefferson, San Jacinto, Polk, Leon, Hardin, Trinity and Wharton. The work is now in progress in Polk, Dallas and Harris counties.

CANADA

Personal.—Lieut.-Col. Walter T. Connell, C. A. M. C., has resigned as consulting physician to the Kingston (Ont.) Penitentiary, and has been succeeded by Dr. Robert Hanley, Kingston.—Lieut.-Col. Charles H. Gilmour, Toronto, now surgeon-in-chief of the Ontario Military Hospital, Orpington, England, has been made a member of the Royal College of Surgeons, London.

Hospital News.—Oshawa, Ont., is to have a maternity hospital, a donation of his residence, by Mr. R. S. McLaughlin of that town.—The Isolation Hospital at Saskatoon, Sask., has been completed. It is situated adjacent to the city hospital, comprises four wings and contains twelve wards, with additional accommodation for the nursing staff. Accommodation is also provided for insane patients pending their removal to a hospital for the insane; so it will be no longer necessary to place such patients in the common jail.—The Esquimalt Convalescent Hospital has lately been extended by the addition of a department of vocational training. The medical officer in charge is Dr. Edward S. Hasell, who was formerly on the surgical staff of the Royal Jubilee Hospital, Victoria, B. C.

University News.—In a recent speech Sir Robert Falconer, president of the University of Toronto, stated there were at present over 6,000 undergraduates of that university on active service overseas, 1,000 of whom were serving in the ranks. He considers that medical students should be exempt from conscription in Canada, and that the medical faculties of the universities in Canada should be formed into medical corps so as to be available if required for the treatment of returned soldiers.—Lieut.-Col. Hadley Williams, London, Ont., has returned from the Ontario Military Hospital, Orpington, England, and has resumed his duties as professor of surgery in the Western University, London, Ontario.—Dalhousie University, Halifax, N. S., has the largest registration in the first year class in medicine in its history. Most of the students of the higher years have returned, but many members of the teaching staff are still on active military service.—The total number of students registered in the medical faculty of McGill University, Montreal, is 362; in the first year there are ninety-three men, a larger number than last year. Fifth year students will be graduated on April 1, so as to permit of going overseas immediately thereafter.

GENERAL

Southern Medical Women Meet.—At the fifth annual meeting of the women physicians of the Southern Medical Association which was held in Memphis, November 13, the following officers were elected: president, Dr. M. Louise Strobel, Washington, D. C.; vice presidents, Drs. Elizabeth C. Kane, Memphis, Tenn., and Olive A. C. Wilson, Paragould, Ark., and secretary-treasurer, Dr. L. Rosa H. Gantt, Spartanburg, S. C.

Southern Railway Surgeons Elect Officers.—At the annual meeting of the Southern States Association of Railway Surgeons, held in connection with the meeting of the Southern Medical Association at Memphis, November 14, Dr. Inman W. Cooper, Meridian, Miss., was elected president; Dr. William A. Chapman, Cedartown, Ga., vice president, and Dr. Ambrose McCoy, Jackson, Tenn., secretary.

Southern Physicians Elect Officers.—At the eleventh annual meeting of the Southern Medical Association, held in Memphis, Tenn., November 12 to 15, the following officers were elected: president, Dr. Lewellys F. Barker, Baltimore; vice presidents, Drs. William H. Deaderick, Hot Springs, Ark., and Thomas C. Holloway, Hazard, Ky., and secretary, Dr.

Seale Harris, Birmingham, Ala.; acting secretary, Dr. James R. Garber, Birmingham, Ala.; editor of the *Southern Medical Journal*, Dr. Marye Y. Dabney, Birmingham, Ala., and chairman of the executive council, Dr. Henry H. Martin, Savannah, Ga. Asheville, N. C., was selected as the place of meeting for 1918. On Sunday, the day before the opening of the convention, the pulpits of the city were filled by medical men.

FOREIGN

Deaths in the Profession Abroad.—Hugh McMinn Smellie, M.B., C.M., Edinburgh, 1886; Sanhead, Wigtownshire, Scotland; aged 60; surgeon on the Anchor Line steamships; surgeon of the *Cameronia*, when she was torpedoed and sunk in European waters; died suddenly on board the *Tuscania* in Erie Basin, Brooklyn, November 11, from heart disease.

PARIS LETTER

PARIS, Nov. 1, 1917.

The War

APPENDICITIS IN THE ARMIES IN THE FIELD

At one of the recent meetings of the Société de chirurgie de Paris, Dr. Walther, assistant professor on the Faculté de médecine de Paris, and surgeon of the hospitals, presented a memoir on this subject by Dr. Rouhier. Rouhier has been astonished at the unusual number of cases of appendicitis occurring in the armies in the field; appendicitis occurs more frequently here than among civilians of the same age. This may be explained by the conditions of life at the front: the meat diet, the free use of wine, fatigue, and exposure to wet and cold, all of which may awaken an old chronic appendicitis, and convert it into an acute case of more or less severity. These conditions may even give rise to acute intestinal affections and appendicitis, which is apparently primary. Rouhier has also been struck by the particular gravity of the attacks he has observed, perhaps the result of overexertion, which lowers the resistance to the infection. Walther does not agree with Rouhier that irregular forms of appendicitis in which the diagnosis is dubious are more frequent at the front than at the rear; perhaps they are more often overlooked on account of the difficulty of examination. On the other hand, Walther agrees with him that as soon as the diagnosis of appendicitis is made, the patient should be evacuated without delay and without relay, as would be a patient with an abdominal wound, to the surgical formation where he can be taken care of properly: operated on, if possible, and treated expectantly if the circumstances permit. Rouhier, discussing the question of immediate operation as against expectant treatment, is of the opinion that at the front, more than at the rear, intervention is indicated; but Walther declares that operation is urgently indicated in both situations alike.

Rouhier has also studied the connection between appendicitis and typhoid fever, which, he believes, predisposes to appendicitis later. One must bear in mind that frequently it is difficult to diagnosticate between appendicitis, peri-appendicitis and peri-ileotyphlitis in relation to the habitual seat of typhoid ulcerations in Peyer's patches. In closing, Rouhier mentioned a special and particularly grave form of appendicitis, that is, perforating appendicitis, occurring as the primary manifestation of typhoid fever. In one instance, within twenty-four hours the appendix became gangrenous and perforated, with a discharge of seropurulent fluid into the abdominal cavity. This was the first manifestation of the typhoid fever, which progressed steadily and finally terminated in the death of the patient in about a month.

USE OF MORPHIN BEFORE OPERATIONS AND FOR THE WOUNDED

At a recent session of the Society of Comparative Pathology, Dr. Regnault discussed the use of morphin in the wounded. Morphin is used, first, as an adjuvant to anesthesia, and, second, to dull the pains of the wounded, aside from operations. In the first case, one must make certain reservations as to that method of procedure, as it superposes two intoxications; however, that method has given good results under varying circumstances. Although of little value when given with chloroform and ethyl chlorid, there appears to be some advantage in restraining the shock which occurs during operations on large nerve trunks, when one cannot resort to Crile's method of double anesthesia, blocking the principal nerve trunks by the local injection of stovain, novocain, etc. The use of a small dose of morphin cannot be compared to the chronic intoxication which follows the

habitual use of anodynes. When local anesthesia is resorted to, 0.5 to 1 cg. of morphin, administered before the operation is begun, has yielded excellent results. The same is true of a mixture of scopolamin and morphin. The efficacy of these drugs may be increased by resorting to psychotherapy. Besides making use of morphin at operations, Regnault also gives it to relieve the pain of the wounded, especially when the kidneys and brain are intact. The toxic action of small doses of morphin is less dangerous than the shock resulting from the pain and the fatigue following sleeplessness due to pain. Pain is an antidote to morphin; a small dose of morphin acts as a general stimulant, and not as an anodyne, as do the larger doses.

Colonel Le Bel Receives the Decoration of the Legion of Honor

For reasons of health, Colonel Le Bel, physician in chief of the Canadian hospital at Saint-Cloud, has left France to return to Quebec. As an evidence of the recognition of France for the services rendered by the colonel to the French wounded, M. Justin Godart, the undersecretary of state for the army medical department, has conferred on him the cross of an officer of the Legion of Honor.

LONDON LETTER

LONDON, Nov. 6, 1917.

The War

WAR BREAD

In certain cases of disease, the government grants permits for the use of white flour; but the applications are becoming so numerous, and the necessity for economizing wheat so imperative, that it is not possible to accede to all of them. A medical subcommittee has been appointed by the Ministry of Food to deal with such cases. It finds in many cases no substantial grounds for the applications, which appear to be made merely to satisfy some whim of the patient and not because the government regulation flour has been found to be deleterious. Speaking generally, it may be said that unless some affection of the digestive organs is present which, in the opinion of the War Bread Medical Subcommittee, justifies the use of pure wheaten flour, an application cannot be granted. Thus, for instance, in acute affections of the stomach (acute gastric catarrh, ulcer in its acute stages, etc.), the use of any form of bread while the disease is at its height is probably inadmissible. During the convalescent stages the prescription of pure wheaten flour for a limited period may be permissible if rusks and breakfast biscuits or ordinary bread boiled and sieved, or bread jelly, do not meet the case. In chronic functional disorders of the stomach (which make up the majority of cases of chronic dyspepsia), the use of pure wheaten flour can rarely be allowed, for the reason that such cases are so numerous and so protracted in their course that it would be impossible to meet demands without seriously depleting the wheat supply of the rest of the population. The use of the present bread, well toasted and thoroughly chewed, or of biscuits and rusks, is recommended. In chronic organic disease of the stomach (carcinoma and chronic ulcer), white flour may sometimes be advisable, if the patient is able to take bread at all. In acute affections of the intestine (acute diarrhea, enteritis, colitis, ulcerative conditions, etc.), the same remark applies as in acute affections of the stomach. In chronic intestinal affections (chronic diarrhea, chronic colitis, malignant disease, etc.), the use of white flour may be desirable; but evidence is required to show that ordinary bread, toasted and thoroughly chewed, and the use of other measures, have failed to relieve the symptoms. Cases of disease of the nervous, circulatory or respiratory systems, or the urinary organs or skin, or such general conditions as anemia and diabetes, are considered rarely suitable for grants. As regards tuberculosis, there is no evidence that the war bread is injurious.

THE CONTROL OF VENEREAL DISEASES

The problem of the control of venereal diseases is receiving a good deal of attention both at home and in our dominions beyond the seas. The National Council for Combating Venereal Diseases (a philanthropic body formed for this object) has adopted a resolution in which it refrains from recommending prophylaxis in the form of provision of outfits to men before sexual indulgence. At the same time it urges the importance of making arrangements for early treatment before the onset of symptoms. The Local Government Board has sent to the councils of counties and county boroughs in

England and Wales a circular calling attention to putting into force the Venereal Disease Act. The purpose of the act is to prevent the treatment of venereal disease otherwise than by duly qualified physicians, and to control the supply of remedies therefor. The necessity for such a measure is shown by the report of the Royal Commission of Venereal Diseases, which stated that the continued existence of unqualified practice constitutes one of the principal hindrances to the eradication of those diseases. The act renders it illegal for any one other than a duly qualified physician for reward, either direct or indirect, to treat any person for venereal disease, or prescribe any remedy for such disease, or give any advice in connection with the treatment thereof, whether the advice is given to the person to be treated or to any other person. But this prohibition does not come into operation within any area until a scheme for the gratuitous treatment of persons in that area suffering from venereal disease has been approved by the board and is already in operation. The act prohibits advertisements, public notices and announcements (other than advertisements, notices or announcements published by any local or public authority or with the sanction of the board, or publications sent only to duly qualified physicians or to wholesale or retail chemists for the purposes of their business) with respect to the treatment of venereal disease or the prescription of remedies therefor, or the giving of advice in connection with the treatment. The act also prohibits the advertisement or recommendation to the public of any so-called remedies for venereal disease by means of any printed papers or handbills, or by labels, etc., affixed to or delivered with any packet, bottle, etc., containing any such so-called remedies.

The Federal Committee of the British Medical Association is asking the state governments in New South Wales and in South Australia to pass a venereal diseases act on similar lines to the acts of the other states of the commonwealth described in the previous letter to THE JOURNAL. This committee is divided in opinion on the question of the advisability of making more widely known precautions for the prevention of venereal diseases that may be taken by those who have exposed themselves to the risk of infection. In Queensland and in Western Australia, physicians have not reported anything approaching the number of cases of venereal disease that must have occurred. The defense department in Australia has given facilities to civil practitioners to obtain special experience in the treatment of venereal disease by attendance at military venereal disease hospitals and camps. In Queensland the health amending act, 1917, gives the commissioner, instead of the governor-in-council, power to make regulations for the treatment of venereal diseases and for the establishment, management and control of dispensaries or other places for gratuitous treatment. No one must treat venereal diseases except a physician; but the commissioner may grant a permit to a pharmacist to prescribe if a physician is not available. In South Australia, the government is well satisfied with the night clinics for venereal disease. In Victoria the minister of health is appointing a venereal diseases advisory committee to assist in administering the Venereal Diseases Act. The sale by pharmacists of any "patent" or proprietary medicine specially recommended is prohibited for the treatment of any venereal disease. The following are specifically mentioned: hydrargyrum cum creta or its admixtures; red mercuric iodid; mercury tannate; mercuric cyanid in pill or tablet form; sandalwood oil or its derivatives; copaiba or its derivatives, in the form of emulsion or capsules; kharsivan (British salvarsan); argyrol; gray oil or similar mercurial emulsions; methylene blue in pills, tablets or capsules; medicated bougies, and gonococcus vaccines and serums. Every person suffering from venereal disease or suspected of so suffering must consult at regular intervals a physician, who shall deliver a warning notice of the penalties involved, and a booklet issued by the public health department, "Information Relating to Venereal Diseases." No person suffering from venereal disease shall carry, deliver, manufacture, prepare, or otherwise handle food intended for consumption by any other person. Precautions must be observed by individuals in the care of children.

The Medical Service of the Australasian forces in Egypt has established a prophylactic tent at the entrance of each camp where men who have exposed themselves to infection can be disinfected. These disinfections have been so successful that in a series of 2,000 cases only three men developed disease. In the first month after the introduction of the system, of 432 men who were treated, not one developed disease, while of thirty-five men who developed disease, not one visited the tent.

Deaths

Major Richard Weil, M. R. C., U. S. Army, New York City; College of Physicians and Surgeons in the City of New York, 1900; aged 41; died in the base hospital at Camp Joseph Wheeler, Macon, Ga., November 19, from pneumonia. Dr. Weil was one of the recognized leaders in American cancer research. He was a Fellow of the American Medical Association, and a member of the American Association of Pathology and Bacteriology; he was also visiting physician to Mount Sinai Hospital, and the Montefiore Home, New York City. Since 1906, Dr. Weil had been an active member of the Huntington Fund, and constantly engaged in the problems of cancer research. His contributions in the field of serology of cancer and in the general problems of immunity have gained for him an international reputation; he was one of the founders of the American Association of Cancer Research, and was one of the founders and editor-in-chief of the *Journal of Cancer Research*. At the reorganization of the Memorial Hospital in 1913, Dr. Weil became assistant director in cancer research and attending physician to the hospital, and labored energetically to establish an efficient and routine work of the institution. On his appointment as professor of experimental medicine in Cornell University in 1915, he resigned as assistant director of the Memorial Hospital, but continued without interruption his experimental work in cancer. On the declaration of war, he was one of the first to offer his services to the government, and spent the summer at the Medical Officers Training Camp, Fort Benjamin Harrison, Ind., and only a short time ago was detailed as chief of the medical staff of the base hospital at Camp Joseph Wheeler, Macon, Ga., and there he died. At a meeting of the board of trustees of the Memorial Hospital, resolutions were adopted setting forth the attainments of Major Weil, and closing with the following paragraph: "During his brief but brilliant career he attained eminence as a devoted laboratory worker, a skilful experimenter, a broadly trained clinician, and a forceful writer, while his untimely death places his name among the first on his Country's honor roll in the Great War."



Died in the Service.

LIEUT. ORLANDO M. GOCHNAUR, M. R. C., U. S. Army

Lieut. Orlando Merrill Gochnaur, M. R. C., U. S. Army, Freeport, Ill.; College of Physicians and Surgeons, Chicago, 1915; intern in the Calumet and Hecla Hospital, Calumet, Mich., and later in the Henrotin Memorial Hospital, Chicago; who went to France in September, and was on duty with the British forces in Flanders, is reported to have been killed in action, November 6.

Franklin Paine Mall, M.D., Baltimore; University of Michigan, Ann Arbor, 1883; aged 55; a member of the American Association of Anatomy; a fellow in 1886-1888, and instructor in pathology, 1888-1889, in Johns Hopkins University; adjunct professor of vertebrate anatomy in Clark University, Worcester, Mass., in 1889-1892; professor of anatomy in the University of Chicago, 1892-1893, and since that time professor of anatomy in Johns Hopkins University; who was made director of the Department of Embryology in the Carnegie Institution, Washington, D. C., in 1915; a distinguished anatomist, and a member of many learned societies; a prolific contributor to the literature of his specialty; joint editor of the *Handbuch der Entwicklungsgeschichte des Menschen*; co-editor and one of the founders of the *American Journal of Anatomy* and the *Anatomical Record*; associate editor of

the *Journal of Morphology*, and editor of *Studies from the Anatomical Laboratory of Johns Hopkins University*; died in Johns Hopkins Hospital, Baltimore, November 17, after a surgical operation.

James Henry Honan, M.D., Augusta, Ga.; Rush Medical College, 1895; Royal University, Berlin, Germany, 1897; aged 58; an honorary Fellow of the American Medical Association; a specialist in cardiovascular diseases, and from 1909 until the outbreak of the war a practitioner of Berlin and Bad-Nauheim; professor of diseases of the heart and circulatory system in the University of Georgia, Augusta; formerly local surgeon of the Erie Railway; author of a *Hand Book of Medical Europe*, and a number of treatises on cardiovascular conditions; died at his home, November 11. As a tribute of respect to his memory the Medical College of the University of Georgia was closed on Wednesday, November 14, and the faculty attended the funeral in a body.

Francis LeRoy Satterlee, M.D., New York City; New York University, New York City, 1868; aged 70; a Fellow of the American Medical Association, and New York Academy of Medicine, and a member of the New York Pathological Society; professor of chemistry, materia medica and therapeutics in the New York College of Dentistry since 1869; lecturer on agricultural chemistry and hygiene in the New York College of Veterinary Surgery since 1870; lecturer on physiology and hygiene in his alma mater; for many years major and surgeon of the Eighty-Fourth Infantry, N. G., N. Y., and for eighteen years surgeon to the New York Police Department; attending physician to St. Elizabeth's Hospital; died at his home, November 12, from heart disease.

William Keener Sutherlin, M.D., Shreveport, La.; New York University, New York City, 1881; Kaiser Wilhelm University, Berlin, Germany, 1897; aged 58; formerly a Fellow of the American Medical Association, and once vice president of the Louisiana State Medical Association; a well-known surgeon, and proprietor of Sutherlin's Sanatorium, Shreveport; died in the Schumpert Sanitarium, Shreveport, November 10, from pneumonia.

William Boardman Reed, M.D., Alhambra, Calif., University of Pennsylvania, Philadelphia, 1878; aged 75; formerly a Fellow of the American Medical Association;

a veteran of the Civil War, and a well known specialist on diseases of the digestive system; for many years a resident of Atlantic City, N. J.; at one time a member of the editorial staff of the *Philadelphia Press*; who went to California on account of ill health in 1909, and suffered a cerebral hemorrhage in 1913; died at his home, October 31.

John Zebulon Currie, M.D., Cambridge, Mass.; Harvard Medical School, 1873; University of Edinburgh, Scotland, 1874; aged 70; a Fellow of the American Medical Association; physician to the New England Baptist Home for Aged People; died suddenly, from heart disease, November 11, while in his automobile in East Arlington, Mass.

Mary O'Brien Porter, M.D., Chicago; Kansas Medical College, Topeka, 1899; Northwestern University Woman's Medical School, Chicago, 1901; aged 47; a member of the Illinois State Medical Society, and a member of the staff of the Psychopathic Laboratory for the Municipal Courts; died at her home, November 18, from pneumonia.

Thomas Howard Marable, M.D., Clarksville, Tenn.; New York University, New York City, 1878; aged 61; a Fellow of the American Medical Association; mayor of Clarksville;

president of the Tennessee State Medical Association, 1898, and of the Clarksville Academy of Medicine from 1891 to 1893; a specialist in obstetrics; professor of obstetrics in the University of Tennessee, Nashville; died at his home, November 12.

William Gibson Craig, M.D., Springfield, Mass.; Jefferson Medical College, 1892; aged 49; a Fellow of the American Medical Association, and a member of the American Ophthalmological Association; a specialist on diseases of the eye and ear; ophthalmic and aural surgeon to Mercy Hospital, Springfield; died at his home, November 15.

Burrell A. Fletcher, M.D., Augusta, Ark.; Bellevue Hospital Medical College, 1884; aged 55; formerly a Fellow of the American Medical Association; a member of the Arkansas Medical Society, and president of the Arkansas State Board of Health; died in St. Joseph's Hospital, Memphis, Tenn., November 15.

Ira F. Gose, M.D., Eureka, Utah; College of Physicians and Surgeons, Baltimore, 1896; aged 44; formerly a member of the American Medical Association; who was injured when his automobile overturned near Santaquin, November 10; died from his injuries in the Provo (Utah) General Hospital, November 12.

William E. Henkel, M.D., Hammond, La.; Louisville (Ky.) Medical College, 1885; aged 66; formerly local surgeon of the Illinois Central Railroad; died at his home, November 9, from the effects of a gunshot wound of the breast, self-inflicted two days before, it is believed, with suicidal intent, while despondent.

Ansel Jerome Robbins, M.D., McAlester, Okla.; Georgetown University, Washington, D. C., 1891; Southern Homeopathic Medical College, Baltimore, 1896; aged 58; formerly a member of the Arkansas Medical Society, and a resident of Mena, Ark.; died at his home, September 10, from acute gastritis.

William B. Sutherland, M.D., Loveland, Colo.; College of Physicians and Surgeons, Keokuk, Iowa, 1876; aged 66; formerly a Fellow of the American Medical Association; founder of the first hospital in Larimer County, Colo.; died at his home, November 14, from carcinoma of the stomach.

Claude Watson, M.D., Nebraska City, Neb.; Missouri Medical College, St. Louis, 1877; aged 62; a Fellow of the American Medical Association; for twenty years president of the board of education; died, November 16, from heart disease, while making a professional call near Dunbar, Neb.

Alvin Roy Peebles, M.D., Boulder, Colo.; University of Michigan, Ann Arbor, 1906; aged 33; a Fellow of the American Medical Association; professor of preventive and experimental medicine and director of clinical laboratories in the University of Colorado, Boulder; died, October 22.

Jason T. Wallace, M.D., Oneida, N. Y.; New York Homeopathic Medical College, New York City, 1865; aged 81; a member of the first board of education and of the board of health of Oneida; died at the home of his daughter in that city, November 16, from heart disease.

Jacob Cullen Barr, M.D., Keokuk, Iowa; Medical College of Ohio, 1857; aged 87; formerly a member of the Illinois State Medical Society; major and surgeon of the First Ohio Infantry throughout the Civil War; died at his home, November 13, from cerebral hemorrhage.

Jesse D. Elliott, M.D., Hawleyville, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1882; aged 65; a member of the Iowa State Medical Society; for one term a member of the state senate; died in a hospital in Moline, Ill., November 11, from malignant disease.

Julius M. Wilhelm, M.D., Traverse City, Mich.; University of Pennsylvania, Philadelphia, 1895; aged 55; a Fellow of the American Medical Association; a veteran of the war with Spain; local surgeon for the Pere Marquette Railroad; died at his home, November 14.

Frank M. Winchester, M.D., Charlotte, N. C.; Jefferson Medical College, 1883; aged 60; formerly a Fellow of the American Medical Association; professor of obstetrics in the North Carolina Medical College, Charlotte; died at his home, November 11.

Frank Blair Lovell, M.D., Gibson City, Ill.; Rush Medical College, 1888; Bellevue Hospital Medical College, 1893; aged 51; a Fellow of the American Medical Association; died in the Presbyterian Hospital, Chicago, November 11, from typhoid fever.

Frank Henry Columbus Zornow, M.D., Pittsford, N. Y.; New York Homeopathic Medical College; New York City,

1917; aged 24; an intern in the Rochester (N. Y.) Homeopathic Hospital; died in that institution, October 25, from diphtheria.

William Fletcher Jolley, M.D., Troupsburg, N. Y.; Eclectic Medical College of Pennsylvania, Philadelphia, 1869; aged 69; a member of the Medical Society of the State of New York; died in the Canandaigua (N. Y.) Health Home, November 8.

Harrison Gabel, M.D., Centerville, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1880; aged 76; formerly a member of the Indiana State Medical Association; died at his home, November 15, from valvular heart disease.

George Edward Turrill, M.D., Cleveland; Homeopathic Hospital College, Cleveland, 1879; aged 63; at one time a member of the staff of the Huron Road Hospital, Cleveland; died at his home, November 13, from cerebral hemorrhage.

William Henry Harrison Asbury, M.D., Clay City, Ind.; Medical College of Ohio, Cincinnati, 1875; aged 77; died in the Post-Graduate Hospital, Chicago, November 11, from hemorrhage, six weeks after operation for prostatectomy.

Louis Charles Winternitz, Baltimore (license, Maryland); a practitioner for fifty-two years; aged 74; formerly a Fellow of the American Medical Association; died at his home in Walbrook, Baltimore, November 9, from senile debility.

Malcolm Stewart, M.D., Tesumseh, Neb.; State University of Iowa, Iowa City, 1884; aged 59; a Fellow of the American Medical Association and a specialist in diseases of the eye, ear, nose and throat; died at his home, November 14.

Marriages

LIEUT. NORMAN ZOLLA, M. C., Ill. N. G., assigned to One Hundred and Thirty-First Field Hospital Company, Camp Logan, Houston, Texas, to Miss Mary McGinty of Chicago, November 11.

CAPT. GEORGE DAVIDSON MCLEAN, M. R. C., U. S. Army, Oklahoma City, to Miss Ruth Elizabeth Barnes, also of Oklahoma City, October 21.

LIEUT. HAROLD BARTLETT JOHNSON, M. R. C., U. S. Army, to Miss Maxine Crockett of Nashville, Tenn., in Chattanooga, Tenn., November 3.

EDWARD R. M. PENNYPACKER, M.D., Scranton, Pa., to Mrs. Vilette Windett Overly, formerly of Chicago, at Salt Lake City, recently.

LIEUT. STANLEY EDWARD STRAUBE, M. R. C., U. S. Army, Fort Oglethorpe, Ga., to Miss Sarah Rollow of Edgote, Ky., recently.

LIEUT. RICHARD SAMUEL MAGEE, M. R. C., U. S. Army, to Miss S. Marguerite Bancroft, both of Altoona, Pa., November 16.

WILLIAM HOWARD EISTER, M.D., Sunbury, Pa., to Miss Amelia Kublic of Sagon, Pa., at Shamokin, Pa., November 7.

ARTHUR FRANKLIN WOLFORD, M.D., Chicago, to Miss Nadine Wiley of Moberly, Mo., at Chicago, November 7.

LIEUT. ALBRO L. PARSONS, M. R. C., U. S. Army, to Miss Katherine Barnett, both of Louisville, Ky., November 20.

SAMUEL SHELTON WATKINS, M.D., Baltimore, to Miss Mary Townsend of Bowling Green, Ky., November 10.

WILBUR ARTHUR BAKER, M.D., Kansas City, Mo., to Miss Olivia Olsson of Lawrence, Kan., November 3.

FLOYD OWEN WOODWARD, M.D., to Miss Alice Margaret Hewson, both of Minneapolis, November 14.

DANIEL CLARK BRENNAN, M.D., to Miss Josephine Agnes Winum, both of Akron, Ohio, November 6.

RICHARDS ELLISON AMOS, M.D., Akron, Ohio, to Miss Hazel McCauley of Ironton, Ohio, November 10.

BENONI AUSTIN PLACE, M.D., Great Falls, Mont., to Miss Margaret Powell of Clarion, Pa., recently.

OSCAR WALTER REST, M.D., Chicago, to Miss Dora Lucile Lake of Madison, Wis., November 21.

ALFRED MOORE, M.D., to Miss Eva McCleskey, both of Memphis, Tenn., November 21.

JAMES F. GARD, M.D., to Mrs. Sarah A. Mooney, both of Carthage, Mo., November 7.

KARL ALBERT MEYER, M.D., to Miss Faye Hart, both of Chicago, November 11.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

SOME MISBRANDED MINERAL WATERS

Baldwin Cayuga Mineral Water.—Lucius Baldwin & Son, Cayuga, N. Y., shipped in interstate commerce 60 half-gallon bottles of Baldwin Cayuga Mineral Water. The label claimed that the water was a cure for Bright's disease, diabetes, all kidney afflictions, liver complaints, dyspepsia, all affections of the bladder, all forms of rheumatism and all skin diseases besides being a "Wonderful Tonic for General Debility." These claims the government held were false and fraudulent, and furthermore declared the water was adulterated because "it consisted in whole or in part of a filthy, putrid or decomposed substance." Lucius Baldwin & Son, claimants, consented to a decree, and judgment of condemnation and forfeiture was entered and the court ordered that the water should be destroyed.—[*Notice of Judgment No. 4894.*]

Bowden Lithia Water.—The Bowden Lithia Springs Water Co., an Atlanta, Ga., corporation, shipped a quantity of "Bowden Lithia Water" which was misbranded. Analysis showed this product to be another one of the so-called lithia waters containing practically no lithium. The company pleaded guilty and was fined \$50.—[*Notice of Judgment No. 4319.*]

Carbonated Colfax Mineral Water.—The federal authorities filed a libel for the seizure and condemnation of 1,200 bottles of mineral water consigned by D. C. Fry & Co., Inc., Colfax, Iowa. The officials charged that the water was adulterated, as chemical and bacteriologic examination showed it to be polluted and containing excessive numbers of bacteria. It was declared misbranded, first, because it was called a "carbonated" water when, as a matter of fact, it was artificially carbonated and, second, because the following false and fraudulent claims were made regarding its alleged curative value:

"This water is an infallible remedy for all diseases of the liver, kidneys, and blood. It cures constipation and is the most pleasant and certain promoter of digestion known. Nature's remedy for the cure of every form of indigestion or dyspepsia and acute and chronic rheumatism and now acknowledged to be the most wonderful specific for kidney affections yet discovered."

The government declared that the water contained no ingredients or combination of ingredients capable of producing such therapeutic effects. D. C. Fry & Co., Inc., appeared as claimant and, having interposed no objection to a decree, judgment of condemnation and forfeiture was entered, and the court ordered that the water should be destroyed, that the cases and bottles should be returned to the claimant and that the claimant should pay the costs of the proceedings.—[*Notice of Judgment No. 4888.*]

Chippewa Natural Spring Water.—The government filed a libel for the seizure and condemnation of 3,420 bottles, each containing one-half gallon of "Chippewa Natural Spring Water," sold by the Chippewa Springs Corporation, Chippewa Falls, Wis., charging that the product was misbranded. The label declared in part that this matter was "Beneficial and Remedial in cases of Typhoid Fever, Kidney Diseases, Rheumatism, Gout, Constipation, Indigestion, Headache, etc." These claims the government declared were "feloniously and fraudulently made with the intention to create the impression that the article was efficacious for the treatment of the diseases mentioned, whereas, it contained no ingredient or combination of ingredients capable of producing the therapeutic effects claimed." No claimant appeared for the property and the court entered judgment of condemnation and forfeiture, and ordered that the product should be redelivered to the

Chippewa Springs Co., on payment of all the costs of the proceedings and the execution of a bond in the sum of \$50.—[*Notice of Judgment No. 4726.*]

Crazy Mineral Water.—One hundred and twenty half-gallon bottles of a water labeled "Crazy No. 3" were declared adulterated by the federal authorities. According to the officials this water which, according to the label, was the product of the Crazy Well Water Company, Mineral Wells, Texas, was adulterated because it contained a filthy, decomposed and putrid animal substance. No claimant appeared, and judgment of condemnation and forfeiture was entered and the court ordered that the product should be destroyed.—[*Notice of Judgment No. 4234.*]

Crystal Lithium Springs Water.—George W. Hamilton, who did business as the Crystal Lithia Water Co., Excelsior Springs, Mo., shipped in interstate commerce a quantity of "Crystal Lithium Spring Water," which was declared adulterated and misbranded. Misbranding was alleged because the label claimed that each gallon of the water contained over 2 grains of lithium chlorid when, as a matter of fact, it contained little, if any, lithium chlorid. Further, the claim that the product was the "Best Water in the Treatment of Bright's Disease, Diabetes . . . Rheumatism and Gravel" was declared recklessly and wantonly false and fraudulent. Adulteration was charged in that the product contained filthy, decomposed and putrid animal or vegetable matter. Hamilton pleaded guilty and was fined \$100 and costs.—[*Notice of Judgment No. 4174.*]

Gray Mineral Water.—William Baird and William A. Baird, trading as William Baird & Son, Cambridge Springs, Pa., shipped in interstate commerce a quantity of Gray Mineral Water which the federal authorities declared misbranded. The statement on the label that this product was "Nature's Own Cure" for all diseases of the stomach, liver, bowels and urinary organs, also rheumatism, neuralgia, nervous disorders, etc., was declared false and fraudulent and made in reckless and wanton disregard of its truth or falsity. It was further charged that the claims that Gray Mineral Water was "America's choicest table water unequalled in its crystal clearness, pleasant taste and absolute purity" were false and misleading in that they indicated that the product was a natural mineral water when in fact it was an artificially carbonated mineral water. The government charged further that the claim that the product was "bottled at the Spring" was false and misleading because it indicated that the article was bottled at Gray Mineral Spring when in fact it was not. Finally, misbranding was alleged for the further reason that the quantity of the contents was not plainly and conspicuously marked on the outside of the package. The defendants pleaded guilty and were fined \$20 and costs.—[*Notice of Judgment No. 4733.*]

Henk Waukesha Mineral Spring Water.—The Henk Mineral Spring Co., Waukesha, Wis., was the trade name under which Margaret K., Arthur W., Emma, Clarence E. and Mabel Henk operated as co-partners in the sale of "Henk Waukesha Mineral Spring Water." The federal authorities proceeded against these individuals on the ground that their product was misbranded. The government held that the claim that Henk Waukesha Mineral Spring Water "is a most effective remedy for all kidney ailments, Bright's disease in its incipency" was false and fraudulent and made knowingly and in reckless and wanton disregard of its truth or falsity, because in truth and in fact the water did not contain ingredients or medicinal agents effective as a remedy for all kidney ailments or as a remedy for Bright's disease in its incipency or at any stage. The defendants pleaded guilty and each was fined \$25, making an aggregate of \$125.—[*Notice of Judgment No. 4858.*]

Seawright Magnesian Lithia Water.—A libel was filed for the seizure and condemnation of 1,656 bottles of "Seawright Magnesian Lithia Water" which were labeled in part "Seawright Magnesian Lithia Spring Co., Nature's Nervine. E. R. Edmondson, manager, Staunton, Va." Misbranding was

alleged. The following therapeutic claims appeared on the bottle:

"Quiets the nerves and induces sleep. Invaluable in all diseases of the Stomach, Liver or Kidneys, Stone in the Bladder, etc. Relieves Dyspepsia, Constipation, Rheumatism, Gout, etc. A sure remedy for Eruptions and all Diseases of the Skin, Ulcerated Stomach, Sore Eyes, etc."

Misbranding was alleged, first, in that the water did not contain enough lithium to entitle it to be designated as a lithia water; second, it "did not contain any ingredients or combination of ingredients capable of producing the therapeutic effects claimed for it." No claimant having appeared, judgment of condemnation and forfeiture was entered and the court ordered that the product should be destroyed.—[*Notice of Judgment No. 3714.*]

White Stone Lithia Water.—Lloyd C. Dillard of Spartanburg, S. C., the Bank of Spartanburg, the Merchants and Farmers' Bank and the First National Bank were charged by the federal authorities with shipping in violation of the Food and Drugs Act "White Stone Lithia Water" which was misbranded. The charge was based on the fact that the name indicated to the purchaser that the product was lithia water when in fact it was not. Moreover, the label represented that it was a cure for all liver, kidney and bladder troubles, rheumatism, gout, all blood diseases and indigestion. These claims the government declared false and fraudulent. L. C. Dillard, the Bank of Spartanburg, the Merchants and Farmers' Bank and the First National Bank pleaded guilty and the court imposed a fine of \$10—or \$2.50 each.—[*Notice of Judgment No. 4869.*]

Witter Springs Water.—The government filed a libel for the seizure and condemnation of 324 bottles of Witter Springs Water of the Witter Medicinal Springs, San Francisco, Calif. The officials charged that the water was adulterated in that it consisted in whole or in part of a filthy, decomposed and putrid animal or vegetable substance. No claimant appeared and it was adjudged condemned and forfeited and the court ordered that the product should be destroyed.—[*Notice of Judgment No. 4296.*]

Correspondence

CORNEAL TATTOOING

To the Editor:—THE JOURNAL has recently published two contributions on corneal tattooing. It seems to me that almost ideal results can be obtained by a modified Froehlich method, which I have followed in several cases. A von Hippel trephine is used to outline the area to be stained, cutting only through the epithelium and upper lamellae of the cornea. With a keratome this is carefully dissected loose, leaving the flap hanging at one side by a small hinge of tissue. The India or Chinese ink emulsion, worked up in a mercuric chlorid solution, is now applied and the flap turned back in place. A beautiful black round pupil remains. If the operation is performed in this manner, the stain is permanent, as can be shown in a case in which it was done six years ago. Dr. Allport's method is very similar excepting for his failure to replace the epithelium, which protects the color more strongly.

JESSE S. WYLER, M.D., Cincinnati.

LOCALIZATION OF FOREIGN BODIES

To the Editor:—In THE JOURNAL, Nov. 3, 1917, p. 1521, Dr. Sinclair Tousey details a method of localization of foreign bodies. On account of his prominence as an author, Dr. Tousey having written a very valuable compilation on the roentgen ray, I think that it is unsafe to let the article referred to pass without question.

Dr. Tousey states that by means of a grating laid on the plate, which merely serves the purpose of a scale for the measurement of the displacement of the shadow cast by a foreign body when the source of illumination casting the

shadow is moved, the tube being placed at a distance from the plate of 21 inches and the tube shift of 3 inches being employed, he is able to read from the plate without calculation the actual distance of the foreign body casting a shadow from the surface of the plate.

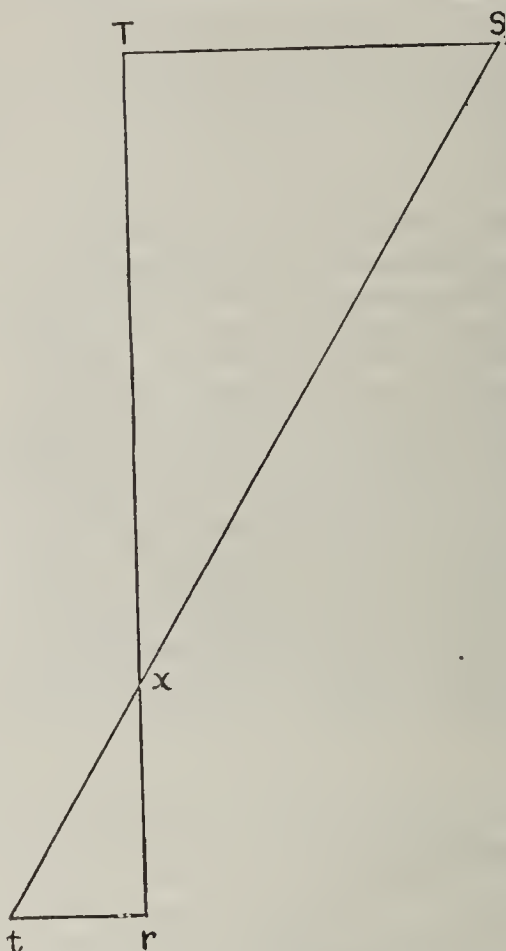


Fig. 1.—Relation of traverses: TS, tube traverse; tr, traverse of foreign body; Tr, anode plate distance; rx, height of foreign body.

TS:tr::Tr:rx:rx

| COMPARISON IN INCHES | | |
|-----------------------|--------------|--------|
| Foreign Body Traverse | Tousey Depth | Actual |
| 1/4 | 0.5 | 0.9 |
| 3/4 | 1.5 | 2.6 |
| 1 | 3.5 | 5.25 |
| 1 1/4 | 5.0 | 6.7 |
| 2 | 7 | 8.4 |
| 3 | 10.5 | 10.5 |
| 4 | 14.0 | 12.5 |

He further states that a shadow traverse of 1/4 inch with tube at 21 inches and tube shift at 3 inches is equal to 1/2 inch distance from plate to foreign body; that for each additional 1/4 inch shadow traverse an additional 1/2 inch should be added to this height or depth according as the tube is over or under the patient. This statement is true when the foreign body keeps such a position that its traverse is exactly 3 inches, and under those circumstances it will be found to be exactly midway between the anode of the tube and the surface of the plate. In such circumstances the relation is true because two right angled triangles whose elevations are equal must have equal bases. It is not true for any other position of a foreign body, and the error in such circumstances is enormous.

Dr. Tousey assumes that the relations here represented may be shown by a simple arithmetical progression, and that

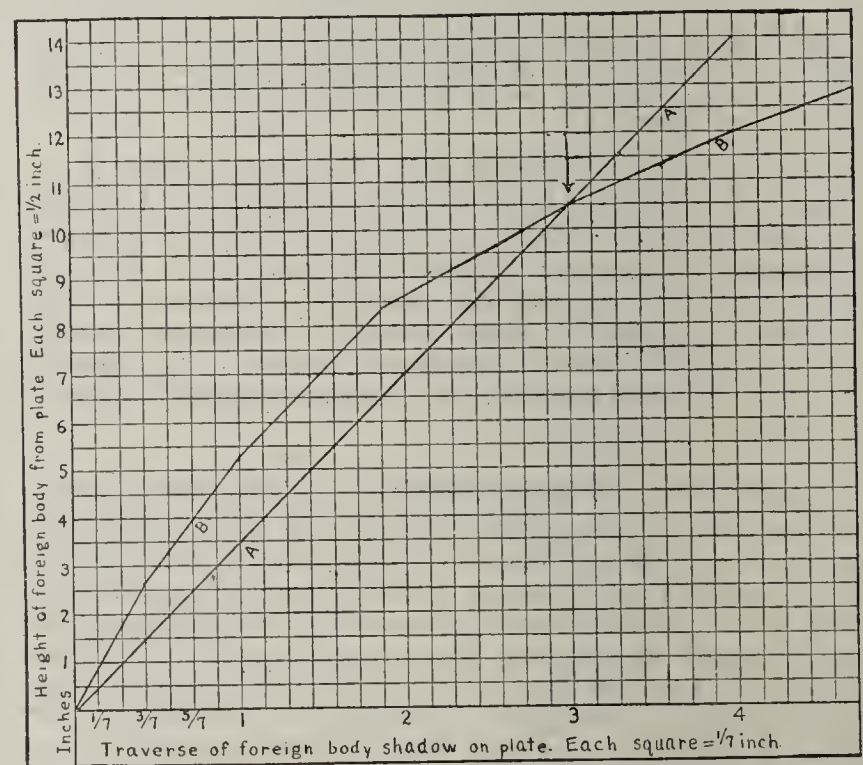


Fig. 2.—Comparison of graphs: A, Tousey's curve; B, actual curve; arrow indicates point at which Tousey's statement is true; anode plate distance, 21 inches; tube shift, 3 inches.

if a graph were constructed having foreign body shadow traverse as ordinates, and depth of body in the tissue as abscissas, the relation curve would be a straight line. It

GEORGE C. JOHNSTON, M.D., Pittsburgh.
Major, M. R. C., Pittsburgh School of Military Roentgenology.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

St., Ashland.

Texas June Examination

Dr. M. F. Bettencourt, secretary of the Texas State Board of Medical Examiners, reports the written examination held at Austin, June 19-21, 1917. The examination covered 12 subjects and included 120 questions. An average of 75 per cent. was required to pass. Of the 119 candidates examined, 115, including 9 osteopaths, passed and 4 failed. Forty-one candidates, including 2 osteopaths, were licensed through reciprocity, and 8 candidates were granted reregistration certificates. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|--------|------------|-----------|
| College of Physicians and Surgeons, Los Angeles.... | (1917) | | 90 |
| Rush Medical College..... | (1916) | | 90 |
| University of Illinois | (1917) | | 80 |

| | | |
|---|---------------------------|--------|
| University of Louisville | (1917) | 80 |
| Tulane University of Louisiana..... | (1916) 80, 80, 90; (1917) | 80, 80 |
| Boston University | (1909) | 80 |
| St. Louis College of Physicians and Surgeons..... | (1914) | 80 |
| University of Pennsylvania..... | (1917) | 90 |
| Mcharry Medical College (1916) 75; (1917) 75, 80, 80, 80, 80, 80, 80, 80, 80. | | |
| University of Tennessee (1917) 80, 80, 80. | | |
| Vanderbilt University (1889) 75; (1917) 80, 80, 80, 90. | | |
| Baylor University (1910) 75; (1916) 75, 75, 80; (1917) 80, 80, 80, 80, | | |
| 80, 80, 80, 90. | | |
| Fort Worth School of Medicine (1917) 75, 80, 80, 80, 80, 80, 80, 80, | | |
| 80, 80, 80, 80, 90, 90, 90. | | |
| University of Texas, (1916) 80, 90; (1917) 75, 80, 80, 80, 80, 80, 80, | | |
| 80, 80, 80, 80, 80, 80, 80, 80, 80, 80, 80, 80, 80, 80, | | |
| 80, 80, 80, 80, 80, 80, 80, 90, 90, 90, 90, 90, 90, 90, 90, | | |
| National School of Medicine, Mexico ....(1895) 75; (1900) | | 75 |
| ..... | (1913) | 80 |
| School of Medicine of San Luis Potosi ....(1908) 80; (1917) | | 75 |

FAILED

| | | |
|-------------------------------|-------------------|------|
| Meharry Medical College | (1912) 71; (1915) | 66.3 |
| University of Tennessee | (1916) | 71.1 |
| Baylor University | (1917) | 65.3 |

| College | LICENSED THROUGH RECIPROCITY | Year (Grad. | Reciprocity with |
|---|------------------------------|------------------------|---------------------|
| Arkansas Industrial University | | (1898) | Arkansas |
| College of Physicians and Surgeons, Little Rock | | (1909) | Oklahoma |
| University of Arkansas | | (1912) | Arkansas |
| Atlanta College of Physicians and Surgeons | | (1909) | Georgia |
| Atlanta Medical College | | (1916, 2) | Georgia |
| Georgia College of Eclectic Med. and Surgery | (1895) | (1909) | Georgia |
| American College of Medicine and Surgery | | (1906) | Nebraska |
| Chicago Hospital College of Medicine | | (1915) | Arkansas |
| College of Physicians and Surgeons, Chicago | | (1906) | Kansas |
| Northwestern University | | (1894) | Nevada |
| Keokuk Medical College | | (1895) | Missouri |
| Hospital College of Medicine | | (1880) | Kentucky |
| University of Louisville | (1904) | Oklahoma; (1909) | Tennessee |
| | | (1915) | Kentucky |
| Johns Hopkins University | | (1914) | Virginia |
| University of Maryland | | (1907) | Maryland |
| University of Minnesota | | (1899) | Minnesota |
| Barnes Medical College | | (1893) | Oklahoma |
| Kansas City Medical College | (1901) | Kansas; (1903) | Missouri |
| St. Louis University | | (1905) | Oklahoma |
| University Medical College of Kansas City | | (1904) | Missouri |
| Eclectic Medical College | | (1892) | Ohio |
| Meharry Medical College | (1913) | Oklahoma; (1915) | Kentucky, Tennessee |
| Memphis Hospital Medical College | | (1902) | Mississippi |
| | | (1910) | Oklahoma |
| University of Tennessee | (1893) | Tennessee; (1914) | Mississippi |
| Vanderbilt University | (1888) | Arkansas; (1900) | Tennessee |
| | (1913) | Mississippi; (1916, 2) | Tennessee |
| University of Vermont | | (1904) | Vermont |

Delaware June Examination

Dr. H. W. Briggs, secretary of the Medical Council of Delaware, reports the written and practical examination held at Wilmington, June 19-21, 1917. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Nine candidates were examined, all of whom passed. Two candidates were licensed through reciprocity. The following colleges were represented:

| ¹ College | PASSED | Year Grad. | Per Cent. |
|---|--------------|------------|------------|
| Johns Hopkins University | | (1916) | 85.9 |
| New York Homeo. Medical Coll. and Flower Hospital | | (1917) | 88, 90 |
| Jefferson Medical College of Philadelphia | (1916) 89.1, | (1917) | 83, 86.7 |
| Medico-Chirurgical College of Philadelphia | | (1916) | 80.6, 86.7 |
| Temple University | | (1917) | 80.5 |

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with Penna. |
|----------------------------------|------------------------------|------------|-------------------------|
| University of Pennsylvania | (1898) | (1913) | |

Oregon July Examination

Dr. H. S. Nichols, secretary of the Oregon State Board of Medical Examiners, reports the written examination held at Portland, July 5-7, 1917. The examination covered 15 subjects and included 104 questions. An average of 75 per cent. was required to pass. Of the 21 candidates examined, 18, including 1 osteopath, passed, and 3, including 2 osteopaths failed. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|--|-------------|------------|-----------|
| College of Physicians and Surgeons, San Francisco .. | | (1916) | 83 |
| Chaddock School of Medicine | | (1887) | 76 |
| Northwestern University | | (1902) | 80 |
| Keokuk Medical College | | (1893) | 76 |
| Maryland Medical College | | (1905) | 77 |
| Johns Hopkins University | | (1917) | 90 |
| Harvard University | | (1912) | 80 |
| St. Louis University | | (1905) | 76 |
| Washington University | | (1901) | 81 |
| Cincinnati College of Medicine and Surgery | | (1900) | 78 |
| University of Oregon (1917) | 80, 81, 83. | | |
| Willamette University | | (1906) | 76 |
| Jefferson Medical College of Philadelphia .. | | (1902) 79; | 77 |
| Tennessee Medical College | | (1901) | 75 |

| | | |
|---|--------|----|
| John A. Creighton Medical College | (1917) | 86 |
|---|--------|----|

Book Notices

OBSTETRICS: A TEXT-BOOK FOR THE USE OF STUDENTS OR PRACTITIONERS. By J. Whitridge Williams, Professor of Obstetrics, Johns Hopkins University. Fourth Edition. Cloth. Price, \$7 net. Pp. 1029, with 708 illustrations. New York: D. Appleton & Co., 1917.

Five years have elapsed since the appearance of the last edition of this book. During that time, notable changes have taken place in the views held on some phases of obstetrics, even though no definite progress has been made. The author discusses this phase of the subject, and expresses opinions which, coming from a man of his standing, are not only worthy of consideration, but are significant and weight-bearing. Anesthesia in obstetrics has received much attention during the past five years. Williams endorses the use of nitrous oxid gas, but feels that it should be limited to the second stage. As for scopolamin-morphin anesthesia, he says the fact that we cannot promise a satisfactory subjective result to more than three patients out of four makes it apparent that the method is not ideal. He believes that it will gradually fall into disuse, or at least that its use will be restricted to a small group of neurotic patients. From his experience the method is not adapted to private practice. He is strongly opposed to lumbar anesthesia. His preference in normal labor is chloroform. The value of complicated chemical methods in determining the prognosis and treatment of preeclamptic toxemia and eclampsia is discounted by the author. He says that while the clinical differentiation between the nephritic and the preeclamptic types of toxemia is not always easy, fortunately the difficulty in diagnosis is of more importance from the scientific than from the practical point of view, as the treatment to be employed is identical in the two cases. While he regards the Abderhalden pregnancy reaction as one of the important recent contributions to medicine, he does not believe that it is destined to come into extensive practical use because, first, its technic is complicated; second, the results fail to correspond with the clinical findings in 5 or 10 per cent. of the cases, and third, it is valuable only in normal pregnancy. In speaking of pituitary extract, he says that his experience has shown that the judicious administration of the drug will do away with the necessity for the application of low forceps in from one third to one half of the cases in which this method was formerly employed; but he urges that great care should be exercised in the use of pituitary extract, as its injudicious employment may place the life of both mother and child in jeopardy. Furthermore, the claims made by several manufacturers concerning its harmlessness are inaccurate and extremely reprehensible, as they are calculated to lead inexperienced practitioners into therapeutic excess to the detriment of their patients. He believes that eventually the use of pituitary extract will be limited to the latter part of the second stage, and this only as a competitor with low forceps. The present revision will maintain the high standard of this work as a practical up-to-date guide to the obstetrician. Many new illustrations have been added. The bibliography given at the end of each chapter is valuable; it bears all the earmarks of having been verified.

PAIN AND PLEASURE. By Henry Thomas Moore, Ph.D., Assistant Professor of Psychology, Dartmouth College. Cloth. Price, \$1.25 net. Pp. 174, with 11 illustrations. New York: Moffat, Yard & Co., 1917.

The author states that pain may be described as of three fairly distinct types—surface pain, distinguished by sharp clearness, exactness of location and well coordinated reaction; bodily distress, characterized by obscure dullness, difficulty of exact location, and a general and somewhat aimless bodily reaction; and unpleasantness, marked by such obscurity that it is commonly spoken of as feeling. It has no particular location, but seems to pervade the whole body. Pleasure may be derived from stimulation of the surface of the body; gratification is the pleasure derived from satisfying the needs of the inner organs, a form of which is distinctly experienced for each of the body needs; then there is pleasantness, which is least capable of exact location or definition. Pain and pleasure as sensations have probably been evolved gradually

out of a primitive obscure state of well-being, or pleasantness, and malaise, or unpleasantness. All three varieties of pain and pleasure described can be best accounted for by reference to the fact that every living organism is born with the capacity for struggle, and in an environment in which struggle is a fundamental law of nature. Pain signifies either that the environment has demanded too much of the organism's limited capacities, or that it has failed to offer a point of contact for unused activity. Pleasure signifies either that the environment has furnished occasion for a conflict to which the organism's powers are equal, or that opportunity is being afforded for recovery from a struggle carried to an extreme point—the pleasure of rest, for instance. As to the diagnostic value of pain, it is said that pain is the physician's most reliable dependence as a means of diagnosis, but it is necessary to have perpetually in mind the possibility that a given pain may be "imaginary" (psychasthenic or neurasthenic) or "referred" (giving a false indication as to the real source of the trouble). The former source of error can, in a measure, be guarded against by tests of suggestibility, by noting the change of facial expression, of blood pressure and of the pupil reflex. The author concludes what is an interesting psychologic study of pleasure and pain by saying, "Whether as sensation or as feeling, the broad significance of pain and pleasure is to be found in the fact that life is essentially a struggle, in which pleasure is the accompaniment of some form of mental or physical success, and pain is an indication of defeat or of abortive effort."

HEALTH SURVEY OF NEW HAVEN. A Report Presented to the Civic Federation of New Haven by Charles Edward Amory Winslow, James Cowan Greenway and David Greenburg of Yale University. Paper. Price, 75 cents. Pp. 114, with 30 illustrations. New Haven: Yale University Press, 1917.

This book deals with public health conditions in New Haven, and recommendations for their improvement. The report is unusually free from destructive criticism. Under each heading, conditions existing at the time of the investigation are given, followed by an analysis and specific recommendations for improvement. Forty-five such recommendations are made on the basis of the author's findings, following approved methods of public health administration but adapted to New Haven's needs. Such a report made by trained men should be of value to other cities as a guide in efficient organization and modern methods of public health administration. The authors have pointed out that New Haven is getting good service for the money expended, but that this amount needs to be increased from 30 cents per capita to 50 cents to secure the best results.

PSYCHOLOGICAL TESTS. A BIBLIOGRAPHY. Compiled by Helen Boardman, Research Worker for the Bureau of Educational Experiments. Paper. Price, 25 cents. Pp. 75. New York: Bureau of Educational Experiments, 1917.

While this is not an exhaustive bibliography, it is a very useful one; for the articles on this subject are numerous, and widely scattered through medical, psychologic and pedagogic journals. Each entry is followed by a brief annotation giving the scope of the article. The bibliography would present a much better appearance if the references were uniform in style. The volume number is given sometimes in Arabic and sometimes in Roman, and the date of the publication in some places precedes the volume and page and again follows it.

THE TREATMENT OF EMERGENCIES. By Hubley R. Owen, M.D., Surgeon to the Philadelphia General Hospital. Cloth. Price, \$2 net. Pp. 350, with 249 illustrations. Philadelphia: W. B. Saunders Company, 1917.

This book is essentially an enlargement of the author's lectures to policemen, firemen and nurses, and as such it is a commendable addition to first aid work, especially for all those, whether professional or lay, who wish to make a more comprehensive study of the subject. The author has aimed, in each instance, to give the underlying principle of each dressing and the reason for a particular method of application. The language used is plain and clearly descriptive, and no exception can be taken to the treatment of the subject or the correctness of the teachings.

Social Medicine, Medical Economics and Miscellany

Welfare of Mothers and Children in Ireland

The birth rate in Ireland has been diminishing for the past ten years; in 1915 there were 3,000 fewer births than in 1914, perhaps partly the result of conditions connected with the war. The deaths of children under 1 year for 1915 were 92 per thousand. In England during the same year the number was 110 per thousand, and in Scotland 126. While the figures for Ireland seem, therefore, to be better than those for England and Scotland, the comfort to be derived from them is diminished by the knowledge that in England and Scotland there has been a steady, rather rapid decline in the deaths under 1 year, whereas in Ireland the rate has remained almost stationary for many years.

These facts, together with many others regarding the welfare of mothers and children in Ireland, are set forth in the report of the Carnegie United Kingdom Trust on Ireland (1917) written by Dr. E. Coey Bigger, medical commissioner of the Local Government Board for Ireland. While the decline in the death rate in England among infants under 1 year has been 24 per cent., in Ireland it has not amounted to over 8 per cent., the actual figures for this age being for Ireland, 1891-1900, 104; 1901-1910, 96, and 1911-1915, 91, and for those from 1 to 4 years of age, 88.7, 58.9 and 52.5, respectively. The chief causes assigned are low wages and the low standard of living or downright poverty of a large proportion of the population; bad housing in city and country; increase in the urbanization of the population, with higher consequent death rate, and decline in breast nursing on account of the lowered vitality of mothers due to improper nourishment, the defective condition and deficiency of the milk supply, which is general throughout Ireland, the lack of knowledge of mothercraft, etc.

The greater death rate among infants of the laboring classes, the low wage earners, is marked and distinct, and its relation to the quantity and quality of the diet of the people is indicated in the following:

For the past twenty years the available income of both laborers and farmers has risen, but the cost of food has, at the same time, risen and its nature has changed. Milk porridge and potatoes were once the staple food of the laboring and farming class; now it is bread and tea and potatoes—a change very much for the worse, and one which is bound to react on the infant by making the mother less fit to bear her child, and to suckle it when born.

The report shows that some progress is being made in improving the housing conditions, in better hospitalization, better reporting, better nursing and enlightenment with regard to artificial feeding, and in general welfare work by various organizations.

Report of New York Committee on Feeble-mindedness

The New York Committee on Feeble-mindedness, which was organized in March, 1916, under the chairmanship of R. Bayard Cutting, is carrying on a campaign in New York State to secure adequate provision for the care, supervision and training of the feeble-minded and epileptic. The aims of the committee, as set forth in its first annual report, are to improve the usefulness of the state institutions for the benefit of the feeble-minded, to further the establishment of special classes in the public schools, and to aid in the establishment of a system of guardianship and supervision in the home. Preventive measures, of course, are prominent in the committee's aims. To attain these objects, the committee is working along the following lines: the gathering and dissemination of information concerning the feeble-minded; organization and leadership of individual effort and social agencies, and promotion of legislation.

A conservative estimate gives the number of feeble-minded persons in New York State as 35,000, of whom 6,000 are provided for in proper institutions; 4,500 are detained in almshouses and jails without appropriate care, and over 24,000 are unprotected in the community, are the bearers of

disease, and live in a state of poverty and degradation. It is shown that from 20 to 30 per cent. of the inmates of correctional institutions are mentally defective, and studies of habitual offenders show that nearly one half of all crime can be laid at the door of feeble-mindedness. It has been estimated that 2 per cent. of the children in the public schools are retarded to such a degree as to constitute feeble-mindedness. One of the great causes of feeble-mindedness is heredity, and the birth rate among the mental defectives is found to be approximately twice that of the normal population. Prevention of marriage of feeble-minded persons would reduce immediately the proportion of the feeble-minded, paupers, criminals and no-account persons. It is said that the only means of accomplishing this which is agreeable to the sensibilities of the average citizen is segregation and institutional care. It is along these lines that the committee has been directing its efforts.

Medicolegal

Insufficient Information Under Statute Defining Practice of Medicine

(*People vs. Watson (Mich.)*, 162 N. W. R. 943)

The Supreme Court of Michigan holds that the verdict should be set aside, and the defendant discharged in a case in which his conviction was under an information that alleged that he "unlawfully did engage in the business of practice of medicine, and did practice medicine, within the meaning of Act 237 of the Public Acts of the state of Michigan for the year 1899, and the amendments thereto, without before so doing having complied with the provisions of said act" and its amendments, etc. The court says that the information was bad because (1) the general words employed therein do not fully set forth all of the assignments necessary to constitute the offense; (2) the subject-matter of the offense is now defined by the statute by descriptive words, none of which are employed in the information; (3) a person may innocently do things embraced within the definition given in the statute.

Act 237, Public Acts of 1899, was amended by Act 368, Public Acts of 1913, so as to define the practice of medicine. Under former legislation it had been left to the courts to define—piecemeal, it is true, but nevertheless to define—what was the practice of medicine, by determining whether the proved acts of the person accused of violating the statute amounted to practicing medicine. The legislature undertook to make an exclusive and inclusive definition by enacting: "In this act, unless otherwise provided, the term 'practice of medicine' shall mean the actual diagnosing, curing or relieving in any degree, or professing or attempting to diagnose, treat, cure or relieve any human disease, ailment, defect or complaint, whether of physical or mental origin, by attendance or by advice, or by prescribing or furnishing any drug, medicine, appliance, manipulation or method, or by any therapeutic agent whatsoever." Here are the elements of the statute offense, a catalogue of the acts constituting "practice of medicine," the doing of which makes the actor liable to the statute penalty. Under such an act, to charge one generally with "practicing medicine" is not to charge him sufficiently with a wrongful act. Moreover, the foregoing statute definition is itself limited by the title of the act and the measure of the police power of the state. Some things within this statute category may be innocently done.

It will at once be perceived that the information before the court may or may not charge the defendant with committing an offense, in view of the definition of "practice of medicine" found in the act and the proper scope of the act, as evidenced and limited by its title; because, since the act has been sustained as valid on certain limitations of the definition, it is no longer sufficient to charge one with engaging in the business of practicing and with practicing medicine, contrary to the provision of the statute—the law having been held valid only when applied to such acts enumerated therein as

"in common acceptance and as generally construed by the courts" are regarded as engaging in the "practice of medicine." The rule that in indictments and informations for offenses created by statute it is sufficient to describe the offense in the words of the statute, and that when the words of the statute are descriptive of the offense it is safe to follow the language there used, is a rule that was not observed by the pleader, since the descriptive words found in the present statute are not used in the information. Moreover, so long as a person may innocently do some things embraced within the definition given in this particular statute, there is additional reason for particularity of statement of the acts committed in order to apprise the accused of the charge sought to be brought against him.

Combining Faith with "Patent Medicines"

(*People vs. Vogelgesang* (N. Y.), 116 N. E. R. 977)

The Court of Appeals of New York, in affirming a judgment of conviction of the defendant of having illegally practiced medicine, says he claimed he was a spiritualist and had practiced the religious tenets of his church. If that was all he did, he acted within his rights. The court, however, thinks he did more. In February, 1915, one Haldeman, then suffering from heart disease, visited the defendant's office. He paid four visits there, and received three visits at his own home. He died the next month. The defendant rubbed his body with a liniment, and gave him medicine for internal use. All this was done for pay. The patient's wife accompanied him to the office. She said the defendant never uttered a word about spiritualism. The defendant handed to his patient a pamphlet, the title on the cover of which gave the defendant's name, and added the words: "Specialist in all forms of chronic diseases; strictly confidential; consultation free." Within the covers was a sketch of the defendant's life. It told that, when 11 years old, "he would get herbs and give them to sick people, for he seemed to know what would be good for them." In later years the Erie County Medical Society complained of him, and a fine was imposed. "After that," said the sketch, "he joined the New York State Association of Spiritualists." The sketch was followed by many testimonials from patients. All, or nearly all, acclaimed the virtue of his medicines. Not one of them betrayed a consciousness that the supposed cure had been wrought through the power of religion. This was the pamphlet by which the defendant accredited himself to Haldeman. One cannot find here the picture of the religious devotee. One can find only the picture of the unlicensed medical practitioner. The picture was not changed by the defendant's testimony. On the stand he characterized himself as a therapeutic and spiritualist healer and dealer in "patent medicines." He had patented them himself. He used a liniment, compounded of angleworms, turpentine, sweet oil and benzin. He said that, while massaging the patient with this liniment, he indulged in silent prayer. He also prescribed for internal use a medicine compounded of wine, beef tea and citrate of iron. The same medicine was used for every one. He argued that all this must be excused, because he had become a member of the spiritualist church, and had been commissioned by that church as a spiritual healer.

The New York statute prohibits the practice of medicine without a license, but excepts from its prohibition "the practice of the religious tenets of any church." This court held in *People v. Cole*, 219 N. Y. 98, 113 N. E. 790, that the exception protected the practitioners of Christian Science, who taught as part of their religion the healing power of mind. Even then the court said there were times when the question of their good faith must be submitted to a jury. But things were done by this defendant which no good faith could justify. He combined faith with "patent medicine." If he invoked the power of spirit, he did not forget to prescribe his drugs. "It is beyond all question or dispute," said Voltaire, "that magic words and ceremonies are quite capable of most effectually destroying a whole flock of sheep, if the words be accompanied by a sufficient quantity of arsenic." The law, in its protection of believers, has other cures in mind. The tenets to which it accords freedom, alike of

practice and of profession, are not merely the tenets, but the religious tenets, of a church. The profession and the practice of the religion must be itself the cure. The sufferer's mind must be brought into submission to the infinite mind, and in this must be the healing. The operation of the power of spirit must be, not indirect and remote, but direct and immediate. If that were not so, a body of men who claimed divine inspiration might prescribe drugs and perform surgical operations under cover of the law. The law exacts no license for ministration by prayer or by the power of religion. But one who heals by other agencies must have the training of the expert.

Liability for Sponge and Silk Thread in Wound—Evidence

(*Wynne et ux. vs. Harvey et al.* (Wash.), 165 Pac. R. 67)

The Supreme Court of Washington says that in this action against the physicians and a nurse for alleged malpractice in connection with an operation on Mrs. Wynne for an enlarged uterus, after a trial of the case on the merits, a motion for nonsuit was granted as to the nurse, but a verdict for \$5,000 was entered against the physicians. Now the action is ordered dismissed as to the assistant physician or surgeon, with costs to him, while the judgment is affirmed as to the physician or surgeon in chief.

The operation did not seem to be very successful, as the wound refused to heal and a fistula was formed, which discharged impure matter, including a silk thread. Afterward, through another operation, a small mop sponge was found, next to the inside of the abdominal wall. Defendant Harvey had been treating the plaintiff for some time prior to the first operation, but on account of the seriousness of the operation it was decided he should have an assistant, and the other physician was employed in that capacity, by Mr. Wynne. In cases of this character, the rule concerning the liability of two physicians independently engaged has been well stated to be that each, in serving with the other, is rightly held answerable for his own conduct, and as well for all the wrongful acts or omissions of the other, which in the exercise of reasonable diligence under the circumstances he should have observed. The evidence showed that this assistant had nothing to do with the sponges or mopping with them on the inside of the incision. It is obvious that he would not be liable for this negligence because of any wrongful act of his own. His activities were confined mainly to the outside of the wound, and, since the duties of an assistant are to do as directed by the chief operator, and there was no showing either that he was directed to keep track of the sponges or that it was made his duty by custom to do so, it is apparent that, in the exercise of reasonable diligence under the circumstances, no duty devolved on him to discover that the sponge was not removed, the omission of which would render him liable to an action for damages.

In considering the appeal of defendant Harvey, the court found that the complaint alleged negligence in the use of silk thread, instead of catgut, in tying off the arteries, and the only evidence to sustain this allegation was that a piece of silk thread was discharged through the fistula that formed in the plaintiff's body. Impliedly admitting that it was improper to use silk in tying off arteries, and to explain its presence, defendant Harvey claimed that it was used in suturing a ruptured intestine, and produced evidence to show that in so doing silk was the proper and better material to use. But while there was no direct evidence to show that silk was negligently used in tying off arteries, there was evidence to show that silk was negligently used, as the thread discharged through the fistula was No. 12, which, according to the testimony of the experts, was far too large for use in suturing a ruptured intestine, the majority of the experts being of the opinion that in no event should silk thread of larger size than No. 3 or No. 4 be used for this purpose. Precisely what use was made of the silk thread, and where, was manifestly unknown to the plaintiff, save by results. The exact place and manner were known to defendant Harvey, who used it, and he was chargeable with reasonable care, skill and knowledge in its use. The court does

not consider this evidence a material variance from the allegations of the complaint, and there was, therefore, sufficient evidence to submit this issue to the jury's consideration.

There being no evidence in the record that the sponges were counted by the attending nurses, or that defendant Harvey knew there was another sponge in the incision, the facts in this case did not bring it within the asserted exception that it is not negligence for a surgeon to leave a foreign substance in a wound when in his professional judgment further exploration for such foreign substance would endanger the safety of the patient.

The plaintiff could testify to such commonplace conditions and effects as that dressings were sometimes changed by defendant Harvey and sometimes by a nurse; that sometimes he would not come when requested; that sometimes dressings were not changed and pus would dry on them, and that the drainage tubes were not sterilized every time the dressings were changed.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Minneapolis, Dec. 27-29.
American Physiological Society, Minneapolis, Dec. 27-29.
Porto Rico Medical Association, San Juan, Dec. 22-23.
Society of American Bacteriologists, Washington, D. C., Dec. 27-29.
Western Surgical Association, Omaha, Dec. 14-15.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION

Annual meeting, held at Toledo, Ohio, Oct. 9-11, 1917

The President, DR. CHANNING W. BARRETT, Chicago, in the Chair

What Reliance Can Be Placed in Our Laboratory Findings in Central Nerve Syphilis?

DR. ALBERT E. STERNE, Indianapolis: A positive Wassermann test of the blood, and especially of the spinal fluid, spells syphilis and syphilis only; but a negative serum Wassermann, and even a negative spinal fluid Wassermann, does not strictly indicate the absence of syphilis. Laboratory tests are merely clinical signs, which at times may be present or absent, like other symptoms; spinal fluid tests should always be made with blood serum tests, and their correct interpretation can be made only by weighing carefully the clinical evidence, with the serologic report, especially when the latter are negative. The laboratory findings should fit into the clinical syndrome, and not vice versa.

Intensive Combined Treatment of Syphilis

DR. J. H. STOKES, Rochester, Minn.: We have come to regard the effect of mercury on the kidney as the weak point in radical methods in the management of syphilis. This applies with special force to the intramuscular injection, and especially to the injection of insoluble mercurial salt, the convenience of which may easily be counterbalanced by much damage that goes undetected because of the irksomeness, to the majority of physicians, of the frequent, careful urinalysis. Radical treatment is indispensable; therefore, means to protect the kidney, especially, from its very real dangers should be devised.

Some Recent Developments in Intraspinal Therapy

DR. OSCAR BERGHAUSEN, St. Louis: In the treatment of epidemic meningitis, no one who has followed the results carefully will dispute the advantages to be gained by the withdrawal of the spinal fluid and subsequent introduction of the specific serum in these patients. The mortality is now, roughly speaking, about 50 per cent. in public institutions, whereas formerly it was 75 per cent. The combined intravenous and intraspinal injection of antitetanic serum has the advantage of sending the serum to all parts of the body. The former enormous doses are not necessary. Much smaller amounts will suffice, if the serum is used both intraspinally and intravenously. In the treatment of syphilis of the central

nervous system, simple drainage of the subarachnoid space, or drainage plus the introduction of a normal serum, or a serum to which minimal amounts of salvarsan have been added, not to exceed from 0.1 to 0.5 mg., is a safe and sound procedure.

DISCUSSION

DR. HUGH T. PATRICK, Chicago: It is important that our serologic examinations should be made by men who are laboratory experts. We should not consider any evidence, however negative it may be, as evidence of cure. Any patient with syphilis who has been cured temporarily and has apparently become entirely well should be subjected to reexamination, not the ordinary clinical examination, but examination of the blood and also of the spinal fluid every six months for a considerable time.

DR. R. B. H. GRADWOHL, St. Louis: The whole question of the Wassermann reaction in the treatment of syphilis is a complicated one. While it is a very useful test as a diagnostic measure, as a prognostic measure, as a guide for treatment, we cannot always make deductions mathematically from it.

DR. F. B. WYNN, Indianapolis: The inunction treatment is the most effective form of mercurial treatment, although the injection treatment is the most popular.

Goiter from the Standpoint of the Pathologist

DR. LOUIS B. WILSON, Rochester, Minn.: Most of the malignant tumors of the thyroid have their origin in nodular adenomas which are usually passed over as benign. When we consider that the metastases from such cases are frequently in the lungs, and that both from the clinical and the gross anatomic standpoint they are difficult to distinguish from miliary tuberculosis of the lungs, I am convinced that many of them are diagnosed as the latter affection when in reality they are due to malignant neoplasms primary in the thyroid. Unless a necropsy is performed in such cases, the clinical diagnosis is of little value.

Goiter from the Standpoint of the General Practitioner

DR. GRANVILLE N. RYAN, Des Moines, Iowa: One must keep in mind constantly the individuality and personal equation of each patient. A complete and painstaking history is most essential. The parenchymatous varieties that occur in the young are the most amenable to medical treatment, if not of too long standing. If degeneration has occurred in a case of long standing, the case is a medical one until the damage is repaired and the patient is surgically fit. In hyperthyroidism, the end result desired can be attained only by team work.

Goiter from the Standpoint of the Laryngologist

DR. JOSEPH C. BECK, Chicago: The thyroid, so far as the laryngologist is concerned, is considered only when it produces pressure, causing either paresis or paralysis of the muscles supplied by the recurrent laryngeal nerve, or tracheal compression. Another aspect to be considered in cases of chronic infection of the upper respiratory tract producing a thyroid gland change is that of the toxemias acting on the autonomic nervous system, which changes the harmonic action of the various glands of internal secretion so as to produce thyroid disease. The advanced laryngologist, the laryngologist who has had a thorough training in general surgical principles, should encroach on this phase of surgery, especially when there are symptoms referable to the larynx and trachea.

The Heart in Goiter

DR. ROBERT H. BABCOCK, Chicago: The treatment of mechanical derangements is surgical. In the toxic form, the treatment must also be directed to the thyroid rather than to the heart, except in certain cases in which treatment of the heart condition is understood. Our usual medicaments, such as digitalis, exert very little effect on the goiter heart, sometimes actually increasing the discomfort from palpitation. Rest, mental and physical rest, in proper environment, and careful diet are, perhaps, the best measures to allay the unpleasant sensation of palpitation. I have found that in some cases tincture of aconite, in doses of from 20 to 30

minims, three or four times a day, considerably lessens the patient's sense of discomfort. On the whole, however, except so far as we may obtain some relief from the use of serum or preparations from thyroidectomized goats, the treatment is surgical.

Surgery of Exophthalmic Goiter

DR. HARRY G. SLOAN, Cleveland: Once the diagnosis of exophthalmic goiter is made, we advise operation. We put the patients to bed so that they may have absolute physical rest; we overfeed them, keep them in the fresh air as much as possible, and see that proper elimination from bowels and kidneys is obtained. The patient is given 10 grains of thyroid extract the evening before operation, and after operation 5 grains, every two hours, for the first day and a half. The body tissues have been depending on the secretion of the thyroid for some substance that aids in the oxidation of the waste product, and the sudden removal of the thyroid handicaps the organism until compensation takes place. Hence the substitution of thyroid extract. The immediate after-results vary with the severity of the disease and the length of time it has existed. All patients who recover after thyroidectomy are improved or permanently cured.

Nonsyphilitic Aortitis

DR. WILLARD C. STONER, Cleveland: It is accepted that acute infections, such as influenza and pneumonia, play no small part in producing aortitis. The intoxicants, such as alcohol, lead and tobacco, play some part, but no doubt alcohol is overestimated as a cause. Overeating as a cause of vascular hypertension and vascular disease cannot be overestimated. Anything that tends to overactivity of the suprarenals tends to vascular disease. Chronic foci of infection, such as bad teeth or tonsils, may be responsible for arterial change. Rheumatic fever may cause aortitis in association with valvular disease, and aortic changes are reported frequently as a result of typhoid. The question arises, What can be done for these patients? We cannot give them new aortas, but we can give them comfort. Absolute rest in bed for a period of time has a distinct value in the lowering of tension. All worry and strenuousness in life should be avoided. Encouragement of elimination and low protein diet should be advised, and if the patient is obese, weight should be reduced. Medicinally, iodids and nitrites are indicated. If the process is acute, direct therapy should be instituted for the general condition, bearing in mind that these patients are to be managed rather than treated.

The Value of the Complement Fixation Test in the Diagnosis of Incipient Tuberculosis

DR. R. B. H. GRADWOHL, St. Louis: The complement fixation test is absolutely specific for tuberculosis. It is not always present in all cases, and it seems to disappear when the process subsides. This test will be found a valuable addition to the diagnostic aids of the clinician. We have very few data on which to base a conclusion that negative reactions mean arrest of tuberculous processes. The observation of the patient over long periods of time must still remain the proper method of adjudicating this question.

Cancer Research in Switzerland.—The Swiss Cancer Research Association is appealing to the physicians of Switzerland to fill out a question blank which is being distributed to obtain data on mammary cancer. The appeal states that Switzerland is one of the countries where cancer is most prevalent, and cancer of the breast in particular seems to be on the increase. Physicians are asked to supply the data in regard to all the cases of mammary cancer encountered in the five years ending with 1915, cured or still under treatment at this date. For each response a fee of 40 cents is paid. Each physician who made out a death certificate during those years in a case of mammary cancer will be sent a question blank. The points to be specially noted are the influence of lactation, of preceding inflammatory affections or benign tumors, the influence of operative treatment on the prognosis in general and on metastasis in particular, and the actual value of roentgen and radioactive treatment.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Insanity, Baltimore

October, LXXIV, No. 2

- 1 Development of Personality. E. G. Conklin, Princeton, N. J.—p. 123.
- 2 Wider Field of Activity for Association. J. V. May, North Grafton, Mass.—p. 129.
- 3 Ought Limited Responsibility to be Recognized by Courts? C. P. Bancroft, Concord, N. H.—p. 139.
- 4 Need of Closer Relationship Between Psychiatry and Medical Schools. A. H. Ruggles, Providence, R. I.—p. 149.
- 5 Psychiatric Problems at Large. A. J. Rosanoff, Kings Park, N. Y.—p. 157.
- 6 Aims and Meaning of Psychiatric Diagnosis. A. Meyer, Baltimore.—p. 163.
- 7 Study of Self Accusation. E. D. Bond, Philadelphia.—p. 169.
- 8 Certain Clinical Aspects of Late Katatonia; Report of Cases. E. A. Strecker, Philadelphia.—p. 185.

American Journal of Syphilis, St. Louis

October, I, No. 4

- 9 *Syphilis of Pulmonary Artery: Aneurysm of Left Upper Division; Spirochaeta Pallida in Wall of Artery and Aneurysmal Sac. A. S. Warthin, Ann Arbor, Mich.—p. 693.
- 10 *Latent or Clinically Inactive Syphilis in Canal Zone. G. L. Qualls, Ancon, C. Z.—p. 712.
- 11 Comparison of Some of Important Phenomena in Syphilis and Tuberculosis. F. M. Pottenger, Monrovia, Calif.—p. 718.
- 12 Behavior of Lymphatic System in Syphilis. D. W. Montgomery, San Francisco.—p. 729.
- 13 Syphilis of Liver. H. L. McNeil, Galveston, Texas.—p. 738.
- 14 *Causes of Arterial Hypertension, with Special Reference to Syphilis—Clinical Inquiry. J. S. McLester, Birmingham, Ala.—p. 746.
- 15 Syphilis as Cause of Chronic Urticaria. H. H. Hazen, Washington, D. C.—p. 750.
- 16 Advisability of Prostatectomy in Presence of Cord Lesion: Report of Cases. E. S. Judd and W. F. Braasch, Rochester, Minn.—p. 752.
- 17 *Roentgen Diagnosis of Lung Syphilis. W. W. Watkins, Phoenix, Ariz.—p. 760.
- 18 Proposed Standardization of Wassermann Reaction. A. W. Stillians, Chicago.—p. 767.
- 19 *Wassermann Reaction in Four Hundred Cases Investigated by Group Study Methods. E. V. Knapp, San Francisco.—p. 772.
- 20 *Modified Wassermann Technic Based on Rapid Fixation of Complement Present in Human Serum. C. J. Bartlett and A. J. O'Shansky, New Haven, Conn.—p. 776.
- 21 Few Points on Public Prophylaxis against Syphilis. A. Ravogli, Cincinnati.—p. 788.
- 22 Technic of Complement Fixation Test for Syphilis. C. F. Craig, Leavenworth, Kan.—p. 802.

9. Syphilis of Pulmonary Artery.—Up to the present no positive pathologic evidence of the existence of a syphilitic atherosclerosis of the pulmonary artery has been produced. Warthin's case offers such positive evidence; and syphilis of the pulmonary artery is now put on the same basis as that of the aorta. The microscopic changes in the atherosclerotic pulmonary artery of this case show exactly similar changes to those found in the wall of definitely recognized syphilitic aortas. Given sections of this pulmonary vessel cannot be distinguished microscopically from given sections of syphilitic aortas. The evidence here speaks decidedly in favor of the view of the specific nature of this especial form of arterial change. From Warthin's experience he believes that atherosclerosis, either of the ordinary type or of the syphilitic type macroscopically, that shows on microscopic examination perivascular infiltrations of lymphocytes and plasma cells along the course of the vasa vasorum, most marked in the adventitia; and following the vessels in their course through the media toward the intima, with obliteration of the arterioles, new formation of capillaries, fibroblastic proliferation, fibrosis of intima and media, secondary hyaline change and atheroma, is specific in character, and is due to the localization of the *Spirochaeta pallida* along the vasa vasorum.

Macroscopically the picture presented by the affected artery may be that of ordinary atherosclerosis or of the type recognized at the present time as syphilitic mesaortitis. Syphilis cannot be ruled out by the naked eye appearances of the aorta or artery at the necropsy table; the necropsy diagnosis of syphilis, however, can be made on the macroscopic criteria of syphilitic mesaortitis, as given above. Aortas presenting

the gross picture of atherosclerosis may show on microscopic examination the most marked syphilitic infiltrations of the media and adventitia, and in Levditi blocks from the same the presence of spirochetes has been shown. The microscopic examination is the only method by which syphilis of a vessel can be determined; macroscopic appearances cannot be relied on. The gross appearances of the pulmonary artery in this case were those of atherosclerosis. Had it not been for the aneurysm present its syphilitic nature would not have been sought and demonstrated.

10. Latent Syphilis in Canal Zone.—From a total of 1,198 colored surgical patients seen by Qualls, 908 showed no evidence of syphilis or gave history suggestive of the disease; 297 showed active evidence of syphilis or gave histories indicating previous syphilitic infection. The Wassermann test survey shows 23.7 per cent. of the nonsuspects to be syphilitic, and 36.7 per cent. of the suspects to be syphilitic. A grand total syphilitic infection of 27 per cent. exists among all colored employees admitted to the surgical wards. The latent syphilitic infection among colored male employees in the Canal Zone is exceedingly high; 23.7 per cent., as compared with the white employees showing 2.3 per cent. The total syphilitic infection among the white surgical patients is 15 per cent.

14. Causes of Arterial Hypertension.—Of 678 patients seen by McLester 124 had arterial hypertension varying from 155 mm. to 200 mm. and over. The average age of these patients was 53.75 years. Thirty-three patients gave a history of typhoid, 14 of pneumonia, 3 of yellow fever and 3 of recent scarlet fever. Only 6 patients admitted the excessive use of alcohol. The heart was enlarged in 67 instances, about 50 per cent. Albumin alone was found in the urine in 29 instances, and both albumin and casts in 61, or 50 per cent. of the cases. It is unfortunate that the phenolsulphonephthalein test of kidney function was made in only 11 of these, the average excretion in two hours being 49 per cent. The urine of 10 patients, 8 per cent. of the whole group, contained sugar. Among the focal infections were noted: 4 instances of diseased tonsils, 4 of infection of the accessory nasal cavities, 42 of diseased teeth (35 per cent.), 4 of chronic appendicitis, and 5 each of gallbladder and urinary tract infections. Twenty-one patients, or 17.5 per cent., gave a positive Wassermann reaction. Of the entire series of 678 patients 16.5 per cent. gave a positive Wassermann reaction.

17. Roentgen Diagnosis of Lung Syphilis.—Observations made by Watkins on approximately 1,000 chest roentgenograms justify the assertion that not fewer than 15 per cent. of tuberculous patients have also a syphilitic infection.

19. Wassermann Reaction in Four Hundred Cases.—The 400 cases studied by Knapp showed that men are five times more frequently syphilitic than women; that the central nervous system leaves demonstrable traces of the disease in 50 per cent. of the cases; that most of the cerebrospinal syphilis cases are in the male division; that the most important single method of examination for syphilis is the physical examination, the Wassermann second and the history least. The most convincing clinical diagnosis is when physical examination, Wassermann and history are all positive, the next in importance where two are positive and one negative, and the least where but one gives positive evidence.

Boston Medical and Surgical Journal

November 8, CLXXVI, No. 19

- 23 Physician's Impressions of Florida. W. L. Johnson, Uxbridge.—p. 647.
- 24 Tuberculosis in Dairy Cattle. C. M. Hilliard, Boston.—p. 654.
- 25 Danger to Children from Tuberculosis in Cattle. R. M. Smith, Boston.—p. 657.
- 26 Starting Health Habits in Childhood. L. P. Loring, Prides Crossing.—p. 659.
- 27 Community Health and Tuberculosis Demonstration at Framingham. D. B. Armstrong, Framingham.—p. 660.
- 28 County Tuberculosis Hospitals; Report of Progress. E. R. Kelley, Boston.—p. 663.
- 29 What Becomes of Discharged Consumptives? B. M. Billings, Boston.—p. 664.
- 30 Annual Report of Massachusetts Antituberculosis League, 1917. S. H. Stone, Boston.—p. 667.

Journal of Experimental Medicine, Baltimore

November, XXVI, No. 5

- 31 *Relation of Spinal Cord to Spontaneous Liberation of Epinephrin from Suprarenals. G. N. Stewart and J. M. Rogoff, Cleveland.—p. 613.
- 32 *Effect of Stimulation of Sensory Nerves on Rate of Liberation of Epinephrin from Suprarenals. G. N. Stewart and J. M. Rogoff, Cleveland.—p. 637.
- 33 Bactericidal Fluorescence Excited by Roentgen Rays. H. S. Newcomer, Philadelphia.—p. 657.
- 34 Hemolysins of Vegetable Origin. I. L. Kritchevsky, Moscow, Russia.—p. 669.
- 35 *Development of Toxicity in Intestinal Secretion. D. M. Davis and H. B. Stone, Baltimore.—p. 687.
- 36 Comparative Study of Serum and Lymph Ferments After Feeding. B. F. Davis and W. F. Petersen, Chicago.—p. 693.
- 37 Comparative Study of Lymph and Serum Ferments During Protein Shock Reactions. B. F. Davis and W. F. Petersen, Chicago.—p. 699.
- 38 *Glomerulonephritis. An Attempt to Produce Glomerulonephritis by Repeated Injections of Bacteria. H. K. Faber and V. Murray, San Francisco.—p. 707.
- 39 *Interrelation of Surviving Heart and Pancreas of Dog in Sugar Metabolism. A. H. Clark, Baltimore.—p. 621.
- 40 *Carriage of Virus of Poliomyelitis with Subsequent Development of Infection. E. Taylor and H. L. Amoss, Burlington, Vt.—p. 745.

31. Relation of Spinal Cord to Spontaneous Liberation of Epinephrin.—After section of the spinal cord in cats in the cervical region, as low as the last cervical segment, epinephrin continues to be liberated from the suprarenal glands. This liberation has all the characters of the normal secretion with intact central nervous system. It is sustained through the same nerve paths connecting the cord with the suprarenals. After section of the cord in the middorsal region the spontaneous liberation of epinephrin from the suprarenals is abolished within the limits of detectability by the methods employed (denervated eye reactions of Meltzer, and rabbit intestine and uterus segments). The portion of the cord concerned in the liberation of epinephrin does not appear to extend much below the third thoracic segment. In acute experiments on cats under urethan anesthesia no change in the rate of liberation of epinephrin which could be detected by the tests employed, was observed when the cord was severed in the cervical region.

32. Effect of Stimulation on Rate of Liberation of Epinephrin.—An attempt was made to determine whether stimulation of afferent nerves (sciatic and brachial) produced a detectable increase in the rate of liberation of epinephrin from the suprarenals, as determined by testing suprarenal vein blood on rabbit intestine and uterus segments. The result was negative.

35. Toxicity of Intestinal Secretion.—Davis and Stone assert that intestinal secretion collected by the method described in this paper is nontoxic when fresh. This secretion, when heated immediately to 90 to 95 C. and kept sterile, remains nontoxic. This secretion when not heated remains nontoxic when kept under chloroform and toluene, even if incubated at 37 C. This secretion when not heated, but collected in a sterile flask, becomes toxic on incubating eighteen hours, producing symptoms like those of closed loop fluid. The secretion, when treated with chloroform and toluene, and later incubated for eighteen hours, after these preservatives have been removed by distillation at 60 C., does not produce lesions typical of closed loop fluid.

38. Attempt to Produce Glomerulonephritis by Injections of Bacteria.—Repeated injections into the blood stream of streptococci and staphylococci derived from cases of scarlet fever, and of *Bacillus coli-communior* failed to produce typical glomerulonephritis even when immune bodies could be demonstrated in the serum in high dilutions. Bacteriolysis of streptococci was not found by the usual tests in vitro or by the Pfeiffer procedure.

39. Heart and Pancreas in Sugar Metabolism.—When the pancreas of a dog is perfused aseptically with a Locke's solution containing dextrose in physiologic concentrations, the optical rotation of the perfusate is diminished, but its reducing power is unaltered. This change also occurs if dextrose is added to a sugar-free pancreatic perfusate and the mixture incubated. These perfusates yield osazones with lower melting points than glucosazone, but when the per-

fusates are hydrolyzed with weak acid their optical rotations and the melting points of their osazones are increased. These changes do not occur with levulose, or with an extract of the pancreas and dextrose. When the heart, spleen or kidneys are perfused with dextrose solutions, hydrolysis of the perfusates does not increase their optical rotation or power of reduction. When a pancreatic perfusate containing dextrose is circulated through a living heart, not only do the above changes take place but, in addition, the reducing properties of the perfusate are altered. Hydrolysis of such a perfusate increases its reducing power, its optical rotation, and the melting point of its osazone. A heart does not cause this effect either alone or when perfused together with the spleen or kidneys. Levulose perfused through the heart and pancreas is unchanged. These phenomena are believed to be due to an enzyme or enzymes obtained from the perfused pancreas. The changes in optical rotation, in reduction, and in the osazones are accounted for by different degrees of dextrose condensation. While the living heart can destroy both dextrose and levulose to some extent, the experimental results suggest that the enzyme or enzymes derived from the perfused pancreas have a specific action on dextrose and are responsible for certain essential steps by which dextrose is prepared for normal utilization.

40. Carriage of Virus of Poliomyelitis.—A family group containing four children of whom all showed in varying degree symptoms of poliomyelitis is described by Taylor and Amoss. The source of infection and periods of incubation have been followed. Two of the children were proved by inoculation tests to carry the virus of poliomyelitis in the nasopharynx. Of these, one was detected to be a carrier after recovering from a nonparalytic attack of the disease, and the other was discovered to be a carrier about five days before the initial symptoms, attended later by paralysis, appeared. The original case from which the three others took origin was fatal; the youngest child, after quite a severe onset, was treated with immune serum and made a prompt and almost perfect recovery. The nasopharyngeal secretions of two of the patients, taken one month after the attack, proved incapable of neutralizing an active poliomyelitis virus. The proposition is presented that every case of poliomyelitis develops from a carrier of the microbic cause, or virus, of poliomyelitis.

Journal of Immunology, Baltimore

October, II, No. 6

- 41 *Anaphylaxis in Dogs. The Liver in Shock and in Peptone Poisoning.—R. Weil, New York.—p. 525.
- 42 Tissue Transplantation and Anaphylaxis. L. Loeb, Washington, D. C.—p. 557.
- 43 Anaphylactic Reactions of Isolated Dog's Liver. R. Weil and C. Eggleston, New York.—p. 571.
- 44 New Method for Making Wassermann Antigens from Normal Heart Tissue. C. A. Neymann and L. T. Gager, Baltimore.—p. 573.

41. Liver in Shock and Peptone Poisoning.—Weil found that blood taken from dogs at the height of anaphylactic shock fails to produce any symptoms when injected, even in very large amounts, into normal animals, indicating that the blood does not contain any toxic substance. The isolated liver of a sensitized dog does not alter the coagulability of blood with which it is perfused; if, however, the antigenic substance is added to the blood before it traverses the organ, it passes out with its coagulability either diminished or completely abolished. The normal liver exercises no such effect. The injection of the antigenic substance, even in very small amount, into one branch of the portal vein of a sensitized dog produces an immediate severe congestion of the corresponding lobe of the liver. The blood rapidly becomes incoagulable, and symptoms of shock develop. Subsurface injection of the antigen into the sensitized liver produces a local focus of congestion. The postmortem examination of dogs dying in acute anaphylactic shock, within one hour, reveals as the single outstanding feature the enormous congestion of the liver. The other abdominal viscera show either very little congestion or none. The marked congestion of the gastro-intestinal tract in dogs dying after an interval of several hours is a late phenomenon, probably secondary to the

congestion of the liver. Microscopic examination shows intense congestion of the liver, and degenerative changes in the parenchyma cells. Peptone affects the liver in exactly the same fashion as does anaphylaxis. The isolated organ, when perfused thereby, renders the blood incoagulable. Injection into one branch of the portal vein induces a localized area of hepatic congestion. The peptone theory of hepatic shock maintains that peptones are produced during the anaphylactic reaction, and that they are directly responsible for the symptoms. There are no experimental observations which establish this theory. It is based chiefly on the resemblances between peptone intoxication and anaphylactic shock, and these are adequately explained by the fact that in both conditions the same hepatic mechanism is affected. The peptone theory cannot be harmonized with the experimental data recorded in this paper. These results introduce a new function of the liver, namely, its participation in the immune reaction.

Journal of Laboratory and Clinical Medicine, St. Louis

October, III, No. 1

- 45 *Bearing of Antityphoid Vaccination on Diagnostic Value of Agglutination Test in Typhoid and Paratyphoid. E. Rist.—p. 1.
- 46 *Antibodies in Gonococcal Arthritis After Intravenous Injection of Specific and Nonspecific Protein. H. Culver, Chicago.—p. 11.
- 47 *Blood and Urine Ammonia in Acidosis. H. L. McNeil and M. D. Levy, Galveston, Texas.—p. 18.
- 48 *Infectious Meningitis. Study of Twenty-Seven Cases in Five Hundred and Eighty-Six Necropsies. S. Graves, Louisville, Ky.—p. 32.
- 49 *Prevention of Simple Goiter in Man. D. Marine and O. P. Kimball, Cleveland.—p. 40.
- 50 *Transplantation of Thymus in Rabbits—Relation of Thymus to Sexual Maturity. D. Marine and O. T. Manley, Cleveland.—p. 48.
- 51 *Complement Fixation Test in Tuberculosis with Besredka's Antigen. J. Bronfenbrenner, Boston.—p. 50.
- 52 Case of Congenital Cystic Kidney in which Tuberculous Process was Superimposed. P. G. Woolley, Cincinnati.—p. 55.
- 53 Effect of Natural Antisheep Hemolysin Content of Human Serum on Complement Fixation Tests. A. I. van Saun, Albany, N. Y.—p. 59.
- 54 *Wassermann Reaction with Large Amounts of Patient's Serum. A. I. van Saun, Albany, N. Y.—p. 61.
- 55 Method for Making Graphic Records of Movements of Certain Internal Organs. D. E. Jackson, St. Louis.—p. 63.
- 56 *Simple Method of Obtaining Blood Serum. M. G. Wohl, Omaha.—p. 68.

45. Antityphoid Vaccination and Agglutination Test.—The total number of quantitative tests performed by Rist from February to November, 1915, amounted to 11,648. He found that in nonvaccinated individuals the agglutination test is of the greatest practical value for diagnosing infection caused by the bacilli of the typhoid group. But, when it comes to discriminate between the three subspecies belonging to that group, the information given by the Widal test should be accepted with great caution. A predominance of the agglutination titer of *B. paratyphoid* A or B speaks almost certainly in favor of *B. paratyphoid* A or B. But if the agglutination titer of *B. typhosus* predominates, the probability of the disease being due to *B. typhosus* is only 73.3 per 100. In individuals having been previously vaccinated against *B. typhosus*, the agglutination test is absolutely unable to confirm a clinical diagnosis of typhoid. The behavior of the agglutination titer in vaccinated typhoid or paratyphoid patients is not distinguishable from the behavior of the same titer in vaccinated individuals suffering from any other disease. In a case of clinically confirmed typhoid occurring in a previously vaccinated individual, the agglutination test has a practical diagnostic value whenever it shows a constant predominance of the agglutination titer for one of the paratyphoid germs. But this is a very rare finding. In the greater majority of cases the agglutinating titer for *B. typhosus* predominates. It has no diagnostic value, the probability of mistaking paratyphoid for typhoid being slight. Blood culture is therefore the only reliable method to ascertain whether a typhoid infection occurring in a vaccinated person is due to *B. typhosus* or to one of the paratyphoid germs.

46. Antibodies in Gonococcal Arthritis After Protein Injection.—It is shown by Culver that primary and secondary proteose preparations stimulate antibody production or mobilization for specific organisms in gonococcal arthritis in a

manner not to be distinguished from that produced by the injection of the specific organisms themselves. In gonococcal arthritis there is either no change or a decrease in the antibody content of serum within the first twenty-four hours following an intravenous injection in all excepting the first injection when the lytic substances seem to be slightly increased during this time. In favorable patients the first injection usually causes the greatest clinical benefit. However, refractory patients may give a similar lysin increase during the first twenty-four hours following an injection; hence the subjective and objective improvement in favorable cases cannot unquestionably be attributed to an increase in antibodies alone.

47. Blood and Urine Ammonia in Acidosis.—During the course of routine analyses for urea of the blood of a chronic alcoholic, who was suffering from repeated periodic attacks of nausea and vomiting of unknown etiology, an estimation of his blood ammonia was made, and it showed an ammonia content of 23 mg. of ammonia per hundred cubic centimeters blood. Similar analyses were made in cases of nephritis, cardiac failure, chronic diseases of the liver, toxemias of pregnancy and acidosis. Increases of blood ammonia of above 1 mg. per hundred cubic centimeters are occasionally encountered in various diseases. Such increases cannot be explained by acidosis in all cases. The fact that nine cases showing marked increases (over 3 mg. per hundred cubic centimeters), which have come to necropsy, have shown definite hepatic lesions would suggest some connection between increased blood ammonia and functional insufficiency of the liver. The fact that of ten chronic and subacute cases of inflammatory disease of the liver studied only one has shown an increase of blood ammonia would indicate acute functional insufficiency of the liver cells rather than acute or chronic inflammatory changes in the liver parenchyma as the source of any blood ammonia increase.

48. Infectious Meningitis.—The most important lesson to be drawn from this study concerns lumbar puncture and spinal fluid. Correct antemortem diagnoses were established in 100 per cent. of cases in which proper lumbar punctures and spinal fluid examinations were made. Correct antemortem diagnoses were not established in 70 per cent. of cases in which proper lumbar punctures and spinal fluid examinations were neglected. Graves advises that in drawing spinal fluid the second portion should always be collected in a separate, clean, dry, sterilized test tube. Any blood in the specimen to be examined renders findings unreliable, wastes time and material and may lead to incorrect conclusions.

49. Prevention of Simple Goiter.—In a complete census taken by Marine and Kimball of the condition of the thyroid in the girls from the fifth to twelfth grades of the school population of a large community in the Great Lakes goiter district, it was found that 1,688, or 43.59 per cent., had normal thyroids; 2,184, or 56.41 per cent., had enlarged thyroids; and 594, or 13.4 per cent., had well defined, persistent thyroglossal stalks. The community lies near the southern edge of the goiter district and it is suggested that communities near the lakes would show a higher incidence. The following method of prophylaxis proposed is in operation. For the prophylactic treatment the authors have selected sodium iodid on the grounds of economy and ease of administration. One mg. of iodine given weekly, by mouth, is ample to prevent goiter in dogs. In all their dispensary experiments with children the authors used either syrup of hydriodic acid or syrup of ferrous iodid, in 1 c.c. doses, daily for two to three weeks, repeated twice yearly. They have, therefore, arbitrarily selected to use 2 gm. sodium iodid, given in 0.2 gm. doses each school day, for each pupil in fifth, sixth, seventh and eighth grades; and 4 gm. given in 0.4 gm. doses each school day for each pupil in the ninth, tenth, eleventh and twelfth grades. These amounts will be given twice annually about the first of May and December, at the schools by the teachers or nurses. These amounts of sodium iodid provide approximately 1,700 (1,692) mg. of iodine for each pupil of the fifth, sixth, seventh and eighth grades and approximately 3,400 (3,384) mg. for the ninth, tenth, eleventh and twelfth grades.

50. Transplantation of Thymus.—The preliminary experiments reported on by Marine and Manley show that in sexually immature rabbits, fragments of thymus autotransplanted into the subcutaneous tissue of the abdomen after thymectomy may "take," grow and survive. There is clear though scant evidence in confirmation of other observers' results, that thymus removal hastens sexual maturity. Also, as others have found, utilization of rabbits for breeding hastens involution of the thymus. The authors' experiments show that this applies to the transplanted thymus as well, and this suggests that a specific nerve influence is not essential for these involutionary changes.

51. Besredka's Antigen in Tuberculosis Complement Fixation Test.—As for the percentage of the occurrence of the reaction in different stages of tuberculosis when a purified antigen of Besredka is used, Bronfenbrenner presents these approximate figures: first stage, 84 per cent.; second stage, 94 per cent.; third stage, 15.3 per cent.; clinically nontuberculous (controls), nonsyphilitics, 5 per cent. The question of surprisingly low percentage of positive results in far advanced cases was especially investigated. In addition to the Besredka antigen, Bronfenbrenner examined a large group of such cases (from Leech Farm, Pittsburgh), with the antigens of Craig, Corper and Calmette, and more recently also with antigen of Miller. Although it was possible to observe a slight variation in the results obtained with respective antigens, in general they reacted no better than that of Besredka.

54. Wassermann Test with Large Amounts of Serum.—The use of a large amount of serum does not, in van Saun's experiences, change a serum giving a negative reaction to one giving a positive if a double serum control (0.8 c.c.) is used and the result of the test read only when this control is completely hemolyzed. In a number of tests she has found that the 0.4 c.c. control has been extremely slow to hemolyze, and has occasionally fixed complement completely. This result appears to point to a lack of specificity in a test depending on this amount of diagnosis. Van Saun does not consider the Kromayer modification a safe method to use for the practical examination of large numbers of serums.

56. Simple Method of Obtaining Blood Serum.—Wohl describes his method as follows: Place a small piece of paraffin (0.5 gm. is sufficient for an ordinary 6 inch serologic test tube) into a container that is ready for sterilization, cork it and sterilize it. On removal of container from sterilizer roll it so as to cover its walls with the paraffin. It takes only a few minutes until the thin film of paraffin is hardened. To clean the container, rinse it with cold water until all the blood is removed, melt the paraffin and pour off. The excess of paraffin is removed by means of a gauze applicator.

Medical Record, New York

November 10, XCII, No. 19

- 57 Breast Feeding. M. S. Reuben, New York.—p. 793.
- 58 New Faradic Current Test for Incipient Cancer of Breast. G. B. Massey, Philadelphia.—p. 803.
- 59 Significance of Pyrexia in Infants. W. W. Harper, Selma, Ala.—p. 805.
- 60 Advancement in Obstetrics. M. T. Benson, Atlanta, Ga.—p. 805.
- 61 Capillary Caliber and Its Relation to Normal and Diseased States. W. V. Gage, Worland, Wyo.—p. 808.

Nebraska State Medical Journal, Norfolk

October, II, No. 10

- 62 Few Practical Points in Clinical Interpretation of Wassermann Reaction and Its Value in Lesions of Stomach. M. G. Wohl, Omaha.—p. 445.
- 63 Popular Consideration of Syphilis. F. E. Coulter, Omaha.—p. 451.
- 64 Intraspinal Medication in Syphilis. E. Kelly, Omaha.—p. 454.
- 65 Dementias of Young. B. F. Bailey, Lincoln.—p. 458.

New York Medical Journal

November 10, CVI, No. 19

- 66 Some Aspects of Military Surgery. H. B. Barling.—p. 869.
- 67 Repair of Flatfoot, Broken Arch, or Rheumatism of Feet, Especially in Recruits. J. M. Taylor, Philadelphia.—p. 872.
- 68 Traumatic Hysteria. C. P. Oberndorf, New York.—p. 874.
- 69 Clinical Observations from Study of Three Hundred and Seventy-One Cases Presenting Symptoms of Nephrolithiasis. R. F. O'Neil, Boston.—p. 876.
- 70 Factors of Race Improvement. C. L. Redfield, Chicago.—p. 882.
- 71 Case of Amaurotic Family Idiocy. J. Epstein, New York.—p. 887.
- 72 Some Functional Inefficiencies of Teeth Associated with Occlusal Anomalies. M. Hellman, New York.—p. 889.

Philippine Journal of Science, Manila

July, XII, Sec. B, No. 4

- 73 *Degeneration of Peripheral Nerves. C. Manalang, Manila.—p. 169.
- 74 Disappearance of Pigment in Melanophore of Philippine House Lizards. E. S. Ruth and R. B. Gibson, Manila.—p. 181.
- 75 *Essential Factor in Treatment of Pregnant Cholera Patients. P. McC. Lowell, Manila.—p. 191.
- 76 Echinostoma Ilocanum (Garrison): Report of Five Cases and Contribution to Anatomy of Fluke. J. S. Hilario and L. D. Wharton, Manila.—p. 203.

73. **Degeneration of Peripheral Nerves.**—The object of Manalang's work is to determine the presence of degeneration in the peripheral nerves of diseases other than beriberi and to emphasize the presence of the degeneration in non-beriberics. In a mixed necropsy service in Manila 88 out of 104 cases showed microscopically degeneration of the peripheral nerves by the Marchi method. Of these 88 cases the degeneration was slight in 55, moderate in 29, and marked in 4. Of the 88 cases of nerve degeneration more than half (49) occurred between the ages of 20 and 50 years, but no age was exempt. Of the 88 cases of nerve degeneration there was nephritis of some form in 69. Manalang found that the condition of nutrition is not an important factor in determining the nerve degeneration, and a reasonable interval (two to forty-eight hours) between death and necropsy does not necessarily mean a sequential myelin sheath change, as demonstrated by the Marchi method. (These bodies were kept at a temperature just above freezing.) With the knowledge that this study was made from a routine necropsy service in Manila and that the subjects were all Filipinos, the following factors must be taken into consideration in attempting to explain the occurrence of degeneration in 88 out of 104 cases studied. In Manila beriberi is endemic, and therefore there is the possibility of many persons with unrecognized mild beriberi dying of other diseases. There may be many patients who recovered from beriberi and died of other diseases. The nutrition of the working class of Filipinos in general is below par, due to insufficient food, excessive non-nutritious food, or a one-sided diet.

75. **Treatment of Pregnant Cholera Patients.**—The essential factor in the treatment of pregnant cholera patients according to Lowell is to remove the dead fetus as soon as possible and in the manner best suited to the mother's condition, because it shortens the period of convalescence, preserves the strength of the mother, and reduces the mortality to about that of the nonpregnant cases.

Southern Medical Journal, Birmingham, Ala.

November, X, No. 11

- 77 Acidosis in Children. F. H. Smith, Abingdon, Va.—p. 839.
- 78 Albuminate of Copper as Intravenous Antiseptic. J. S. Fleming, Memphis, Tenn.—p. 845.
- 79 Hirschsprung's Disease; Report of Case. R. W. Baird and G. C. Kindley, Dallas, Texas.—p. 846.
- 80 Two Cases of Swallowing Seven and a Half Grain Tablet of Bichlorid of Mercury. I. L. Van Zandt, Fort Worth, Texas.—p. 848.
- 81 Public Health and Government. E. G. Williams, Richmond, Va.—p. 850.
- 82 County Method of Handling Tuberculosis. D. C. Absher, Henderson, N. C.—p. 852.
- 83 Saving Sight—Saving Citizens. G. L. Berry, New York.—p. 857.
- 84 *Exstrophy of Bladder with Report of Transplantation of Entire Bladder and Ureteric Openings into Sigmoid. W. D. Haggard, Nashville, Tenn.—p. 862.
- 85 Unusual Case of Extra-Uterine and Abdominal Pregnancy. L. C. Fischer, Atlanta, Ga.—p. 866.
- 86 Treatment of Tetanus. J. H. Neff, Charlottesville, Va.—p. 868.
- 87 Roentgen Ray Diagnosis of Pathologic Gallbladder. G. M. Niles, Atlanta, Ga.—p. 873.
- 88 Indian Operation for Cataract. F. B. Tiffany, Kansas City, Mo.—p. 876.

84. **Exstrophy of Bladder.**—Haggard's patient made an uninterrupted recovery, passing a normal quantity of urine through the catheters, which protruded from the rectum and which were left in place for four days. After that time the patient passed the urine through the rectum at frequent intervals, which have gradually lengthened, until now at the end of three years she is able to retain the urine from three to four hours by day and from five to six hours at night.

There has never been any leakage whatever. The anterior wound healed over completely. Her general health is unimpaired.

Southwestern Medicine, El Paso, Texas

October, I, No. 10

- 89 Blood Picture as Aid to Prognosis and Treatment in Tuberculosis. R. E. Thomas, Phoenix, Ariz.—p. 9.
- 90 Rollier's Method in Treatment of Pott's Disease. J. W. Flynn, Prescott, Ariz.—p. 11.
- 91 Military Surgeon. H. A. Ingalls, Roswell, N. M.—p. 14.
- 92 Roentgen Therapy and Tubercular Lesions. J. W. Cathcart, El Paso.—p. 18.
- 93 Autosensitized Serobacterin. W. O. Sweek, Phoenix, Ariz.—p. 21.
- 94 Dentistry's Share in Preparedness. E. P. Tignor.—p. 25.

South Carolina Medical Association Journal, Greenville

October, XIII, No. 10

- 95 Roentgen Ray Diagnosis of Chronic Appendicitis. A. R. Taft, Charleston.—p. 693.
- 96 Use of Dakin's Solution in Gangrenous Endometritis, Following Puerperal Sepsis. B. J. Workman, Charleston.—p. 704.
- 97 Uterine Evacuators, Elective and Enforced. Cesarean and Porro Operations. Report of Cases. S. O. Black, Rochester, Minn.—p. 707.
- 98 Postgraduate Course in Anatomy at Home. W. F. R. Phillips, Charleston.—p. 710.

Vermont Medicine, Rutland

October, II, No. 10

- 99 Diagnosis. C. H. Beecher, Burlington.—p. 233.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

October, XXII, No. 5

- 1 Electrotherapy in Military Hospitals. N. H. M. Burke.—p. 130.
- 2 Treatment of Wounded by Means of Electricity. H. J. Seeuwen.—p. 136.
- 3 Shrapnel Balls; Their Roentgen Ray Characteristics Compared with Bullets and Other Foreign Bodies. A. H. Pirie.—p. 138.

British Medical Journal, London

October 27, II, No. 2965

- 4 Harvey's Work Considered in Relation to Scientific Knowledge and University Education in His Time. R. Saundby.—p. 543.
- 5 *New Operation for Cure of Inguinal Hernia.—A. J. Hull.—p. 548.
- 6 Modern Artificial Limbs and Their Influence on Methods of Amputation. E. M. Little.—p. 550.
- 7 How to Attach an Artificial Arm or Leg. R. C. Elmslie.—p. 553.

5. **New Herniotomy.**—The operation described by Hull aims to remove the sac at the highest possible level with the minimum disturbance of tissue. No dissection of tissues is undertaken, or injuring the delicate or important structures which surround a hernial sac by attacking the hernia from within the sac. Under local anesthesia an incision from half an inch to an inch in length is made and carried down to the aponeurosis of the external oblique. The fibers of the external oblique are split for a distance of half an inch. The opening in the external oblique should lie directly over the spermatic cord. The cremasteric and spermatic fascial coverings of the cord are drawn through the aperture of the external oblique. The cremasteric fibers are separated and the spermatic fascia incised. Two pairs of fine hemostatic forceps are placed on the edge of the sac, and an incision half an inch in extent, made between them by a snip of a pair of scissors. The two layers of the sac forming the lips of the aperture are now clipped with hemostatic forceps. The aperture can now be held open by four pairs of forceps, and four incisions are made, one between each pair of forceps, enlarging the aperture sufficiently to display the interior. If omentum lies in the sac it is drawn out, ligatured, and cut off. This interior of the sac presents for examination two apertures, one the internal ring passing into the abdomen, the other passing down the inguinal canal. These apertures are separated from one another by a process of peritoneum, the crista which corresponds to the internal margin of the internal ring. The neck of the sac is exposed and freed without

dissection. A gauze swab is gently passed down the outer and inner side of the sac. A gentle pull is made on the neck of the sac while it is ligatured as high up as possible. It is unnecessary and undesirable to perform any displacing maneuver to the neck of the sac. When the sac is cut off distal to the ligature, the elasticity of the peritoneum will displace the ligatured sac well behind the rectus muscle. In 90 per cent. of cases this is all that it is necessary to do, and the skin incision is sutured with silkworm gut passing down to, and taking up the edge of the external oblique.

Indian Medical Gazette, Calcutta

September, LII, No. 9

- 8 Ulcerating Granuloma of Pudenda. D. F. Curjel.—p. 305.
- 9 Plea for Painless Childbirth in India. C. Webb-Johnson.—p. 310.
- 10 Early Diagnosis of Leprosy. C. L. Palk and R. Bryson.—p. 316.
- 11 Treatment of Kala-Azar with Antimony Tartrate. E. Muir.—p. 317.
- 12 Treatment of Kala-Azar and Some Blood Reactions in This Disease. U. N. Brahmachari.—p. 319.
- 13 Intravenous Eusol in Plague. W. F. Brayne.—p. 322.
- 14 Quinin Idiosyncrasy in Five Cases. J. A. Sinton.—p. 323.

Lancet, London

October 27, II, No. 4913

- 15 Harvey's Work Considered in Relation to Scientific Knowledge and University Education in His Time. R. Saundby.—p. 633.
- 16 *Treatment of Trench Feet and Allied Conditions by Bier's Method of Passive Hyperemia. P. Turner.—p. 638.
- 17 *Treatment of Series of Recently Inflicted War Wounds with Flavine. H. Drummond and J. W. McNee.—p. 640.
- 18 Ether-Oil Anesthesia by Rectum. H. M. Page and G. B. M. White.—p. 643.
- 19 Cartilage Prosthesis for Eye. J. L. Aymard.—p. 644.
- 20 Departmental Committee on Welfare of Blind. A. Lawson.—p. 654.

16. **Trench Feet Treated by Passive Hyperemia.**—Turner's experience with this form of treatment has been satisfactory to him. In slight and moderate cases the swelling of the foot has usually disappeared in twenty-four or forty-eight hours after the application of the bandage. In severe cases it may persist longer. Pain improves rapidly, and in twenty-four hours has either disappeared or has markedly diminished. Anesthesia improves steadily, but not so rapidly. In a moderate case with anesthesia of all the toes and of the greater part of the dorsum of the foot the sensation will probably be normal in four days, with the exception of blisters and gangrenous spots where the sensation is naturally still deficient. In cases of moderate severity blisters and the gangrenous areas shrivel, dry up, and eventually separate, leaving an unbroken delicate pink skin underneath. Not infrequently there is an extensive desquamation of the skin of the affected part, sometimes of practically the whole foot. In extensive cases, after the separation of dried blisters, gangrenous spots, and epithelial scales, there is left a surface of thin, pink, soft skin resembling a baby's foot. This is naturally very tender, and though the patient can walk in soft shoes, boots cannot be worn until the thin skin has become hardened and accustomed to pressure. Turner regards this desquamation and separation of dried gangrenous areas as part of the natural process of cure in these cases of moderate severity, and thinks that the treatment by passive hyperemia considerably accelerates the process. In slight cases, as soon as pain, swelling and anesthesia have disappeared, usually after four or five days, the patient is allowed to walk in soft shoes. Then after two days boots are worn at first for half an hour daily. This period is gradually increased until the boots can be worn for two hours without discomfort, when the man is discharged to the convalescent dépôt. In moderate cases the procedure is the same. A longer period is, however, required before walking is possible and before boots can be worn. Severe cases always require evacuation to England.

17. **War Wounds Treated with Flavine.**—This is the authors' report to the medical research committee. Flavine was tested out by Drummond and McNee clinically as well as in the laboratory. Seventy patients, many having multiple injuries, were treated. The flavine was at first employed in a strength of 1 in 1,000, the dilution being made in normal saline solu-

tion, in which the powder is readily soluble. This routine was soon given up, however, as it was found that equally good results ensued if the use of 1 in 1,000 solution for the first dressing was followed by the employment of a solution 1 in 5,000 for all subsequent applications. In some cases, also, where the Carrel method of irrigation was being used, the strength of the solution was further reduced to 1 in 10,000. The surgical methods adopted depended on the type of injury met with. Long incisions, with free excision of damaged muscle and fascia, must be regarded as a cardinal part of all operative treatment in recent wounds, no matter what subsequent methods are employed. After this preliminary surgical treatment the wounds treated with flavine were dealt with in the following ways: 1. Primary suture. 2. Drainage by tube or gauze strip, followed by secondary suture. 3. The Carrel method of intermittent irrigation. 4. Gauze packing in open wounds. Wounds treated by excision of the infected and damaged tissue, followed by primary suture, gave excellent results.

Secondary suture gave good results in all the cases in which it was adopted. In open wounds on removal of the first dressing on the third day the wound, except for being deeply stained with flavine, has undergone no alteration whatever in its appearance, and resembles an injury only a few hours old. All signs of inflammation are wanting, and there is no pain, redness, swelling, or induration in the tissues around. The secretion from the wound is minimal in amount and suppuration is absent. The complete absence of suppuration, even in wounds where films show abundant organisms to be present, is a noteworthy feature in wounds under treatment with flavine. When dressed again at the end of a week the skin edges are found clean cut, no epithelial growth having taken place from the edges. The floor of the wound has by this time become covered by a closely adherent membrane, only detached with difficulty from the underlying structures. This yellow pellicle forms over whatever tissue is exposed in the wound, whether it be muscle or subcutaneous fat. Experience has shown that a wound heals with much greater rapidity if the flavine be stopped after three or four days in the case of small wounds, and after about a week in the case of severe wounds or compound fracture.

Flavine appears to have many advantages as a primary treatment of recent war wounds. Among the advantages are: (a) The absence of all toxicity, even in large wounds. (b) The prevention of suppuration and of spreading sepsis. (c) The primary dressing need not be changed for two or three days, and is then easily and painlessly removed. This may be of great advantage during severe fighting where rapid evacuation of wounded from front to base is required without unnecessary dressing of the wounds. (d) The wounds are not inflamed or painful, and the surrounding skin is never irritated. Flavine cannot be classed as a success in the treatment of the later stages of war wounds. The wounds tend to assume a stagnant condition, during which the processes of repair are almost in abeyance. After a few days, when the danger of gas gangrene and of spreading sepsis have to a great extent passed off, flavine should be stopped and another treatment adopted. In the majority of cases war wounds are not rendered bacteriologically sterile even by the prolonged use of flavine. Test tube experiments carried out with organisms isolated from actual wounds bear out the strong antiseptic properties of flavine, and their enhancement in the presence of serum. Coliform bacilli, which are a common infection in the later stages of wounds, are much more resistant to the action of the antiseptic in test tube experiments than any of the other types of organism examined in this way.

Medical Journal of Australia, Sydney

September 29, II, No. 13

- 21 Case of Systemic Blastomycosis-Blastomycotic Cerebrospinal Meningitis. H. Swift and L. B. Bull.—p. 265.
- 22 War Injuries of Ear. R. E. Shuter.—p. 267.
- 23 Occurrence of Mysterious Disease in Southern Queensland. A. G. Anderson.—p. 270.

October 6, No. 14

- 24 Prostatic Obstructions and Their Surgical Treatment with Special Reference to Two Stage Operation. S. H. Harris.—p. 285.

- 25 Establishment and Work of Commonwealth Serum Laboratories. W. J. Penfold.—p. 290.
October 13, No. 15
- 26 Morbid Anatomy of Insanity. W. A. T. Lind.—p. 305.
- 27 Rough Clinical Notes on Some Recent Interesting Surgical Cases. L. M. McKillop.—p. 308.
- 28 Case of Progressive Lenticular Degeneration. H. Swift.—p. 310.

Sei-I-Kwai Medical Journal, Tokyo

October, XXXVI, No. 10

- 29 *Fate of Starch Granules Injected into Rabbit's Vein. M. Okazaki.—p. 101.

29. Fate of Starch Granules Injected into Rabbit's Vein.—Okazaki says that starch granules injected into the rabbit's vein begin to present the glycogen reaction on the sixth day after the first injection of starch emulsion. This reaction can be demonstrated in the granules in the blood and within the histiocyte, but is more marked in the latter. On the basis of these observations Okazaki declares that the histiocyte has a diastatic action converting starch into glycogen.

Bulletin de l'Académie de Médecine, Paris

October 9, LXXVIII, No. 39, pp. 361-394

- 30 *Flying Surgical Units. Plisson and Quénu.—p. 362.
- 31 Discussion of Declining Birth Rate. Pinard and others.—p. 367. Continuation.
- 32 Treatment of War Wounds with Vincent's Hypochlorite Powder. J. Martin.—p. 388.
- 33 Strychnin in Large and Progressive Doses as Tonic after Extensive Wounds. P. Hartenberg.—p. 392.

30. Flying Surgical Unit.—Plisson's proposed *groupe chirurgicale mobile* is already working at the front. The principle is to have the operative, the hospital and the administration sections separate, distinct and interchangeable. The operative section is also composed of separate interchangeable parts, each with its truck, one for sterilization, one for the surgical material, one for radiography, and one for the pre-operative tent. The hospital section also is divided into interchangeable parts, each with its truck, carrying twenty beds and all other equipments for complete hospital service. The present unit comprises eleven trucks, but more can be added at need as each truck is complete in itself; the personnel of the unit, including the fifty-two nurses, travel by automobiles. This flying unit is thus autonomous and extensible. As it travels on its own power it is independent of traffic, and can be swiftly moved to points where its services are most required.

Journal de Chirurgie, Paris

XIV, No. 2, pp. 113-216

- 34 *Resection of the Hip Joint for War Wounds. P. Alquier and J. Tanton.—p. 113.

34. Resection of Hip Joint.—Alquier and Tanton give an illustrated description of twelve cases in which from eight to twelve months have elapsed since they resected part of the hip joint above the head, or through or at the base of the neck, or through or below the trochanter. In only one of the twelve cases was the resection primary. In all but two, infection was already installed after the comminuted fracture of the upper end of the femur. Their experience demonstrates that it is possible with an early and complete operation to realize the aseptic healing of a war fracture of this kind. The after care is as important as the operation itself. They get the man on his feet even before the wound has quite healed, the foot hanging loose in a walking cast. If there is danger of talus equinus they have a sole fitted in the stirrup which holds the foot horizontal. A celluloid cast replaces the open plaster cast when the man gets up, and crutches are gradually discarded early. The cases are reported in detail, the outcome justifying the conclusions that even extensive resection of epiphysis and shaft may give good results, the joint solid and free from pain, with possibly some slight functioning of the new joint provided the resection is done at a secondary operation, subcapsular and subperiosteal, at the period of most active bone regeneration. They sacrificed an extent of bone from 12 to 18 cm. long, and their confidence in the ultimate anatomic and functional repair was justified by the outcome in the young men. In only one of their cases

was the man left with a loose fibrous pseudarthrosis, and this has been partially corrected by a celluloid corset. The other men with solid ankylosis walk without difficulty; the sole of the shoe on that side is made thicker to balance the shortening of the leg.

Lyon Médical

October, CXXVI, No. 10, pp. 445-492

- 35 Hemorrhage from the Spleen; Two Cases. Briau.—p. 445.
- 36 Intravenous Vaccine Therapy of Typhoid. Petzetakis.—p. 449.

Paris Médical

October 6, VII, No. 40, pp. 273-288

- 37 *Ophthalmology in 1917. F. Terrien.—p. 275.
- 38 *Better Stumps for Artificial Eyes. (Amélioration des moignons oculaires en vue de la prothèse.) F. Terrien.—p. 277.
- 39 Advantages of Mercury Salicylarsinate in Treatment of the Eye and General System. A. Terson.—p. 282.
- 40 Choked Disk after War Wounds. A. Cantonnet.—p. 286.
- 41 Care of the Wounded after Operations. A. Mouchet.—p. 287.

37. War Wounds of the Eyes.—Terrien remarks in the course of this review of ophthalmology in 1917 that the visual disturbances of shell shock are generally transient, but that photophobia, spasmodic myopia, amblyopia or restriction of the visual field may be quite durable. Some think they are of hysteric nature. Vaccination against typhoid may bring on a relapse of iridocyclitis. As the uveal tract is so vascular, it is easy to understand how the vaccination may induce the localization there of casual infection, analogous to the oculoreaction to tuberculin. He has encountered one case of grave purulent iridocyclitis after the vaccination. Sometimes the vaccination started up metastatic ophthalmia, herpes of the cornea or infectious trigeminal neuritis, in those already bearing the seeds of such. Glaucoma secondary to iridocyclitis may rupture under the influence of the reaction to the vaccination. A reaction on the part of the meninges might entail lesions of the optic nerve and tract or ocular paralysis. Morax has warned that a primary acute glaucoma might rupture under the reaction to the vaccine, but he knows of no scientific reason why chronic glaucoma should be aggravated by it. To admit a causal connection, the aggravation must have occurred at the time of or soon after a reaction violent enough to modify the temperature. Ophthalmoscopic and medical examination should precede the vaccination, and he advises exclusion of all with syphilis, tuberculosis, or joint troubles when there is a history of lesions of the uveal tract, especially in persons over 35 or 40. The strict asepsis and antisepsis with war wounds have rendered sympathetic ophthalmia of less frequent occurrence than was anticipated, but a few cases have been encountered. Possibly they might have been more numerous if the patients had been kept under observation longer. A sympathetic reaction is comparatively common, appearing early and disappearing after enucleation. The poisonous drift gases may induce iritis or neuroretinitis, but the course has proved essentially mild.

38. Need for Protection of Soldiers' Eyes.—Terrien expatiates on the importance of a good fitting artificial eye for the later welfare of the wounded, saying that the question of better stumps is growing more and more important as the number of eyes injured beyond redemption is unfortunately increasing every day. This is owing to the more intensive use of grenades and small shells which break up into large numbers of small fragments, and the lack of any device to protect the eyes. No practical means has been found to protect the eyes, and yet, according to his latest notes, 92 per cent. of the perforating injuries of one or both eyes were made by such small flying fragments that the slightest protecting device would have turned it aside and saved the eye. A thin metal shell with a slit permits excellent vision while it would save the eyeball in the majority of cases. The Société d'ophtalmologie adopted in June, 1916, a resolution setting forth the advantages of some such device to protect the eyes, and the authorities conceded the correctness of the principle, but nothing to speak of has been done toward its realization in concrete form. The various measures necessary to ensure a good stump are described in detail, bearing in mind that the withered eyeball itself is the best stump of all.

Presse Medicale, Paris

September 24, XXV, No. 53, pp. 545-560

- 42 Protection of the Child among the Ancient Romans. IV. E. Jeanselme. Titlepage.
- 43 *Rebellious Fistulas in the Thorax. L. Bérard and C. Dunet.—p. 545.
- 44 *Practical Treatment of Syphilis. P. Chevallier.—p. 547.
- 45 *Tetanus and Tetanophobia. M. Couteaud.—p. 550.
- 46 *Hot Air Douches in Treatment of War Wounds. J. Bandaline and J. de Poliakoff.—p. 551.
- 47 *Graduated Spiroscopic Exercises in Training the Respiratory Apparatus. J. Pescher.—p. 552.
- 48 American Method of Anesthesia by Insufflation. J. Luzoir.—p. 555.

43. **Rebellious Fistulas in the Thorax.**—Bérard and Dunct show by several roentgenograms that often the reason why a fistula persists after a war wound of the chest is that some of the ribs have become soldered together by infected callus. Nothing short of resection of the pathologic tissues will ensure the healing of these fistulas. Roentgenoscopy will reveal the callus and thus permit effectual treatment.

44. **Practical Treatment of Syphilis.**—In concluding this presentation of the present status of treatment of syphilis, Chevallier emphasizes that treatment, even vigorous treatment, which is not kept up for years, does not protect against relapses. He insists that the action of soluble mercurial salts can be only transient. The insoluble salts ward off recurrences better as their action is prolonged longer. Recurring manifestations of the syphilis generally appear first on mucous membrane. The drugs should be given in the largest doses that can be borne without disturbances or only minimal disturbance, and the physician must keep in close touch with the patient. The physician must back up the patient's flagging will, and for this reason among others it is best to give the drugs by injection. The patients generally return to complete a definite course of injections. When it is concluded, he gives a card with the date when the next series of injections has to begin. There is only one contraindication, namely, impermeability of the kidneys. The intervals between courses should never be longer than six weeks. His course of arsenobenzol begins with 0.3 gm. once a week, increasing to 0.75 or 0.9 gm. by the fifth or sixth week and then dropping down again. The rich and the indigent are provided for, he says, but to date no provision has been made for the demi-indigent—those accustomed to paying for medical care at some sacrifice, but unable to bear the expense of four years of treatment. Arrangements must be made for these demi-indigent. Possibly the best plan to avoid infringement on professional secrecy would be to have a dispensary devoted to "chronic diseases"—for all affections which by their persistency condemn the demi-indigent to ruin or abandonment of treatment.

45. **Tetanophobia.**—Couteaud says that in his district every one who gets even the slightest kind of a wound, civilians and soldiers alike, rush to the hospitals for an injection of tetanus serum. The nurses are kept injecting it all the time, so it is flowing in a constant stream. He deplors this as a waste which may deprive the legitimate cases of the precious serum. It is a pity that bacteriologists as yet have been unable to detect in the blood the antitoxic elements which would reveal whether the wounded person is fitted or not to resist the tetanus germs. He is confident that there must be something of the kind, as farmers so seldom develop tetanus although so often exposed to it. We might learn something in this line by comparing the incidence of tetanus after war wounds among soldiers recruited from towns and those from rural districts, whether there is not a professional physiologic vaccination from repeated small inoculations.

46. **Hot Air Douches in Treatment of Torpid War Wounds.**—This communication from a base unit on the southwestern coast reports continued fine results from the jet of hot air turned on lesions in soldiers that refuse to heal promptly, especially the effects of frostbite of the feet and torpid infectious processes in general. The germ count is made before and after the hot air douche, to keep control of the progress, the findings confirming the prompt sterilization of the tissues and the speedy healing thereafter. The importance of having arrangements for acrothermotherapy as an adjunct to every surgical service is emphasized, and an illustrated description

of a few cases is given to show the immediate benefit in the relief of pain and the prompt healing of lesions that had been dragging along for months.

47. **Therapeutic Spiroscopy.**—Pescher's spiroscope has already been described in these columns, and he here shows how it can be systematically applied in training the respiration. The long blow tube enters at the side, low down, of a bottle filled with water. The bottle stands on a standard and can be emptied completely at a single blowing by a person with normal lungs. The bottle is graduated, and the individual can see at a glance his respiratory capacity, and can watch it increase as training with this spiroscope expands the breathing area of his lungs. A stopcock on the tube allows the breathing exercises to be graduated for hyperfunctioning. In every case of war wound of the chest, there comes a time when these spirosopic exercises are extremely beneficial. Also in pleurisy, and especially for persons who seem to be candidates for pulmonary tuberculosis. When the bulbar respiration center has been progressively inhibited by repeated nervous shocks, it may function so sluggishly that the whole system suffers from lack of the normal vigor of the respiratory movements; the resulting anemia, autointoxication or neuropathic depression all show marked improvement under spirosopic training of the respiratory apparatus. The fact that the patient can see for himself by the drop in the water content of the jar just how he is progressing, gives zest to the exercises.

Progrès Médical, Paris

September 22, XXXII, No. 38, pp. 311-320

- 49 Three Neuromuscular Syndromes. H. Gougerot.—p. 311.
- 50 *Spontaneous Rupture of Heart. J. Tapie.—p. 314.
- 51 Medicine in Recent Fiction. P. Voivenel.—p. 315.
- 52 Propaganda of Hygiene by the Profession. A. Satre.—p. 317.

September 29, No. 39, pp. 321-330

- 53 Trench Foot. Renard and P. Blum.—p. 321.
- 54 Regional Anesthesia of the Arm. H. P. Achard.—p. 323.
- 55 *Suprarenal Symptoms in Malaria. C. Garin, Sarrouy and Pouget.—p. 324.
- 56 Pathology of the Senegalese Troops Now in France. Ardoin and Bonnette.—p. 326.

50. **Spontaneous Rupture of the Heart.**—Necropsy disclosed that the spontaneous rupture at the apex in a man of 49 was result of infarction from atheroma and thrombosis of the anterior coronary. The man was robust, with no specific pathologic antecedents, but for a few months had had asthma and symptoms of asystole and albuminuria.

55. **The Suprarenals in Malaria.**—Garin and his co-workers report that 4 per cent. of a group of 590 men with malaria presented symptoms showing that the suprarenals had been damaged by the infection. Their extreme pallor and lassitude, blanching of the mucosa, changes in pigmentation, emaciation, anorexia and resistance to the effect of a change to the mountains, testified to the suprarenal insufficiency. The general depression of the whole organism was shown by the tardy recuperation after the attacks, and the slight benefit apparent under tonics until epinephrin or suprarenal tissue tablets were given in addition. The prompt improvement then was striking.

Revue de Médecine, Paris

XXXV, No. 2, pp. 73-132

- 57 *Deficiency Diseases. (Les maladies par carence.) E. Weill and G. Mouriquand.—p. 73. Commenced in No. 1, p. 1.
- 58 War Epidemics of Typhoid Group. D. Olmer.—p. 108.

57. **Deficiency Diseases.**—Weill and Mouriquand's monograph contains an account of much experimental work besides extensive clinical experience. They discuss in detail the deficiency disturbances that developed in pigeons fed with decorticated or sterilized cereals, peas and beans; also the beriberi and experimental scurvy in animals under similar circumstances. They discuss further the deficiency in vitamins or ferment substances in relation to the army ration and the question of bread making. Among their conclusions from this and preceding research are that beriberi cannot be ascribed to decorticated rice alone, as similar hulling of all other grains and legumes is liable to bring on the symptoms of beriberi. Even sterilization of the unhulled grains may bring on the same set of symptoms. The nervous mani-

festations from these deficiency disturbances open a new chapter of pathogenic neurology. They reiterate that "life is necessary to life," and that a rational diet should include the digestible maximum of fresh, "living" foods. The use of ultra refined flour, of sterilized meats, vegetables, milk, etc., kept up too long and too systematically, may be responsible for deficiency disturbances beyond those that fit into the clinical frames of scurvy in young and old, and beriberi.

Correspondenz-Blatt für Schweizer Aerzte, Basel

October 6, XLVII, No. 40, pp. 1329-1360

- 59 *Dangers and Treatment of Placenta Praevia. A. Labhardt.—p. 1329.
60 *An Embryonal Growth Center in the Crystalline Lens. (Ein embryonaler Kern der menschlichen Linse.) A. Vogt.—p. 1342.
61 *Practical Diagnosis of Duodenal Ulcer. F. Fortmann.—p. 1349.

59. **Placenta Praevia.**—Labhardt reiterates the vital importance of absence of infection when cesarean section is contemplated. Also that cesarean section is the only safe, and reliable method for delivering a woman with placenta praevia without injury to the child. Hence the practitioner should get the woman to the hospital as quickly as possible and not allow any internal manipulations, tamponing, etc. All other methods of treatment show a high mortality among the mothers and a frightful mortality among the children, in spite of every effort. To be done under the best conditions, the cesarean section should come early in labor, and the child be extracted before the lower segment of the uterus has been much distended. By this prompt extraction before the placenta becomes separated, we ward off hemorrhage and atony of the uterus after delivery. In the hands of many obstetricians cesarean section has come to have no mortality. It has the further advantage that no germs from the vagina are carried up into the uterus as there is no necessity for version or the inflatable bag. As the uterine vessels are not gaping so much at this time, the danger of air embolism is correspondingly reduced. The general practitioner should insist on the woman's going to the hospital at the first bleedings, whether they occur just before or during labor; he should refrain from internal examination and especially from any tamponing. In the hospital, indications can be met as they arise.

60. **Anatomy of the Crystalline Lens.**—Vogt explains that the posterior surface of the crystalline lens is liable to show grooves and linear elevations indicating some disturbance in growth. There may be whitish lines and other anomalies suggesting an embryonal center of growth. They are found even in children, and he argues that they have something to do with the development of cataract.

61. **Diagnosis of Duodenal Ulcer.**—Fortmann refers to the diagnosis by the general practitioner without laboratory aid, and expatiates on the importance of prompt differentiation of duodenal ulcer. Much loss of flesh and nervousness were prominent symptoms in all his cases, with one exception. One of his patients had correctly diagnosed his own trouble from the clinical picture as he had found it described in a "doctors' book." Blood in vomit or stools may confirm the diagnosis and render radiography superfluous. He advises to have the patient refrain from meat for eight or ten or twelve days before applying the test for occult blood. All such tests have the disadvantage of being disconcertingly sensitive. Repeated negative findings with careful technic are correspondingly instructive as they exclude an ulcer. Hyperacidity is the rule with duodenal ulcer, but anacidity has been encountered by Stierlin and himself, and fluctuating findings in some cases. The practitioner may find Friedreich's swallowed-thread test instructive when the stomach content cannot be obtained directly. He always found the hunger pain, night pain and periodicity of the pains spreading toward the right in the liver region and back. The tender point is two or three fingerbreadths to the right of the median line, outside of the gallbladder, inside of the pylorus point. In one of four cases described in detail, the tender point was to the left of the median line. A second tender point is sometimes found at the end of the right twelfth rib. One of his patients had paid no attention to the pains, which were rather mild, until she had a stool black with blood.

Vomiting of blood may occur with duodenal as well as with gastric ulcer. Advanced age does not always turn the scale in favor of cancer; one of his patients was 63, and cases are known with ages older than this. One of his patients, a man of 43, had had symptoms typical of duodenal ulcer for six and a half years when there was severe hemorrhage. There had never been any signs of gastrectasia, but the operation revealed that the ulcer was in the pylorus region. In another case the typical symptoms in a man of 30 had lasted for some time but the stools and radiographic findings were negative. He is evidently a "duodenal-ulcer neurasthenic," and Fortmann remarks that we may expect to encounter such more frequently as the "duodenal triad" is becoming known to the laity.

Gazzetta degli Ospedali e delle Cliniche, Milan

October 4, XXXVIII, No. 79, pp. 1065-1072

- 62 *Intramuscular Serotherapy in Cerebrospinal Meningitis in Children. F. Fanciulli.—p. 1069.

October 11, No. 81, pp. 1089-1096

- 63 Acute Pancreatitis. M. Maurizi.—p. 1091.

62. **Serotherapy in Epidemic Meningitis in Children.**—Fanciulli remarks that no serum as yet, by any technic, can do miracles, and the fulminating cases terminate fatally as before. But under other conditions serotherapy can be counted on. He tabulates the details of eleven cases in children in which he injected 10 c.c. morning or evening or both, up to a total of 30 or 40 c.c. in the graver cases, with prompt recovery in all but one child who was left with intermittent fever and chills and enlarged spleen. The children were all treated at home, without isolation or disinfection of the premises beyond having the bed linen boiled. There was no second case in any of the families. Another child was moribund when first seen and no attempt at serotherapy was made. He injected the serum into a muscle.

Policlinico, Rome

October 7, XXIV, No. 41, pp. 1233-1256

- 64 The Hospital Centers for Specialist Work. Editorial.—p. 1233.
65 *The Subnormal Arterial Pressure with Abdominal Wounds. A. Chiasserini.—p. 1238.
66 Lactic Acid Bacilli Ferments in Therapeutics. G. Monti.—p. 1240.
67 Infant Feeding in Foundling Asylums. O. Viana.—p. 1243.

65. **The Subnormal Arterial Pressure with Abdominal Wounds.**—Chiasserini's long experience with war wounds of the stomach and abdomen has convincingly demonstrated, he says, that the character of the pulse is the guide to treatment, whether to operate or not, and it also affords a basis for the prognosis. He made a special study of the suprarenals from ten men who had died from wounds of the gastro-intestinal tract, securing them a few hours after death. Changes in the suprarenals were constant; they were like those found in diphtheria, all testifying to grave toxic action. When, with an abdominal wound, the pulse is small and fast, and persists thus in spite of measures to combat shock, any operation is contraindicated unless the trouble is from acute anemia. The operation may be successful and the subjective condition good, but the pulse keeps growing worse.

Riforma Medica, Naples

September 15, XXXIII, No. 37, pp. 893-912

- 68 *Cause of Persistence of Bacilli in Typhoid Convalescents. L. Preti.—p. 893.
69 War Wounds of the Abdomen. O. Finzi.—p. 894.
70 Diphtheria Antitoxin in Treatment of Epidemic Parotitis. E. Salvaneschi.—p. 896.
71 *Treatment of Fracture of the Femur. B. Schiassi.—p. 897.
72 Present Status of War Psychoneuroses. G. Molinari.—p. 898.
73 *Cinematic Surgery: To Facilitate Vitalization of Artificial Limb. E. Aievoli.—p. 902.

68. **Low Agglutinating Power in Typhoid Carriers.**—Preti tabulates the data in thirty-five cases, showing the agglutination during the typhoid and again late in convalescence. When the agglutinating power from two to nearly five weeks after defervescence was 1:40, bacilli were found in the stools. None were found in the convalescents agglutinating at 1:80, 1:160 and 1:320 with the exception of two cases with

bacilli present the twenty-sixth and twenty-eighth days with agglutination at 1:80. Hence the persistence of the bacilli evidently depends on the proportion of antibodies present.

71. **Fractured Femur.**—Schiassi's "decatalogue" as he calls it was summarized, November 24, p. 1835.

73. **Cinematic Surgery.**—Aievoli analyzes what has been accomplished to date in the attempts to make possible the direct control of artificial limbs by traction from muscle fibers. Vanghetti's pioneer work in this line of vitalization of artificial limbs was described recently, page 321.

Rivista di Clinica Pediatrica, Florence

October, XV, No. 10, pp. 505-560

74 *Pathologic Somnolency with Lesion in Midbrain. C. Francioni.—p. 505.

75 *Acetonemia. G. Guidi.—p. 549.

74. **Pathologic Somnolency in Young Children.**—Francioni's patients presenting this mesencephalic syndrome were a child of 3 years and an infant of 10 months. In both the somnolency over months was the most striking symptom, and necropsy in the second case confirmed the diagnosis of a brain tumor. It was found in the isthmus of the brain, a vast destructive lesion shutting off almost completely all connection between the front and the hindbrain. The superior nerve centers were thus apparently cut off from the inferior centers as by a laboratory experiment. Both children were tuberculous, with some tendency to internal hydrocephalus.

75. **Acetonemia in Children.**—Guidi comments on the difficulty at times of distinguishing between acute appendicitis and an attack of periodical vomiting with acetonemia. Palpation of the appendix region through the rectum is sometimes the only means to clear up the case. He advises in case of persisting doubt to remove the appendix. There is always a possibility that the two affections may be associated. Three cases are described in detail in which the profuse elimination of acetone by the breath and kidneys was accompanied by frequent vomiting and occasional severe diffuse pains in the abdomen, the pulse fast and small, and the children were restless and felt badly, and there was no stool. The abdomen was distended but this was uniform, and no specially tender points could be found. While the surgeon was studying the first case with the internist, all the symptoms suddenly subsided. No purgatives had been given but slight peristaltic movements were detected while the abdominal walls were not contracted. The acetonemia subsided under large doses of sodium bicarbonate by the mouth or rectum. There was no movement of the bowel until the fifth day, but by the end of the week the child seemed to be perfectly well again. This child and the second were under 3, the other was 6. This was the first attack of acetonemia in the last two cases; the first child had had at 18 months a similar attack of vomiting with abdominal symptoms. The intestines in the three cases seemed much dilated—evidently a paresis from the toxins in the blood. Guidi has encountered other cases of acetonemia in which there was paresis of the bladder and retention of urine, compelling catheterization, but these disturbances are always transient and disappear with the acetonemia.

Semana Medica, Buenos Aires

August 9, XXIV, No. 32, pp. 149-176

76 *Exclusive Carbohydrate Infant Feeding and Its Evil Effects. M. Acuña.—p. 149.

77 Treatment of Ankylosis by Interposition of Tissue. E. M. Oliveri.—p. 153. Continuation.

78 *Charitable Institutions at Buenos Aires. E. R. Coni.—p. 160. To be continued.

79 Ethyl Chlorid General Anesthesia. B. Echevarria, B. D'Ascoli and A. Iturrieta.—p. 162.

76. **'Evils from Exclusive Carbohydrate Feeding of Infants.**—Acuña reports two cases of trophy from too exclusive carbohydrate feeding in infants about 6 weeks old, fatal in both. Such children have a good appetite and the digestion seems to be perfect, but they do not increase in weight and height. When they are less than 6 months old, they generally succumb even when changed to breast milk.

78. **The Charitable Institutions of Buenos Aires.**—Coni here gives the first of thirty chapters of his work on the hospitals, asylums and other charitable institutions of Buenos Aires. He says that so much has been done in this line of late years that Buenos Aires now compares favorably with Paris, London, Berlin and New York in this respect.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

September 1, II, No. 9, pp. 751-830

80 The Value of Vivisection for Medical Science. G. van Rijnberk.—p. 755.

81 *Roentgenotherapy of Surgical Tuberculosis. A. van Ree.—p. 767.

82 Enucleation of the Eyeball and Preparation for Wearing an Artificial Eye. H. J. L. Struycken.—p. 779.

83 Experimental Physiology in Relation to Psychology. F. J. Soesman.—p. 781.

84 Medical Statistics and Psychanalysis. D. S. Henkemans.—p. 786.

85 *Congenital Absence of Skin Reflexes and Tendon Reflexes. G. C. Bolten.—p. 788.

81. **Radiotherapy of Surgical Tuberculosis.**—Van Ree gives fifty-seven double illustrations showing the condition before and after roentgen treatment, mostly of tuberculous glands in the neck. In this group of tuberculous glands a complete cure was realized in thirty-five out of forty-eight; only two failed to show marked benefit. The cases showing mere improvement to date may go on to a complete cure in time. One great advantage of the treatment is that the healing proceeds without leaving disfiguring traces. From eight to ten exposures were the average course, some cases needing very few and others requiring a whole year. The exposures were about 4 H. units and the intervals about three weeks. These small doses do not modify the tissues around so as to make operative measures more difficult in case they are deemed necessary later. Tuberculous lesions in small bones healed promptly in seven of his thirteen cases of this kind. In one case of a tuberculous lesion in the sternum, the necrotic masses were excised, followed by smooth and rapid healing under the exposures. The benefit in some cases of bone and joint tuberculosis was so striking that further efforts in this line are encouraged even although this treatment failed in a certain proportion of the old cases; especially in adults. Certain experiences on record warn against exposing the larger joints of children to the roentgen rays as liable to interfere with normal growth later.

85. **Congenital Absence of Reflexes: Skin and Tendon.**—Bolten reported recently the case of an apparently healthy man of 22 in whom neither the knee-jerk nor Achilles reflex could be elicited. There was nothing to suggest tabes, and Bolten accepted the areflexia as a sign of degeneracy. This seems probable also in a second case here described at length. This patient was a woman of 30. She displays a slight neuropathic tendency and is somewhat nervous, but otherwise seems sound. None of the skin and tendon reflexes can be elicited. The periosteum reflexes are faint. As both persons seem normal in every other respect, the anomaly in regard to the reflexes can be explained, he thinks, only by assuming a congenital inferiority, that is, a more or less pronounced degeneracy. There was no trace in either case of hypotony or disturbance in the muscle sense.

Hygiea, Stockholm

LXXIX, No. 16, pp. 801-864

86 *Influence of Physical Training on the Morphologic Development of the Motor Nervous System. E. Agduhr.—p. 801.

87 *Influence of Posture on Physical Development of Schoolchildren. T. Resmark.—p. 829.

86. **Influence of Training on the Physical Development of the Nervous System.**—Agduhr reports a pronounced influence from systematic exercises on the development of the motor nervous system of young cats. Other kittens from the same litter had been kept in cages without much chance for exercise, and the difference was marked by the end of seven months. The training of the kittens consisted in their climbing up a long burlap curtain to a graduated height, and repeating at least a hundred times a day. Other tests were made on other warm and cold blooded animals. The findings apparently demonstrate that moderate graduated training of the growing individual causes hypertrophy of most of the

elements of the peripheral motor nervous system, and an increase in the numbers of fibers in the conducting tracts. The brain also grows to be larger than in the controls.

87. **The Habitual Posture of Schoolchildren.**—Resmark measures and compares the findings by means of a frame on a standard. The sides of the frame are marked off in centimeters for the height, and the top and bottom of the frame are marked off to each side from a central zero. The child stands in profile behind the frame, the camera at a fixed distance in front. The research was undertaken to study the influence of the habitual posture on the physical development of the child.

Norsk Magazin for Lægevidenskaben, Christiania

October, LXXVIII, No. 10, pp. 1129-1240

- 88 *Calcification of the Lungs. F. Harbitz.—p. 1129.
89 Extension Bandage without Plaster. S. Widerøe.—p. 1163.
90 The Heart Complications with Diphtheria. J. Holst.—p. 1167.
91 The Banti's Disease Question. C. Schjøtz.—p. 1176.
92 *Diabetes Insipidus. L. Nicolaysen.—p. 1184.

88. **Calcification of the Lungs.**—Harbitz has previously published some cases of calcium metastasis, calcium gout, and universal calcinosis. He here reviews these experiences and the literature on the subject, and reports the details of a case in which both lungs were so full of calcium that it is surprising that they were able to work at all. The lungs weighed six times the normal weight, and stood up on their own basis. The calcium was evenly distributed throughout, not in deposits around vessels. There had been no preceding destructive bone affection, so the calcification was primary and not metastatic. Six other primary cases are on record which he cites in turn. In his case the kidneys were sound but there had been chronic gastritis with occasional hematemesis. The patient was a woman of 41 with a history of acute articular rheumatism as a child and again three years before, and a chronic tendency to shortness of breath on exertion and to slight cyanosis. She entered the hospital on account of anasarca and ascites; the pulse was 104 and regular, respiration 34 and audible. There were 8,448,000 reds and 11,600 whites. Percussion showed resonance over the lungs with somewhat prolonged expiration and fine crepitation. The woman died in three weeks under the diagnosis of heart disease. The various theoretical possible causes for the extreme calcification of the lungs in this case are discussed, as nothing was found at necropsy to explain it.

92. **Diabetes Insipidus.**—In the first of the two cases reported, a previously healthy woman of 44 developed after her tenth pregnancy a condition of general weakness with tendency to obesity, polyuria, polydipsia and polyphagia. The same set of symptoms was presented by the second patient, a septipara of 34, subject to epilepsy. Tests with pituitary extract and abstention from fluids showed good concentration level. The polydipsia seemed to be primary and there were other features suggesting that the trouble was some disturbance in the centers in the third ventricle.

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- 93 *Carbohydrate Dyspepsia and Xerophthalmia. H. Rønne.—p. 1488.
September 13, No. 37, pp. 1521-1564
94 *Historical Sketch of Prostitution during Various Wars. A. L. Fønss.—p. 1521. Commenced in No. 36, p. 1479.
95 Atresia of the Hymen with Rupture of Tube from Accumulation of Blood. J. E. Kieler.—p. 1538.

93. **Carbohydrate Dyspepsia and Xerophthalmia.**—Rønne, as an ophthalmologist, differs from both Bloch and Monrad whose views were recently summarized in these columns, Sept. 29, 1917, p. 1122. He relates that he has had cases of xerophthalmia in infants who had been fed casein and little carbohydrates. He emphasizes that untreated xerophthalmia is practically always fatal. The grave symptoms including the xerophthalmia come on suddenly, suggesting, he thinks, that lack of vitamins is probably responsible. An excessive carbohydrate diet could scarcely induce such a sudden and stormy onset of the xerophthalmia and other symptoms. No instance is known to him of carbohydrate dyspepsia, without

xerophthalmia, proving so rapidly fatal. The immediate cause of death is the lowered resisting powers of the child (pneumonia), and he thinks there is much to sustain the assumption that both carbohydrate dyspepsia and avitaminosis are involved. Xerophthalmia is frequently but not always of dietetic origin. It may occur in the tuberculous. Here it seems to depend not on the intake but on the power of assimilation, the inability to utilize the requisite elements although they are supplied in the food. There seems to be an individual power of assimilation, as some children apparently do well on a diet that induces severe xerophthalmia in another.

94. **Prostitution in Wartime.**—Fønss traces the history through the ages of attempts to control the spread of venereal disease, and especially in armies and discusses what is being done during the present war in this line. Among the data cited is Dreyer's statement that 89 per cent. of the registered prostitutes in Berlin gave a positive Wassermann reaction, and Sperk's report that 772 prostitutes who had contracted syphilis were known to have had 2,135 recurrences during the first four years after infection. Fønss mentions that polygamy was introduced in Bohemia after the Thirty Years War. He regards as of great and practical interest the regulations in regard to prostitution promulgated in Austria since the war began. They specify with minute detail the prophylactic measures, the preliminary and terminal salves and rinsings which the prostitute must use herself and offer to her customer. The medical inspector must verify that she has the preservatives, etc., on hand. Fønss remarks that whether the minute directions are followed or not is a question, but the emphasis placed on them by the official decree impresses on all concerned the importance of preservatives.

He relates that the *Dermatologische Wochenschrift* Nos. 11 and 12, 1917, contains the report of a committee appointed by the Reichstag to study the venereal disease question. The main points of the report are the recommendations that professional secrecy should be abrogated when it is a question of venereal disease, that is, the case should be notified by name; that transmission by venereal disease should be penalized; and that the state examination for license to practice should include examination in skin and venereal diseases. Dreuw emphasized that the notification by name is absolutely impracticable unless it is to be made to a central federal bureau which will keep the records for the entire country, and organize uniform measures under the seal of strict secrecy except for the parties directly involved. Fønss adds that compulsory notification to the police of contagious venereal disease is already decreed in Schleswig-Holstein. In No. 9 of the *Wochenschrift*, Hecht published an appeal for the application to prostitution of the principle of the Göteborg system for reducing the evils of the liquor trade, that is, placing the whole business in the hands of a central organization which aims to make only a small profit on the capital invested. Fønss remarks that this suggestion has much to commend it. It would thus be possible to ensure completely hygienic conditions free from pecuniary speculation. The privately owned brothel, he reiterates, must be stamped out.

Fønss relates that it was not until about 1600 that the connection between prostitution and disease in the soldiers was definitely recognized. Among the efforts to rid the army of the female camp followers he mentions Marshal Strozzi's drowning of 800 at one time in the river Loire (1570), and Gustavus Adolphus' promotion of marriage among his troops (1621). During the Thirty Years War, in 1648, history records that to the army of 40,000 soldiers entitled to rations there were 140,000 followers not on the ration list. The women aided in cooking the food, mending the soldiers' clothes and nursing them when sick. Johann of Nassau proposed in 1608 to substitute men nurses and cooks for women workers, alleging as the chief reason the prevention of infectious diseases. The French commander, Carnot, in 1793 drove away women followers of the camp to the number of 3,000, saying they did ten times more harm to the army than the enemies' guns. Fønss credits most of his historical data to I. Bloch's large work, "Die Prostitution," 1912.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 23

CHICAGO, ILLINOIS

DECEMBER 8, 1917

THE TREATMENT OF SOME CASES OF SO-CALLED "PERNICIOUS" ANEMIA

A REGIMEN THAT HAS BEEN FOUND HELPFUL *

LEWELLYS F. BARKER, M.D.

AND

THOMAS P. SPRUNT, M.D.

BALTIMORE

"Pernicious anemia," so called, formerly often overlooked, is now generally recognized, when encountered, by physicians who have been trained in the modern methods of examining the blood. Indeed, once the anemia is well developed, the appearance of the patient is so characteristic that its existence is likely to be suspected at first sight before any examination of the blood has been made. In the office of a consulting physician, where these patients are often entering, it is by no means uncommon to have an observant office secretary, who has grown familiar with the pallor, the lemon-yellow tint to the skin, the weakness and the dyspnea, remark that "the patient coming in looks as though he had pernicious anemia."

Though it is easy to place a patient of this sort in a great group designated "pernicious anemia," we know now that this group does not represent a unity. And, of late, we have learned to divide the general group into several subgroups, our classifications being based partly on the blood findings, partly on etiologic considerations. Formerly, it was common to speak of pernicious anemia as a primary or idiopathic anemia, to distinguish it from a secondary anemia due to disease of some organ, to hemorrhage, or to some other known etiologic factor. The terms "primary" and "secondary" anemia are still used, though we now realize that, in the last analysis, there can be no such thing as a strictly "primary" anemia. Again, Ehrlich's attempt to separate pernicious anemia from other anemias on the basis that the regenerative forms of red corpuscles found in the blood are of embryonal rather than of postembryonal type (megaloblasts rather than normoblasts) broke down when it was found that this criterion, though a helpful one, does not admit of strict application. Though no basis of classification of the severe anemias is as yet wholly satisfactory, a separation of those due to increased blood destruction (the hemolytic anemias) from those due to loss of blood by hemorrhage and from those due to defective or

decreased blood formation has been found helpful. The old group of so-called "pernicious anemias" contained subgroups belonging to at least two of these categories. Thus formerly the severe hemolytic anemias and the aplastic, or aregeneratory, anemias were lumped together in the pernicious group. By far the majority of cases that were designated pernicious anemia were, however, hemolytic anemias due to increased blood destruction; only a few of them were aplastic anemias due to decreased blood formation. And the matter was further complicated when it was discovered that a hemolytic anemia may sometimes, after exhaustion of the regenerative power of the bone marrow, enter into an aplastic stage. And, finally, an analysis of the severe hemolytic anemias themselves showed that they, in turn, are divisible into further subgroups depending on their etiology. Among these subgroups may be mentioned (1) the hemolytic anemia due to invasion of the intestine by *Dibothriocephalus latus*; (2) the hemolytic anemias due to syphilis, to carcinoma, and to intoxications in the puerperium; (3) the hemolytic anemias due to certain known chemical poisons, as potassium chlorate, nitrobenzene and phenylhydrazin, and (4) the hemolytic anemia that accompanies congenital hemolytic icterus. But after these subgroups had been recognized, it was found that the majority of severe chronic hemolytic anemias still remained unaccounted for, and it has been, and still is, customary to refer to these cases of unknown (or at least unsettled) etiology as "Addisonian anemia," or "Biermer's anemia," or as the "Addison-Biermer type of pernicious anemia."

Without further introduction, we may say that it is the last group of severe hemolytic anemias mentioned, and to it only, to which we shall refer in the present paper. We must agree with William Hunter and other writers who deprecate the use of the ill defined term pernicious anemia, unless, when it is made use of as a designation, the clinical description is such that the reader will have no doubt as to just what the writer means by it. Since the blood picture in the Addison-Biermer type of anemia is indistinguishable from the blood picture of the forms of hemolytic anemia of known etiology, some of which are curable, it is conceivable that still other groups will be separated out from the Addison-Biermer group as soon as their cause has been discovered. Or it may even be that the cases now remaining in the Addison-Biermer group will later be proved to have a single cause (focal infection? enterogenous intoxication?). The disease we are referring to has been so fully described in modern textbooks¹ that no extended account need

* From the Private Ward Service of the Medical Clinic of the Johns Hopkins Hospital.

* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, New York, June, 1917.

* Owing to lack of space this article has been abbreviated in THE JOURNAL by omission of some of the case reports. The complete paper appears in the Transactions of the Section and in the author's reprints.

1. Cabot, Osler and McCrae: Modern Medicine, Ed. 2, 1915. Barker: Chronic Hemolytic Anemia of Unknown Etiology, Clinical Diagnosis of Internal Diseases, 1916.

here be given. It will suffice to recall that (1) it is commonest in people of middle age; (2) the well to do are affected almost as often as the poor; (3) men and women are affected in approximately equal numbers; (4) the onset is, as a rule, insidious, the patients complaining of weakness without apparent cause, of increasing pallor (with straw-colored tint to the skin), of dyspnea, of gastro-intestinal disturbances, and of nervous symptoms; (5) the urine is usually high colored and contains an increased amount of urobilin; (6) there is always gastric anacidity, and (7) the blood changes characteristic of a hemolytic anemia are demonstrable (reduced red count; anisocytosis; poikilocytosis; high color index; often regeneration signs, including nucleated red cells, polychromatic red cells and basophilic stippling; moderate leukopenia with relative lymphocytic increase, and a diminished number of platelets). There is often a little fever, but not always. Numbness and tingling in the hands or feet are not uncommon; in the later stages, the anesthetics, paralyses or ataxias due to the lesions in the spinal cord described by Frank Billings and others may be encountered. Pyorrhea alveolaris, periodontal abscesses or other signs of oral sepsis may be present. Remissions in the course of the disease are common. They may occur spontaneously; more often, they follow, and seem to be produced by the application of one or another form of therapy. When a remission occurs, the patient may remain well for months, or even for years. Several exacerbations, separated by remissions, may be encountered in a single patient. Clinical experience teaches us to be very guarded regarding prognosis, for in the majority of cases, sooner or later, a relapse occurs that does not yield to treatment, but goes on to a fatal termination.

UNSATISFACTORY STATE OF PREVIOUS PLANS OF THERAPY

The bibliography of the subject contains great numbers of reports on the various methods that have been used in the treatment of pernicious anemia, and certain of these methods have been, and still are, warmly advocated by their adherents. Their very multiplicity is evidence that in none of them has, as yet, a really satisfactory plan of therapy been found. Indeed, until the etiology and the pathogenesis of the Addison-Biermer type of anemia are better understood, and until more is known of the mechanisms of pathologic hemolysis and of regenerative hemato-poiesis, an entirely satisfactory method, applicable in all cases, need scarcely be expected.

Among the forms of therapy that are most in vogue may be mentioned (1) dietetic-hygienic measures; (2) pharmacotherapy (iron, arsenic, quinin, hypophosphites, cholesterin, glycerin, oxygen inhalations, hydrochloric acid, intestinal antiseptics, salt infusions), radium, thorium and the roentgen ray; (3) subcutaneous or intravenous injections of whole or of defibrinated blood; (4) the combating of oral, gastric and intestinal sepsis, and (5) splenectomy.

William Hunter did a great service in emphasizing the importance of not being content with the application of single measures in the treatment of addisonian anemia, urging a "general management of the case, with close observation of all its features, especially of its gastric and intestinal symptoms, of its fever, and of its hemolytic symptoms, extending not merely over the period of acute illness, but also over many months and years subsequent to the first remission."

In this paper we wish to make no extravagant claims for the methods we have employed, but desire simply to set forth a general regimen that, during the past few years, has, when it has been systematically applied, yielded favorable results in at least one group of cases of anemia of the Addison-Biermer type. We say "one group of cases," for we have had other cases that have not responded favorably to the regimen. Why the one set of cases responded whereas another set did not, we do not know. Thus far, we have been unable satisfactorily to differentiate between the two classes of cases before the therapy has been applied.

REGIMEN USED BY THE AUTHORS

1. *The Diagnostic Study.*—When an anemia of the Addison-Biermer type is suspected, the patient is sent at once into a *private room in the hospital*, where the physical examinations and laboratory tests are made with the least possible discomfort to the patient and with avoidance of exertion on his part. If the anemia is severe, we ask the patient to give himself over to us entirely for a time, gaining his *consent to forego both letters and visits*, even from members of his family, for a time. He is required to remain in bed, undressed, constantly, the *rest in bed* being made as nearly absolute as possible, aside from the interruptions necessitated during the first week by the application of diagnostic methods. An experienced *special nurse* is secured whose sole duties consist in administering to the care and comfort of the patient, tactfully securing observance of all directions issuing from the physicians.

After the anamnesis has been recorded, and the general physical examination of the different systems made, the blood, gastric juice, feces and urine are carefully studied and a thorough *search for focal infections* is undertaken. In this search, the special domains of the body known to be prone to focal infection are closely examined, whenever possible by men who devote their whole attention to particular fields. Thus the teeth and gums are inspected by a consulting dentist, expert in oral diagnosis; the extent of any pyorrhea present is reported; roentgenograms of dead teeth are made and the films closely examined for periapical areas of resorption and for paradental infection. Glossitis, or stomatitis, if present, is carefully noted. A nose and throat specialist is asked to report on the condition of the nose, throat, ears and paranasal sinuses as revealed by direct inspection and by transillumination. In addition, roentgenograms of the paranasal sinuses by the method of Waters and Waldron are made in every case as a supplement to, and control of, the rhinologist's examination. The digestive tract, already studied by physical and chemical methods, is further examined by roentgenoscopy (after barium intake), and if there is any suspicion of ulcer, of appendicitis, of cholecystitis, of ileal or cecal stasis, or of diverticulitis, serial roentgenograms are also made. The urogenital tract is subjected to special examinations also, urethritis, cystitis and pyelitis being sought for in both sexes, in addition to a search for prostatitis and seminal vesiculitis in the male, and for vaginitis, cervicitis, endometritis and pelvic inflammatory disease in the female.

2. *Surgical Treatment.*—In case focal infection is found, even though it appears to be trivial, we usually attempt to eradicate it, for in our experience it pays in the severe anemias, just as in the arthritides, to be radical rather than conservative in the treatment of any infection found.

In the mouth, stomatitis and glossitis receive appropriate local applications; infected teeth are extracted and the sockets are curetted and treated for a few days with iodine solution; gingivitis and pyorrhea alveolaris are treated by a pyorrhea specialist. Any teeth loosened by pyorrhea are extracted. Pyorrheal pockets are carefully curetted and locally treated. After the mouth has been put in good condition, the patient is instructed in the details of a proper mouth toilet, the nurse seeing to it that the technic is acquired and regularly applied.

In the nose, throat and ear, any active infection found is treated at once. For example, a suppurating sinus (antrum, ethmoid, etc.) will be drained; infected adenoids or badly infected tonsils will be removed, though great care should be taken not to subject the patient to an operation on the tonsils merely because they are adherent, or because tonsillitis has previously existed. Here the common sense of the physician in charge may often be required to check the *cacoethes secundi* of an overzealous specialist. Similarly, the best judgment of the physician will be called on in deciding for or against operation for suspected infection elsewhere (gallbladder, appendix, renal pelvis, endometrium, etc.).

In our experience, infections of the teeth and gums have more often than any other infection required immediate attention in pernicious anemia. Rapid improvement has so frequently followed the treatment of such oral sepsis that we cannot help but feel, with William Hunter, that this side of the treatment is, in many cases, very important, and that poisoning from oral sepsis may, in some cases at least, play an etiologic rôle.

It is surprising how well patients with severe hemolytic anemia bear the operations necessary for the removal of foci of infection. At first we were loath to permit even minor surgical operations on these patients, but after a few trials we became convinced that our reluctance had been unfounded. Even with a red corpuscle count as low as 1,500,000 and a hemoglobin of 30 per cent., the patients stand, without harm, a short general anesthesia for extraction of teeth, or for such a procedure as the puncture and cleaning of an infected antrum. It has been rare, too, to see any unusual bleeding follow these minor surgical measures. Should any major operation be indicated, it is best deferred, unless very urgent, until a decided improvement in the condition of the blood has been obtained. Thus one of our patients, who suffered from a cystitis, due to leading a catheter life because of prostatic hypertrophy, came in with a hemoglobin percentage of 38 and a red corpuscle count of 1,400,000. He had several infected teeth, which were removed at once. The blood rapidly improved, and when the hemoglobin had reached 80 per cent., we asked Dr. Young to remove the prostate. The patient bore the operation perfectly well, the cystitis soon cleared up, and he has remained well since.

3. *Dietetic Treatment.*—We believe that attention to the diet of the patient is especially important. Gastrointestinal disturbances are so common in the disease that they have come to be looked on as more or less characteristic of the symptomatology. Owing to the gastric anacidity there is hypermotility of the stomach, too rapid emptying of that viscus, and frequently diarrhea. The disinfectant properties of the gastric juice are lost, owing to the absence of hydrochloric acid, and abnormal fermentative processes doubtless occur.

Eructations, meteorism and general abdominal discomfort are common, and there are sometimes critical exacerbations of these abdominal disturbances. Anorexia is a prominent symptom, and nausea and vomiting are frequently present. It is but little wonder that, as a result of all these conditions, the patients, either on their own initiative, or at the advice of physicians, make attempts to modify their diet so as to secure relief from symptoms. As is well known, these symptoms tend to persist for a time, no matter what kind or quantity of food is ingested. We find that most of the patients that have come to us have reduced their food intake quantitatively far below their needs, and that nearly all are on a qualitatively ill-balanced diet. Moreover, though they may be perfectly willing to rest, their aversion for food and their fear of what may follow eating often make them quite unwilling, and at first even unable, to eat. For this reason, it is our custom to begin, in the severer cases, with the milk diet of Dubois; on the first day we give 2½ ounces of milk every two hours from 7 a. m. to 9 p. m., the two hourly quantity being increased each day until by the sixth day the patient is receiving some 3 liters (quarts).

On the seventh day, we permit a small piece of bread and a little jam at breakfast time, and at mid-day we send in a full tray of easily digestible foods. From the beginning, the patient is encouraged to drink all the milk brought to him, regardless of any disinclination he may feel, or of any consequences that may follow it, and the special nurse tactfully but firmly sees that he takes it. Even if there is some vomiting, the milk is given again at the regular times. The same system is followed after the milk diet has been succeeded on the seventh day by a full and varied diet. The patient is encouraged to eat regardless of choice or of inclination, and to empty each dish on the tray. At first the portions sent are not too large, but during the next few days they are rapidly increased in size until the patient is on an abundant roborant diet, rich in protein, and, if he is thin, in carbohydrate and fat also. At this time, too, the patient is asked to swallow a raw egg (with a little orange juice) immediately after each of the three meals. A little later on, two raw eggs after each meal may be given. In our experience, most patients find it easier, when taking three large meals, to swallow the raw eggs immediately after the meals rather than to take them as "intermediate nourishment." Extra milk, too, is given, as far as possible, with meals, rather than between them. Many patients may, within two or three weeks, be induced to take six raw eggs, a quart and a half of milk and a pint of cream, each day, in addition to three full meals. In this way, the daily dietary of the thin patient may easily reach an intake of 4,000 or 5,000 calories. After the first period is over and some gain in strength has been made, an intelligent patient may often be helped, if eating is still hard for him, by giving him a book like Locke's "Food Values," and asking him to figure out, with the aid of the nurse, the number of calories in the diet ingested and to keep a food chart recording the intake of protein, carbohydrate and fat. Interest is soon aroused in securing a gain in weight, as well as in the rising red corpuscle curve and hemoglobin curve after these begin to show improvement. Not a few anemic patients are overweight, and when such obesity exists, we make sure of a large intake of proteins (meat, eggs), green vegetables in purée form, and stewed fruits, keeping the intake of carbohydrates and

fats low, in such instances, so that the total caloric intake does not exceed 1,000 or 1,500 calories per day.

The dietetic treatment can be materially aided, also, by measures taken to improve the appetite and to overcome the oral, gastric and intestinal disturbances (see pharmacotherapy).

4. *Fresh Air*.—The windows of the patient's room are kept constantly wide open, though care is taken to insure his warmth in bed. After the diagnostic study has been completed and any preliminary surgical therapy has been got through with, the patient's bed is wheeled out on a porch, where he spends a large part of each day (preferably in the sunshine); in some cases, the patient is encouraged to spend the whole night in the open air, carefully protected from cold.

5. *Pharmacotherapy*.—This plays a subordinate but, in our opinion, a very helpful part in the treatment of a severe anemia. Above all, pharmacotherapy can be a great aid to digestion in patients who suffer from pernicious anemia. On account of the gastric anacidity, we give from 20 to 30 drops of dilute hydrochloric acid (with or without pepsin) with each meal, and the same dose is repeated about half an hour after the meal. Croftan has used even larger doses and, he believes, with good results. In addition, it is our custom to give 45 grains of pancreatin with 45 grains of calcium carbonate three hours after each meal. In view of the fact that hydrochloric acid is absent from the stomach juice and that the pancreatin is further protected by the alkaline calcium carbonate that is given with it, it seems reasonable to assume that much of the pancreatin may pass through the stomach uninjured and reach the intestine in a form capable of aiding in intestinal digestion. Certain it is that many of our patients on this regimen quickly become able to eat large amounts of food, making but few complaints of abdominal discomfort. We regard the hydrochloric acid treatment, however, as much more important than the treatment with pancreatin and calcium carbonate; and when patients, as some will, complain of finding the swallowing of the pancreatin disagreeable, we omit this part of the treatment.

A bitter tonic—say 10 minims of tincture of nuxvomica in 1 dram of compound tincture of gentian—given ten or fifteen minutes before each meal may do something toward improving the appetite, though the hydrochloric acid treatment alone, along with the encouraging psychotherapy, is usually followed by a sufficient food intake. The digestive disturbances often clear up in a remarkable way after the measures described have been applied. If they do not, one must keep a close watch for the development of signs of an underlying malignant disease, for, as is well known, a carcinoma of the stomach may for a time masquerade as a pernicious anemia.

Medical tradition as regards the beneficial effects of arsenic in the treatment of these patients we believe to be well founded, and we have used it in every case. Formerly, we used either liquor potassii arsenitis (Fowler's solution) or pills of arsenous oxid and pepper (Asiatic pills²), but of late we have given the arsenic in the form of sodium cacodylate, by intramuscular injection. It has seemed to us best to use rather small doses. We give only 50 mg. per dose, once daily for eight days; after an interval of two weeks, a second course of eight injections is given.

This does not upset digestion, whereas Fowler's solution sometimes irritates the digestive tract. In a few cases, we have used small intravenous injections of salvarsan (0.3 gm.), and with Byron Bramwell and with T. R. Boggs have felt that it had a good effect; as a routine mode of giving arsenic to these patients, however, we adhere to the intramuscular injection of sodium cacodylate.

6. *Massage; Exercise*.—As we have said, we keep the patients at the beginning of treatment at as nearly absolute rest as possible. This is especially important, if the hemoglobin percentage is very low. A little gentle massage may, however, be started early in the treatment, its amount and force being increased gradually as the patient's condition improves. We usually order it, as a routine measure, to be given three times a week, taking the precaution to engage the services of operators who have been well trained and who have shown, earlier, good judgment in estimating the quantity and quality of massage beneficial at different stages of severe illnesses. The massage is continued as long as the patient is confined to bed.

The patient is not permitted to exercise, even in bed, until the hemoglobin is above 60 per cent.; after that, however, he is instructed in gentle resisting exercises to be taken in bed. The exercises described in S. Bennett's "Old Age: Its Causes and Prevention," are excellent for this purpose. It is a pity that Bennett's book, aside from the description of the exercises, contains much arrant nonsense and misleading advice; if placed in the hands of patients, they should be warned to pay attention in it to nothing but the exercises.

Rest in bed is maintained until the hemoglobin percentage is above 80 and the red corpuscle count above 4,000,000. Toward the end of this period, the patient is allowed to sit up in bed with a back-rest and to occupy himself with reading and with other mild diversions. He is then permitted to sit up in a chair, for one hour on the first day, for two hours on the second and for three hours on the third day. On the fourth or fifth day he is allowed to walk for five minutes. The exercise is then gradually increased until one or two hours of gentle exercise are taken in the open air daily. When the patient leaves the hospital, he is warned of the danger of relapse, is cautioned against excess in mental or physical exertion, and is advised to have his family physician keep a close eye on him even after apparently complete recovery. He is urged to keep up the hydrochloric acid treatment continuously, for the gastric anacidity probably always persists, and he is warned especially against deviating from the well-balanced dietary, arranged in caloric intake according to his needs.

7. *Other Measures, Including Blood Transfusion and Splenectomy*.—In the one group of cases to which we refer, we have usually had a favorable response with no therapy other than the measures outlined above. Some of the patients showed immediate and rapid improvement. A larger number began to show improvement in the blood findings only after two or three weeks of treatment. In many cases, the red count rose to 4,000,000 and the hemoglobin to 80 per cent. within eight or ten weeks. In some cases improvement began only after patient persistence with the regimen for a much longer period. In the group of patients that did not respond at all to this treatment, the blood picture remained unaltered, or grew worse.

2. Asiatic (Tanjore) pills are compounded of arsenous oxid, 5 grains; powdered black pepper, 10 grains; powdered acacia, 3 grains; water, enough to make a mass, divided into twelve pills.

Only after the regimen outlined had been given a thorough trial without benefit did we think it worth while to resort to other measures (transfusions, splenectomy). One exception to this rule has been made: when the red corpuscle count is below 1 million and the hemoglobin percentage below 20 when

for twenty years, and otitis media at 30. He was accustomed to three or four colds each year. He had had abdominal pain, coming on occasionally at night, during the past five years; it was relieved by a drink of water. Constipation had been present for three or four years, and hemorrhoids for two years. The patient's habits were good. The onset occurred in November, 1911, one year before admission, with asthenia. The patient stopped work in April, 1912. Other symptoms were loss of weight, anorexia, constipation, and numbness of fingers. Three months before, vomiting spells occurred, with nausea but without pain. His physician said that in August, there was an acute attack with fever, jaundice, choluria, acholic stools, nausea and vomiting, very suggestive of cholangitis. He had had reverses in business, and was depressed and introspective.

Physical Examination.—The patient was undernourished. There was bronze pigmentation of the skin, and pallor of the mucous membranes; the tongue was flabby and of a brownish color. There were some infected dental roots and a few palpable cervical lymph nodes. The heart and lungs were negative. The liver edge was palpable, two fingers breadths below the costal margin. Slight resistance was encountered in the gallbladder region. There was slight edema of the ankles; a few external hemorrhoids were noted.

The blood picture was that of a severe anemia (Chart 1). There was gastric anacidity. The stools were normal. The Wassermann test was negative. The Calmette reactions were negative.

The only untoward event in his otherwise favorable course was an acute febrile period of four or five hours' duration, with temperature of 102 F., chilly sensations, and nasal discharge. About a month after his discharge from the hospital, his physician, Dr. James A. Work, Jr., wrote that his hemoglobin was 94 per cent. (Gowers). The patient was then feeling well, and was at work. While in the hospital, his systolic blood pressure was about 100; his temperature rose occasionally to 99.5, but usually was not over 99, with a tachycardia of from 90 to 100. Weight increased in the hospital from 120 to 140 pounds.

Treatment.—This consisted of rest, full diet, dilute hydrochloric acid (twentieth normal) before and after meals; arsenic in the form of sodium cacodylate; neosalvarsan (one dose); and, for a time, liquor potassii arsenitis. Bland's

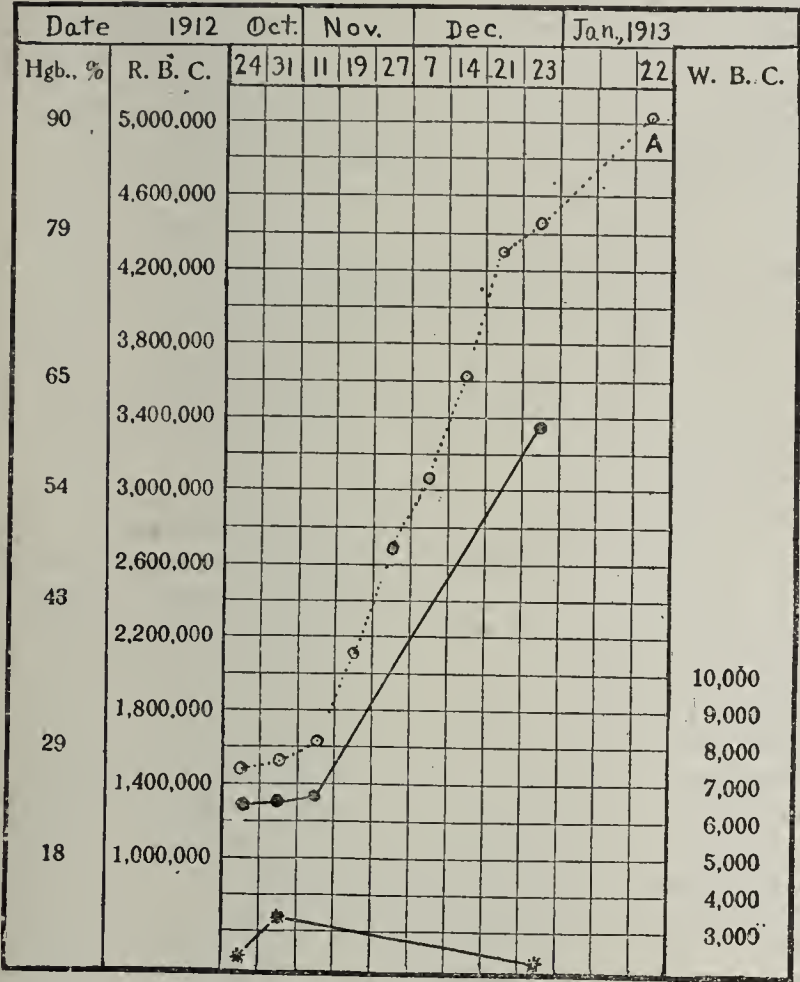


Chart 1.—The blood in Case 1: A, reported by home physician. In this and the accompanying charts, the solid line with solid dots denotes red blood corpuscles; the dotted line with hollow dots, hemoglobin, and the solid line with stars, white blood corpuscles.

the patient is first seen, we have found transfusions very useful in raising the blood to a higher level before starting on our usual regimen. When blood transfusions are used, we take especial care to find a suitable donor (negative Wassermann reaction; same group as regards agglutinins and hemolysins).

ILLUSTRATIVE CASES

As examples of favorable response to the method of treatment employed, a few case summaries with blood charts are given. These patients, except in Case 7, are now very well. They all know of the danger of relapse; they are living carefully regulated lives and are having occasional blood examinations made. Patient 7 made a good start, but had a marked setback with fever. Unfortunately, he could not remain at the hospital, but is now trying to gain a remission at his home in a distant state.

CASE 1.—History.—C. L. M., business man, aged 45, married, admitted, Oct. 24, 1912, discharged, Dec. 23, 1912, complained of indigestion, constipation and "liver trouble." The diagnosis was pernicious anemia, gastric anacidity and oral sepsis. The family history was good. Seven brothers were all well except one, who had had a similar trouble.³ The patient had had measles, whooping cough and mumps in childhood; pneumonia at 17; tonsillitis at 43; chronic catarrh

3. This brother, J. H. M., aged 53, came into the hospital the following spring, March 17. He had had bad teeth for eighteen years, typical symptoms of pernicious anemia for nine months, gastric anacidity, blood count of 1,000,000 red blood corpuscles, fever and tachycardia. His course was progressively downward and he died, April 30, in spite of salvarsan, of whole blood subcutaneously, and of a transfusion of 500 c.c. of defibrinated blood.

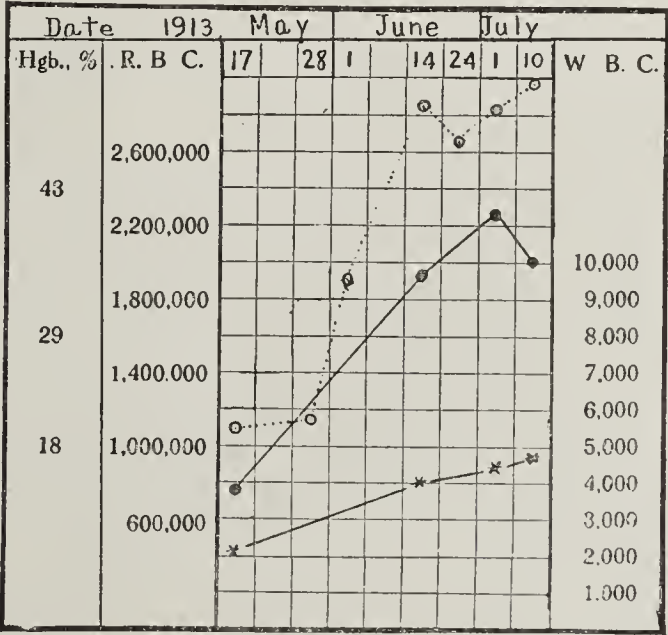


Chart 2.—The blood in Case 2.

pills were given after meals. A solution of potassium chlorate was used as a mouth wash. The teeth and gums were put in good condition.

This patient, who lives in Indiana, has returned from time to time for observation. He is well and carries on an active business. His hemoglobin has, at times, been as high as 107 per cent.

CASE 2.—History.—W. C., business man, aged 38, admitted, May 17, 1913, discharged, July 10, 1913, for about eight years, had had a low fever at times accompanied by chilly sensa-

tions; the disease had been supposed to be malaria, though the symptoms were much like those manifested on admission. He had been troubled with bad teeth for many years. The present illness had grown worse for four months, with loss of weight, marked asthenia, fever, and tachycardia. On admission to the hospital, several teeth were found to be loose, with pus about their roots. The physical findings and

F. There was no fever during the last three weeks. He gained only a few pounds in weight while in the hospital. Later, at a nursing home, he made a good gain in weight. On leaving there, he went to the country to live. His blood is now normal and he is taking up his work again in Alabama.

CASE 4.—*History*.—A. E. H., man, aged 43, white, married, admitted, May 18, 1916, and discharged, July 30, 1916, complained of sensitiveness of the plantar surfaces of the feet, and of weakness. The family history was good. He has three children, living and well, and no children have died. The patient has worked hard at confining office work, but his health has been, in general, good. He has had the usual children's diseases. He had influenza four years ago, but has had no sore throat. He has had alveolar abscesses recently. His habits have been good. Patient said his illness began about nine months previously with numbness in hands and, later, in feet and knees. The numbness had disappeared, but he said the toes and the bottoms of his feet were very sensitive. There had been some loss of weight. Blood examined at home had disclosed marked anemia. Three small transfusions of whole blood had been given, each containing from 30 to 50 c.c.

Physical Examination.—The patient was fairly well nourished, though pale and with slightly pigmented skin. The scleras were slightly icteroid. The heart was negative except for a soft systolic murmur. The lungs, the spine and the abdomen were negative. There was definite hyperesthesia on the plantar surfaces of the feet. There were no other evidences of lesion of the nervous system.

The blood revealed the usual picture of a moderately severe pernicious anemia as seen in Chart 4. The Wassermann reaction was negative. The roentgenoscopic examination of the gastro-intestinal tract was negative. After an Ewald test meal nothing was recovered through the tube after thirty-five minutes. There was no fever and no tachycardia. The urine was of low specific gravity, and otherwise normal. Dental consultation and examination revealed periapical areas about three teeth, and these teeth were extracted and

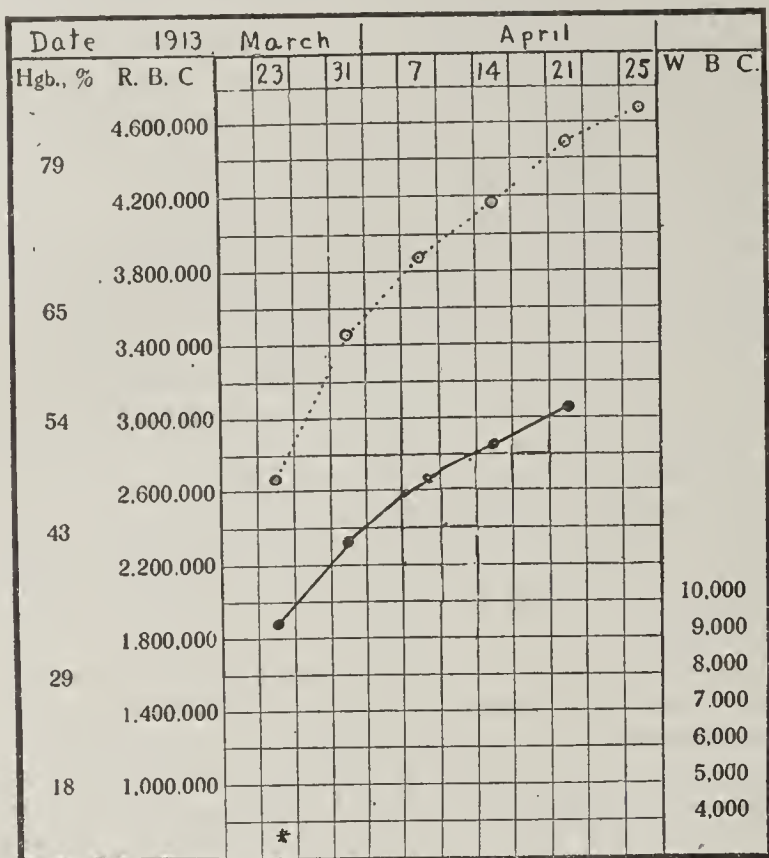


Chart 3.—The blood in Case 3.

blood picture were typical of pernicious anemia of severe grade. The red corpuscle count was below a million cells; hemoglobin 20 per cent. (Chart 2).

Treatment.—This consisted of rest, food, hydrochloric acid, Bland's pills, and arsenic in the form of sodium cacodylate; neosalvarsan, two doses; and for a time, liquor potassii arsenitis. The teeth and gums were put in good condition by dental specialists.

Note on Discharge.—The symptoms have all cleared up; the patient has gained 12 pounds in weight; the pallor is gone; the blood is rapidly improving.

CASE 3.—*History*.—J. C. L., business man, aged 37, admitted, March 21, 1913, discharged, April 25, 1913, complained of a "general tired feeling," nervousness and sleeplessness. The family history was unimportant. The patient's general health had been good. He had had measles and mumps as a child, and gonorrhea, twenty years before admission, followed by stricture of the urethra, which was completely cured. He had a tendency to worry about business affairs, became very irritable at times, and suffered from insomnia. He had meals at irregular times, ate rapidly and, formerly, smoked excessively. The onset began about thirteen months before, following an attack of grip. He did not go to bed, but kept at work, with progressive increase in the asthenia, irritability, insomnia and anorexia.

Physical Examination.—The patient was a well-nourished, muscular man. His face showed marked pallor. The liver edge was palpable 1 cm. below the costal margin. The firm, round edge of the spleen was felt just beneath the costal margin. The blood examination disclosed a moderately severe anemia, with high color-index and leukopenia, as shown in Chart 3. There was gastric anacidity. The Wassermann test was negative. The diagnosis was pernicious anemia and gastric anacidity.

Treatment.—This consisted of rest, full diet, hydrochloric acid, calcium carbonate and pancreatin, 3 drams of each, three hours after each meal, and sodium cacodylate.

At time of discharge, April 25, the spleen was not palpable. At first, there was an occasional rise of temperature to 99.6

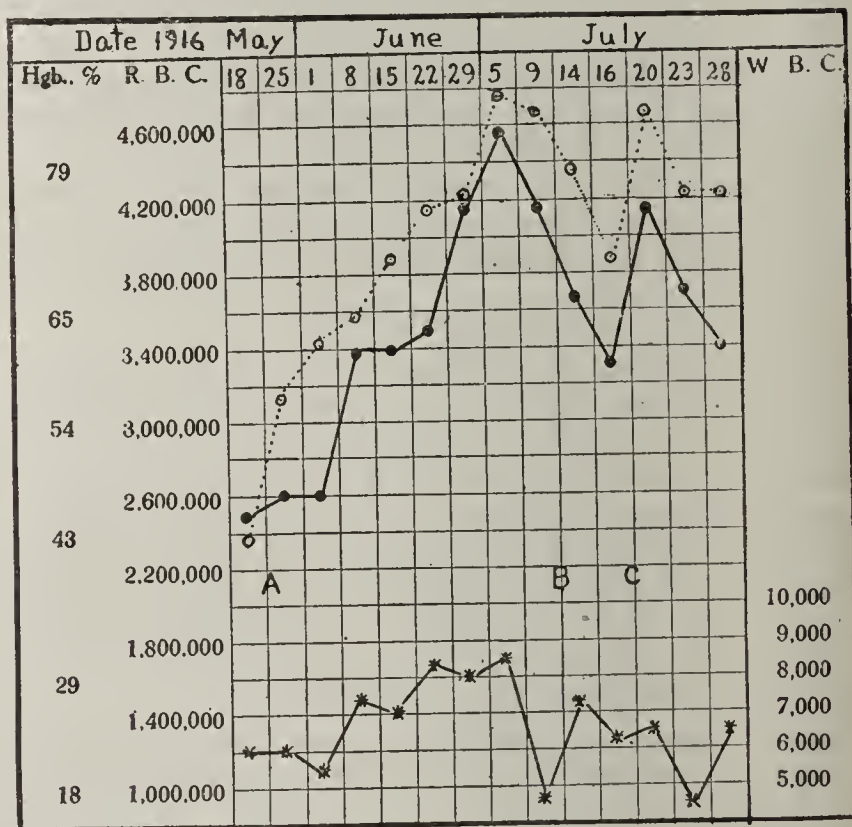


Chart 4.—The blood in Case 4: A, three teeth extracted; B, diarrhea and abdominal pain; C, diarrhea checked.

their sockets curetted. The diagnosis was pernicious anemia and oral sepsis.

Our usual regimen for the treatment of pernicious anemia was begun. Improvement began at once, but, after eight weeks, was interrupted by an attack including diarrhea and abdominal pain. After a few days, however, the counts again started upward. Recent reports from his home in Texas state that the patient is very well.

CASE 6.—*History*.—S. B. F., aged 73, business man, married, was admitted, April 27, 1917, and on examination pernicious anemia and peridental abscesses were revealed. The patient complained of weakness, loss of energy, pallor, dyspnea, and anorexia. He had had one attack of diarrhea. The family history was negative. The patient had had measles, mumps, chickenpox and malaria. He has had a great deal of trouble with his teeth (pain, abscesses). He had an attack of influenza three years ago with bronchitis. He has some frequency of urination, and is unable to empty his bladder. His habits are good. For three years, he had felt loss of his usual energy, and had had vague abdominal discomfort, constipation and anorexia. The weakness had increased steadily and, for one year, had been quite marked. The other symptoms noticed include dizziness, loss of weight, and dyspnea on exertion.

Physical Examination.—The patient showed moderate obesity; had a typical lemon-yellow color of skin and scleras; marked pallor and spade-like hands with abundant soft parts, almost like myxedema. There was severe oral sepsis and tachycardia. A slight pitting of ankles and a slight arterial hypertension were noted. The blood pressure was 150/80.

Blood examination revealed a marked anemia as seen in Chart 6. Gastric analysis shows anachlorhydria; total acidity 7 acidity per cent. Stools were small, soft and light yellow, but contained no parasites, ova, or blood. The Wassermann reaction was negative. Dental consultation and examination revealed large periapical areas with pus-sacs about many of the teeth, some ten of which were accordingly extracted.

Roentgenographic examination of the stomach and the intestines disclosed a spastic pylorus and a duodenal cap rotated and flattened out, suggesting a lesion in the neighborhood of the gallbladder. The laryngologic examination was negative. The urologic examination revealed phimosis, chronic prostatitis, and seminal vesiculitis. Further cystoscopic examination will be made when the patient's strength permits. The urine is of normal amount. The specific gravity is 1.015, and there is a faint trace of albumin, hyaline and granular casts, and abnormal amounts of urobilin.

The patient was at first extremely asthenic, and dyspneic on the slightest exertion. These symptoms improved markedly along with improvement in the blood condition. The usual regimen was followed. The chart shows the beginning of an improvement that has continued steadily since. The patient returned to his home in Delaware.⁴

ABSTRACT OF DISCUSSION

DR. H. A. CHRISTIAN, Boston: Forced feeding is evidently important, but in our own experience often we have found it exceedingly difficult to carry out because so many patients have nausea or a distinct aversion to food. In overcoming that aversion to food we have sometimes found transfusion valuable. I would suggest transfusion as an appetizer in some of these cases of pernicious anemia. In regard to the treatment with hydrochloric acid, pancreatin and calcium carbonate, we have found great difficulty in getting our patients to take this treatment (on account of the bad taste, especially

of pancreatin). We have carried it out as Dr. Barker has suggested, and some patients have taken it very well; other patients have refused. There may be something wrong with our pancreatin, or we lack that persuasive power that Dr. Barker has.

Clearing up foci of infection of course is important. The prolonged rest, with the patient going frequently out into the fresh air or spending the whole day in the open, adds a great deal to the results because the patients take their food so much better, and their general condition is greatly improved. Frankly, however, I do not think we have succeeded in accomplishing much in the attempt, possibly a poor attempt, to carry out the regimen that Dr. Barker has indicated. In some cases we have had good results and in others we have had no results at all.

I should like to emphasize the importance of gastric anacidity in these cases. The point is that sometimes the condition exists for several years before the development of the symptoms of anemia. I have seen a case in which it existed for five years and in one of our cases, which was studied very thoroughly, with a complete blood examination and nothing abnormal made out except gastric anacidity, the patient returned in two years with typical primary anemia. I should like to emphasize the presence of fever as a symptom. As we see it in the hospital, we find fever present with almost no exceptions; if the patient is sick enough to come to the hospital, he almost invariably has fever. These cases have been sent in as typhoid fever and tuberculosis because the general practitioner did not recognize the fever as a symptom of anemia. In these cases transfusion, when it increases the blood, relieves the fever.

DR. N. E. BRILL, New York: I know of no subject in the domain of the pathology of the blood which is surrounded by as much darkness as is the subject of anemia, whether primary or secondary. This is perhaps due to the fact that we as clinicians have not paid much attention to the biologic, physiologic and pathologic conditions associated with anemia. We speak of anemias in a general way as reduction in the number of the red cells of the blood. When we take into consideration the fact that the spleen is constantly destroying blood cells, that the life of a red blood cell, as estimated by Quincke is only thirty days, that therefore of all our blood we are losing one-thirtieth every day, it must strike us that there must be a nice balance between this daily loss and the new red cells formed to keep a constant of 5,000,000 red blood cells to each cubic millimeter of blood. What is the factor that regulates this wonderful balance? For over ten years I have been teaching my students that the regulating cause of this production resided in the red blood cell itself, particularly in its hemoglobin, and was particularly dependent on the oxygen-carrying capacity of the blood. When there is a diminution of oxygen in the blood, whether it be due to deficiency in the number of red cells or in the available oxygen, that deficiency of oxygen is the instigator or the hormone to the marrow for the production of new red cells. Clinically that theory is borne out by many factors. We know that in deficient aeration of the blood such as occurs in emphysema or in cardiac disease, the bone marrow responds to that diminution of oxygen by producing new cells, and polycythemia is a not uncommon accompaniment. Take carbon monoxid poisoning: there is no poison that will dissipate or force aside the oxygen from the hemoglobin as intensely and completely as will carbon monoxid gas, and in every case of this poisoning reported you will find that the bone marrow was distinctly red and that the circulating blood was full of nucleated cells, which means bone marrow activation. Take the blood of people living up on the mountain tops and you will find that the average number of red cells is 6,000,000 instead of 4,000,000 or 5,000,000, which is the number present at sea level, owing to the diminution of oxygen, the result of variation in barometric pressure. Take pernicious anemia, or even Minkowski's disease, in each of which the hemolysis which accompanies them results in the splitting up of the hemoglobin and, therefore, in the oxygen content, as a result of which bone marrow stimulation obtains. Haldane has shown that the blood in pernicious anemia contains the lowest amount of hemoglobin, hence the

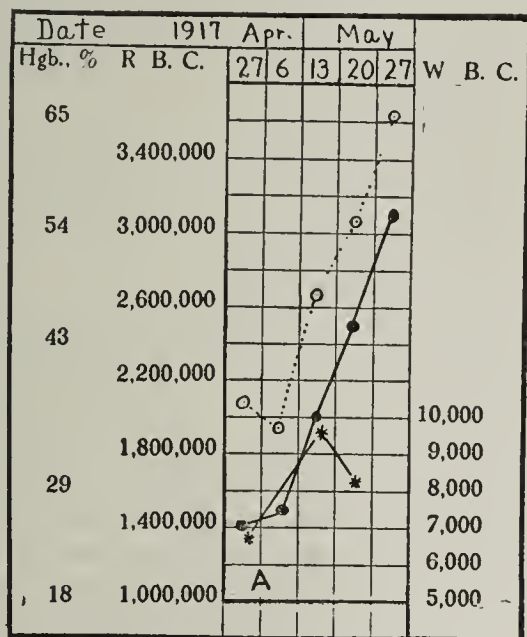


Chart 6.—The blood in Case 6: A, extraction of ten teeth, May 4, 1917.

4. In the summer (1917) he wrote that he was well—better than he had been in years.

amount of bone marrow activation is most marked in that disease.

DR. GEORGE R. MINOT, Boston: Dr. George I. Lee and I have studied the anemias at the Massachusetts General Hospital for the past three years, and there is one point about the activity of the bone marrow which was not brought out, yet which seems to us important.

It has been pointed out that the skeined cells (reticulated cells) and polynuclears give us information about bone marrow activity. The blood platelets are formed from the giant cells of the bone marrow and are also important elements to observe when studying bone marrow activity. We feel that if we were given, in a case of pernicious anemia, but one of the three chief marrow elements to judge the activity of the marrow from, we would rather know the number of the platelets than any other single factor.

We have treated approximately 100 patients with pernicious anemia; about 40 of these patients received only fresh air, suitable diet and arsenic; about 40 more have received transfusions, and 19 (chiefly unselected cases) were splenectomized. Splenectomy should, however, be reserved for selected cases, and is to be looked on as only the best means of inducing a remission. It usually gives the most satisfactory results in young patients with large spleens and considerable hemolysis. About 85 per cent. of the splenectomized patients showed some definite improvement following the operation, and 45 per cent. showed marked rapid gains; 50 per cent. of the transfused patients showed definite improvement beyond a simple filling up with blood, and 18 per cent. showed marked rapid gains; while in a similar period of time but 35 to 40 per cent. of the nonsplenectomized and nontransfused patients showed any improvement at all, and 7 per cent. showed marked rapid gains. There was a greater degree of improvement in the transfused and splenectomized than in the other patients.

DR. FRANK SMITHIES, Chicago: I am glad that Dr. Barker emphasized the important causal relationship of bacteria to the severe anemias. I personally believe that in the majority of these cases of Addisonian or "pernicious" anemia we have to deal with a peculiar type of bacterium of the hemolytic group. It is probable that the ailment represents end-results of long continued, intermittently active, low-grade sepsis.

In regard to the treatment, I believe in the early and frequently repeated transfusion of undoubted blood. I think that if we knew how to use transfusion, splenectomy would not be necessary in the majority of cases. Does transfusion do anything? Dr. Christian said that it is an appetizer; it certainly is, in the majority of cases. It will aid Dr. Barker in giving these large masses of pancreatin, which of course physiologically have no action within the alimentary tract. Transfusion will enable the patient to fight infection and its products, and probably stimulate blood formation. It will do in a week what Dr. Barker's rest treatment in bed for a month or more will do. This is an important service when one is treating anemic patients whose time and money are both limited. The individual who is energetically treated from the start has a fighting chance. I think that we ought not to go from this room and say, respecting our Addisonian anemias, that the treatment is only "lots of fresh air, good food and sunshine, and Heaven help them." If we let the patient consider that he has a hopeless disease, then he will not do well; but if we get into the patient's mind that there is a cause for this disease and that we are treating that cause as far as possible, we are going to have a fighting group of patients with anemias. Many will get well and be useful citizens.

DR. EDWARD LINDEMAN, New York: The most typical feature of pernicious anemia to me is its atypical and capricious course. One must be constantly guarded lest one attribute to any form of therapy that which rightly belongs to the natural course of the disease.

As to the value of the different measures of treatment as advocated in Dr. Barker's paper, I never give hydrochloric acid, cacodylate of soda or other medicinal remedies mentioned. I do not crowd the food, for the simple reason that after transfusions patients crowd the food without advising it. I do not advise rest in bed after transfusions. Patients are given blood transfusions in quantities from 1,200 c.c. to

2,300 c.c. These transfusions are given by the syringe cannula system and no reactions follow transfusions. Under no circumstances is sodium citrate or other anticoagulant used. I do not find it necessary to transfuse more than once in two months, one and two years, or even longer intervals, depending on the type of case.

When one sees a patient in a semiconscious state with dyspnea, generalized edema, persistent nausea and vomiting, rapid pulse and fever, and four hours after receiving 1,600 c.c. of blood, finds a disappearance of all nausea and vomiting, with the return of full consciousness, with absence, at the end of twenty-four hours, of all signs and symptoms enumerated, and the patient remains well for a period of two years, one cannot help but respect that form of therapy.

In regard to splenectomy, every patient I have had has returned with a blood crisis. What splenectomy has done for some is that it has prolonged the remissions of the disease and only carefully selected cases have proved favorable for this procedure.

In all cases of pernicious anemia coming under my observation in which the patients were in the first year of their disease, and who have remained where I could treat them at opportune times, there has been no death in the last two years. Treatment consisted almost entirely of blood transfusions in large amounts.

DR. E. L. TUOHY, Duluth, Minn.: I wish to emphasize the value of Schneider's method of estimating pigment output in the duodenal contents. The original investigations of Eppinger and Hess were made on the stools. Splenectomy, as advised by Eppinger, was the outgrowth of this work. Whatever may prove ultimately to be the merits or demerits of this operation, it can be said that certainly splenectomy is not logical in those patients not showing pleiochromia in the duodenal contents. I have studied about thirty cases of severe anemia, using this method in addition to the usual methods of investigation. Interestingly, two cases of *Bothriocephalus latus*, with very severe anemia, did not show any excess of pigment in the duodenal contents. In many severe anemias where I live the patients have shown positive Wassermanns; all of these have shown the same sort of duodenal contents as are seen in the usual severe secondary anemia. All have improved under specific treatment. The true pathology of pernicious anemia still seems obscure. The spleen cannot be looked on as the only destructive agent. These severe syphilitic anemias point to the possibility of striking injury done the bone marrow by syphilitic toxin.

DR. ALFONSO CASTELLI, New York: In the treatment of secondary anemia, exercise, diet, rest, fresh air and transfusion, of course, give relief, but in my experience in the treatment of secondary anemia the best results have been accomplished by the intramuscular injection of arsenate of iron. Iron, we know, is the time honored drug in the treatment of anemia, and we can trace its use to those early, empiric times when it was obtained for medicinal purposes, from having a red hot piece of iron immersed in water so as to produce aqua ferrata or chalybeate. We also know that iron, which enters into the constitution of the human body, 2.1 gm. being present in the average 65 kg. body, makes hematoblasts become adult erythrocytes, thus entering into the formation of hemoglobin, which is the important functional element in the red cells and the most important medium in the exchange of oxygen (oxyhemoglobin) from the air to all the tissues.

Arsenic, the well known tonic and alterative, on the other side, seems directly to stimulate bone marrow and the other hematoplastic organs in their blood-cell producing function, and therefore in the combination of the two elements, iron and arsenic, we have an ideal product with which to treat anemia. Of course, we know that iron must not be given by mouth, because patients will get either diarrhea or constipation, and we know that the intestines do not absorb heavy metals like iron, to say nothing of its teeth-blackening property. Likewise, arsenic tends to show untoward effects—nausea, dyspepsia, gastralgia, etc.—when administered by mouth, while the administration by the transcutaneous route of the two elements in solution avoids all that trouble and gives, beside, a fair estimation of the dose of the compound

which is deemed advisable to inject, according to age, size, etc., of the patient. We may start with 0.1 gm. of iron arsenate in 1 c.c. of solution, to be administered every day or every other day, children and undersized patients accordingly, and the dose may be increased up to 0.7 gm. After a number of injections of this arsenated iron the blood picture has become normal, not only in relation to the number of cells, but even to the index of hemoglobin, and the patient who was low spirited, pale, emaciated and underweight when he started the treatment, has regained his normal condition, is feeling well and looking rosy when he has taken the necessary series of intramuscular injections of iron arsenate. This holds good in cases of obscure anemias, as well as in those cases which accompany or follow such diseases as tuberculosis, syphilis, malaria, etc., and in the disorders of metabolism in general.

DR. ALFRED STENGEL, Philadelphia: Hemolysis alone cannot be the basis for our judgment as to methods of treatment. Hemolysis is one factor in true pernicious anemia, and only one. There is the question of marrow activity after hemolysis has been reached, to a certain extent. Observations have been made pointing to specific infection of the bone marrow in some cases. These observations have not been published, but are under way at present. The question of syphilitic anemia, I think, is a proper one. I recall a case of syphilitic anemia of a grade which we see in the most severe pernicious anemia; this patient recovered quickly under antispecific treatment. There are also infectious cases with speedy recovery after removal of the infection.

There are conditions closely resembling pernicious anemia that get well with either Dr. Barker's treatment or Dr. Smithies' treatment; but I am unable to give any positive opinion as to what plan of treatment is going to be effective. I think we are getting nearer to proper treatment in removing subsidiary causes or in coaxing back the bone marrow into its previous activity.

DR. L. F. BARKER, Baltimore: Two points have come out in this discussion: first, the great difficulty in differential diagnosis in some of the cases, and second, the clear advantage in therapy of the removal of foci of infection, and in some instances, of transfusion. As to aversion to food, I believe that we can often do much by urging patients to take food in spite of absence of appetite. Dr. Christian has observed that transfusion increases appetite. In many cases it is necessary to tell a patient that his appetite is not a sufficient guide and that he should eat what the nurse brings him, despite anorexia. An abundant, mixed, roborant diet should be given; the patients should be encouraged to take it and to bear any slight discomfort that follows its ingestion. I agree that pancreatin and calcium carbonate in the amounts mentioned are somewhat unpalatable. We have given them on the theory that, in the absence of hydrochloric acid and of proper secretin-production, some aid to intestinal digestion might be beneficial. Many of us will overlook foci of infection even when we think our search has been thorough.

This brings me to the question of fever. I think it may be due sometimes to the anemia itself, but I think we should first assume that it is due to some focus of infection that we have not yet discovered and we should continue the search for an overlooked focus. If, in a severe anemia, a focus of infection be found, say in the teeth, one might be inclined to say "wait," but I think we should go ahead, give an anesthetic, even to a man with a hemoglobin of 30 per cent., and perform the operation to get rid of the focus of infection. I have done this in several instances with gratifying results. What has been said about transfusion has interested me very much, and I certainly think that patients that do not respond to other methods of treatment should be transfused. I do not want to be understood as being pessimistic about the outlook in even very severe cases, because we now feel that at least many of these anemic patients can be speedily returned to health and to work, and to the enjoyment of life.

WOUND INFECTION AMONG LATHE WORKERS

AN INVESTIGATION INTO SOME OF THE FACTORS CAUSING WOUND INFECTION IN INDUSTRIAL SURGERY AND METHODS OF OBVIATING THEM *

MARVIN D. SHIE, A.B.

CLEVELAND

While serving in the emergency hospital of a large manufacturing plant last summer, I was impressed by the great number of infections and cases of furunculosis with which we had to deal. On some men a pin-prick, if left unattended, developed into a severe lymphangitis; a slight scratch in twelve hours into a linear mass of pus; a slight abrasion into a suppurating ulcer, and a laceration into a mass of necrotic tissue and pus. There were dozens of cases of multiple furunculosis, some patients developing as many as fifty boils at once on their arms and legs and faces. It is probable that ours was not the only manufacturing plant troubled with experience of this sort, since out of the total amount paid for deaths by the Industrial Commission of Ohio last year, 22 per cent. was for those resulting from infections, and of the total amount paid for disabilities and loss of time, 10 per cent. was for the same cause.

In our plant there are employed about 2,000 men, representatives of many nations—Americans, Canadians, Irish, English, Scotch, Welsh, Swedes, Russians, Poles, Germans, Austrians, Lithuanians, Hungarians, Italians, Armenians, Slavs, Bulgarians, Serbians, etc. Their standards of living vary as much as their nationalities, some of them living in places as crowded, filthy and unkempt as are found in our city slums, others in clean, tidy cottages with little gardens. In age, they vary from 16 to 60. Their general health is good, seeming not to be affected in the least by personal filth or cleanliness. The tenure of employment is exceedingly variable, some men working only a few hours, while others have been with the company for twenty years. The majority of laborers, however, are transient.

Situated on a hill, the plant gets its electric power and water from Cleveland. The plant includes a carpenter shop, old machine shop, new machine shop, structural shop, forge shop, bond room, packing room, pumping station, power house, yard where the structural work is assembled, hospital and offices. Each department has its own toilet rooms, wash rooms and shower baths.

All these departments were represented by patients who came to the hospital. From fifty to sixty patients were seen daily, and of these from 8 to 10 per cent. had furunculosis, and about 5 per cent. had wound infections of various sorts (these percentages are mutually inclusive). It was soon noted, however, that these cases all came from the two machine shops. When this was investigated further, it was discovered that of all the 1,200 or more men in the machine shops, none had multiple furunculosis save those who worked on lathes, and furthermore that 90 per cent. of the infections occurred in men working on lathes. The new machine shop is given over to the manufacture of

* From the Laboratories of the Department of Hygiene and Bacteriology, Western Reserve University School of Medicine.

* Awarded \$100 prize offered by the American Association of Industrial Physicians and Surgeons for the best paper on industrial medicine or surgery by any undergraduate medical student in America.

Suckers.—We believe that the person who coined the statement, "A sucker is born every minute," sold patent medicines. Cumberland (Md.) *Health Bulletin*.

8-inch shells, and houses about 400 lathes. The old machine shop is given over to the manufacture of machinery of various kinds, and houses only about twenty or thirty lathes. The cases of infections and furunculosis in these two shops varied directly as the number of lathes in each. The men employed on the lathes were of all nationalities and ages, and of the same general health as the rest of the men.

The localization of all furunculosis and the fact that the great proportion of infections was among the lathe workers naturally made us suspect that some element of the lathe work was the causative factor. This was further emphasized by transferring some of the men. Several of those affected with furunculosis were transferred to different types of work in the same and in other departments. In a week the boils began to disappear, and before long the men were comparatively free from them. Likewise some men in other departments, free from furunculosis and infections, were shifted to lathe work. About 35 per cent. of these men developed furunculosis, and in nearly every case, slight wounds which ordinarily would have caused them very little trouble became exceedingly troublesome, requiring constant attention and care to prevent infection. This was considered sufficient proof that lathe work was causing the trouble. The next problem was to discover the troublesome factor.

There were two possibilities: oil and cutting mixture. The oil was suggested by some of the men, and not without reason. For it is a well known fact that employees in machine shops, factories, etc., in which the men come in contact with lubricating oils, which are used automatically again and again, are particularly liable to suffer from dermatitis and furunculosis, in the form of "oil pimples," on the parts of the body which are constantly in contact with the oil. Elsewhere in the shop, however, there were men working in oil who had oil pimples, but whose furunculosis was not nearly so severe, and who were not nearly so susceptible to wound infection as the lathe men.

Cutting mixture is a compound of animal fats, petroleum oils and, as a rule, acids, used to facilitate the action of the cutting tool of the lathe on the object in the lathe. As the work revolves in the lathe, the cutting mixture runs in a steady stream on it at the point of application of the cutting tool. It then runs down over the work and the lathe into drains beneath. These drains empty into a central reservoir, from which the mixture is pumped up into tanks near the roof. With the aid of gravity, the mixture flows from these tanks through the system of pipes to the lathes. Thus the mixture is used over and over until it becomes so dirty as almost to clog the pipes. This, at least, was the condition before our investigation. The men are accustomed to spit into the mixture in the drains beneath their machines, throw their tobacco into it, and otherwise contaminate it. As they work, they are constantly in contact with both the oil and the cutting mixture, with which their clothes are often saturated. Thus it seemed that either might be a fruitful source of infection.

Having determined the possible causative factors, we set about the investigation of each of them. Stained cover-glass preparations, made from the oil and the cutting mixture, showed the presence of cocci and bacilli—very few in the oil and very many in the cutting mixture. Then cultures from each were made on glycerin agar and blood serum, and incubated in an

electric incubator at 37.5 C. (99.5 F.). No growth whatever was obtained in the cultures made from the oil, as the tubes were absolutely clean. On the other hand, the cultures made from the cutting mixture were covered with a cream-colored growth in about twelve hours, the glycerin agar having more growth than the blood serum. Smears made from these cultures showed an enormous number of staphylococci, some large diplococci, a few short chains of streptococci, and several strains of bacilli. This was repeated a number of times, and the same results were obtained each time. Plates made from these specimens contained a number of putrefactive colonies, mostly aerobic spore-bearers, and a large number of colonies of *Staphylococcus aureus*. Cultures made from the furuncles and the infected wounds showed the same kind of growth, and the smears showed the same kinds of organisms.

We next tried the effects of inoculation. A series of guinea-pigs was inoculated with suspensions of organisms from cultures made from furuncles and infected wounds, and a second series was inoculated with suspensions from cultures made from the cutting mixture. Three modes of inoculation were tried, namely, scarification, subcutaneous injection and intraperitoneal injection. Other pigs had similar inoculations of distilled water and some had none. These served as controls. The results are shown in the accompanying table.

Ten days later, when the pigs were all apparently normal again, I repeated the experiment, changing the pigs around, and I obtained practically the same results. After another intermission of ten days, I repeated the experiment again, and got practically the same results, though the reactions were less pronounced. Guinea-pigs were rather an unfortunate choice for these inoculations, for I discovered later that they are somewhat immune to staphylococcus infections, and staphylococci made up the greater majority of the suspensions. Considering this immunity, I feel that, since all of the inoculated pigs reacted, the virulence of the organisms was, perhaps, above the average.

These results demonstrated rather conclusively that the cutting mixture was the cause of many of our infections, and also that any harm done by the oil was probably not due to its bacterial content. There was still a possibility, however, that the oil was causing the furunculosis. But "oil pimples," though numerous, do not develop into the large boils, and even carbuncles, with which so many of our patients were affected. The oil might have a local effect, causing irritation and an inflammation which, instead of leading to an effusion of liquid, leads to an emigration of leukocytes, thus producing pustulation, a type of dermatitis venenata. Some drugs possess a specific chemotactic power on leukocytes and thus lead to a septic pus formation. Their injection (hypodermic or into serous cavities) leads to the collection of pus even when asepsis is perfect. Turpentine, croton oil, petroleum, mercury, silver nitrate, digitoxin, cadaverin and a few others are the principal examples. All boils and pimples investigated, however, contained staphylococci. It may be that the constant irritant action of the oil on the skin, following the hairs down into the hair follicles, and setting up an irritation there, caused localized points of lessened resistance which readily succumbed to the attacks of any staphylococci which might later gain access to them. It is not likely that the oil itself is so strongly irritant as to cause furunculosis unaided.

We must consider, then, as causative factors, both oil and cutting mixture, but especially the latter, since our investigations seem to place the greater blame on it.

On inquiry at the Department of Bacteriology of the Public Health Division of Cleveland, I found that specimens had been submitted for analysis from various plants having apparently the same difficulties we were having. Plates made from certain specimens of wash water and lard oil were found to contain a number of putrefactive colonies, mostly of the *Bacillus subtilis* type, together with a few molds. No pyogenic organisms were found. A specimen of alkali water was found to contain 210 colonies per gram, mostly of the *B. subtilis* type, but no pyogenic organisms. A specimen of oil before use contained several putrefactive colonies, but no pyogenic organisms. A specimen of oil after use contained numerous putrefactive colonies and a number of colonies of *Staphylococcus aureus*.

It will be noted that the last of these specimens presented the same bacteriologic findings as did our own

PROPHYLAXIS

We next faced the problem of prevention, the prophylaxis. In regard to the oil, about all we were able to do was to try to find men who were more or less immune to its irritant action. There seemed to be no way of counteracting the irritant action without injuring the properties of the oil. With the cutting mixture, however, it was an entirely different problem. This contained living organisms, the main cause of our trouble. The problem, then, was to find some cheap and effective means of killing the organisms without injuring the properties of the mixture. The possibilities were (1) sterilization by heat and (2) disinfection by chemicals.

Sterilization by heat can be carried out in a variety of ways. Probably the most effective method is by circulating steam through coils of pipe placed in the reservoirs and tanks containing the mixture. In this way the temperature attained by the mixture in the tanks is sufficient to kill the organisms present. A disadvantage of this method, however, is that as soon as

EFFECTS OF INOCULATIONS

| Method | Time After Inoculation | | | | |
|---|--|--|---|-------------------------------------|-------------------------------|
| | 24 Hours | 36 Hours | 48 Hours | 72 Hours | 120 Hours |
| Control pigs | Lively as ever | Well | Well | Well | Well . |
| Cutting mixture: Scarified pig | Lively, but seropurulent material along excoriations | More pronounced..... | Healing | Healing | Healed |
| Subcutaneous | Decidedly less lively. | Lay inert in corner of cage, under straw; roused with difficulty | Sick, almost comatose | Recovering | Almost well (well in 8 days) |
| Intraperitoneal | Decidedly less lively.. | Inert in corner of cage; under straw; roused with difficulty | Almost comatose | Slightly better | Recovering (well in 7 days) |
| Wounds and furunculosis: Scarified | Very lively, but pus under scabs on excoriations | About same | Healing | Healed | Healed |
| Subcutaneous | Somewhat less lively.. | Very quiet; not easily roused | Inert in corner of cage under straw; roused with difficulty | Slightly better; more easily roused | Much better; practically well |
| Intraperitoneal..... | Much less lively..... | Almost comatose | Slight movement; roused with difficulty | Better..... | Better (well in 6 days) |

cutting mixture. Our oil also showed the same morphologic forms, but the organisms in it did not grow, and so probably were dead.

The portals of entry by which the germs might gain access to the system were many—cuts, abrasions, puncture wounds. Small particles of flying steel from lathes cause innumerable small puncture wounds, each of them sufficiently large to form a portal of entry. We passed the electric magnet over many arms apparently free from steel, and the magnet came away covered with fine steel “hairs” and splinters pulled out of the arms, leaving almost microscopic puncture wounds. We made cultures from the arms of these men, and in less than ten hours the cultures were covered with bacterial growth. Cultures from the arms of twenty-five college students were made in the same way. The majority showed some slight bacterial growth, but nothing approaching that obtained from the arms of these working men. It could not be otherwise, for the arms of the latter were constantly wet with oil and cutting mixture.

the mixture leaves the pipe it is so distributed that it at once becomes recontaminated, and therefore reaches the workmen in almost as dangerous a condition as before treatment.

The other method, that of disinfection by chemicals, obviates this disadvantage, since the bactericide is constantly present and renders harmless any organism that might come in contact with it. The selection of the proper germicide for disinfection is really a problem for the makers of the mixture, and as soon as we made them acquainted with the facts, they were glad to cooperate with us and to do all in their power to render the mixture sterile. It may be well, however, to mention some of the difficulties in making a compound of this sort germ-proof. In the first place, it is impossible to use any inorganic or metallic germicide or disinfectant such as mercuric chlorid, copper sulphate, silver nitrate or ferrous sulphate, because of the action of the chemical on the metals with which it would have to come into contact. Oxidizing and reducing agents, hydrogen peroxid, potassium permanganate, sulphur

dioxid, ozone, iodine, bromine, chlorine, etc., are ineffective because of their instability and the presence of organic matter in the cutting mixture. Likewise, disinfectants of the fatty series, such as chloroform, iodoform and alcohol are too unstable and also too costly. Some of them would also interfere with the action of the compound. As alkaloids are unsuitable, the only group left is the coal tar series, including phenols and cresols. This group is the least objectionable.

But many members of the coal tar series are also useless for our purpose, for the nature and quantity of the associated material is of great importance and must be taken into account.

Cutting mixture is a more or less oily solution containing considerable organic matter, especially after passing through the pipe and drainage system several times. Phenol (carbolic acid) acts antiseptically scarcely at all when in oily solutions—a fact due to their great solvent power for phenol, and to their ability to prevent its transfer to the bacterial protoplasms. Likewise in the presence of much organic matter, phenol, to be effective, must be used in concentration of about 5 per cent., which is too high a percentage to be desirable from its toxic standpoint. From the standpoint of effectiveness, the degree of dilution of the antiseptic is also important. A 5 per cent. solution of phenol is much more effective than either a 2 per cent. or a 25 per cent. solution. On the other hand, a solution must be strong enough in any given case to be effective. The various antiseptics vary greatly in their effective strength. The element of cost also enters here.

The toxic and corrosive action of the agent and the ease with which it is absorbed are of importance in deciding its practical usefulness. Some men are susceptible to the odor of coal tar antiseptics such as phenol and cresol, and cannot work with solutions of which these are a part. This is one of the difficulties we encountered. Then, too, the cost of the disinfectant is an important factor, especially in these modern days when manufacturers watch closely every element entering into the cost of production, in order to cut down to the smallest margin the producing cost of the manufactured article.

We have shown that the coal tar disinfectants are practically the only ones available for our purpose. Of these the cresols are of the most importance. They form the major part of crude phenol, and contain the methyl group. This group diminishes its toxicity and increases its antiseptic power. The cresols are about three times as powerful as phenol in disinfecting value. A strength of from 1 to 1.5 per cent. is effective, and is only about one fourth as toxic as phenol. Their cost is also much less than that of phenol. The one disadvantage of cresols is their very slight solubility in water. This insolubility can be readily overcome, however by emulsifying agents. A cresol, then, would seem to be the most practical disinfecting agent for our purposes.

Two methods of sterilization, then, are available: by heat and by chemical disinfection. Both have been tried and found more or less effective. A large foundry about a mile from the plant of which I have been speaking had the same trouble. Here the heat method was used and it was found that the infections and furunculosis were considerably reduced, though not entirely stopped. The chemical method was tried in our plant. Phenol was found to have the dis-

advantages enumerated in the foregoing. * It kept organisms from growing in the mixture only about one and a half days. Next a mixture of phenol and wood alcohol was added to the cutting mixture sufficient in amount to make a 5 per cent. solution when diluted with water. This was found more efficient than phenol alone. Solutions and preparations of cresol were then tried, and it was found that a smaller percentage kept the solution free from living organisms for a much longer time than did phenol, namely, for six days. Another dose had to be added then or else new cutting mixture had to be used to keep the mixture sterile, partly because additions to the number of bacteria in the mixture were constantly being made. This served to reduce markedly the infections and furunculosis, but some of the men could not work with it because of susceptibility to the odor. This is a small matter, however, which may be readily overcome.

It is quite likely that further modifications may be made which will reduce the number of cases still more. For the past three months, the cases of infection have been less than 0.5 per cent., and no complaints are heard from the men regarding either oil or cutting mixture. Whenever it seems probable that living pyogenic organisms are present in the oil, a germicide also might be added to it. We did not try a combination of heat and disinfection, for there was no steam in the shops, all the power being electric. But when steam is available, I believe that a combination of both methods would prove effective, and would greatly reduce the cases of furunculosis and infections, with which the emergency hospitals of many of our large manufacturing plants have to deal. In places where the men are sufficiently intelligent, a program of education in sanitation should be instituted so that the oil and cutting mixture would not readily become contaminated.

SUMMARY AND CONCLUSIONS

1. In a large manufacturing plant the vast majority of cases of wound infections and furunculosis were found to be localized among lathe workers in the machine shops.

2. The peculiar features of lathe work are the use of cutting mixture and oil, and the manner in which these circulate and are used repeatedly, thus making them extremely liable to contamination. This contamination rendered them open to suspicion as factors in the causation of the wound infection and furunculosis.

3. These suspicions were borne out by bacteriologic investigation and animal inoculation, which showed the causative factor to be pyogenic organisms which were present in vast numbers in the cutting mixture and less numerous in the oil. Marked results were obtained.

4. Abundant portals of entry for these organisms were found on the arms of workmen in innumerable small cuts and punctures made by flying chips of steel from the lathes.

5. The methods of prophylaxis possible are: (a) by heat; (b) by chemical disinfection, and (c) by a combination of the two. Various chemical disinfectants were tried, and the cresol group was found to be the most effective and the least expensive.

6. By use of chemical disinfection (cresols), wound infections have been reduced from 5 per cent. to less than 0.5 per cent. in the plant under consideration, and furunculosis has almost disappeared.

1356 East One Hundred and Twenty-Fifth Street.

THE FRACTIONAL TEST MEAL

A STUDY OF 377 FRACTIONAL TEST MEALS, OF WHICH 139 ARE IN PROVED PATHOLOGIC CONDITIONS

CHARLES P. HORNER, M.D.

Research Fellow, Wesley Memorial Hospital

CHICAGO

During the past two years there have been 377 fractional test meals given in the Medical Clinic of Wesley Memorial Hospital, under the supervision of Dr. Charles A. Elliott. Thirty of these test meals, as previously reported,¹ were tried on normal individuals, nurses and medical students, eighty-nine on patients in whom the diagnosis has been proved either at operation or at necropsy, forty-five on patients in whom the diagnosis was clinically certain but not proved, and 213 on patients in whom the diagnosis was not absolutely certain and could not be proved.

The present report deals with a total of 139 cases, in sixty-five of which the diagnosis was proved at necropsy or operation and in seventy-four of which there could be no doubt as to the actual condition present. These cases are divided into six groups: (1) diseases of the gallbladder, thirty-eight cases; (2) gastric ulcer, ten cases; (3) duodenal ulcer, twenty-six cases; (4) gastric carcinoma, eight cases; (5) pernicious anemia, eleven cases; (6) miscellaneous, forty-six cases.

The technic uniformly followed was that previously reported (Talbot) from this clinic. In those unusual cases in which the patient found it difficult to swallow the tube, a specially constructed bucket and a tube fitted with a wire obturator, as devised by Dr. Allen B. Kanavel,² were employed.

Special attention was given to the emptying time, first of food and then of secretion, for the two periods do not always coincide. The emptying time was considered of special importance and was well demonstrated by means of the fractional test meal.

DISEASES OF THE GALLBLADDER

This group consists of thirty-eight cases. In thirty-four, the diagnosis was proved at operation, and in four, the diagnosis was conclusive.

Fasting Content.—The amount of gastric content obtained from the fasting stomach varied from 2 to 255 c.c. The latter amount is exceptional, as in only

two other cases did the amount exceed 60 c.c. The average was 27 c.c., exclusive of the one exceptional case. Free acid was absent in nineteen cases, below 20 in nine, between 20 and 40 in seven, over 40 in four, with a maximum of 54, the average being 14. The total amount of acid ranged from a minimum of 6 to a maximum of 66, with an average of 29. The highest reading for total acid, in cases in which free acid was absent, was 22. Lactic acid was uniformly absent in twenty-six cases. Gastric mucus was present in excessive amounts in seventeen cases. A benzdinin test for blood was positive in three out of thirty-five cases. The microscopic findings were not interesting except in one case in which many pus cells were found in the fasting stomach content. The stomach content for this case gave a positive Gmelin test, and the case proved to be one of cholecystitis, with distention of the gallbladder.

Fractional Meal.—In the acid curve, the beginning of response to the test meal varied in onset from a

few minutes to forty-five. In eleven cases it occurred less than fifteen minutes after the test meal, in nineteen cases, between fifteen and thirty minutes after the test meal, and in five it was delayed beyond the thirty minute period. In four cases there was no response. The response, whether prompt or delayed in onset, was gradual in development. The maximum amount of free acid varied from 0 to 80, with an average of 41. For the total amount of acid, the maximum varied from 14, in a case without free acid, to 112, with an average of 60. In point of time, the amount

of free acid was highest at from thirty minutes to three hours, averaging one hour and twenty-eight minutes. The high point of total acidity occurred at from thirty minutes to two and one-half hours after the test meal, averaging one hour and twenty-two minutes. For both free and total acid content, the time of the high point was constant, regardless of the promptness of response. This point is illustrated in the accompanying tabulation.

CONSTANCY OF HIGH POINT OF ACIDITY

| Cases | Response | Average free HCl | Average total HCl |
|-------|------------------|------------------|-------------------|
| 11 | 0 to 15 minutes | 1 hr. 35 min. | 1 hr. 24 min. |
| 19 | 15 to 30 minutes | 1 hr. 40 min. | 1 hr. 35 min. |
| 5 | 30 minutes + | 1 hr. 42 min. | 1 hr. 36 min. |

The type of response is fairly constant in most gallbladder cases. The acid values rise to the high point, at which the stomach empties, the gastric cycle not being completed in twenty-seven of thirty cases. Bile was present in four cases occurring after fairly high

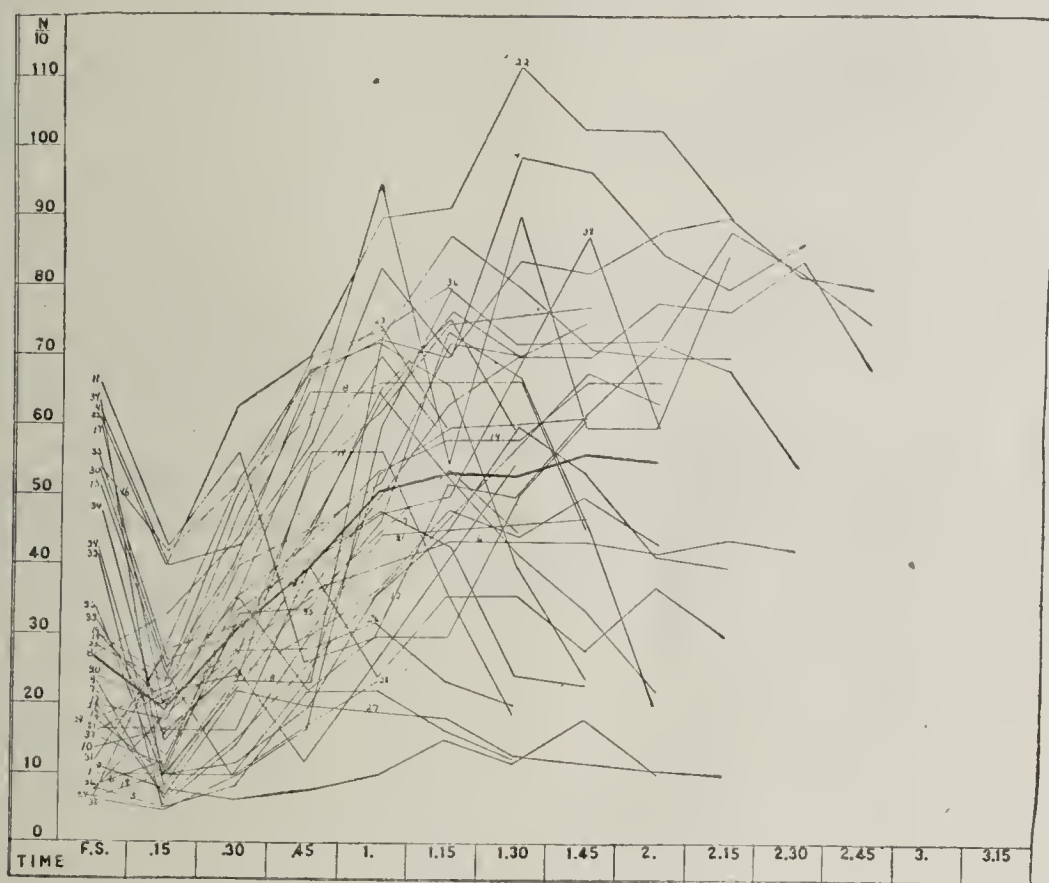


Chart 1.—The total acid curves in thirty-eight gallbladder cases (with operation in thirty-four). Note the low acidity of the fasting content (F. S.), the prompt response, the fairly constant time of maximum acidity, and the early emptying time at or near the high point. The gastric cycle is incomplete. In this and the following charts the heavy line represents the mean acid curve and terminates at the mean emptying time.

1. Talbot, E. S.: The Examination of Normal Gastric Secretion by the Fractional Method, THE JOURNAL A. M. A., June 10, 1916, p. 1849.
2. Kanavel, A. B.: Surg., Gynec. and Obst., October, 1916, p. 433.

acid values were reached. It was accompanied by a decided drop in acidity.

Pain occurred during the test meal in only one case, was moderate in degree, independent of acid readings,

Fractional Meal.—There was no case of anacidity in this group. In nearly all cases with high acid fasting content, there was a sharp drop in the curve after the test meal was taken. The response to the food stimulus began in seven cases before the fifteen minute period, in eighteen cases before the thirty minute period, and in only one case later than thirty minutes. The response was gradual in development in twenty cases and abrupt in six cases, three of which showed a high acidity in the fasting content. The maximum acidity was reached in from forty-five minutes to three hours after the test meal, with an average time of one hour and thirty-six minutes. Acid values ranged from 24 to 110, averaging 66. The high points of total acidity were 44 to 124, with an average of 85, occurring in from one to three hours after the test meal, the average period being one hour and thirty-six minutes.

While the acme of the curve showed a distinctly high point in nearly all the cases, this level was sustained as a plateau in only five cases. In one there was a drop in the free acid to 0, one hour and fifteen minutes after eating. This was followed by a rise to 42 after two hours and thirty minutes, at which time the stomach emptied itself. In another there were two drops to the 0 line, each accompanied by

the presence of bile and followed by a rise, giving the line a triple apex.

In six cases the Gmelin test for bile was positive. Its first appearance was usually accompanied by an

and relieved at the emptying time. The emptying time in the majority, that is to say, twenty-two cases, was between one and one-half and two hours after eating. Only twelve cases continued beyond the two-hour period, and all were empty at the end of two hours and forty-five minutes.

Summary.—The characteristic features of the fractional test meal in gallbladder cases are: (1) fairly constant time for maximum acidity; (2) the emptying of the stomach at or near the maximum acidity; (3) early emptying time, and (4) incompleteness of the gastric cycle, interrupted by the emptying process at or near the maximum acidity.

DUODENAL ULCER

In this group, consisting of twenty-six cases, there are fifteen confirmed by operation and eleven in which the clinical diagnosis was certain.

Fasting Content.—From the fasting stomach the amount obtained varied from 5 to 175 c.c., with an average of 50. Eleven cases had less than 30 and eighteen less than 50 c.c., while eight had over 50 and only one over 100 c.c. The free acid value ranged from 0 to 80, with an average of 26. The total acidity varied from 6 to 100, with an average of 43. Five showed a total acidity above 80. Lactic acid was absent in all. Gastric mucus was excessive in seven. Microscopically, food remnants were found in only one, in which the fasting content was 131 c.c., free acidity 70 and total acidity 86. In one, red blood cells were observed with many puss cells, motile bacilli and *Trichomonas intestinalis*.

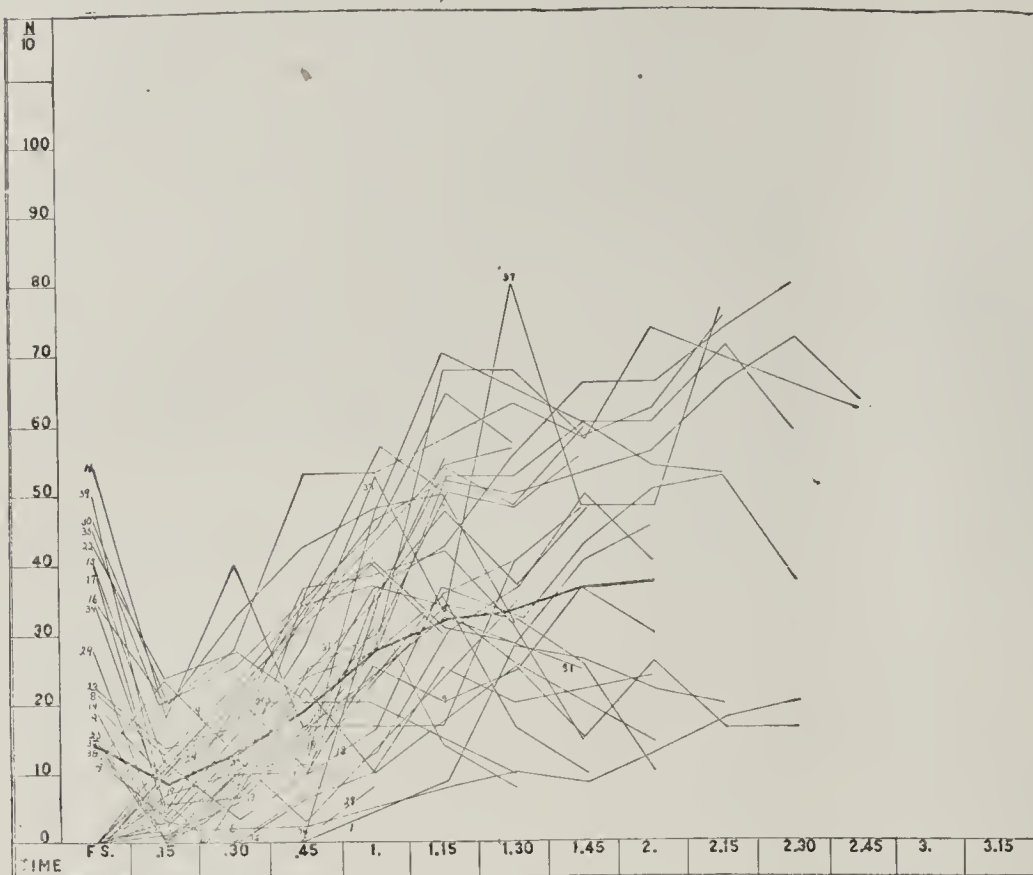


Chart 2.—The free acid curves in thirty-four gallbladder cases (four anacid curves not shown). Note the tendency to empty early at the high point.

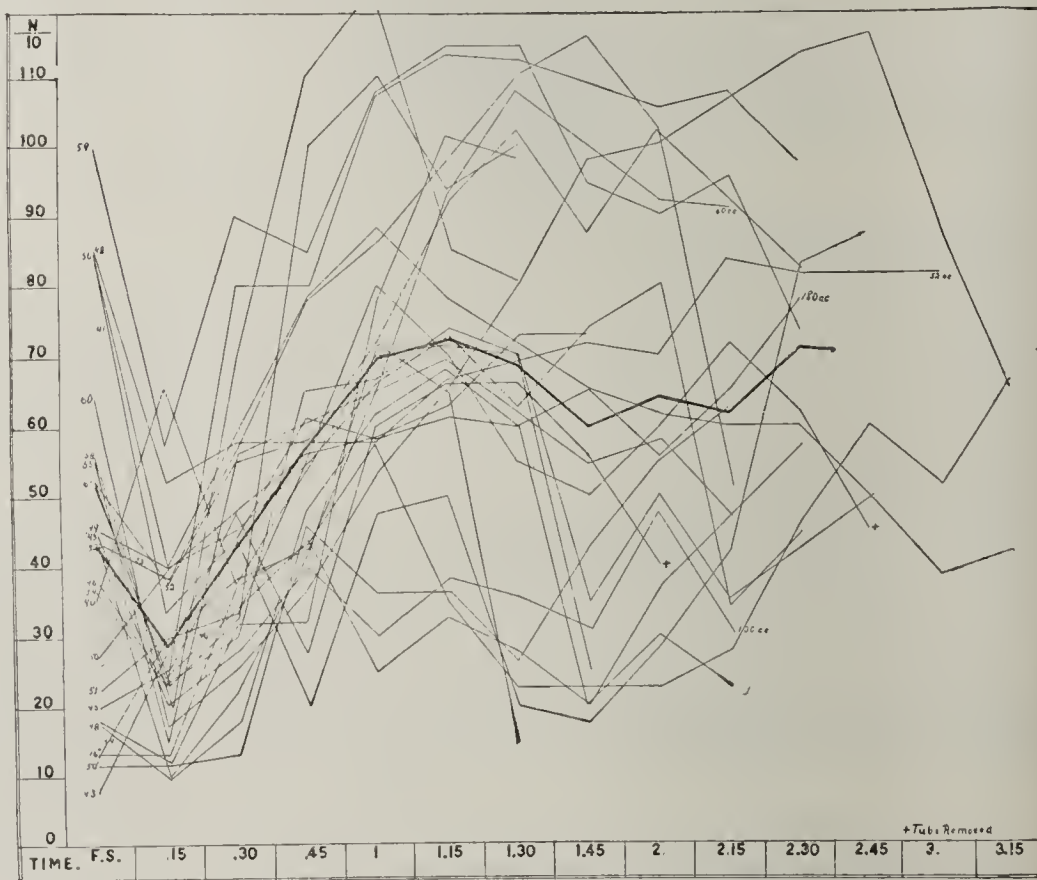


Chart 3.—The total acid curves in twenty-six duodenal ulcer cases (with operation in fifteen). Note the extremes of acidity of fasting content, the prompt secretory response to food stimulus, the high acidity, and the delayed emptying time.

abrupt fall in acidity. In one case it was a terminal finding. In three cases it was detected at one point during the test but disappeared, followed by a distinct rise in acidity.

In one case, bile was constantly found from the end of the thirty minute period to the time of emptying. two and one-half hours after eating. In another case, it appeared at the end of one hour after eating, and

justified in classing them as cases of continued secretion. In six cases there was no declining phase, in four cases the stomach emptied at a delayed high point, and in two, a large amount of the content was aspirated at a much delayed point when the test was discontinued.

The emptying time varied from one and three-fourths to three and one-half hours. Food particles disappeared from fifteen minutes to two hours and thirty minutes before the emptying time.

Summary.—The characteristics of this group are: (1) lack of anacid cases; (2) larger amount of fasting content; (3) high acidity, the highest values being found in this group; (4) delayed emptying time, with continued secretion in six cases, and (5) frequency of pain, which occurred in eight out of twenty-six cases.

GASTRIC ULCER

This group consists of ten cases, eight proved by operation and two in which the clinical diagnosis was certain.

Fasting Content.—The amount varied from 10 to 200 c.c., with an average of 65. The amount of free acid ranged from 0 in two cases to 84. In five cases it was more than 50, the average being 35. The total amount of acid ranged from 6 to 97, in five being more than 50, and the average being 51.

The contents were colorless with one exception, which was green and which gave a positive bile test with an excess of mucus and no blood, the ulcer being at the lesser curvature. Mucus was excessive in two

was constantly present until the stomach emptied at the end of two and one-half hours:

In one case, the benzidin test for blood was positive at the apex of the curve. Its appearance was followed by an abrupt fall in the acidity. In this case a chronic ulcer surrounded by many adhesions was found just outside the pylorus.

In eight cases, complaint was made of pain, which, in six of these cases, was described as burning in character and occurred at or just preceding the high acid point, which varied from 54 to 110 free acid. Pain continued until the acidity again fell to a figure corresponding to that at onset. In two cases, the pain was colicky or peristaltic in type, of short duration and with a lower acidity, that is to say, with a free acid content of from 20 to 34.

In this group the type of curve varies greatly, especially in the latter phase, which is most affected by disturbed motility and emptying power. Eighteen cases revealed a normal diverging rise in free and total acid curves, an acute or sustained apex, and a converging decline in acid values throughout the period extending to the emptying time or the discontinuance of the test. In seven cases the decline was abrupt, while in the others it was gradual, varying in length of time, and in some remittent. In six cases the acid values were so sustained and the emptying time so delayed, if, indeed, it came at all, that, in view of the high acid finding in the fasting content, one was

cases. Blood was found in none, and bile was present in two.

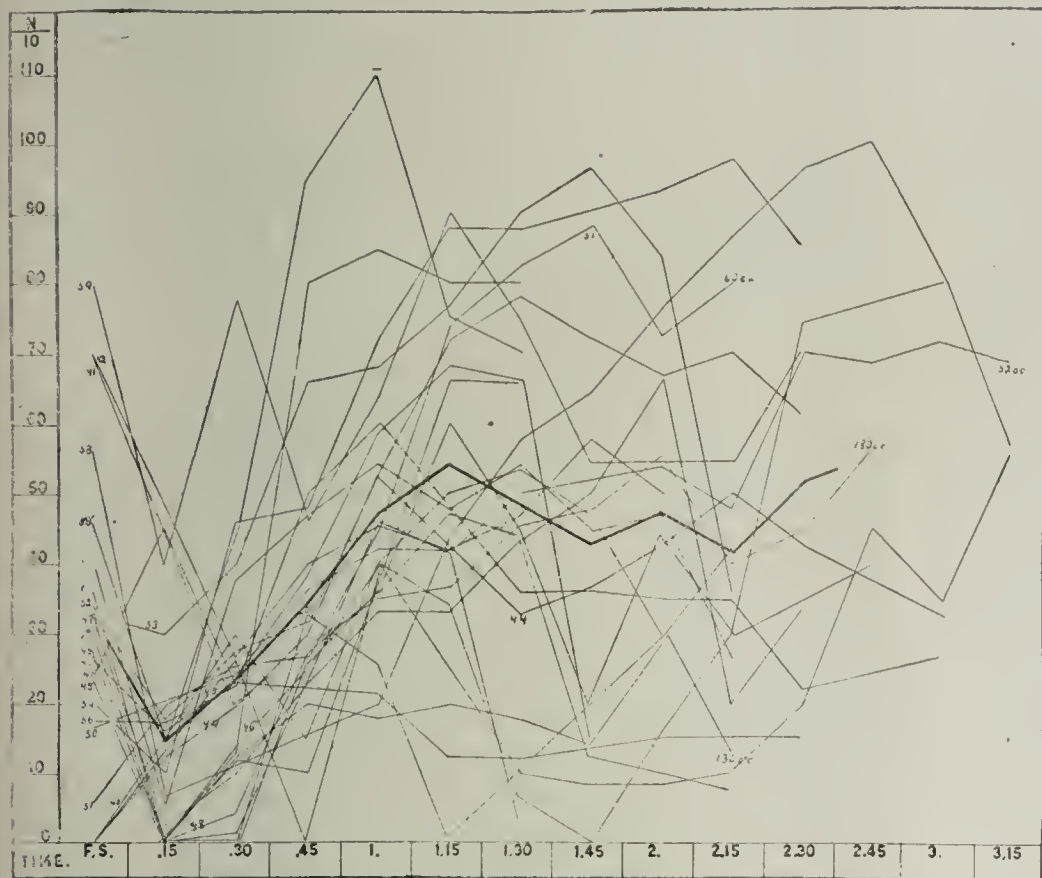


Chart 4.—The free acid curves in twenty-six duodenal ulcer cases (with operation in fifteen). Note the prompt secretory response, the high free acidity, and the delayed emptying time. There are no anacid cases in this group.

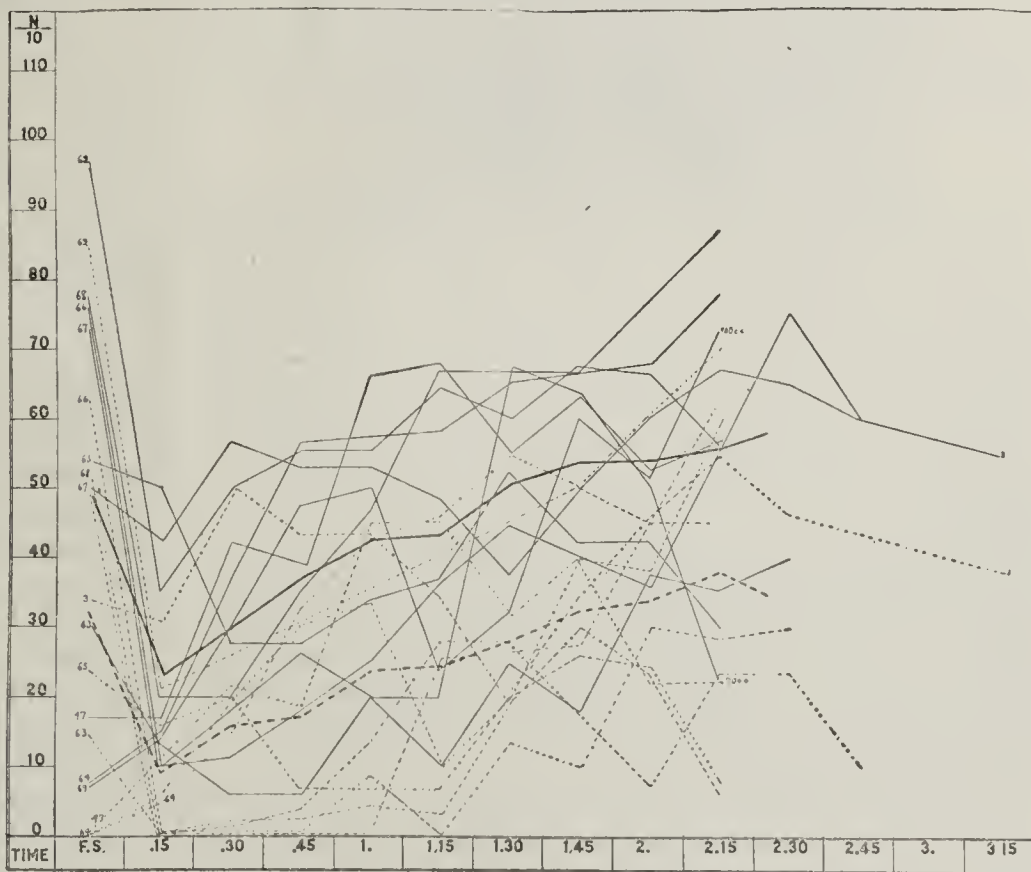


Chart 5.—The fractional test meal curves in ten gastric ulcer cases (with operation in eight). Total acid is indicated by the continuous lines, free acid by the interrupted lines. Note the high acid values of the fasting stomach content as compared with that obtained in the curve, the delayed and weak secretory response, the moderate height of curves, and the fairly uniform emptying time (seven cases at two and one-fourth hours).

Fractional Meal.—Of four cases which revealed high acid findings in the fasting content, the test meal was followed by an abrupt fall in the free acidity to 0 in three, and from 84 to 22 in the fourth. In two other cases the fall was gradual and less in degree. In two cases showing anacid fasting contents, the response was prompt in onset and gradual in development. In two cases the response began between the fifteen and thirty minute periods, in one it was delayed until the end of one hour, and in one there was no perceptible response until the end of one hour and fifteen minutes.

The maximum free acidity was reached at the end of a period varying from one and three-fourths to two and one-half hours, with values varying from 28 to 70, the average time being two hours with 49 acidity. The total acid high point was reached at from one and one-half to three hours, with an average of two and one-fourth hours. The acidity ranged from 40 to 88, the average being 65.

Bile was present in three cases. In one case with an ulcer at the lesser curvature with adhesions, it was present throughout the test, including the fasting content. In another case, bile was present at the end of fifteen minutes after an abrupt drop in acidity from a high fasting point of 62 free and 74 total. In a third case, it was present at the end of the one and one-fourth hour period, accompanied by a prompt fall in acidity.

Blood was demonstrated in only two cases. The pain, which was described as burning, was present in only one case, which showed the moderate acidity of 54 free and 64 total.

Summary.—The characteristic features of the fractional test meal in gastric ulcer are: 1. The amount of the fasting content is comparatively large. 2. The response is weakened and delayed. 3. A high point of only moderate acidity is attained. 4. Free blood and pain during the test are unusual. 5. The emptying time is fairly uniform at two and one-fourth hours, occurring in seven of ten cases.

GASTRIC CANCER

This group consists of eight cases all confirmed by operation or postmortem. The fasting content varied from 10 to 238 c.c., according to the site of the tumor, the largest amount being associated with obstruction at the pylorus. The cases fall into two groups, first, a group of five anacid cases in which there was no response to the test meal, and second, a group of three cases in which there was a response and free acid was present.

Of the five anacid cases the fasting content showed a total acidity of less than 8 except in one case in which the total acidity was 60, on account of the presence of a large amount of lactic acid. There was little or no response. The curve was uniformly flat. The emptying time was early except when associated with pyloric obstruction.

In the three cases in which free acid was present, the acidity was fairly high on the fasting content. In two cases there was a rather prompt response, and the free acid values were fairly high in all. In one case, the high point was reached in thirty minutes, and in the others, at the end of two hours. In one case there was a continued secretion. In all three cases, with free acid present, the pylorus was not involved, the tumors being prepyloric, on the lesser curvature, and cardiac, respectively.

The free acidity reached 40, 56 and 74, respectively, the total acid and free acid curves being parallel to each other.

The emptying time was two hours or less in five cases and much delayed in three. Blood was present in five of the eight cases.

Summary.—1. In gastric cancer there are two types of curve, anacid and hyperacid. 2. In the anacid cases, the stomach empties early with one exception, which is associated with an edematous pylorus. 3. There is a continued secretion in two cases in which there is free acid. 4. In all three hyperacid cases, the site of the cancer was at the cardia or lesser curvature, the pylorus being free.

PERNICIOUS ANEMIA

This group consists of eleven cases, in all of which the diagnosis of primary pernicious anemia was clinically conclusive. The fasting content was small in amount, averaging 14 c.c. Free acid was uniformly absent. There was no gastric response to the test meal. In all cases, the benzidin test for blood was negative. The stomach emptied early and the food remained undigested throughout the test in all cases. In only one case was food present at the two hour period, six being empty at the end of one hour.

Three cases of severe secondary anemia resembled primary pernicious anemia, in all of which the etiology was known to be syphilis and chronic hemolytic infection. In two of these cases, the results of the fractional test meal differed markedly from those obtained in the cases of true pernicious anemia, in that the response to the test meal was marked, though somewhat delayed. In other words, free acid values of 35, 40 and 65, respectively, were obtained. In all cases, the response began thirty minutes after the test meal, and the high point was reached at the end of one and one-fourth hours.

Summary.—In pernicious anemia the following conditions were observed: (1) a small amount of fasting stomach content; (2) complete anacidity; (3) absence of blood; (4) unchanged food; (5) early emptying time, and (6) the presence of free acid in severe secondary anemias of known etiology simulating true pernicious anemia.

INFECTIONS

There is a small group of anacid cases of which mention should be made. These embrace chronic infections, such as arthritis, myositis, neuritis, chronic endocarditis, acne and boils. They occurred in patients who complained of no gastro-intestinal symptoms and in whom no acid was found during the fractional test meal. In a case of acne, the eruption apparently cleared up after the systematic administration of hydrochloric acid. Of two patients with hyperacidity occurring in duodenal ulcer, and given ulcer treatment during which the acid was continuously neutralized by the administration of large doses of sodium bicarbonate and magnesium oxid, one developed appendicitis, and the other, multiple acute arthritis. These facts suggest the protective nature of the hydrochloric acid in preventing infective agents from gaining access to the gastro-intestinal tract, or possibly to the general circulation, and would seem to warrant the making of a fractional test in all cases of chronic focal infections of unknown etiology. They also suggest the possible danger of general infection in neutralizing the acid in hyperacid cases.

Two important features of this group of anacid cases are the frequency of gastric anacidity in cases of chronic colitis without gastric complaint, and the value of hydrochloric acid therapy in pernicious anemia. The latter feature, which has been frequently observed in this clinic, also suggests the importance of the defensive rôle of hydrochloric acid as an antiseptic agent in the gastric secretion.

CONCLUSIONS

1. The fractional test meal satisfies the clinician as to the amount and character of the fasting stomach content, the gastric response, the acidity, the amount and character of secretion, the degree of gastric digestion, the presence of blood, the amount of bile, and the pain at any specific point in the gastric cycle, which is of considerable diagnostic value.

2. Certain fairly constant characteristics of the curve are noted in various diseases. In gallbladder disease the secretory response is prompt with high acidity, and the emptying time occurs at or near the high point. In duodenal ulcer there is a prompt gastric response, high acidity and delayed emptying time. In gastric ulcer, not affecting the pylorus, there is a weak and delayed response, moderate acidity and early emptying time. Gastric carcinoma presents two types of curve, the first showing the presence of acid and a delayed emptying time, and the second showing the absence of acid and an early emptying time. Pernicious anemia shows an anacid curve and an early emptying time, while severe secondary anemia shows a definite secretory response and a delayed emptying time. Chronic focal infections may show anacid curves suggesting the gastro-intestinal tract as a possible atrium of infection.

30 North Michigan Avenue.

PROLAPSE OF THE FEMALE URETHRA *

JOHN W. KEEFE, M.D.

Fellow of the American College of Surgeons

PROVIDENCE, R. I.

While a slight amount of eversion of the female urethra is not uncommon, a pronounced bulging or prolapse of the mucous and submucous tissues is fortunately rare. The condition is found with greatest frequency in children, namely, in 60 per cent. of reported cases, while in patients aged from 15 to 40, only 12 per cent. are noted. Again, the percentage rises to 28 per cent. in women affected who are over 40 years of age. The youngest patient mentioned was an infant 5 days old, and the oldest was a woman of 92 years. Debilitated children and old people are those most often affected.

Portions of the mucous membrane removed have been carefully studied by various observers, and in some instances the tissues were found normal, while other specimens examined showed evidences of vascular and inflammatory changes. A number of investigators reported angiomatous nodules with vascular and connective tissue changes. The epithelium had disappeared from some of the projecting angiomatous nodules, which may account for the bleeding which so frequently accompanies this condition. Fibro-

myomatous changes have also been found with hypertrophied submucous glands.

While these pathologic conditions are of interest, they represent end-results, as they were made from tissues removed when the prolapse was complete, and throw no light on the etiology. The condition of the mucous and submucous structures in the early stages of the prolapse, we have no way of determining.

The large number and variety of theories as to the etiology of prolapse of the urethra is ample evidence that the cause is not definitely known. Among the predisposing causes that have been mentioned are: cough, constipation, straining at stool, trauma, cystitis, vesical tenesmus, stone in the bladder, parturition, angioma and general debility.

Dr. Thomas Addis Emmet, that master of plastic surgery, who gave careful thought to this condition, believed that during parturition, the head of the child pressed forward the loose tissues about the neck of the bladder, and also lacerated the periurethral structures, so that prolapse of the urethra followed. This theory is untenable, as we know that the majority of

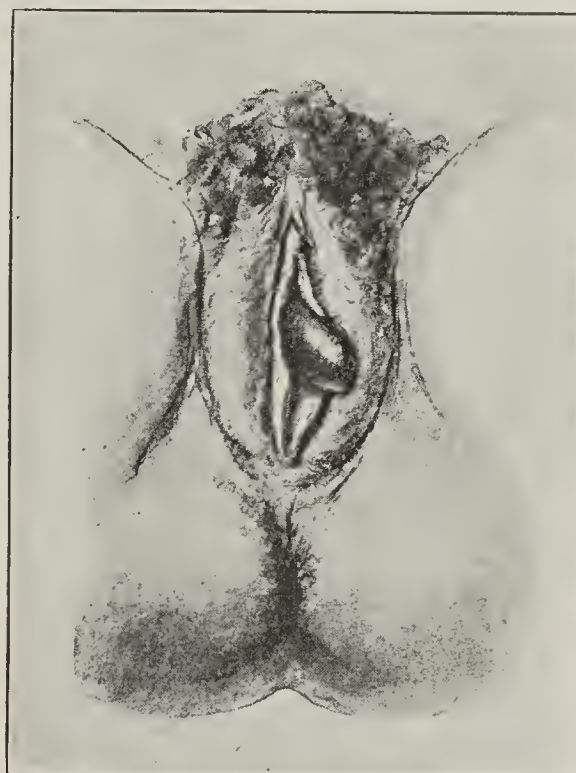


Fig. 1.—Prolapse of the urethra.

cases occur in children, and many cases are reported as having occurred in women who have never borne children.

I believe that the cause is neuromuscular; that the nervous mechanism that controls the detrusor urinae muscle loses its normal balance and exerts too great a force on the normally loosely attached mucous membrane of the urethra, producing extrusion of this membrane; consequently the constrictor muscle of the urethra becomes partially paralyzed and cannot regain its tone, until the membrane is replaced and held there by the shortening of the sphincter muscles, or by the employment of some other operative procedure.

The symptoms found vary with each case. There may be no discomfort experienced by the patient, and attention is called to the condition solely by the presence of a slight, bloody discharge. Other patients complain of sudden, severe and continuous pain, with vesical tenesmus and frequent micturition. A protrusion can be seen and felt at the site of the meatus urinarius. Ulceration and even gangrene with sloughing of the protruding membrane has occurred.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

Treatment by applications of astringents, tincture of iodine and caustics has effected cures in comparatively few instances. Local applications have also been used to allay inflammation. However, some form of operative interference is usually found necessary.

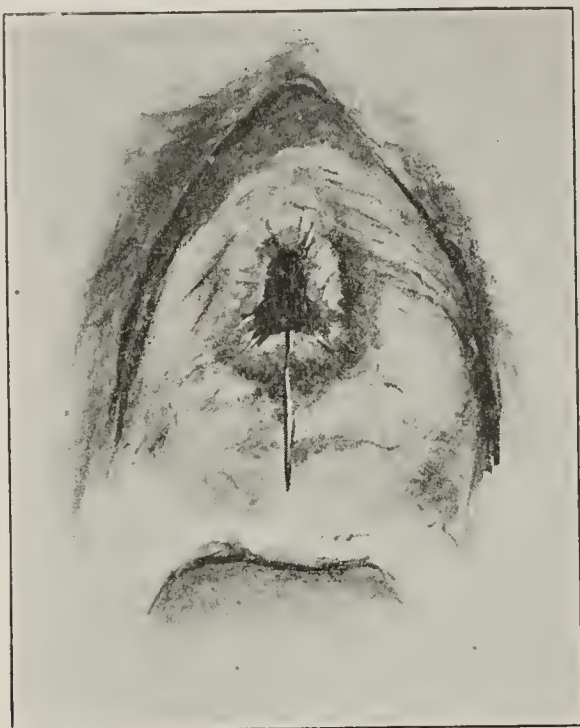


Fig. 2.—Incision through the mucous membrane and muscle.

Several methods of operative procedure have been employed with varying success.

Dr. Emmet, as early as 1879, devised what he termed the button-hole method of operating, which proved effectual in curing a number of cases. He illustrated the operation by drawing a small part of a handkerchief through a button-hole in a coat. He placed a sound in the urethra, and then made an incision in the anterior wall of the vagina, over the midportion of the urethra, down to the redundant mucosa. This he withdrew through the opening made

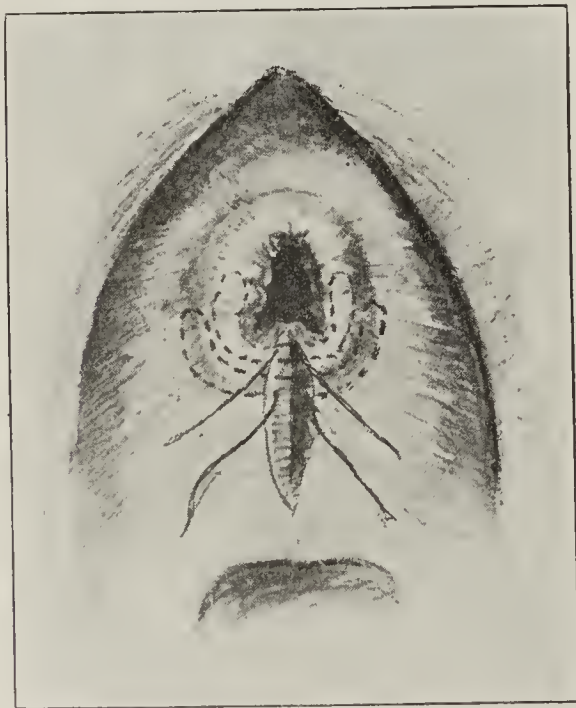


Fig. 3.—Buried sutures in circular muscle.

and held the membrane in the wound with sutures. He then removed the excess of mucous membrane, tied the sutures and closed the wound made in the vagina.

The protruding mass of mucous membrane has been transfixed by two ligatures which were tied on either

side and the tissues distal to the ligatures were then removed. I mention this procedure only to condemn it.

Also the cautery has been used, as in prolapse of the rectum; but has been followed in some instances by a cicatrix, which contracted and narrowed the meatus until it was possible to pass only a small sized probe and which necessitated subsequent operative measures.

The method most frequently employed has been to excise the projecting membrane with a knife or scissors, and to suture the urethra to the edges of the adjacent mucous membrane.

Profuse hemorrhage has resulted in some instances, and recurrences following this method have been frequent.

REPORT OF CASE

L. H. C., a woman, aged 53, single, on whom I had operated in January, 1911, for uterine fibroids, by an abdominal hysterectomy, consulted me, Feb. 1, 1917. She had been perfectly well until one week previously, when she experienced a frequent desire to pass urine. She also remarked

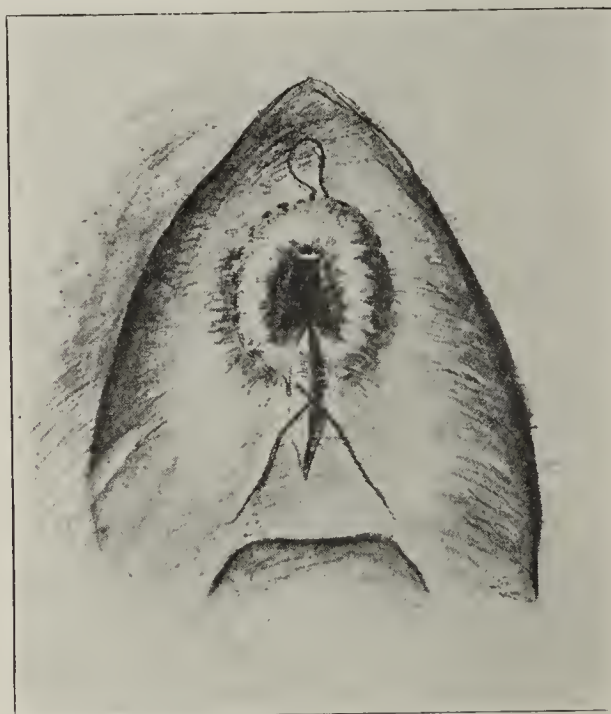


Fig. 4.—Purse-string buried suture.

a slight amount of bloody discharge from the vagina, and during the last few days had felt a projection presenting at the vulvar orifice.

Inspection revealed a mass about the size of a ripe olive and of a mahogany color. It was sensitive to the touch and nearly filled the small vaginal outlet. I thought it might possibly be a fibroid, with a long pedicle, which was presenting at the vulva.

Feb. 2, 1917, under ether anesthesia an attempt was made to catheterize the patient, but the opening into the urethra could not be seen. The upper part of the mass reached to within a short distance of the clitoris. The index finger was passed below the mass into the vagina, and a normal cervix was found. When the mass was raised, an opening was found on its under surface, through which a glass catheter was passed into the bladder and urine obtained. We now realized that we had to deal with a prolapsed urethra; but the best method of procedure was not so clear.

About three weeks previously, I had operated with success on a woman who had been married eight months, and who had suffered from incontinence of urine during the last five months.

Examination revealed an absence of vagina, a rudimentary uterus, and a dilated urethra, due to attempts at coitus. The operation I had found effective in this

case I thought might prove of value in the case of the prolapse of the urethra.

Accordingly I was able to replace by digital manipulation the swollen and prolapsed mucous membrane of the urethra, which formed the tumor. The urethra was found so dilated

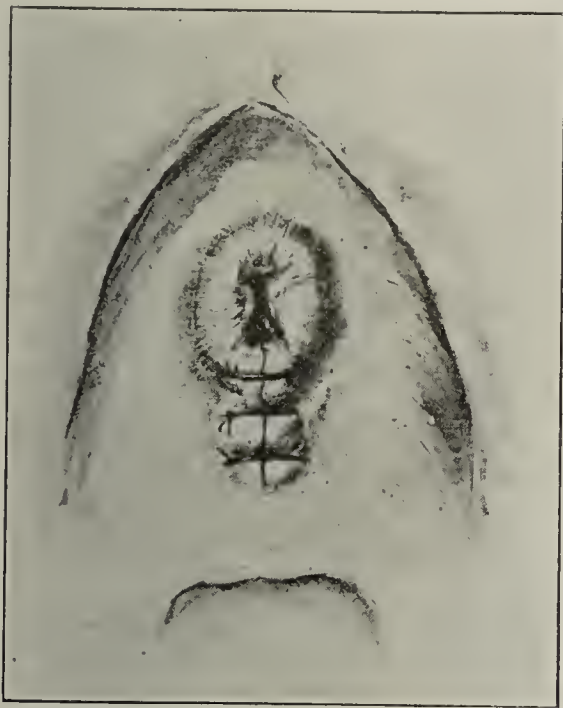


Fig. 5.—Interrupted sutures in mucous membrane.

that I passed my finger into the bladder and could determine that there was no calculus present.

A vertical incision was made in the lower part of the urethral meatus, through the mucous membrane, muscle and connective tissue. Following the plan that one usually adopts in searching for and bringing together torn fibers of the sphincter ani muscle, in a complete tear of the latter, I picked up with a tenaculum the circular muscle fibers in the right side of the incision and then the circular muscle fibers in the left side. I observed that the diameter of the urethra was lessened when traction was made with the tenacula. A lead probe, about the diameter of the normal urethra, was passed into the bladder, and two chromic gut sutures united the muscle ends tightly about the probe.

A chromic gut stitch was now passed through the muscle, beneath the mucous membrane, the entire circumference of the urethra. The needle entered the wound on the right side, passed in a semicircle and made its exit through the mucous membrane on the upper part of the meatus; reentered the same opening; passed in a semicircle on the opposite side, and made its exit in the left side of the wound. This suture was tied with the lead probe still in position in the urethra, to prevent a too tight closure of the urethra. Four catgut sutures united the edges of the mucous membrane of the wound. The probe was now removed and a Pezzer, self-retaining catheter was passed into the bladder, to permit continuous drainage of that viscus. The catheter was removed the fourth day. The convalescence was uneventful. The patient now has complete control of the urine and has had no sign of recurrence of the prolapse of the urethra.

I have been unable to find mention of this procedure in the literature of this subject.

CONCLUSIONS

1. The cause of prolapse of the urethra is neuromuscular, namely, the loss of balance of the nerve impulses to the detrusor urethral muscle, with subsequent changes in the vascular supply to the tissues, including the adjacent glands.

2. The result is a prolapse of the urethra followed by partial paralysis and relaxation of the constrictor muscles. The treatment should consist in replacing the extruded membrane and shortening the constrictor muscles as described in the case herein reported.

ABSTRACT OF DISCUSSION

DR. GUY L. HUNNER, Baltimore: Dr. Keefe's operation certainly brings before us a simple method of dealing with what can be a very complicated condition, and what has been made a complicated condition in most of our operations in the past. I just asked Dr. Keefe whether he depended entirely on the internal sphincter of the urethra or the external. I thought from his description that he depended on shortening the internal sphincter, but seeing his illustrations made me think he was depending on shortening the external sphincters, and this he says he does. I am surprised that he should get such good results in this way. It seems to me that the same principle applied to the internal sphincter would give more certain results and would be no more complicated. It is really the operation which Hill of Montgomery, Ala., described for the incontinence sometimes seen after childbirth. Later, Dr. Kelly reported about thirty cases, and Dr. Deaver described the same operation. The operation I have used has an incision down over the urethra to the cervix and lays the anterior vaginal wall wide open. With fine black silk sutures I reach out into the reticular tissues, a second and third bite take up the urethra and the fourth bite reaches out into the opposite side. When the suture is tied it not only tends to shorten the fibers themselves, but it infolds the urethra. The operation is generally followed by a perfect result. I have had three partial failures in about thirty cases. This operation involves about the same principles that Dr. Keefe has described, but it deals with the internal sphincter.

DR. BROOKE M. ANSPACH, Philadelphia: I take great interest in Dr. Keefe's operation because I have been using a method somewhat like it in connection with other plastic work. In cases of cystocele with relaxed pelvic floor in old women, one often finds a large, gaping urinary meatus. By inserting sutures through the tissues at the neck of the bladder as Dr. Kelly has described, the internal sphincter is tightened and by resecting the anterior orifice very much after the manner illustrated by Dr. Keefe one can turn in the exposed mucosa. I think this plan makes satisfactory control of the bladder even more certain and it relieves the

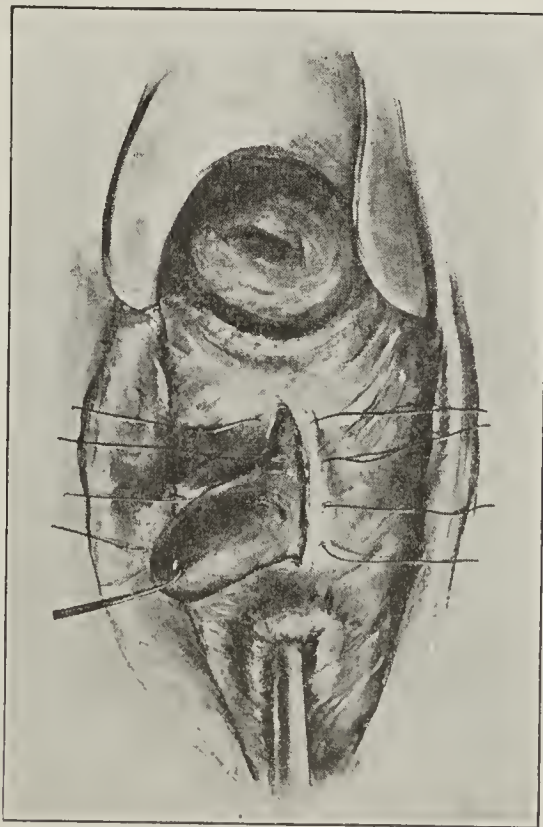


Fig. 6.—Dr. Emmett's buttonhole operation.

women of the irritation and pain which they often have from the exposed mucosa.

DR. JOHN W. KEEFE, Providence, R. I.: The operation described by Dr. Hunner, to my mind, is of value, and in some of the aggravated cases may be preferable to the operation I have described. The muscular structures about the female urethra are in excess near the bladder and near the

meatus, but there are circular muscles all the way along the urethra, besides the longitudinal muscles. The muscular structure just back of the meatus is so well developed that it alone, as has been proved by the case reported, may be sufficient to control the flow of urine. If this is so, it seems to me that the simpler the operation the better; but, if there should be a recurrence, I think then some operation on the internal sphincter or the portion of the circular muscles near the bladder may be of value. If, however, the simpler operation is sufficient, it is better, whenever possible, to employ this method.

THE PRESERVATION OF THE MENSTRUAL FUNCTION

IN DOUBLE SUPPURATIVE DISEASE OF THE TUBES AND CHRONIC METRITIS *

JOHN OSBORN POLAK, M.D., M.Sc.

Fellow of the American College of Surgeons

BROOKLYN

The proper management of suppurative tubal disease in the young woman often taxes the judgment of even the experienced surgeon. When to operate, so as to afford the patient the greatest margin of safety, and how to operate, to obtain the best end-results, are questions that should be definitely settled. On these questions the surgeon and gynecologist, however, seem to hold different views. The gynecologist has learned from bitter experience that time alone sterilizes the tubal content and that when sufficient time is allowed, Nature is competent, to a considerable degree, to absorb and regenerate the function of many of the involved structures. We have also learned that different bacteria, each having a different life history, have a decided influence on the operative prognosis.

Simpson and I have promulgated and taught these rules as to the time for operation: 1. Radical abdominal procedure should never be done in the presence of acute tubal infections, or in acute exacerbations of chronic inflammatory conditions. 2. It takes time to sterilize the tubal content—from six weeks to three months in gonorrheal infections, and longer when the

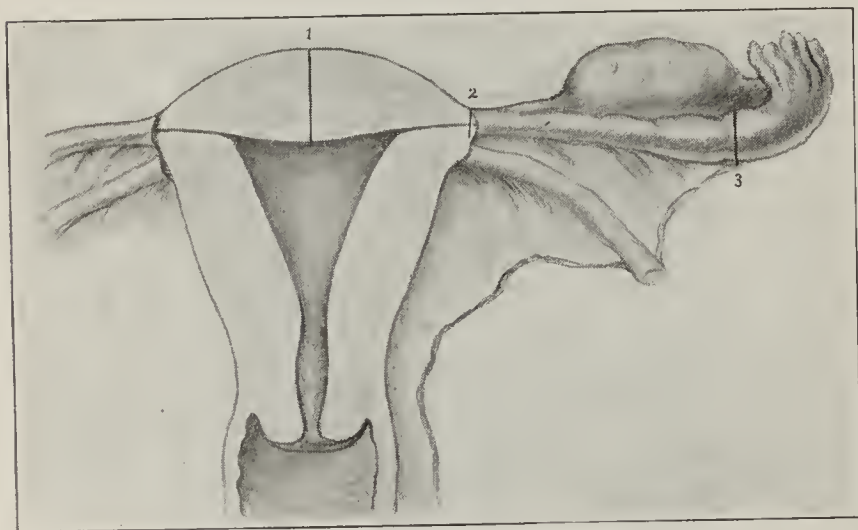


Fig. 1.—Location from which sections were taken.

streptococcus is the infecting agent. Hence, a greater period of quiescence is necessary after postabortal infections, than when the clinical course points to the gonococcus as the causative agent. 3. The morning and evening temperature must be normal for a period of at least three weeks before intervention is consid-

ered. 4. Bimanual examination of the pelvic organs must show the exudate to have disappeared, or if an exudate is present, it should be hard and insensitive and the pelvic manipulation should not be followed by an exacerbation in temperature or leukocytosis or local sensitiveness, for unless the exudate is quiescent, manipulation will squeeze the toxins into the surrounding lymphatic channels and occasion a fresh resistive reaction. Hence the importance of making comparative leukocyte and differential counts before and after bimanual examination in pelvic inflammations, for by this method we may determine the state of their activity. 5. No patient should be operated on by the abdominal route unless the leukocyte count remains at a point under 11,000, and the polymorphic leukocytes at 75

per cent. or less. Success or failure depends directly on the observance of the foregoing principles, for unless Nature has had time for resorption of the exudate and regeneration of the pelvic tissues, conservation of any of the pelvic structures is out of the question.

Infection of the tubes, resulting from an extension of the inflammation through the uterus, is usually bilateral, for gonorrhea involves the entire tube; hence any attempt at conservation offers but little protection against subsequent exacerbation. All of us have seen cases with one tube grossly involved, while the other, macroscopically at least, was free from disease, yet during convalescence, or while the patient was still in the hospital, the retained tube would light up and become a thick, swollen mass, adherent to the posterior surface of the uterus. It was formerly supposed that no fluid accumulation could occur in the tube until both ends were sealed, but by making serial sections through the isthmic and interstitial portions of the tube in a large series of cases, we have found that the uterine end never closes and that the apparent occlusion in the isthmic and interstitial portion is relative and not actual. This may be explained by the fact that the folding, edema and consequent swelling of the mucosa make the actual lumen so tortuous that intratubal pressure closes, or practically closes, the uterine end. If one recalls for a moment the anatomy of the interstitial portion of the tube, surrounded as it is with an inner circular muscular coat, which is continuous with the circular muscular coat of the uterus, one must be impressed with the fact that any inflammatory process of the mucosa must excite an inflam-

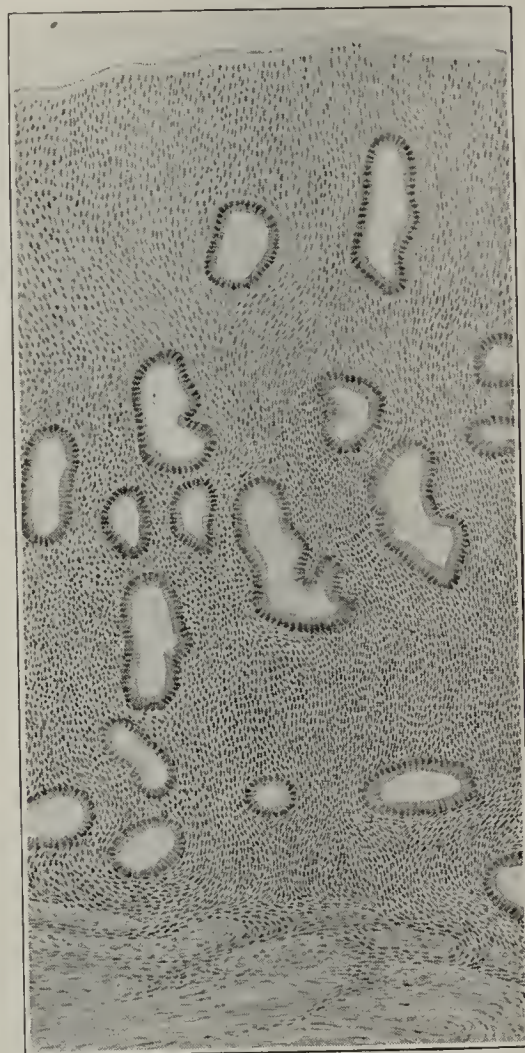


Fig. 2.—Normal endometrium from fundus uteri.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

matory reaction in the submucous and muscular structures immediately surrounding the mucous tube. The muscular coat, when examined microscopically, is edematous and infiltrated with inflammatory tissue cells, and in the mixed infections, particularly when the streptococcus is present, there may be found small localized abscesses in the surrounding muscle tissue. This small round tissue cell infiltration results in an increase in the connective tissue within the uterine wall and thereby actually increases the size of the uterus. Such metritic changes do not subside after the removal of the distal portion of one or both tubes.

The persistence of this infection of the uterine muscle formerly tempted the French operators to do vaginal hysterectomy with double salpingectomy, for chronic suppurative tubal infection. Many of our more conservative surgeons acknowledge that a gonorrheal infection of the tube can never be wholly cured without ablation of both tubes, and that the persistent leukorrhea, which under certain excitation regains its infective properties, and the increased amount of the menstrual flow, which with the pelvic pain makes up the clinical syndrome in these cases of chronic inflammation, are due to the enlargement and increased blood supply to the metritic uterus, and because of the persistence of these symptoms, have advocated hysterectomy when salpingectomy is done, with the retention of one or both ovaries.

While we are agreed that the retention of an infected uterus is a menace to the woman's future health, my own feeling has been that when *so much care is taken to preserve the function of ovulation, there should be like care in preserving the function of menstruation*, as ovulation without menstruation contributes little to the patient's well-being. Sections



Fig. 3.—Isthmic portion of tube showing round cell infiltration at a distance from the reaction zone.

through the uterus, between the fundus and the internal os, show few if any of the pathologic changes which may be demonstrated about the pars interstitialis. It is only in the cervical region, in Naboth's glands, in the columnar epithelium of the cervical

canal, in the fundal region, and in the structures surrounding the pars interstitialis that there is a persistence of the inflammatory changes described above. Therefore, it must appeal to any one of considerable clinical experience that, in a given case of chronic specific infection involving the cervix and the tubes, a cure cannot be effected, except by the removal of



Fig. 4.—Midportion of tube showing inflammatory reaction with round cell infiltration.

these foci, and to attain this end many are doing panhysterectomy. The endocervicitis and cervicitis may be controlled by amputation or linear cauterization, but the tubal infection cannot be checked or its sequelae removed without proper attention being paid to the pars interstitialis and the structures immediately surrounding it. Clinical experience has shown that after amputation of the fallopian tubes, the stump which is left in the wall of the uterus may be a source of continued metritis and annoying discharge, or may remain the site of focal infection and cause an exudate and intestinal adhesions. Again, the stump of an amputated tube may become the seat of a tubal pregnancy, for unless the cornu is excised, the lumen of the interstitial portions may remain patent. This assertion is not theoretical, as I have seen three ectopic pregnancies in this location.

In gonorrheal infection, notwithstanding the fact that the gonococcus is primarily a surface organism, it quickly spreads to the deeper layers of the tube, and the gonococci and their toxins may escape not only through the abdominal ostia, but actually through the walls of the oviducts, and excite a local resistance in the form of a plastic exudate at these points. Ordinarily, however, the inflammatory exudate forms within the tube and escapes from the abdominal end into the peritoneal cavity and causes a perioophoritis or an adhesive peritonitis, or the abdominal ostia of the tubes may become closed and the contents be confined within the tube, distending it, resulting in a sactosalpinx, which leaks from time to time into the uterus or abdominal cavity, setting up an exacerbation of the peritoneal inflammation. Both tubal appendages are generally involved, though the infection of the one may antedate the infection of the other. Unilateral salpingitis of gonococcic origin is practically unknown. The disease involves the entire tube. Why,

then, should we leave one third of the tube, the pars interstitialis, to continue the infection? Therefore, in determining the extent of the operative procedure, too much weight cannot be given to the influence of the etiology, not only on the primary, but also on the

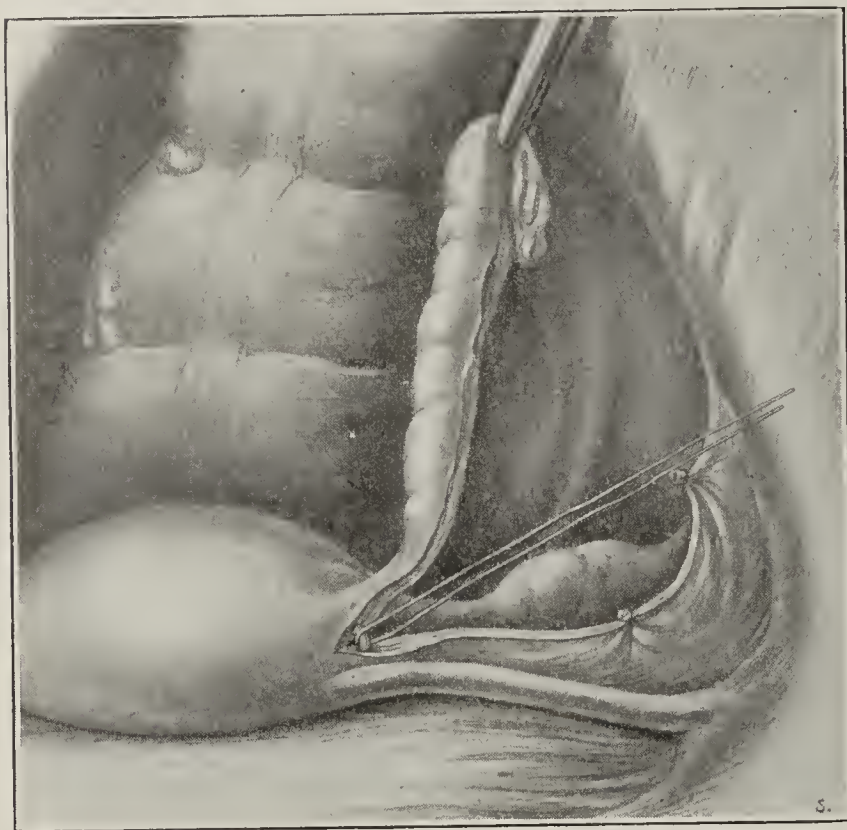


Fig. 5.—The proper way to remove a tube without interfering with the ovarian circulation.

remote prognosis in tubal infections. Hyde, in an examination of 2,973 tubes, found the contents sterile in 67 per cent. The gonococcus was recovered in 19 per cent., and mixed infections were demonstrated in 15 per cent. Krönig's bacteriologic examination of suppurating tubes practically coincides with the work done by Hyde. In his series, 61 per cent. were sterile, and the gonococcus was recovered in 21 per cent. I regard the history and clinical course with the physical findings as of the greatest significance; for when extension of a gonococcus infection occurs from the cervix to the uterus and the fallopian tubes, it usually follows close on a menstrual period, or in the second week following the emptying of a gravid uterus, or following a curetting for leukorrheal discharge (foolish as such a procedure may seem to those of us trained in gynecologic pathology). On the other hand, streptococcal infection almost invariably follows early, after abortion, delivery at term, or intra-uterine office manipulation, and the attack is always more violent. Too careful inquiry cannot be made into the history of any case, and errors in diagnosis in gynecology are better guarded against by careful history taking than by the bimanual examination, as only by the history is it possible to interpret the pelvic findings.

A clinical appreciation of these facts led me, three years ago, after witnessing the work of Beuttner in Geneva and Bell in Liverpool, to introduce into America their procedure, namely, the ablation of both tubes with the resection of the infected fundus of the uterus, leaving sufficient healthy uterine body to conserve the menstrual function and one or both ovaries to continue ovulation. Removal of the tubes and resection of the upper segment of the uterus can be done without interfering with the ovarian circulation. Hence, the ovary may be retained with a greater degree of security than if a hysterectomy is done and

the uterine end of the anastomosis cut off. The ovary is the analogue of the testicle, and I believe that considerable surgical risk is justified for the preservation of an ovary, for it is well known that double oophorectomy, particularly in a young woman, may convert the normal woman into a hopeless neurasthenic. In tubal disease, the ovary is usually involved only because of its association with the infected tube. It is an ovary in bad company rather than a diseased ovary, and its function can be conserved, provided its circulation is not too much interfered with. Clinical experience justifies the attempt not only to conserve the internal secretions from the ovary, but also to maintain the menstrual function. We all know that menstruation exercises a therapeutic effect on health, which is not only psychic but actual, for the whole system is planned for this periodic outflow. The uterine mucosa undergoes definite histologic changes throughout a definite cycle which culminates in the menstrual flux. These cyclic changes are subconscious when proper correlation exists between the several governing organs of the body. We all know, however, that when this correlation is disturbed, and it is disturbed by cystic changes in the ovary, resulting when its circulation is interfered with, definite symptoms are produced in the breasts, the tonsils, the thyroid gland, the genital spot in the nasal mucous membrane, and in the circulatory and nervous systems of the individual. Consequently, there can be no question as to the desirability of the conservation of the ovarian function, provided it is associated with a periodic outflow of menstrual blood. In order to have this maintained, it is necessary to have the ovaries and uterus relatively healthy.

While it must be admitted that many uteri do recover and return to normal, or nearly so, after the amputation of the isthmic and free portion of the tubes, it is only after a long period of time, during which the menorrhagia and leukorrhea, to a greater or less degree, persist. On the other hand, there are a great number of these uteri that do not even approach a return to normal, but remain large and

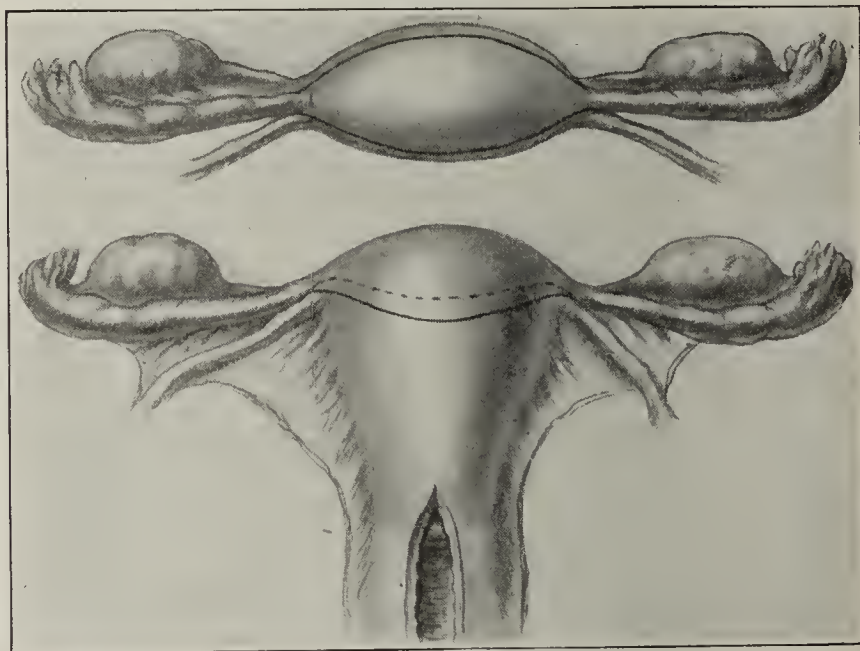


Fig. 6.—Lines of incision.

metritic. To justify the employment of a procedure which is such a radical departure from simple salpingectomy as the Bell-Beuttner operation, sufficient clinical data must be produced and the end-results must be sufficiently satisfactory as to leave no question in the mind of the reader regarding the advisability

of adopting the more extensive operation herein recommended.

All gynecologists are agreed that the ovarian circulation must be maintained in removal of the tube, if the retained ovary is to escape degenerative changes. In double salpingohysterectomy, the efferent circulation from the conserved ovary is actually obstructed. Clinical experience in our follow-up work has con-

anteverts the uterus. The convalescence is usually smooth and uneventful. Of twenty cases in which operation was performed by this technic, two patients have had infected wounds, and one a diffuse bilateral parametritis. In the last seventeen cases the recovery has been smooth and complete, the uterus being small, well anteverted and freely movable at the time of discharge. All but two of these twenty cases have been followed for periods of from two months to three years. Since the operation, all patients menstruate regularly and painlessly and have free pelves. Only one has a leukorrheal discharge.

CONCLUSIONS

1. The number of sacrificial operations in young women may be materially reduced by giving Nature time to absorb exudate, sterilize tubal contents and regenerate function.

2. For chronic tubal disease, especially where the gonococci or streptococci are concerned, simple ablation does not remove enough of the diseased tissue. Menorrhagia and leukorrhea persist and the tubal stump becomes a focus for continued infection.

3. While hysterectomy in chronic pelvic inflammatory disease may effect a cure, the conserved ovary quickly loses its function, as the circulation is frequently impaired and even its internal secretion is short lived.

4. It should be the aim of the gynecologist to preserve both ovulation and menstruation.

5. The ovarian circulation can be maintained and the menstrual function preserved by the employment of this technic.

6. The after-results in this series of cases justify its further trial.

287 Clinton Avenue.

ABSTRACT OF DISCUSSION

DR. E. E. MONTGOMERY, Philadelphia: Dr. Polak has spoken of the frequency with which these inflammations subside and the importance of retaining the functions of ovulation and menstruation. One of the difficulties is that of keeping these

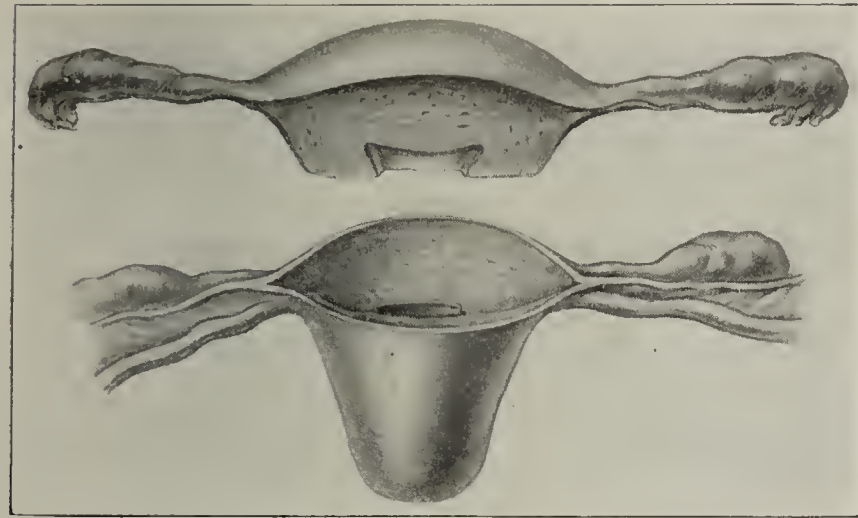


Fig. 7.—Showing wedge of fundus removed, including metritic tissue.

vinced us that after hysterectomy, when the ovary is to be retained, and its function maintained, the corresponding tube should also be left in, as only in this way is the afferent and efferent circulation maintained. Sampson's exhaustive work on the uterine and ovarian circulation leaves no doubt as to the verity of this statement. Furthermore, the frequency of cystic degeneration of ovaries left in situ after the ordinary methods of tubal ablation or after hysterectomy gives living testimony as to the practical truth of this statement.

In removal of the fundus, by ligation of the fundal branch as it comes off from the uterine, just above the utero-ovarian anastomosis, there is no obstruction to the ovarian circulation, provided the tube is taken off by individual ligation, of the medial and intermediate branches, as the return flow is maintained by the preservation of the pampiniform plexus.

The technic of the Bell-Beuttner procedure depends on the ligation of the individual branch supplying the tube and uterine fundus. With the bleeding controlled, a wedge-shaped excision is made of the upper part of the body and fundus of the uterus. The anterior incision begins just posterior to the insertion of the round ligament and runs across the front of the uterus to a corresponding point on the opposite side. The posterior incision begins between the tubal insertion and the ovarian ligament on one side and extends across the posterior surface to the same point on the opposite side. The incision is made in such a manner that the entire fundal mucosa with the pars interstitialis and surrounding tissues of both sides are excised. The uterine flaps are then brought together with interrupted catgut sutures with superficial sutures between the deeper ones. This wound is then peritonealized after the manner of Rossini by reflecting the bladder above the line of incision, and the abdominal wound is closed in the usual manner. This

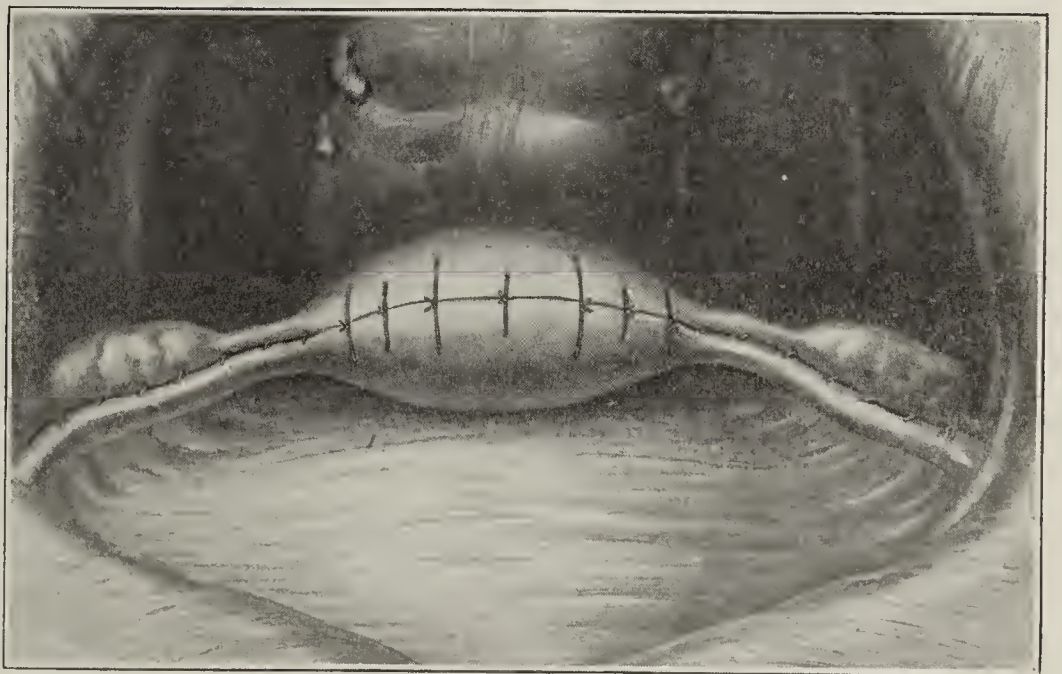


Fig. 8—Fundal wound closed; ovaries suspended by round ligament.

patients under supervision. Many of them have others dependent on their care and they are obliged to get back to their duties promptly. A second difficulty is the limited number of beds in the great majority of our hospitals, for their treatment requires that the most expeditious procedure must be employed. I have subjected a number of these patients to operation immediately after the subsidence of the more acute

symptoms, by abdominal incision, through which adhesions are separated and the peritoneal cavity protected from the spread of infection by gauze packing; the tube from whose abdominal end seropurulent fluid is flowing is seized and wrapped with a pad of gauze and forcibly milked, squeezing out the purulent fluid and exudation, and in several cases I have seen uncomplicated convalescence follow with regularity of menstruation and hope of procreation.

DR. BERTHA VAN HOOSSEN, Chicago: I think it is important that young women should have the menstrual period preserved, and by leaving the circulation so that the menstrual period is preserved it does much to give the woman speedy relief from the infection. My operation is much like Dr. Polak's. The first step is practically the same. The next step is to put the angiotribe on the uterus. It is practically impossible to include the muscularis in closing the angiotribe, but the peritoneum will be drawn by it over to the side and the uterine muscularis will be pushed toward the middle line. In this way the ureter is pushed to one side; another angiotribe is put in front so that the ureter is pushed still farther out of the way and a little more peritoneum is included in the grasp of the forceps; the same is done on the other side. The peritoneum is incised from just above the bladder line up to the horn of the uterus, because the peritoneum is very adherent to the body of the uterus. The peritoneum is lifted from the uterus by a simple pull with a tenaculum. When the uterus is entirely separated down to the internal os, a dissecting scissors is slipped in and the mucosa of the cervix and enough of the underlying muscularis to include the glands are cut. In this way none of the arteries is interfered with except the very small vessels. The parts are then closed, one stitch being put through the cervical portion antero-posteriorly. The clamp is taken off the part nearest to the middle, and with a silk suture union is made to the fundus. In none of my cases has there been a death.

DR. H. J. BOLDT, New York: Dr. Polak's words are a verification of the stand which I took many years ago. With regard to further conception, I cannot say that I have had the same experience that Dr. Montgomery has had, since I have not seen any of my patients conceive subsequent to surgical intervention of that kind.

DR. HARVEY P. JACK, Hornell, N. Y.: At our New York State meeting in Utica I detailed an operation looking to preservation of the childbearing function in these cases. It will not always, perhaps not often, succeed, but it is worth trying on its results, even at the slight risk of being compelled to operate again. After I had read my paper at Utica several men came to me and reported successful results as to childbearing as a consequence of conservative work on the tubes. Some of these patients are known to recover and regain the childbearing function without any surgery, so that I think it is time we halted in our efforts, in many of these cases, to do ideal surgery and try to do practical surgery.

DR. R. H. C. GIBBONS, New York: I have never taken stock in these "conservative" operations, although I have done many of them. Many patients who have had "conservative operations"—tube, ovary and appendix removed—have not recovered their health. When the uterus is badly

infected it should be taken out in greater part; also the appendages.

DR. HENRY O. MARCY, Boston: This subject has fluctuated back and forth through the years. We should place more emphasis on the conditions for which we operate. It is the character of the infection one should think of quite as much as the location. If the tubes are in the condition referred to by the author of the paper, it is unwise to preserve them. On the other hand, it is wise to be conservative in that one is dealing with that which is important, not to the individual alone, but to the race.

DR. JOHN OSBORN POLAK, Brooklyn: I wish to disclaim any originality for the conception of this operation, as the principles involved were conceived and published by Blair Bell of Liverpool and Beuttner of Geneva. Only the perfected technic regarding the circulation of the ovary has been developed by me. With regard to the remarks of Drs. Montgomery and Jack, their discussion is irrelevant, as they are speaking of another class of cases, cases which we all know time will regenerate and in which function will be reestablished. Before describing this operation I showed two slides on the screen which even my friend Dr. Jack must admit are beyond conservation. This operation is only advocated in the class of cases in which the ordinary operator does a double salpingectomy with panhysterectomy, conserv-

ing one or both ovaries, with an interfered-with circulation for their internal secretion. Our follow-up work has shown us that the retained ovary after hysterectomy becomes cystic, the seat of adhesions, and that its life history regarding internal secretion is very limited, because its efferent circulation is interfered with.

Two classes of cases have been discussed, one in which the patient will in time get well without operation or at most with the formation of adhesions; the other in which the pathology

is so great that nothing short of ablation of the diseased structures will effect a cure. It is in these that I am striving to save the menstrual function as well as the ovarian secretion.

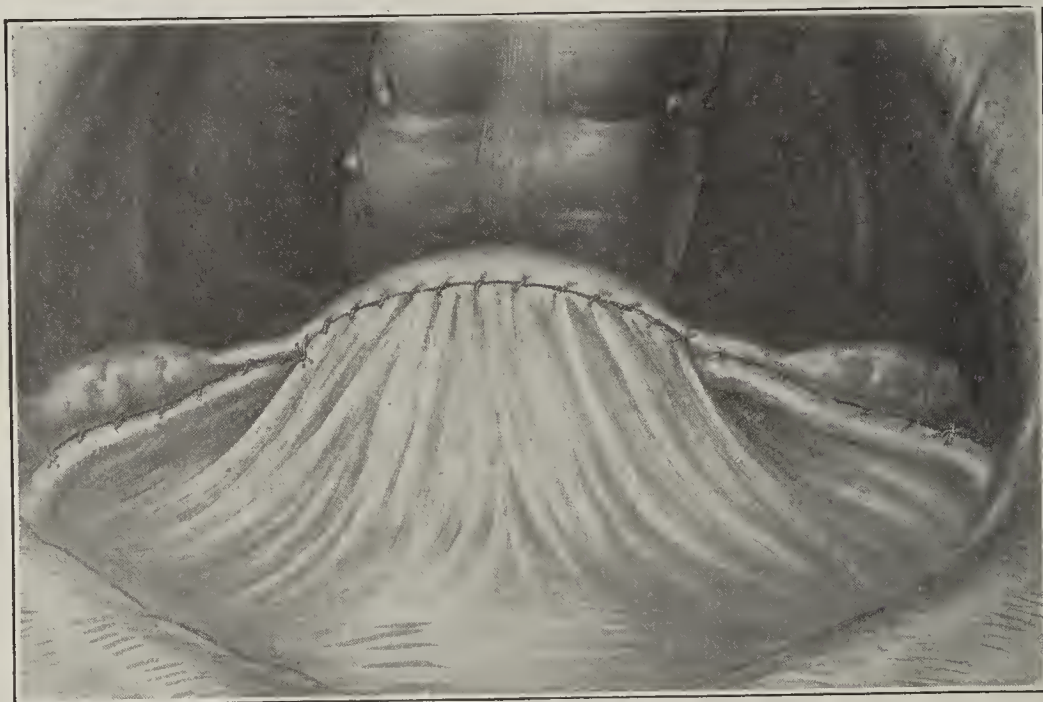


Fig. 9.—Fundal wound peritonealized by reflecting the peritoneum of bladder over it.

Child Labor Day.—It has been customary each year to designate the fourth Saturday, Sunday and Monday for observance as child labor days in the churches, synagogues, schools and clubs of the country. For 1918 the days designated by the National Child Labor Committee are January 26, 27 and 28. The observance of these dates as Child Labor Days has been approved by Secretary of War Baker, Commissioner Claxton of the United States Bureau of Education, Miss Julia C. Lathrop of the Children's Bureau and Owen R. Lovejoy, general secretary of the National Child Labor Committee, and the officials of many other organizations. To furnish material for programs the National Child Labor Committee is distributing pamphlets dealing with the war situation and with child labor and educational problems in general. Secretary Baker, in endorsing the plans for the observance of the days, said: "The ravages of hostilities bear heavily indeed on the present generation, but we must not permit the effects of it to be visited on the children of the nation. The tribulations borne by the present should make us conserve to as great a degree as possible the health and energies of the coming generations."

CHOLECYSTECTOMY WITHOUT DRAINAGE *

A. MURAT WILLIS, M.D.

Fellow of the American College of Surgeons; Professor of Clinical and Operative Surgery, Medical College of Virginia

RICHMOND, VA.

At this time gallbladder surgery is occupying the attention of surgeons perhaps more than any other subject. The reason for its prominence is obvious. Cholecystostomy, once the operation of choice, has been denounced by an able coterie of surgeons as giving permanent results in not more than half of the cases; and cholecystectomy, a supposedly more dangerous operation, is being substituted for it whenever conditions allow.

All are familiar with the condition found at operation after a previous cholecystostomy. Often the liver is turned up at its lower border and lies on a level with or above the costal margin, having diaphragmatic and peritoneal adhesions. The duodenum, transverse colon and stomach are often adherent to the gallbladder and the liver. I believe this is due entirely to the drainage, which does not allow the liver to assume its normal position, and which, in my opinion, is responsible for the adhesions to the other structures. In

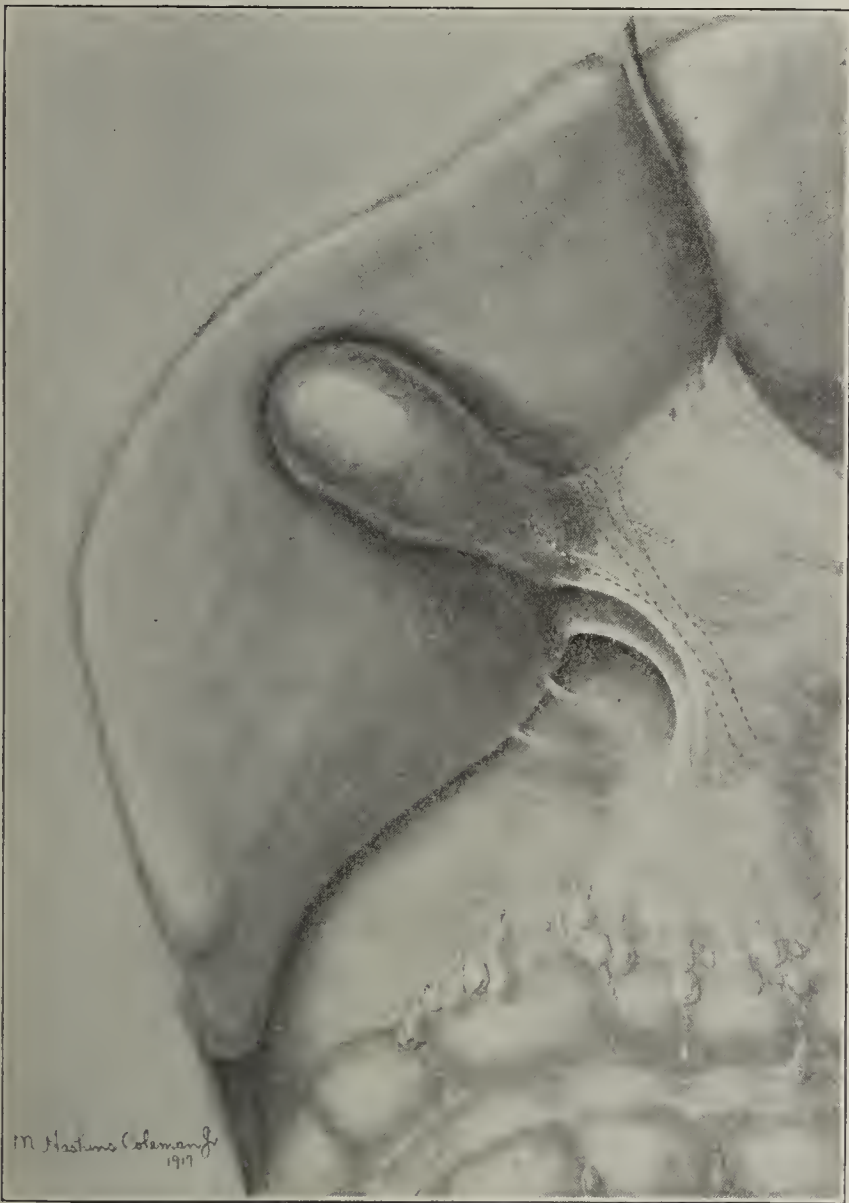


Fig. 1.—Relations of cystic duct to common duct. Dotted lines indicate direction of incision in hepatoduodenal ligament.

every case in which I have done a cholecystostomy and later gone back into the abdominal cavity, I have found a mass of adhesions about the gallbladder.

* Read before the Maryland Medical and Chirurgical Society, Baltimore, April 25, 1917.

In fact, I have never seen, in secondary operations elsewhere in the abdomen, the same number and density of adhesions. I have never found a case which did not have this condition. It is impossible for me to state from my operative observation how

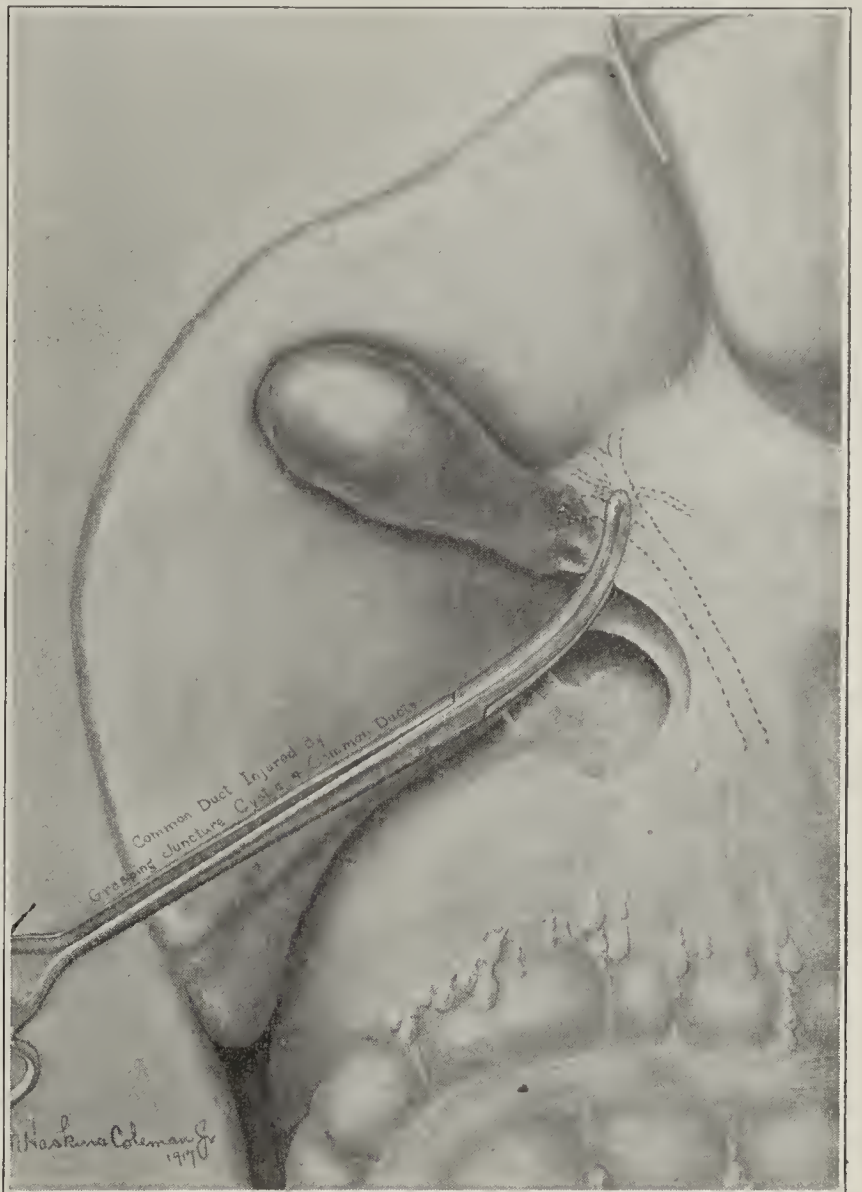


Fig. 2.—Method generally employed. When making sure of the cystic duct, the curved artery clamp is apt to grasp and injure the common duct as well.

many adhesions form about the gallbladder region after a cholecystectomy without drainage, as I have never had occasion to reopen the abdomen in such cases. I feel confident that fewer adhesions would be found associated with a more normal condition of this region. I am sure, however, that this result will be obtained only with careful removal, allowing no bile to escape into the cavity.

In some recent experiments by Dr. Budd and myself, we were able to demonstrate that presumably healthy bile, if spilled in the region of the gallbladder, would produce a moderate amount of adhesions, and that bile infected with the colon and typhoid bacillus would produce extensive adhesions. We were also able to show that infected bile spilled in the region of the gallbladder, plus drainage, were followed by even more extensive adhesions. We removed gallbladders without liberating bile in the cavity, closing without drainage, and in these cases the number of adhesions was negligible.

About five years ago, we were first impressed with the number of cases of cholecystectomy which never leaked any bile through the drain after operation. We began, in carefully selected cases, to close without drainage, and found that excellent results followed. We began to enlarge more and more on this group,

until now we remove quite a large percentage of gallbladders without drainage. We do not believe that all cases can be closed without a drain, but do contend that a big percentage can be done in this way, provided,

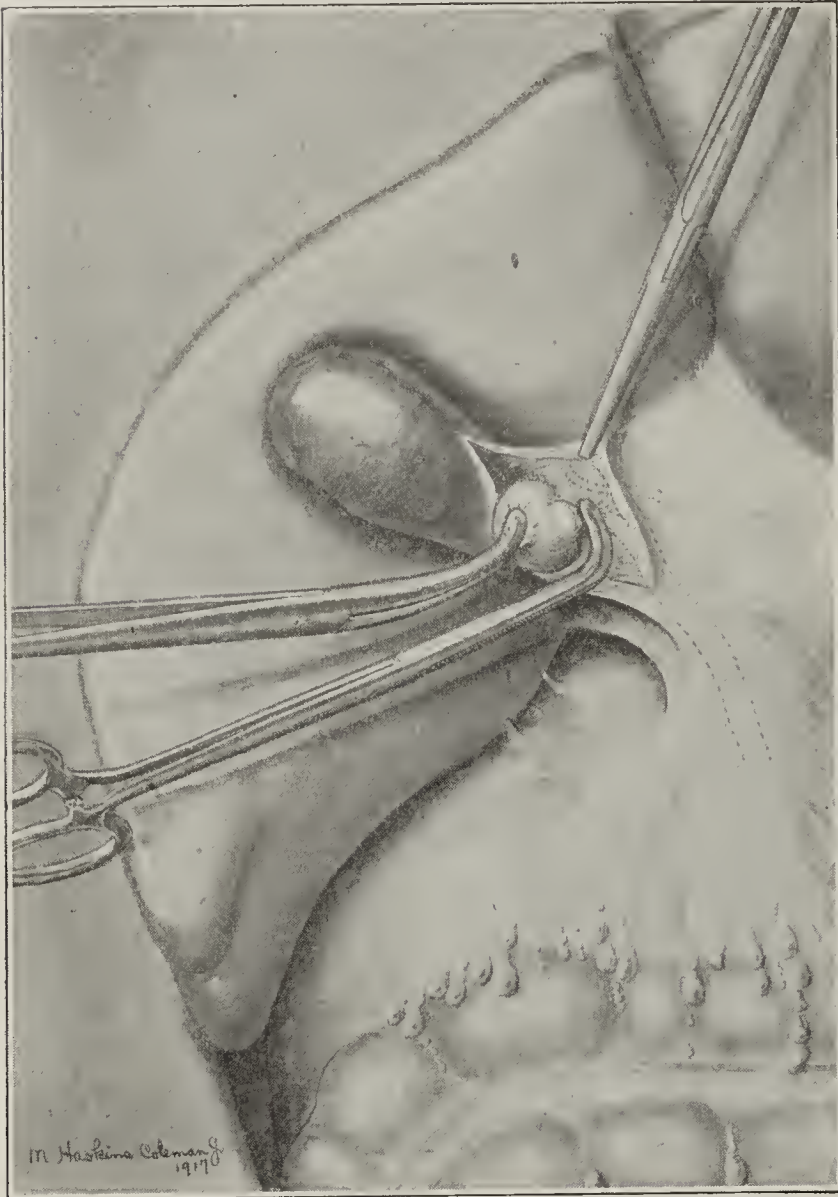


Fig. 3.—Incision made in hepatoduodenal ligament. Pouch of gallbladder rotated up, and right angle clamp placed on cystic duct and artery.

of course, the surgeon is careful to spill no bile in the cavity and to leave no bleeding surfaces.

We believe that the technic of the removal of the gallbladder, whether from the fundus down or from below upward, is largely a matter of each surgeon's preference as to the method by which he can best control the situation. I myself believe that the removal from below toward the fundus offers the greatest advantages.

OPERATIVE TECHNIC

Using the right rectus incision curving at the upper end toward the xiphoid, we bring the gallbladder at once into view. Rotating the liver upward, we make an incision in the hepatoduodenal ligament, as shown by the dotted line in Figure 1, and by blunt dissection bring the cystic duct into the field.

The method generally employed is to place a curved clamp over this ligament, as shown in Figure 2. We believe that this in itself is responsible for many reported injuries to the common duct in cholecystectomy, as the clamp, in being placed sufficiently far to assure the grasping of cystic duct and artery, is liable to grip the common duct as well. There is also a possibility of a ligature being put through or around the common duct when the cystic duct is tied off, or of the scissors injuring it when the cystic duct is cut. It is to be borne in mind that the cystic duct does not

join the common duct at right angles in a great many instances, but runs parallel to it and right alongside.

We believe that this accident is obviated absolutely in our method. Grasping the pelvis of the gallbladder and pulling upward, we are able to apply a right angle clamp on the cystic duct and artery, as shown in Figure 3. Figure 4 illustrates what we have found to be the usual relations of the cystic duct to the pelvis of the gallbladder, certainly in pathologic conditions. Then, a No. 2 catgut ligature is placed around the cystic duct close up to the junction with the common duct, and we are careful to cause no stricture of the latter. We thus avoid leaving sufficient cystic duct to form a bud in which future trouble is liable to occur. Another ligature is now placed around the cystic duct and artery, and the two are cut (Fig. 5). By blunt dissection with the back of the knife and the finger, the gallbladder is dissected back to the fundus, care being taken to leave the peritoneal coat of the liver intact. The gallbladder is removed, sufficient peritoneum being allowed to remain to close the space

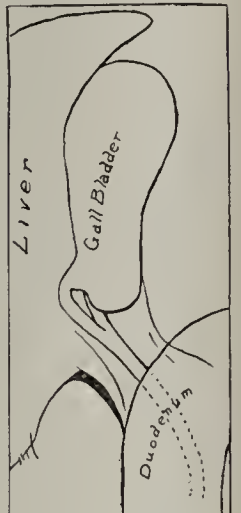


Fig. 4. — Schematic view illustrating the usual relations of cystic duct to pelvis of gallbladder.

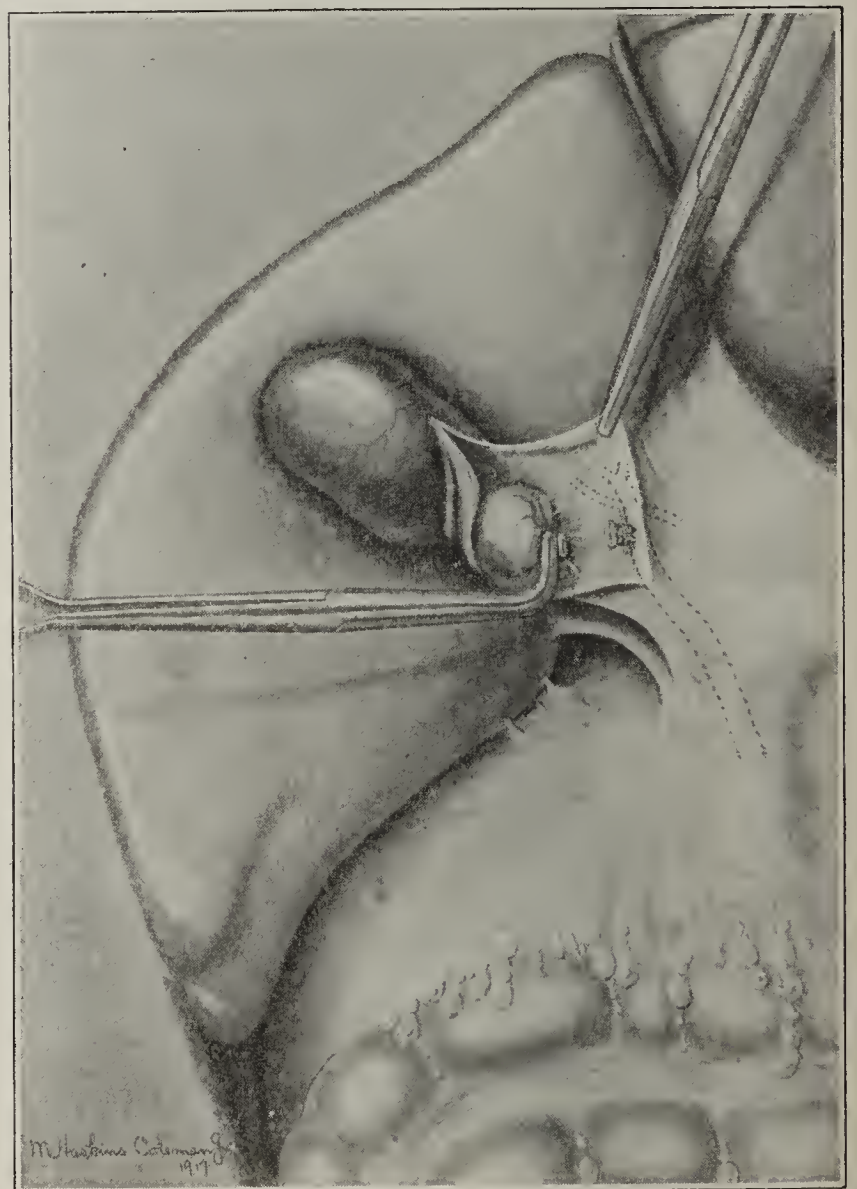


Fig. 5.—Ligature placed around cystic duct, also around cystic duct and artery close to common duct, and cut.

without tension. A crown suture is placed through the peritoneum and under the stump of the cystic duct, being brought back over the stump and tied, as shown in Figure 6. This drops the stump back in the liga-

ment, and a continuous suture closes all raw surfaces and leaves a clean field, as shown in Figure 7. We then close without drainage, and have no fear that bile will escape into the peritoneal cavity.



Fig. 6.—Crown suture in place under and over cystic stump. Gallbladder being dissected back to fundus.

RESULTS OF OPERATIONS

Our experience in surgery of the gallbladder is based on 549 operations for cholelithiasis and cholecystitis with twelve deaths, or 2.2 per cent. In this series, 466 patients, or 86 per cent., had gallstones in the bladder or duct; eighty-two patients, or 14 per cent., had no gallstones, but showed various stages of cholecystitis. There were 398 cholecystostomies with seven deaths, or 1.7 per cent., and 107 cholecystectomies with one death, or 0.9 per cent. In thirty-eight of our cholecystectomies, we left no drainage. It was in this group that the one death occurred. There were forty-four choledochotomies with four deaths, practically 9 per cent.

There were twenty-six secondary operations. Twenty-one followed the operation of cholecystostomy and five occurred after choledochotomy. Gallstones were found in twelve of the secondary operations; seven in the cholecystostomy and in all five of the choledochotomy group.

This series presents several interesting facts. The women outnumbered the men five to one. The percentage of deaths in the common duct cases was about five times as great as the mortality in other gallbladder work. The causes of death in the common duct group were secondary hemorrhage and infection. The mortality in our cholecystectomies is much lower than in the cholecystostomies. This is due to the fact that

cholecystectomy on the whole was performed in the more favorable type of case.

The patient lost in our cholecystectomy group was a woman aged 66 with a simple case of cholelithiasis. The gallbladder was ruptured during removal. Drainage was not used, as we were able to cover the raw surface and clean out the peritoneal cavity. She had urinary suppression, and died three days after operation. At necropsy a small abscess was found between the liver and transverse colon, and an acute nephritis was revealed. There was no evidence of the escape of bile. It is impossible to say whether she died from acute nephritis or an infection; but in future, under similar circumstances, we shall drain.

It should be borne in mind that this mortality represents the patients who have died in the hospital after operation on the gallbladder. Some of these patients undoubtedly died of causes other than those which can be attributed to the immediate effect of the operation, but, because of the fact that they died in the hospital, we have included them in the gallbladder mortality.

CONCLUSIONS

1. Cholecystectomy for simple infections of the gallbladder is a most successful operation, especially if this can be done without soiling the peritoneum by the contents of the gallbladder, and closing without drainage. 2. Adhesions of organs which normally

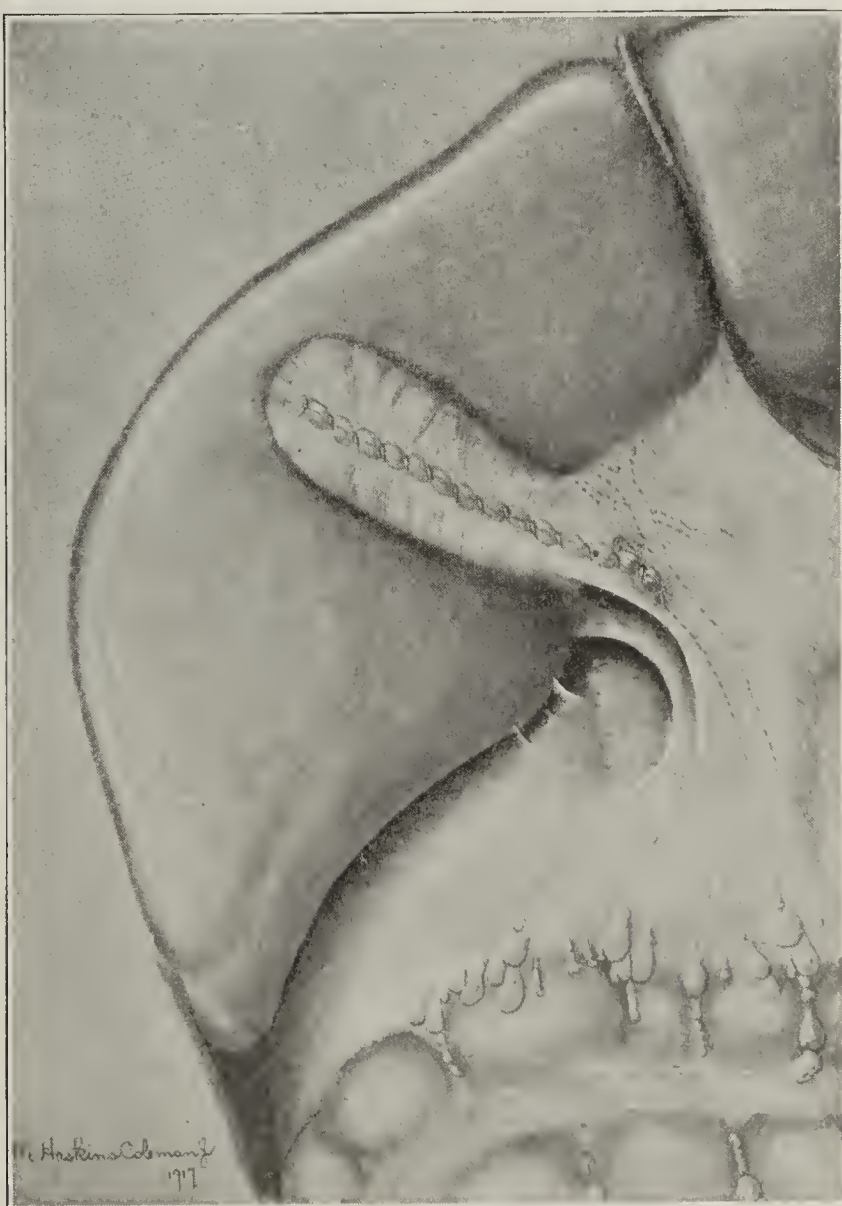


Fig. 7.—All raw surfaces covered, and clear field left ready to close without drainage.

have a certain amount of mobility cause postoperative complaints, especially in the gallbladder region, and we feel that any operation which will limit these is certainly a step in the right direction.

PIGMENTATION OF THE HIND-GUT

A PATHOLOGIC AND EXPERIMENTAL STUDY *

W. LANDRAM McFARLAND, M.D.

Clinical Professor of Bacteriology and Pathology, Polyclinic Hospital
NEW YORK

The presentation of a paper based on the observation of a small number of cases must justify itself by dealing with a rare condition or by demonstrating new facts concerning a well known subject. With the advance of intestinal surgery, and the increasing number of "developmental reconstructions" and other operations which involve removal of the cecum and part or all of the first portion of the hind-gut, we are able to note with more frequency a pigmentation or melanosis of the mucosa of both organs. This pigmentation may or may not be transitory; but the rarity of its observation at the necropsy table, and the fact that at times a fading of color may be noted through the proctoscope, lead to the supposition that, in not all cases at least, is it macroscopically permanent.

PATHOLOGY

Gross Pathology.—Both the gross pathology and the histopathology of pigmentation of the hind-gut have been so clearly given by Pick that any subsequent description of the tissue changes observed must of necessity follow him closely in detail if not in phraseology. Macroscopic appearance of the intestinal mucosa in pigmentation of the hind-gut not only varies with the amount of pigment present, but is evidently influenced to a certain extent by the manner in which the tissue is handled. In tissue removed at operation, the color is materially affected by congestion which follows clamping, and in three cases here cited pigmentation was revealed only by microscopic examination. This factor may to some extent be responsible for the infrequent recognition of pigmentation of the hind-gut at time of operation and divert such tissue from the laboratory to the furnace of the unscientific hospital. In such portions of the hind-gut as may be observed by means of the proctoscope, the color varies from gray-black to light brown, or it may have the mottled "toad's back" appearance mentioned by Pick. Two specimens of the present series which were removed at operation and included the ileocecal valve, cecum and ascending colon were uniform gray-black or mottled throughout. Pick has described the mucous membrane as being mottled like a toad's back, and noted the following variations in color: "The tint may become a little lighter in diffuse spots of the mucosa, or in an entire segment, passing from a deep black into a lighter shade of brown." He further notes that there may or may not be a failing of melanosis toward the rectum. On these minor points my observations are not entirely in accord with those of Pick. In the one case seen at necropsy there was an even tar-black pigmentation from ileocecal valve to rectum; in the other cases, even shading throughout the specimen. It is natural that the influence of postmortem change should be thought of, but the specimen of this series was secured within two hours after death, and it is

not probable that such a factor would be overlooked by Berlin's most astute pathologist. A cut section of the intestinal wall may show a thin brown or black line corresponding to the mucosa, or the surface may exhibit nothing indicative of pigmentation. There is variation in thickness from that of tissue paper to somewhat more than normal. Extreme thinness is confined to the cecum and is, of course, a condition frequently noted in long standing cases of intestinal stasis. The serosa shows no change. In Case A, the mesenteric glands of the mesocolon were darkened. In Case A, the abdominal organs, as in the cases of Pick and other observers, were free from pigment.

Microscopic Pathology.—When the intestinal wall has markedly thinned, there is, of course, a diminution in the depth of the gland pits; otherwise they appear to maintain their normal depth. The cells lining the glands may be somewhat increased in size, they may present a normal appearance, or they may be somewhat smaller than normal. The goblet cells are neither increased or diminished in number, nor do cells foreign to this layer appear. The connective tissue of the mucosa is not affected except in the very thin intestines, where it appears to have undergone some degree of atrophy. In the connective tissue of the mucosa, between the basement membrane of the gland epithelium and the muscularis of the mucosa, are observed a varying number of pigment cells. These cells may be arranged in a uniform layer and lie close to and follow the basement membrane of the epithelium, or scattered through the stroma of the mucosa. The cells vary in size from 7 to 20 microns and have a single round or oval concentric nucleus. Such pigment as they contain is not uniform either in size of granules or in color. Some cells are gorged with large light or dark brown granules, while others hold dust-fine, saffron-colored particles. There is also a certain amount of free pigment in the form of isolated granules or clumps of granules, though the clumps of granules may be pigment cells so overloaded with pigment as to obscure their cell bodies. The pigment cells resemble morphologically the plasma cell found normally in this locality, though Pick considers them connective tissue cells of the tunica propria, and Henschen and Bergstrand regard them as several types of the wandering class of connective tissue cells of the stroma of the mucosa. Sections of two ileocecal valves showed pigment to stop at a midpoint in the valve, the ileac side being pigment free. Large numbers of eosinophils may at times be seen in the mucosa, and in Case A an occasional ameboid-looking body was noted, but the character of these bodies could not be determined. The last tissue examined exhibited pigmentation of the distal end of the ileum.

Submucosa: In several cases pigment cells were found in the solitary lymph nodes, and occasionally a cell can be seen beneath the muscularis, which is in contradistinction to the description of Pick, but has been noted by Henschen and Bergstrand. The muscular walls and serosa were free of pigment cells, and neither I nor my colleague, Dr. Jeffries, could note microscopic change worthy of mention other than occasional atrophy. *Mesenteric glands:* In Case A, pigment cells corresponding in every way with those of the mucosa could be seen. These cells appeared to be principally gathered on one side of the gland in a position probably corresponding to the junction of the afferent duct.

* Read before the Section on Pathology and Physiology at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

Chemical Examination.—It would be of no avail to chronicle in detail a series of failures. All solvents and dyestuffs which I could think of, or which were suggested by the experiments of others, gave negative results. Hence, if deduction can be drawn from negative results, the pigment, from its resistance, must resemble the melanin group.

NATURE OF THE PIGMENT

Pigments relating to intestinal pigmentation fall naturally into two groups—exogenous and endogenous. Of exogenous pigments but little need be said, they being, as a rule, salts of either silver or mercury, easily accounted for in the clinical history of the patient and demonstrated without difficulty by chemical and microchemical methods. Endogenous pigments present a much more difficult problem for consideration, and it is practically impossible to confine such considerations to any

specific pigment or group of pigments. Von Gierke¹² says one can divide endogenous pigments into two great groups, those derived from blood pigment (hemoglobin pigments) and those formed from other body substances through cell activity (autogenous pigments). If one follows the classification of Heuck, endogenous pigments encountered in the body may be divided into the hemoglobin pigments and the autochthonous pigments. Further subdivision separates the hemoglobin pigments into three groups, malarial pigment, hematoidin and hemosiderin. The autochthonous pigments include the fat-containing abnutzungspigment and the melanin. In contradistinction to the classification of Heuck, and as illustration of the diversity of opinion on the subject of body pigments, may be

quoted the following somewhat broad definition by Adami.¹³ In the paragraph dealing with "modified hemoglobin," Adami speaks of a succession of modifications of the hemoglobin pigment "hematin," leading to the eventual deposit in tissue of two, or more correctly, three substances, hematoidin, hemosiderin and hemofuscin. Further, Stengel and Fox¹⁴ say that consideration of hematogenous pigment "concerns the deposition of pigments derived from hemoglobin, of which there are two groups, the siderous and the non-siderous. The chief siderous pigment is hemosiderin, which has, however, many modifications; the non-siderous pigments are derivatives of. hematin-hema-

toidin, hemafuscin, melanin, etc." Heuck, on the other hand, does not think that hemosiderin is derived from hematoidin, nor does he consider hemofuscin one of the pigments coming from coloring matter of the blood but rather belonging to that class of pigments originating from lipoid substance and in consequence being an abnutzungspigment identical with the lipofuscin of Borst. As to the derivation of melanin or melanins, von Furth, according to Adami, regards them as being developed by the action of intracellular oxidases (tyrosinase) on the aromatic chromogen group of the protein molecule.

As it is not necessary here to regard malarial pigment, the chemical composition of only two of the blood pigments need be considered, following the classification of Heuck. Concerning the exact nature of these pigments and the chemical processes involved in their formation there is much controversy. Their

characteristics in general, however, are as follows: Hematoidin is a red or brownish gold, crystalline or granular substance, dissolved in concentrated sulphuric and nitric acids and distorted by alkalis; its iron reaction is negative. Hemosiderin is a golden yellow to brown, granular or flaky substance, soluble in acids but insoluble in alkalis; its iron reaction is positive. The definition of abnutzungspigmenten or lipoid pigments given by von Gierke is that by such are understood a class of granular, golden brown pigments that give a lipoid reaction. As illustrations he mentions pigment found in heart muscle, liver, seminal vesicles, etc., which may be normally present or occur in diseased tissue. Heuck describes it as a golden brown, flaky substance insoluble in acids or alkalis; its iron reaction is negative; it is always posi-

tive to basic dyes and irregularly positive to fat dyes. Hammersten,¹⁵ in writing of melanins, says that there are some forms which are slightly soluble, and others easily soluble, in alkalis. He mentions choroid pigment as an example of sulphur-free melanin. Others mention melanin as a substance containing a minimal amount of iron but a relatively considerable quantity of sulphur. According to Heuck's table, melanin is a substance occurring in the form of brown crystals or flakes; it is insoluble in acids and alkalis and does not take any stains which are used for the identification of abnutzungspigment.

For the identification of pigments, one must consider the morphologic, microchemical and staining

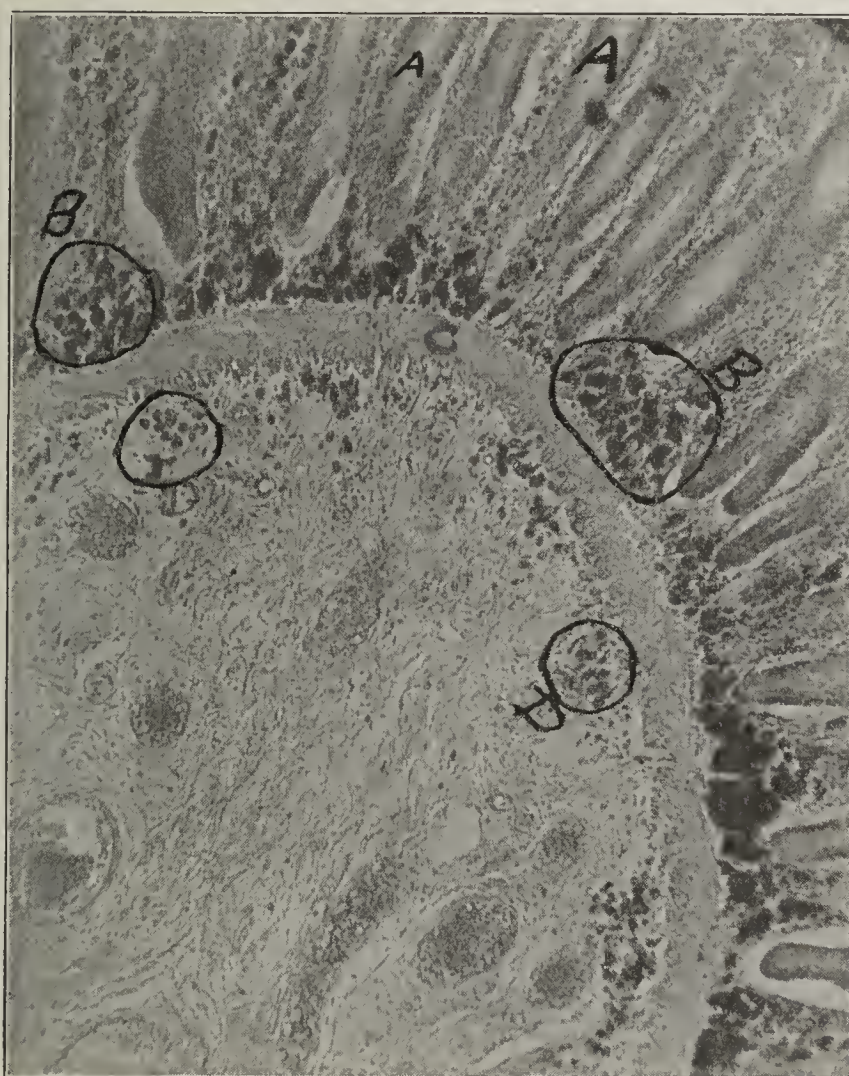


Fig. 1.—Pigmentation of the ileum: A, A, gland; B, B, pigment cells; C, muscularis mucosa; D, submucosa; pigment cells in submucosa. (Photograph by Dr. Wightman.)

12. Von Gierke, E., in Aschoff, Ludwig: *Pathologische Anatomie*, 1911, 1.

13. Adami, J. G.: *Principles of Pathology*, 1910, 1.

14. Stengel and Fox: *A Textbook of Pathology*, 1915.

15. Hammersten, Olaf: *A Textbook of Physiological Chemistry*, Mandel, 1900.

characteristics. Morphologic characteristics include form and color of pigment substances. Microchemical reactions pertain to solubility in acids and alkalis of varying strengths and at different temperatures which may be applied for a few minutes or allowed to act for several months. Staining characteristics are ascertained by treatment (both before and after tissue has been subjected to the action of acids and alkalis) with the basic dyes, Nile blue and neutral red, and the various dyes for the differentiation of fats such as are mentioned by Schmorl,¹⁶ or in any similar book which deals with chemical and microchemical methods of treating tissues. Summed up, the information one obtains concerning the nature of pigments found within the intestinal wall is based principally on three factors, namely, the solubility of the pigment, its iron content, and its ability to take dyestuffs both before and after treatment with acids, alkalies and other chemical substances.

THEORIES CONCERNING INTESTINAL PIGMENTATION

Limiting this matter to the views of those men who have had the most extensive opportunities for observation of pigmentation of the hind-gut, it is necessary to consider only the opinions of Solger, Pick, Heuck, Henschen and Bergstrand, and Lynch.

Solger appears to have been influenced to a marked extent by the location of the pigment, which he noted as confined exclusively to the tunica propria of the mucosa, the solitary follicles being spared. Although the reactions for iron yielded no very clear results, he considered it necessary, on the basis of the microscopic picture, to assume that the pigment was derived from blood chromatin, especially on account of the resemblance of the pigment deposits to the granular cells observed in the surrounding bloody deposits. Topographic relation of the pigment deposits corresponded with the vascular distribution, more particularly of the small veins. Hence the assumption of stasis in these vessels as a probable cause of pigment formation, though why pigment should show a predilection for the mucosa of the large intestine was not clear.

Pick agrees with Solger as to the distribution of pigment. He, however, noted that it was for the most part contained within cell bodies, and on this is based the hypothesis of his theory of pigment production. By microchemical tests Pick was able to exclude iron from the composition of intestinal pigment, but the presence of iron and a not inconsiderable quantity of sulphur was indicated by microchemical examinations. According to his experiments, the pigment did not appear to be a blood derivative in its chemical properties but to belong rather to the class of true melanins. The melanins of melanosis of the large intestine originate, according to Pick, from the aromatic albumin-disintegration products of the contents of the large intestine (indol, skatol), under the influence of an oxidative ferment, resembling tyrosinase, produced by the connective tissue cells of the mucosa. The capacity for production of this ferment is apparently individual. Indol and skatol are transformed into true melanin, in the connective tissue cells, by way of absorption in the mucosa. This interpretation renders intelligible the otherwise inexplicable limitation of the disease to the large intestine, on the one hand, and to the mucosa with its connective tissue cells, on the other.

Heuck agrees with Solger as to the pigment location and notes, as did Pick, the pigment cells. He considers the condition a true melanosis, and was able in one instance to examine an intestine which exhibited both true melanosis and pseudomelanosis. The pigment he assumes to be "propigment" between true melanin and lipofuscin, though perhaps more closely allied to the latter. It is, as he thinks, a fat pigment normally present in the intestine and increased in quantity through the action of some unknown agent. Why it should be confined to the large intestine, or as to the nature of the pigment cells, he expresses no opinion.

Henschen and Bergstrand consider the pigment to be between a true melanin and abnutzungspigment. They do not agree with the foregoing observers regarding either the limitation of pigment to the large intestine or to the mucosa of the large intestine. In one or two cases noted by them, pigment was found not only in the solitary follicles but also in the glands of the mesocolon. Pick's theory of pigment formation by connective tissue cells of the tunica propria does not appeal to them as a tenable one. Chronic obstipation being an almost invariable symptom, they regard it as an important etiologic factor. Their supposition is that on the hypothesis of absorption or elimination the etiology of the condition will eventually be worked out.

The theory of Lynch is interesting not only from its variance with those before considered, but because it is the result of deductions drawn from a study of the literature on the subject up to the article of Heuck, combined with opportunity for observation of the living tissue. Lynch, who prefers the term "hemachromatosis" for the designation of intestinal pigmentation, says he is inclined to think that "hemachromatosis is of bacterial origin; that the extent of the disease is dependent upon the severity of the infection; that the probable source of infection is the intestinal tract, possibly starting as an intestinal putrefaction; that this putrefaction lowers the vitality of the tissues, and thereby the cells of the mucous membrane lose their protective properties; consequently bacteria find ready access to the portal circulation. As a result of this, the chromogenic function of the liver is interfered with, and the liver becomes surfeited with pigment and is not capable of abstracting iron from the hemoglobin, with the result that an excessive amount of pigment is circulating in the blood. Further, the cells of the intestine probably have a selective action for these pigments, and as a consequence they are deposited in the tissue, etc. These pigments may or may not give a reaction for iron."

ETIOLOGY OF INTESTINAL PIGMENTATION

The theory of Solger, in view of subsequent researches by Pick, Heuck, Henschen and Bergstrand, hardly appears to merit consideration. Plausible as at first seem the hypotheses of Pick, they will hardly bear analysis. It is well known that indol (Combe¹⁷) is produced in the small intestine, and although Pick was without doubt aware of this fact, he must, to make his contention of the limitation of pigment to the hind-gut plausible, assume indol to be an exclusive product of the large intestine. That indol is not an important etiologic factor is indicated by the rarity of pigmentation in the terminal portion of the ileum

16. Schmorl, G.: Untersuchungsmethoden, 1914.

17. Combe, A.: Autointoxication, States, 1908.

where indol and skatol are produced in large quantities. Henschen and Bergstrand are not able to understand, and with reason, why, even if the first part of Pick's theory were correct, he should assume a connective tissue cell of the tunica propria to be elected for the complicated metabolic process of pigment making. They contend that not a single cell, but several cells of the wandering type of connective tissue cell, are the ones in which pigment is seen. Their supposition is based on variation in the shape of the cell bodies and on the presence of more than one nucleus in some cells. Neither Pick nor I have been able to note other than mononucleated pigment cells, nor could any variation in the form of cell bodies be considered due to other than distortion by pigment granules.

Concerning the nature of pigment, opinion does not diverge as widely as would seem apparent at first glance. With the exception of Lynch, all agree that it does not appear to be a blood pigment. Pick, Heuck, Henschen and Bergstrand agree that it resembles a melanin, and Heuck and Henschen and Bergstrand consider it of the abnutzungs class between melanin and fat-containing pigment. Heuck thinks that it resembles more the latter. In this status it will probably remain until new or more refined methods of chemical analysis can be applied to this particular problem.

There is some degree of satisfaction in the contemplation of conclusions regarding the nature of intestinal pigment. Unfortunately, not so much comfort can be derived from theories concerning its etiology. When one considers the problem, it resolves itself into the following questions: What is the nature of the pigment; what produces it; why is the pigment confined principally to the mucosa of the hind-gut; why is the pigment contained principally in cells; why is chronic obstipation an almost invariable accompaniment of pigmentation? Concerning the first question there is nothing to add to the exhaustive analyses of Heuck and Henschen and Bergstrand, and that the pigment substance belongs to a group between the true melanins and the fat-containing pigments appears conclusive. That a ferment is active in pigment production is in accord with the theory of Pick and not entirely at variance with the opinions of Henschen and Bergstrand, who incline toward an absorption or excretion theory. In considering absorption and secretion as factors, it is, so far as our present knowledge of the function of the hind-gut is concerned, reasonable to assume that absorption plays a more important rôle than secretion. It must not be forgotten, however, that though the physiologists tell us that secretions from the hind-gut

contain no distinctive enzymes and are composed principally of water, it has been clearly demonstrated by Draper¹⁸ and others that under abnormal conditions intestinal mucosa is capable of assuming utterly foreign secretory functions. In support of the absorption factor is the possible action of a variety of decomposition products from putrefactive processes which are accentuated by chronic obstipation. These processes, while usually pronounced in the cecum and hind-gut, may, under certain conditions, be also present in the terminal portion of the ileum. That the substance responsible for the production of pigment in the hind-gut is related in a measure to the so-called tyrosinase, is, in view of the proved nature of intestinal pigment, a not illogical conclusion. The fact that the condition is principally confined to the large intestine supports the assumption that conditions for the production of the tyrosinase-like body are most favorable in that locality. I believe that

putrefaction of the contents of the cecum and hind-gut, so invariably an accompaniment of chronic intestinal stasis, is the most important contributing factor. This assumption is based not only on the fact that chronic obstipation is almost without exception observed in individuals whose colons exhibit pigmentation, but also on the statement of Lynch that he had noted a diminution of the optically visible pigment to be coincident with relief of chronic obstipation, and, in consequence, permanent acceleration of the fecal current. I further consider it probable that the pigment-producing ferment is formed principally in the cecum, and that pigment is manufactured by such intestinal mucosa as comes into contact with and absorbs this ferment. Henschen and Bergstrand have shown that part of the ileum may

be pigmented, and I have examined two such tissues. Both intestines were removed from individuals that had numerous peritoneal adhesions which confined the distal portion of the ileum in such a manner that stagnation of the fecal current took place to a degree usually confined to the cecum and hind-gut.

Involvement of the cecal half of the ileocecal valve would further strengthen the view that only such mucosa as comes into contact with the pigment-forming ferment will be found to contain pigment. It does not, however, seem probable that this ferment has an intracellular action. It is more probable that it acts on the intercellular substance, of which there is a comparative abundance in this locality. Such an assumption in a measure accords with the conten-

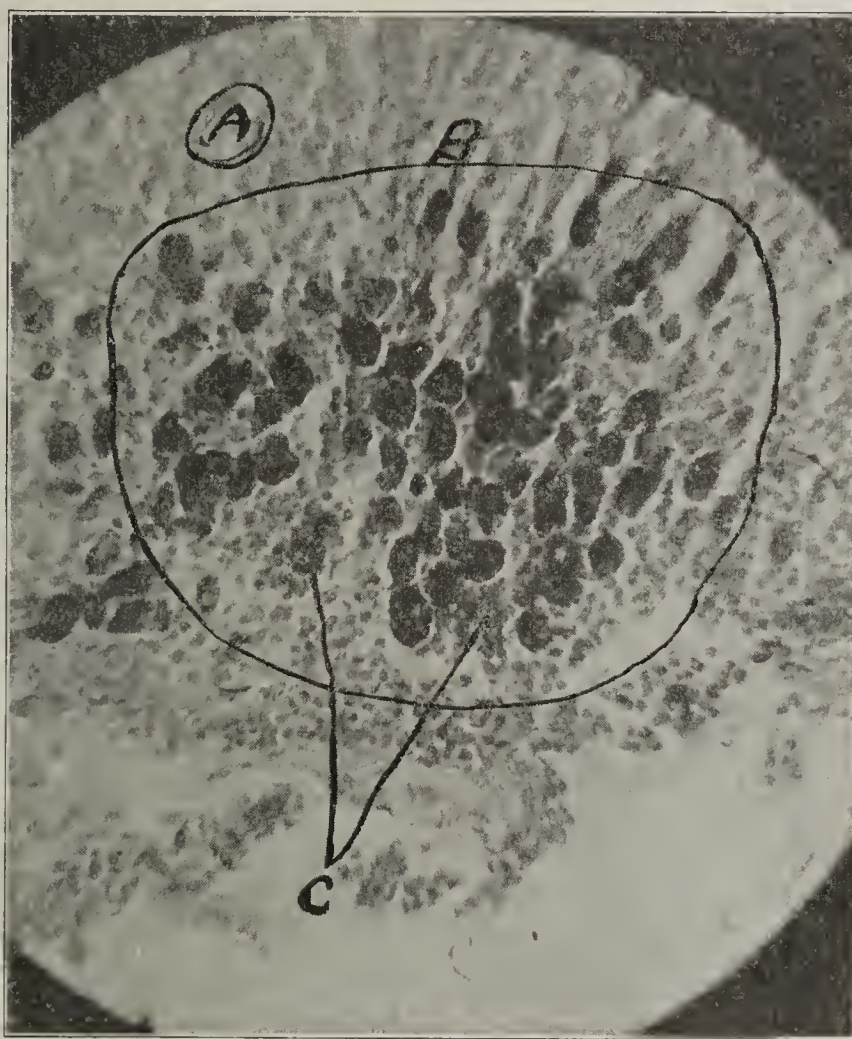


Fig. 2.—Pigmentation of gland of mesocolon: A, normal tissue; B, pigment cells; C, granular nature of pigment. (Photograph by Dr. Wightman.)

18. Draper, J. W. (Maury): Am. Jour. Med. Sc., 1909; Experimental Intestinal Obstruction, THE JOURNAL A. M. A., Oct. 21, 1911, p. 1338.

tion of Heuck that we are merely observing an increase of a normally present pigment. From the position of the vast majority of pigment cells it would appear that the ferment acts with rapidity on the first intercellular substance which it encounters after passing the basement membrane. In support of this theory it must be remembered that in the mucosa of the cecum and hind-gut we are not dealing with as highly specialized tissue as that of the liver or of the kidney, but with a tissue whose even passive function has been considered by some as anatomically and physiologically nonessential. As the cecal and colonic mucosae are practically passive walls through which fluids pass, it is more probable that the action of the pigment-producing ferment is on intercellular substances and fluids and not on intracellular substance of any cell or group of cells. The variation in pigment building capacity mentioned by Pick should depend more on duration and intensity of stasis than on difference of individual property to produce pigment-forming enzyme. This is supported by the statements of Henschen and Bergstrand regarding the number of pigmented intestines they encountered in individuals past 40, and by my experience with intestines removed because of chronic intestinal stasis.

Pigment cells are, in my opinion, plasma cells which have acquired visible phagocytic properties. These cells are found in considerable numbers in the stroma of the mucosa; and the cells studied appeared to be morphologically nearer the plasma cell than any other found in the locality. By arrangement of the pigment-containing cells, it would appear that the plasma cells attempt to follow the action of the white cells, which become phagocytes, and to form a protecting wall against further invasion by pigment-producing enzyme, in addition to removing the pigment. Were it possible to follow microscopically the change accompanying permanent acceleration of the fecal current, one could no doubt observe, coincident with decrease of pigment-forming enzymes, a gradual assimilation of pigment granules, as suggested by the experience of Lynch. Migratory properties of the plasma cell carry it to different parts of the connective tissue stroma, and at times to and beyond the muscularis. Those pigment cells seen in the solitary follicles and in lymph nodes of the mesocolon may be accounted for by the migratory properties of the cell or by the effort of the lymphatic system at removal of waste products.

The theory of Lynch is so at variance with that of other writers that it must be considered apart. It should be of material interest to the reader because of the unusual opportunity for the clinical observation on which it is partially based. I, however, cannot consistently reconcile Lynch's idea of the effect of bacterial infection with the number of nonpigmented but severely infected hind-guts which I have had the privilege of examining for him. Furthermore, it is difficult to understand why a selective action for intestinal pigments should be conferred almost uniformly on cells of the connective tissue stroma of the hind-gut.

REPORT OF CASES

SERVICE OF DR. LYNCH

CASE 1.—Mrs. M., aged 45, had had obstipation for ten years. An operation for developmental reconstruction was performed. Tissue examination revealed pigmentation confined to the mucosa of the hind-gut. The solitary nodules were pigment free. There was no change in other intestinal walls.

CASE 2.—Mrs. O., aged 50, exhibited symptoms which Dr. Lynch associates with pigmentation of the hind-gut. There was prolonged constipation, toxemia, urine at times free from indican, and blood in the stools. Proctoscopic examination revealed ocher-colored pigment extending from the anus to the sigmoid. Tissue examination of bit snipped through the proctoscope revealed pigmentation of the mucosa. The appendix exhibited pigmentation of the mucosa.

SERVICE OF DR. DRAPER

CASE 3.—Mrs. R., aged 44, had severe hemicrania averaging fifty a year, together with severe congenital constipation. An operation for developmental reconstruction was performed. Tissue examination revealed pigmentation confined to the mucosa. The lymph nodes were free. There was pigmentation of the cecal half of the iliac valve. There was no change in the muscle walls.

CASE 4.—Mrs. B., aged 34, had mild mental obsessions and marked depression, with severe congenital constipation. An operation for developmental reconstruction was performed. Tissue examination revealed no pigmentation of the ileum. The cecal half of the ileocecal valve was pigmented. There was pigmentation of the mucosa of the cecum and the hind-gut. Solitary follicles were pigment free. There was no change in the muscle walls. The lymph nodes of the mesocolon were pigment free.

CASE 5.—Mrs. R., aged 55, had chronic constipation for twenty years. An operation for developmental reconstruction was performed. Tissue examination revealed pigmentation of the mucosa only. There was no change in the muscle walls.

CASE 6.—Mr. A., aged 60, had profound toxemia. Obstipation had existed for twenty years. An operation for developmental reconstruction was performed. Tissue examination revealed pigmentation of the terminal portion of the ileum and the entire hind-gut. Pigment involved the solitary follicles as well as the mucosa, extended into the submucosa, and was to be found in the lymph nodes of the mesocolon. There was marked atrophy of the muscle walls.

SERVICE OF DR. BAINBRIDGE

CASE 7.—Mr. M., aged 36, was always constipated. Colectomy was performed. Tissue examination revealed the ileum pigment free. Pigment was confined to the mucosa of the cecum and hind-gut. There was some atrophy of the muscle walls. As an interesting side light on the toxicity of cecal contents in these cases a cubic centimeter of such, from this case, was injected into the peritoneal cavity of a 250 gm. guinea-pig and caused his death in two hours, the symptoms being those of profound toxemia.

SERVICE OF DR. MEEKER

CASE 8.—Mrs. W., aged 42, was troubled with prolonged constipation, etc. Colectomy was performed. Tissue examination revealed profuse pigmentation of the mucosa of the terminal portion of the ileum; also pigment in the solitary follicles and the submucosa.

Three other pigmented intestines are not mentioned in this group because of insufficient clinical data. Of the twelve intestines examined after operation for chronic intestinal stasis, eleven were pigmented. Not including appendixes, we have examined 206 intestinal tissues in our laboratory in the past five years. The foregoing eleven were the only pigmented ones which came to our notice.

COMMENT

It would appear that pigmentation of the hind-gut is a condition dependent on chronic intestinal stasis rather than incident to it. That it is a result, and not a primary contributing cause of obstipation, is indicated by consideration of clinical data in conjunction with histologic findings in tissue obtained both at necropsy and from the operating table. The influence of pigment, after formation, on the normal physiologic function of the hind-gut is, as are most phases

of this problem, a matter on which one is compelled to theorize because of inability to establish facts. Physiology of the hind-gut does not brilliantly illumine the pages of standard textbooks. Other than that the hind-gut serves as a connecting link between the small intestine and rectum and that it absorbs to a certain extent, and secretes a watery enzyme-free fluid, there is but little information pertaining to its functions. That both absorptive and secretory functions should bear directly on the degree of obstipation is understood when one takes into consideration their influence on consistency of fecal mass, lubrication of the intestinal mucosa, and effect on bacterial action. It is, of course, impossible to more than conjecture how materially normal functions of the mucosa are retarded by the presence of pigment. A study, however, of the position of many of the pigment cells would indicate that their interference must be a considerable one. So characteristic was the position of the majority of the cells to Solger, that, noting how they followed the peripheral line of vessels, he attributed pigmentation to circulatory disturbances.

If one recalls for a moment the normal histology of the mucosa of the cecum and hind-gut, he will remember that it is roughly as follows: (a) a single layer of columnar epithelial cells resting on a basement membrane; (b) connective tissue stroma containing central arteries, veins, lymphatic stem and nerves, with fine branches spreading from the central vessels and anastomosing directly beneath the basement membrane; (c) muscularis mucosa composed of a thin layer of muscle fibers separating the mucosa from the submucosa. With this histologic picture in mind, it must be conceded that a foreign substance in greater or less abundance when interposed between anastomosing branches of terminal blood vessels and between or in lymph spaces, mechanically at least, interferes with the normal performance of the functions of these parts.

If secretions are diminished there is a coincident loss of moisture to the fecal mass and defective lubrication of the mucous membrane. This has been graphically described by Lynch in his protoscopic picture of a dry mucous membrane covered with sticky fecal masses. If absorption is retarded, fats which would otherwise pass through the intestinal wall remain within the cavity and both promote and accelerate bacterial decomposition. On the other hand, however, with retarded absorption, there would be less fluid withdrawn from the fecal mass, though this might be a feature of small importance, owing to the turbidity of the fecal current and the consequent extended period during which absorption can take place.

In both the pigmented and nonpigmented cecum and adjacent hind-gut, during chronic intestinal stasis, there appears first to occur a congestion and edema of the mucosa, accompanied by congestion manifest in all blood vessels throughout the several intestinal walls. Following this phase, if the condition persists, there occurs a very slow but progressive atrophy not only of the mucosa but of all walls of the intestine. (By this I do not wish to convey the impression that atrophy continues until fibrous tissue ultimately replaces the normal structures. In no tissue which I have studied was there an absence of any of the normal coats of the intestinal wall, even though they had been extensively thinned out.) Not considering senile atrophy, we may presume these changes to be due,

first, to an irritation of the mucosa which may be either chemical or mechanical and is probably both. After the preliminary irritation, there begins a gradual overdistention followed by loss of tonicity through constant stretching, and disturbance of circulation from pressure of gut content and compression by gut walls. It is more logical to attribute such changes to the causes mentioned than to suppose them to be due to the presence of pigment in the mucosa, though the possibility of a toxic element derived from pigment is within the bounds of speculation.

CONCLUSIONS

If the foregoing premises are correct, it is possible to draw the following conclusions:

1. In true melanosis of the hind-gut, the pigment is not derived from blood pigment, but is a substance between true melanin and fat pigment.
2. This pigment is probably formed by an enzyme which, manufactured by the intestinal contents, acts on the intercellular substance of the stroma of the intestinal mucosa.
3. Pigment-containing cells are derived from plasma cells of the stroma of the intestinal mucosa.
4. Intestinal pigment is primarily an accompaniment and not a cause of chronic obstipation.
5. The clinical significance of intestinal pigmentation concerns the duration and intensity of obstipation, and, while a contributing influence in established obstipation, is not an initial etiologic factor.

ABSTRACT OF DISCUSSION

DR. R. A. LAMBERT, New York: By what method of examination did Dr. Lynch note the disappearance of the pigment in the three cases which he studied?

DR. ALFRED F. HESS, New York: Does the pigmentation occur in children, or only in adults?

DR. JAMES EWING, New York: I have encountered pigmentation of the large intestine somewhat frequently and I think that small amounts of this condition are not so uncommon as Dr. McFarland's references to the literature would indicate. I recall one rather pronounced case in a physician who suffered from chronic anemia and long continued obstipation. The entire large intestine was dark brown. He also suffered from a peculiar degeneration of the voluntary muscle system and of the peripheral nervous system, the exact designation of which puzzled our New York neurologists. We interpreted the intestinal condition as the result of the chronic intestinal obstipation and intoxication.

DR. JOHN W. DRAPER, New York: I had the pleasure, in connection with Dr. Lynch, of furnishing a part of the tissues from which these studies were made. I know nothing of the origin of the pigment excepting what I have learned from the study of Dr. McFarland's paper. We have observed clinically one important matter—the improvement in the cases operated on has in a general way been proportionate to the amount of pigment present. It may be, therefore, that the presence of the pigment, which in most cases was easily discoverable when the abdomen was opened, may be an index of value for the operating surgeon.

DR. JEROME M. LYNCH, New York: I have been studying this question for five years and am sorry that I can throw but little light on the origin of bowel pigmentation. I have seen a comparatively large number of patients. They are all very toxic, constipated, bleed from the bowel occasionally and have severe periodic headaches. The toxicity is relieved if the bowels are kept open, and the pigment gradually disappears if irrigations are continued over a long period. The pigment varies from an ochre to a black shade and is sometimes divided into rectangular blocks. It is an interesting problem, and I hope that this paper may lead to further study and information on this important subject.

DR. W. LANDRUM McFARLAND, New York: The observations of Dr. Lynch in regard to the disappearance of the pigment were made with the proctoscope. He saw the decolorization of the intestine—the usual picture before the treatment, and the disappearance as the patients were treated—just as you would the fading out of anything that is decolorized. Of course his observations were macroscopic. The youngest case that I have seen on record was that of a person 16 years of age. The worst pigmentations were in persons over 40. The remarks of Dr. Ewing were interesting. The Germans think the condition rare; the Swedes do not. Eight out of the eleven intestines that were sent to me have shown pigmentation, so I do not consider it a rare condition.

WHEN IS CANCER OPERABLE?*

J. WALTER VAUGHAN, M.D.

DETROIT

During the past ten years, my assistants and I have experimented with many various substances in the hope of throwing some light on a better understanding of the cancer problem.

The work¹ first reported contained a brief case report on the use of vaccines prepared from cancer protein, and later publications² gave reports of various scientific findings as they were encountered during the progress of this study.

Other workers, notably Blumenthal³ and Lünchenbein,⁴ have reported clinical observations which corresponded to those that I had previously reported. From a scientific standpoint, the work of Gruner⁵ agrees with changes I have observed chiefly in advanced malignancy, while of decided corroborative value is the research of Murphy,⁶ showing the effect of spleen destruction on the transplantability of tumors.

Indeed, the literature on the subject of malignancy abounds with isolated observations made by many independent investigators which, when taken collectively, all point toward the verification of the conclusions reached by me from my own investigations.

While these investigations have not added much of decided value to the solution of the cancer problem from the standpoint of ultimate control of the disease, yet they have contributed much toward what I might term its intelligent treatment, and they have given us an exact knowledge as to when operative treatment is indicated, as well as to when such treatment will shorten life rather than prolong it.

Obviously it would occupy too much time to give in detail the mass of experimental work that has been done before the facts, on which the following conclusions are based, were elicited. However, these have

all been published before, and the references to such publications are appended, so I will occupy the time by a simple statement of the facts, together with a brief report of the conclusions that must be deduced from them.

Metchnikoff, in his classical work on phagocytosis, was the first to show that tissue cells when introduced into the animal body were ingested by the type of large mononuclear leukocyte that is formed in the spleen. At this time, owing to the importance of his observations on the rôle of the polymorphonuclear leukocyte in bacterial infections, but little attention was paid to his observations on the large mononuclear cell, and he himself never associated this cell with any protective function in malignancy.

The next work, calling attention to this endothelial blood cell of splenic origin, and the first associating it with the protective apparatus against malignancy, was that performed by my assistants and myself.⁷ Altogether we have done over 30,000 differential blood counts and have ascertained that there is invariably an increase in large mononuclear leukocytes following the injection of cancer protein into normal persons or animals.

The percentage of increase is dependent on certain factors, chief among which is the number of body cells with which the protein comes into contact.

Thus a subcutaneous injection is followed by a slight increase, an intravenous injection by a greater increase, and the intraperitoneal method gives a still greater increase.

Another important factor is that the sensitizing dose should not be too large—from 5 to 10 minims of a 0.5 to 1 per cent. solution or suspension of either residue or vaccine is sufficient.

This increase in percentage of large lymphocytes is of short duration, lasting from about four to twenty-four hours. During this time the animal is sensitized to large intravenous doses of the protein; but such sensitization is lost when the increase in large mononuclear cells again recedes.

At the time these observations were first made, I was working under the mistaken impression that this reaction was specific for cancer tissue; but the work of Fischera⁸ helped to show this to be untrue.

Fischera was experimenting with fetal autolysate in the treatment of malignancy, and had reported decided clinical benefit in some cases. I immediately started blood counts following injections of fetal autolysate, placental residue, and tissue vaccines from every source, and obtained results of decided interest.

Chief among these was the fact that the more the tissues used reverted to the embryologic type, the greater was the increase in large lymphocytes following its injection. This forced me to the conclusion that we were not dealing with a specific ferment but with a general proteolytic ferment produced by the larger mononuclear leukocytes which is specific only to a limited degree.

This also explained why residues or vaccines made from some forms of malignant tumors gave but a slight increase in large mononuclear cells after injection, while others gave an increase of from 200 to 300 per cent. A careful study of many tumors in this way indicated that the more the tumor reverted to the

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. Vaughan, J. W.: Some Modern Ideas of Cancer, *THE JOURNAL A. M. A.*, May 7, 1910, p. 1510.

2. Vaughan, J. W.: Sensitization in Cancer, *New York Med. Jour.*, May 21, 1910; Blood Changes Caused by the Hypodermic Administration of the Cancer Proteid, *THE JOURNAL A. M. A.*, Nov. 16, 1912, p. 1764; Cancer Vaccine and Anticancer Globulins as an Aid in the Surgical Treatment of Malignancy, *ibid.*, Oct. 10, 1914, p. 1258.

3. Blumenthal: *Berl. klin. Wehnschr.*, 59, 2333.

4. Lünchenbein: *Zur Behandlung maligner Geschwülste*, München. med. Wehnschr., Jan. 6, 1914.

5. Gruner: A Study of the Changes Met With in the Leukocytes in Certain Cases of Malignant Disease, *Brit. Jour. Surg.*, January, 1916, p. 506.

6. Murphy, J. B., and Norton, J. J.: The Effect of Roentgen Ray on the Resistance to Cancer in Mice, *Science*, 1915, n. s., 42, 842; The Lymphocyte as a Factor in the Natural and Induced Resistance to Transplanted Cancer, *Proc. Nat. Acad. Sc.*, 1915.

7. Vaughan, J. Walter: *Surgery of the Spleen*, Harper Hosp. Bull., May, 1917.

8. Fischera: Aktiv. Immunisierung oder histogene Chemotherapie, *Ztschr. f. Krebsforsch.*, 1914, 14, 566-577.

embryologic type, the greater was the resulting increase.

For this reason it was thought best that a tissue which invariably gave a decided increase when properly prepared should always be used; a residue made from normal placental tissue was found to answer the requirements most satisfactorily.

Consequently we now always use this substance in our tests for the activity of the malignant immune mechanism, unless we have been particularly fortunate in obtaining an extremely malignant sarcoma.

Without going more into detail, it can be quite definitely stated that the immune mechanism in malignancy is a ferment which is formed in the large mononuclear leukocyte. This particular type of blood cell is of splenic origin or arises from similar tissues, notably the hemolymph glands and possibly the bone marrow under certain conditions.

A study of the blood findings in cases of all stages of malignancy was next undertaken. This series comprises over 200 cases ranging from the earliest diagnosable lesion to the most advanced cases, and when added to a survey of 10,000 previous daily counts on patients in all stages of this disease, it furnished some very interesting data.

In general, it may be stated that cases of early malignancy usually show a decided decrease in the total number of polymorphonuclear leukocytes with a corresponding increase in mononuclear cells.

Thus the differential count in early cancer closely resembles that seen in exophthalmic goiter, syphilis and tuberculosis, the percentage of polymorphonuclear cells being frequently much below 60.

When a tumor is growing rapidly, and always after metastasis has taken place, the percentage of polymorphonuclear cells runs above 70, and is usually much higher.

The differential count in early malignancy frequently varies considerably from day to day, and more decided changes are noticed at longer intervals.

When a high percentage of large mononuclear cells is noted for several days in succession, the tumor retrogresses during that period. Conversely, when the count shows a high percentage of polymorphonuclear cells for a continued period, it signifies rapid tumor growth. Indeed, during such periods, the microscopic character of the tumor cells occasionally assumes a more malignant type. This is evidenced in a case in which the first tissue was removed from the thyroid gland when the differential count was: polymorphonuclears, 50 per cent.; large mononuclears, 12 per cent.; small mononuclears, 38 per cent.; eosinophils 0, and the section shows a carcinoma simplex. The second section was taken from the same individual when the count was running: polymorphonuclears, 85 per cent.; large mononuclears, 2 per cent.; small mononuclears, 13 per cent.; eosinophils, 0, and shows what might have been called a spindle cell sarcoma. Such an apparent change in tumor morphology has been observed in four different instances.

The study of this large series of blood counts, besides furnishing the foregoing scientific data, revealed one fact of decided clinical importance, namely, that metastasis does not usually occur until the percentage of polymorphonuclear cells becomes high and remains so. In other words, metastasis does not occur until the immune mechanism has broken down and is no longer capable of being stimulated to renewed function.

Neighboring lymph glands may be slightly involved while the immune mechanism is still intact, but no advanced metastasis can occur during this period.

From this it can be seen that if the first differential leukocyte count in any case of malignancy shows a high large mononuclear count and a low polymorphonuclear count, we can conclude that metastasis has not occurred, and that the case is operable.

If the count shows a high polymorphonuclear and a low mononuclear percentage then we have at our disposal the wherewithal to test whether the immune mechanism has been destroyed or whether it is simply an interval of increased tumor growth. This is ascertained by injecting about 1 c.c. of placental residue intraperitoneally into the patient, and taking daily differential blood counts thereafter.

A twenty-four to forty-eight hour decrease in polymorphonuclear cells signifies that the immune mechanism is still intact and that metastasis has not occurred and therefore that the case is operable. No change, or an increase in polymorphonuclear cells with a corresponding decrease in large cells, shows inoperability because of metastasis. Such patients actually receive harm and their end is hastened by surgical intervention, unless such a procedure is indicated for palliative reasons.

In order to better illustrate this point let me cite two cases that were clinically similar in every respect. They were both cases of gastric carcinoma, apparently of advanced type, and the roentgenologist reported both inoperable.

CASE 1 (235).—Carcinoma of stomach. Hemoglobin, 70 per cent. Differential leukocyte count: polymorphonuclears, 75 per cent.; large mononuclears, 6 per cent.; small mononuclears, 18 per cent.; eosinophils, 0; mast cells, 1 per cent.

Injection of placental residue, twenty-four hour count: polymorphonuclears, 82 per cent.; large mononuclears, 3 per cent.; small mononuclears, 15 per cent.

CASE 2 (241).—Carcinoma of stomach. Hemoglobin, 40 per cent. Polymorphonuclears, 70 per cent.; large mononuclears, 6 per cent.; small mononuclears, 23 per cent.; eosinophils, 1 per cent.

Injection of placental residue, twenty-four hour count: polymorphonuclears, 59 per cent.; large mononuclears, 15 per cent.; small mononuclears, 25 per cent.; mast cells, 1 per cent.

The test in Case 1 showed that the immune mechanism was destroyed, and therefore the diagnosis of metastasis present was made.

Operation was performed for obstruction, and a posterior gastro-enterostomy was made. At this time, liver metastasis and extensive lymph gland involvement were found, and the postmortem two months later revealed extensive retroperitoneal involvement, both suprarenals being almost destroyed.

Case 2, which clinically appeared much farther advanced owing to the severe secondary anemia, showed a decided decrease in polymorphonuclear cells following injection, and an increase in large lymphocytes. From this the low hemoglobin was attributed to slow hemorrhage, since the test showed the immune mechanism to be intact, and a diagnosis of no metastasis was made. At operation a small growth obstructing the pylorus was found, and a radical operation was performed. No metastasis was observed. The lymph glands of the lesser curvature were decidedly enlarged, but microscopic section of these showed them to be inflammatory and that no metastasis was present.

We have followed the foregoing routine in over 200 cases, and I feel justified from the uniformity of our observations in stating that if the test shows the immune mechanism to be intact, operative treatment is indicated. Conversely, if the test shows the immune mechanism to be destroyed, operation is useless except for palliative reasons.

Again, I believe that operation is best performed when the percentage of large mononuclear cells is high, as metastasis is less liable to occur from the operative handling if the anticancer ferment is active when the operation is performed.

One more word concerning the value of this test: It is a valuable prognostic aid. After complete destruction of the immune mechanism, which may occur occasionally when the initial tumor is small, the progress of the disease is always rapid, and operation in such cases is usually followed by rapid general metastasis, while many cases, apparently far advanced, will respond to stimulation of the immune mechanism. Such patients always live much longer than the physician anticipates, unless he is particularly guarded in his prognosis. It is this class of case, with the alternating periods of retrogression and advancement of growth, that furnishes the fruitful field for the work of the charlatan, since the temporary benefit observed from Nature's efforts is usually attributed to whatever medication is being used at the time.

ABSTRACT OF DISCUSSION

DR. HENRY SCHMITZ, Chicago: I made the assertion some time ago, and again here in discussing Dr. Levin's paper, that in the study and treatment of carcinoma we should take into consideration the leukocytic and the differential white blood corpuscle count. By these the value or uselessness of different therapeutic measures could be shown. If, for example, following the use of a certain therapeutic measure, there were a decrease in the red and the white blood count, we should wait until the blood returned to normal before making another attempt to treat the patient. If the decrease persists, further treatment would be useless. This is specially true in the radium and roentgen treatment of cancer. Persistence of leukopenia indicates the hopelessness of the treatment. Additional exposures to the rays merely render the patient and the tumor worse. I therefore feel that the observations of Dr. Vaughan are of inestimable value, not only in the determination of operability, and the prognosis of surgical treatment of carcinoma, but also of the palliative treatment. On my return home I shall immediately begin a study of my work from Vaughan's standpoint and see whether I can substantiate his deductions.

DR. SAMUEL W. BANDLER, New York: I am delighted to hear the word immunity introduced in the study of carcinoma. I believe the preventive study will be along the line of immunity—determining why some of us have it and others do not. It would be interesting also in families to study whether the tendency to carcinoma is a characteristic of more than one member of the family or only of the person who has the disease. I have known histories in which the father has had carcinoma, in which three children have died in infancy; one adult child of that father has tuberculosis; another adult daughter has carcinoma of the stomach at the age of 37; another adult daughter has carcinoma of the colon at the age of 34. Circumstances such as that point absolutely to a lack of resistance in that family, which takes the form of carcinoma in the majority, of tuberculosis in one, and death in infancy or childhood in the others. It would be interesting to see in these cases whether there is a familial change in the blood and in the relation of the cells in other members of the family than the one with carcinoma. I would ask whether Dr. Vaughan has made studies of the same sort in benign tumors of various parts of the body, pointing to immunity

in one individual and a lack of it in another. In women who have been pregnant we find in a certain proportion the development of hydatid mole, or an overgrowth of cells which are supposed to atrophy and disappear, showing a lack of protection or resistance in that individual.

DR. J. WALTER VAUGHAN, Detroit: The only studies we made with benign tumors were in making extracts from the tumors and testing out their power to increase the percentage of large mononuclear cells. The more the tissue cells revert to embryologic type, the higher the increase—from 6 to 10 per cent. I am glad that the point has been brought out that the repeated differential blood count is of the utmost importance and gives us more aid clinically than any other examination.

RELATION OF VITAL CAPACITY OF LUNGS TO CLINICAL CONDITION OF PATIENTS WITH HEART DISEASE *

CHARLES W. McCLURE, M.D.

AND

FRANCIS W. PEABODY, M.D.

BOSTON

In most persons with heart disease, dyspnea is one of the earliest symptoms observed, and the tendency of a patient to become short of breath on exertion bears a close relation to his clinical condition. The physician often asks of his patient, "Do you get short of breath easily?" or "Do you get short of breath more easily than you did formerly?" and thereby indicates that he regards the question of dyspnea as having a direct bearing on the functional state of the heart. An increasing tendency to dyspnea is evidence of a failing cardiac reserve, while the ability to perform a greater amount of exercise without becoming short of breath indicates, in general, an improvement in the efficiency of the heart. In a limited number of patients, palpitation or cardiac pain are the presenting symptoms, and dyspnea does not assume so prominent a rôle, but in a much larger group the onset of respiratory distress is the first symptom which suggests that the subject is approaching the limit of the functional capacity of his heart.

On account of the importance of the tendency to dyspnea as an index of the clinical condition of the patient, we not infrequently attempt to standardize it or describe it in our records, so that we may know more or less accurately whether it is increasing, decreasing or remaining constant. Unless, however, careful observations are made on the patient while he is undergoing graduated exercises, one has little but the patient's own statement to rely on, and such observations concerning subjective symptoms are, of course, apt to be extremely vague and unreliable. It would be of considerable assistance, therefore, if we could devise some objective method of measuring accurately the tendency to dyspnea. The latter it seems possible to do in the determination of the vital capacity of the lungs.

As a result of a study of the various elements which take part in the production of dyspnea in heart disease, it was found that perhaps the most significant feature was the inability to breathe deeply. When a person

* From the Medical Service of the Peter Bent Brigham Hospital, and the Department of Medicine, Medical School of Harvard University.

* Read before the Section on Practice of Medicine at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

exerts himself, as by walking or running, the metabolism becomes increased, the oxygen consumption is raised, and in order to meet the need for additional oxygen, the rate and depth of respiration are increased. The normal subject accomplishes this without difficulty, since he can easily breathe many times deeper than he does while he is at rest; but for the patient with severe heart disease, it is quite a different problem, for the amount to which he can increase the depth of his respiration is much restricted. If one measures the vital capacity of the lungs of such a patient, and this is the volume of air which he can expire after the deepest possible inspiration, it will be found to be much below the normal. The importance of this inability to breathe deeply, which manifests itself as a decrease in the vital capacity of the lungs, is shown still further by the fact that there is a close relationship between the degree of the decrease in vital capacity and the degree of the tendency to dyspnea. Observations reported elsewhere on 124 patients¹ and

1. Peabody and Wentworth: Arch. Int. Med., September, 1917, p. 443.

TABLE 1.—VITAL CAPACITY DURING PROGRESS OF CARDIAC DISEASE

| Case | Date | Vital Capacity | | Condition | Remarks |
|---|------|----------------|----|------------|---|
| | | C.e. | % | | |
| 1 Med. No. 6165 Chronic myocarditis Auricular fibrillation | 2/20 | 1,825 | 65 | | Comfortable while at rest in bed. Lungs clear |
| | 2/21 | 1,875 | 66 | Stationary | Subjective improvement |
| | 2/24 | 1,825 | 65 | Stationary | |
| | 2/27 | 1,800 | 68 | Stationary | Worse |
| | 3/ 1 | 1,500 | 53 | Worse | |
| | 3/ 4 | 1,600 | 56 | Stationary | Hydrothorax has developed since last observation |
| | 3/ 5 | 1,500 | 56 | Stationary | |
| | 3/12 | 1,525 | 56 | Stationary | Hydrothorax present |
| | 3/16 | 1,500 | 56 | Stationary | |
| | 4/ 4 | 1,450 | 51 | Stationary | Hydrothorax present |
| | 4/ 6 | 1,300 | 50 | Stationary | |
| | 4/10 | 1,250 | 44 | Worse | Increased dyspnea |
| | 4/19 | 1,000 | 35 | Worse | |
| | 4/20 | 1,200 | 42 | Stationary | Dyspnea and cough |
| | 4/23 | 1,400 | 50 | Improved | |
| | 4/30 | 1,200 | 42 | Stationary | Dyspnea has gone; no pulse deficit |
| | 5/11 | 1,400 | 50 | Stationary | |
| | 5/17 | 1,400 | 50 | Stationary | No change since April 23; still in bed |
| | | | | | |
| | | | | | |
| 2 Med. No. 6274 Chronic myocarditis | 3/13 | 1,700 | 35 | | Badly decompensated anasarca |
| | 3/14 | 1,900 | 39 | Stationary | |
| | 3/16 | 1,900 | 39 | Stationary | |
| | 3/19 | 1,700 | 35 | Stationary | Less edema of legs; less dyspnea |
| | 3/22 | 1,900 | 39 | Stationary | |
| | 3/26 | 2,000 | 42 | Improved | |
| | 3/31 | 1,950 | 41 | Stationary | Less edema of legs; less hydrothorax |
| | 4/ 4 | 2,050 | 43 | Stationary | |
| | 4/ 6 | 2,000 | 42 | Stationary | |
| | 4/10 | 2,300 | 48 | Improved | Less edema of legs |
| | 4/17 | 2,275 | 47 | Improved | |
| | 4/20 | 2,200 | 46 | Stationary | |
| | 4/23 | 2,400 | 50 | Stationary | Slow but steady improvement occurred throughout stay in hospital |
| | 4/27 | 2,500 | 52 | Stationary | |
| | 4/30 | 2,400 | 50 | Stationary | |
| | 5/ 2 | 2,500 | 52 | Stationary | Slight edema of shins; right hydrothorax; out of bed but very much restricted |
| | 5/ 5 | 2,400 | 50 | Stationary | |
| | 5/ 7 | 2,400 | 50 | Stationary | |
| 3 Med. No. 6194 Chronic myocarditis | 5/ 9 | 2,500 | 52 | Stationary | Badly decompensated anasarca |
| | 5/15 | 2,500 | 52 | Stationary | |
| | 5/17 | 2,700 | 56 | Improved | Badly decompensated anasarca |
| | | | | | |
| | | | | | Badly decompensated anasarca; more dyspnea |
| | | | | | |
| | | | | | |

TABLE 1.—VITAL CAPACITY DURING PROGRESS OF CARDIAC DISEASE—Continued

| Case | Date | Vital Capacity | | Condition | Remarks |
|--|------|----------------|----|------------|---|
| | | C.e. | % | | |
| 4 Mitral stenosis Triuspid insufficiency | 2/10 | 2,100 | 43 | ..... | Enlarged liver; acutely decompensated; anasarca |
| | 2/12 | 2,130 | 45 | Stationary | |
| | 2/14 | 3,000 | 62 | Improved | Less ascites; liver less tender |
| | 2/19 | 3,500 | 73 | Improved | |
| | 2/27 | 3,100 | 65 | Worse | Liver not tender |
| | 3/ 1 | 2,575 | 54 | Worse | |
| | 3/ 3 | 2,700 | 56 | Stationary | Slight increased dyspnea; dry cough |
| | 3/ 5 | 2,400 | 50 | Stationary | |
| | 3/ 8 | 2,200 | 46 | Stationary | Increased dyspnea; liver slightly tender; increased ascites |
| | 3/12 | 2,650 | 55 | Improved | |
| | 3/16 | 3,100 | 64 | Stationary | No change clinically |
| | 3/19 | 2,750 | 53 | Stationary | |
| | 3/22 | 2,700 | 56 | Stationary | Cough stopped and edema is less |
| | 3/26 | 2,500 | 32 | Stationary | |
| | 3/31 | 2,800 | 58 | Improved | No dyspnea; less ascites |
| | 4/ 4 | 3,200 | 67 | Improved | |
| | 4/ 6 | 3,400 | 71 | Stationary | No ascites; no dyspnea |
| 5 Med. No. 6317 Chronic myocarditis | 4/10 | 3,100 | 65 | Stationary | |
| | 4/13 | 3,400 | 71 | Stationary | Left hospital in fair condition |
| | | | | | |
| | 3/23 | 2,000 | 41 | ..... | Ascites; hydrothorax; orthopnea |
| | 3/24 | 1,950 | 40 | Stationary | |
| | 3/26 | 2,200 | 46 | Improved | No ascites; less dyspnea |
| | 3/31 | 2,200 | 46 | Improved | |
| | 4/ 4 | 2,150 | 45 | Stationary | Less edema; no hydrothorax |
| | 4/ 6 | 2,200 | 46 | Stationary | |
| | 4/10 | 2,300 | 48 | Stationary | Signs unchanged, but looks better |
| | 4/17 | 2,500 | 52 | Stationary | |
| | 4/23 | 2,800 | 58 | Improved | Edema of legs; liver large and tender |
| | 4/27 | 2,700 | 56 | Stationary | |
| | 5/ 2 | 2,500 | 52 | Stationary | Left hospital, but gets short of breath very easily |
| | 5/ 5 | 2,100 | 44 | Worse | |
| | 5/ 7 | 2,300 | 48 | Stationary | |
| | 5/ 9 | 2,300 | 48 | Stationary | |

many subsequent observations confirm this fact. If the volume of the vital capacity is expressed in terms of the percentage of normal values determined according to sex and height,² it has been found that the following generalizations are approximately true: Cardiac patients with a vital capacity of 90 per cent. or more of the normal standards have no more tendency to dyspnea than is to be found in a similar group of healthy persons. Cardiac patients with a vital capacity of from 70 to 90 per cent. of the normal almost invariably give a history of becoming short of breath on moderate exertion, but most of them can lead a satisfactory although somewhat limited life. Patients with heart disease who have a vital capacity which is only from 40 to 70 per cent. of the normal are much more restricted. Practically all become short of breath easily, and few are able to do even the lightest work. They are borderline cases and frequently become acutely decompensated. Those patients with a vital capacity which is below 40 per cent. of the normal standard are acutely decompensated, usually confined to bed, and are often dyspneic even while at complete rest.

It having been shown that there is a direct relation between a decrease in the vital capacity of the lungs and the clinical condition of cardiac patients even when one compares the vital capacity of the individual case to more or less arbitrarily chosen normal standards, it seemed worth while to find out whether this relation between vital capacity and clinical condition would not be even more striking if frequent observations were made in the same case. In a considerable

2. The normal values for the vital capacity of the lungs are: Males: Height from 159.5 to 173.5 cm., 4,000 c.c.; from 173.5 to 182.5 cm., 4,800 c.c.; 182.5 cm. and above, 5,100 c.c.. Females: Height from 154.5 to 162 cm., 2,825 c.c.; from 162 to 167 cm., 3,050 c.c.; 167 and above, 3,275 c.c.

group of cases, therefore, we have attempted to plot the variations in the vital capacity of the lungs and to compare with these the changes in the clinical condition. Each observation has consisted of a careful clinical examination of the patient, together with the recording of a statement as to whether the examiner

TABLE 2.—EFFECT OF EDEMA ON VITAL CAPACITY

| Case | Date | Vital Capacity | | Condition | Remarks |
|---|------|----------------|----|------------|---|
| | | C.e. | % | | |
| 6 Med. No. 6229 Mitral stenosis Auricular fibrillation | 3/ 3 | 1,900 | 47 | ..... | Orthopnea; cyanosis; edema of legs |
| | 3/ 4 | 1,800 | 45 | Improved | Less edema of legs |
| | 3/ 5 | 1,900 | 47 | Improved | Less edema and has dyspnea |
| | 3/ 7 | 2,300 | 56 | Improved | Less dyspnea; less edema of legs |
| | 3/ 9 | 2,500 | 62 | Improved | Improved; breathing easier |
| | 3/12 | 2,400 | 60 | Stationary | |
| | 3/16 | 2,200 | 55 | Stationary | |
| | 3/19 | 2,400 | 60 | Stationary | |
| | 3/26 | 2,300 | 58 | Stationary | Some edema of legs; out of bed, but becomes dyspneic on slight exertion |

TABLE 3.—EFFECT OF HYDROTHORAX AND ASCITES ON VITAL CAPACITY

| Case | Date | Vital Capacity | | Condition | Remarks |
|---|------|----------------|----|------------|--|
| | | C.e. | % | | |
| 7 Med. No. 6284 Mitral stenosis Aortic regurgitation | 3/15 | 2,250 | 44 | ..... | Orthopnea; ascites; large liver; edema of legs |
| | 3/16 | 2,500 | .. | Stationary | |
| | 3/19 | 2,700 | 53 | Improved | Less edema of legs |
| | 3/22 | 2,500 | 49 | Stationary | |
| | 3/26 | 2,500 | 49 | Stationary | |
| | 3/31 | 2,900 | 57 | Improved | Lungs clear; ascites gone; no edema |
| | 4/ 4 | 2,900 | 57 | Stationary | |
| | 4/ 6 | 2,900 | 57 | Stationary | |
| | 4/10 | 2,950 | 58 | Stationary | |
| | 4/14 | 3,100 | 61 | Stationary | Left hospital in rather poor condition; can walk, but probably unable to do work |
| 8 Med. No. 6114 Chronic myocarditis | 2/12 | 1,510 | 31 | ..... | Orthopnea; edema of legs; hydrothorax; Cheyne-Stokes respiration |
| | 2/13 | 1,575 | 33 | Improved | Less dyspnea |
| | 2/15 | 1,675 | 35 | Improved | Edema gone from legs |
| | 2/16 | 1,900 | 40 | Improved | Much more comfortable |
| | 2/19 | 1,800 | 37 | Stationary | |
| | 2/23 | 1,800 | 37 | Improved | No râles in lungs; no edema of feet |
| | 2/27 | 2,000 | 42 | Improved | Cough gone |
| | 3/ 1 | 2,100 | 45 | Stationary | |
| | 3/ 5 | 1,950 | 41 | Stationary | Nocturnal dyspnea persists; in wheel chair, but condition very poor |
| 9 Med. No. 6335 Chronic myocarditis | 3/27 | 1,200 | 25 | ..... | Orthopnea; much ascites and edema |
| | 3/31 | 1,700 | 35 | Improved | Condition improved; no ascites |
| | 4/ 4 | 2,300 | 48 | Improved | Lies flat without discomfort |
| | 4/ 6 | 2,000 | 42 | Stationary | |
| | 4/10 | 2,250 | 44 | Stationary | |
| | 4/14 | 2,300 | 48 | Stationary | Left the hospital compensated; patient must lead a restricted life |
| 10 Med. No. 6341 Chronic myocarditis | 3/26 | 2,000 | 50 | ..... | Orthopnea; massive edema; much ascites |
| | 3/31 | 2,100 | 53 | Improved | Record of vital capacity is unsatisfactory; less ascites |
| | 4/ 4 | 2,900 | 73 | Improved | No edema of legs; ascites gone |
| | 4/ 6 | 2,800 | 70 | Improved | Moderate diuresis, no change in clinical condition |
| | 4/10 | 3,000 | 75 | Stationary | |
| | 4/14 | 3,000 | 75 | Stationary | Left the hospital |

TABLE 3.—EFFECT OF HYDROTHORAX AND ASCITES ON VITAL CAPACITY—Continued

| Case | Date | Vital Capacity | | Condition | Remarks |
|---|------|----------------|----|------------|--|
| | | C.e. | % | | |
| 11 (Chart 1) Med. No. 6261 Chronic myocarditis Auricular fibrillation | 3/ 9 | 1,400 | 42 | ..... | Acutely decompensated; hydrothorax; orthopnea; edema of legs |
| | 3/10 | 1,475 | 45 | Improved | Less dyspnea but still orthopneic |
| | 3/12 | 1,800 | 55 | Improved | Less edema; less dyspnea; less hydrothorax |
| | 3/16 | 2,500 | 76 | Improved | Lungs clear; less dyspnea; hydrothorax gone |
| | 3/19 | 2,700 | 82 | Stationary | |
| | 3/22 | 2,775 | 85 | Stationary | |
| | 3/26 | 2,800 | 86 | Stationary | Left hospital in good condition |
| 12 (Chart 2) Med. No. 6152 Mitral stenosis Auricular fibrillation | 2/16 | 1,150 | 29 | ..... | Orthopnea; cyanosis; anasarca |
| | 2/17 | 1,200 | 30 | Worse | Increased edema |
| | 2/19 | 1,050 | 26 | Stationary | Marked dyspnea; condition bad |
| | 2/23 | 650 | 14 | Worse | Died |
| 13 Med. No. 6178 Chronic myocarditis Auricular fibrillation | 2/20 | 1,400 | 29 | ..... | Orthopnea; marked ascites; anasarca |
| | 2/21 | 2,300 | 48 | Improved | Much less dyspnea; edema unchanged |
| | 2/22 | ..... | .. | ..... | Abdominal paracentesis |
| | 2/23 | 2,500 | 52 | Improved | Less dyspnea; still in bed |
| 14 Med. No. 6541 Chronic myocarditis | 5/ 5 | 1,500 | 38 | ..... | Orthopnea; moderate ascites; moderate edema of legs |
| | 5/ 7 | 2,150 | 54 | Improved | Less dyspnea; no edema and no ascites |
| | 5/ 9 | 3,500 | 88 | Improved | No dyspnea |
| | 5/16 | 3,600 | 90 | Stationary | Out of bed and in good condition |

considered the patient's general condition to be improved, worse or stationary, and then the determination of the vital capacity of the lungs. Instead of the recording spirometer which was used in the previous observations on the vital capacity of the lungs, in this series of cases we have used an ordinary well-balanced spirometer of 8 liter capacity. The subjects were told to take as deep an inspiration as possible, and then to insert the tube to the spirometer into the mouth and give a complete expiration. The volume of the expiration was measured on the spirometer wheel. In a few subjects who were very ill or were for other reasons unable to cooperate, and in a few who were unwilling to cooperate, satisfactory results could not be obtained, but in most instances it proved to be comparatively easy to get records that apparently represented with considerable accuracy the vital capacity of the lungs.

Judgment as to the clinical condition of our patients has been based on the degree of dyspnea, edema, pleural transudate, ascites, pulmonary congestion, acute enlargement of the liver, cyanosis, and pulse rate or pulse deficit. In two cases, of which special mention will be made, precordial pain and cutaneous or muscular hyperesthesia were considered as symptoms of myocardial weakness.

Twenty-four patients with some severe form of cardiac disease have been studied. In five patients in whom the objective evidences of myocardial insufficiency were marked, the alterations in clinical condition took place extremely slowly. For this reason it was frequently difficult or even impossible to note any changes in observations made at short intervals. It was under these circumstances that the greatest discrepancies between the vital capacity records and our

judgment of the progress of the case have occurred. Nevertheless these discrepancies have never been great, and the subsequent course of the case has invariably shown an error in judgment rather than an error in the indications of the vital capacity records. A comparison of our clinical observations as to the progress of the case with the vital capacity findings is given in Table 1.

Diminution in edema of the extremities resulting from rest in bed does not necessarily represent improvement in the functional condition of the myocardium. It may be explained as a static phenomenon resulting from a change from the vertical position assumed in sitting or standing to the horizontal position in bed. On the other hand, edema, while apparently leaving the body, may merely be redistributed, as is sometimes shown by the failure of the patient to lose weight (Table 2).

Two frequent complications of cardiac disease which modify the vital capacity are hydrothorax and

TABLE 4.—EFFECT OF ANGINOID PAIN OR CUTANEOUS AND MUSCULAR HYPERESTHESIA ON VITAL CAPACITY

| Case | Date | Vital Capacity | | Condition | Remarks |
|---|------|----------------|----|------------|--|
| | | C.e. | % | | |
| 15 Med. No. 6176 Mitral stenosis | 2/21 | 2,450 | 80 | ..... | Cyanosis; frequent cough; slight edema; no dyspnea |
| | 3/ 1 | 2,950 | 97 | Improved | No edema; less cough |
| | 3/ 5 | 2,200 | 72 | Worse | Precordial pain |
| | 3/ 9 | 2,700 | 89 | Improved | No pain; left hospital in good condition |
| 16 Med. No. 6480 Mitral stenosis | 4/20 | 2,000 | 61 | ..... | Dyspnea on exertion; comfortable in bed |
| | 4/27 | 1,900 | 60 | Stationary | Subjective improvement |
| | 4/30 | 2,400 | 73 | Improved | |
| | 5/ 2 | 2,600 | 80 | Stationary | Cutaneous and muscular hyperesthesia |
| | 5/ 9 | 2,000 | 61 | Worse | |
| | 5/10 | 2,100 | 64 | ..... | Hyperesthesia unchanged |
| | 5/14 | 2,965 | 91 | Improved | Hyperesthesia gone |
| 17 Med. No. 6262 Mitral stenosis Aortic insufficiency | 3/ 9 | 1,100 | 39 | ..... | Orthopnea on slight exertion; moderate edema of legs |
| | 3/10 | 1,200 | 42 | Improved | Less edema |
| | 3/12 | 1,375 | 48 | Improved | |
| | 3/16 | 1,650 | 58 | Stationary | |
| | | | | | Vital capacity is increased, but no change noted in clinical condition; still in bed |
| | 3/19 | 1,500 | 53 | Stationary | |
| | 3/22 | 1,850 | 65 | Improved | Less cyanosis; less dyspnea; no edema |
| | 3/26 | 1,900 | 66 | Stationary | |
| | | | | | |
| | | | | | Gets dyspnea on moderate exertion |
| 18 Med. No. 6293 Chronic myocarditis | 4/ 7 | 1,900 | 48 | ..... | Acutely decompensated tender, pulsating liver; no dyspnea while in bed |
| | 4/10 | 2,400 | 60 | Improved | Liver not palpable. |
| 19 (Chart 3) Med. No. 6130 Chronic myocarditis Auricular fibrillation | 2/13 | 1,700 | 42 | ..... | Marked dyspnea; orthopnea; much edema of legs |
| | 2/14 | 2,175 | 54 | Improved | Less dyspnea; less edema |
| | 2/16 | 2,800 | 70 | Improved | Less edema; less dyspnea |
| | 2/19 | 3,200 | 80 | Improved | Less edema; less dyspnea |
| | 2/23 | 3,150 | 79 | Stationary | Less cough |
| | 2/27 | 2,550 | 88 | Stationary | |
| | 3/ 1 | 3,550 | 88 | Improved | |
| | 3/ 5 | 3,200 | 80 | Stationary | General condition good; walking about the ward |
| | 3/ 8 | 3,450 | 86 | Stationary | |
| | 3/12 | 3,575 | 89 | Stationary | |

TABLE 4.—EFFECT OF ANGINOID PAIN OR CUTANEOUS AND MUSCULAR HYPERESTHESIA ON VITAL CAPACITY—Continued

| Case | Date | Vital Capacity | | Condition | Remarks |
|--|------|----------------|----|----------------------|--|
| | | O.e. | % | | |
| 20 Med. No. 6135 Mitral stenosis | 2/14 | 1,200 | 42 | ..... | Much dyspnea even when at rest |
| | 2/15 | 1,275 | 45 | Improved | Less dyspnea |
| | 2/17 | 1,400 | 49 | Improved | Slight edema |
| | 2/18 | 1,200 | 42 | Worse | More dyspnea |
| | 2/24 | 1,400 | 49 | Improved | Less dyspnea; comfortable in bed |
| | 2/27 | 1,475 | 52 | Stationary | |
| | 3/ 1 | 1,400 | 49 | Stationary | |
| | 3/ 4 | 1,650 | 58 | Stationary | |
| 21 Med. No. 6491 Mitral stenosis | 3/ 5 | 1,575 | 55 | Stationary | Up in chair; dyspnea on slight exertion |
| | 4/25 | 1,900 | 68 | ..... | Dyspnea on exertion, but comfortable in bed |
| | 4/26 | 1,800 | 64 | Stationary | |
| | 4/27 | 1,950 | 69 | Stationary | |
| | 4/30 | 1,950 | 69 | Stationary | |
| | 5/ 2 | 2,000 | 71 | Stationary | |
| | 5/ 9 | 2,100 | 74 | Stationary | |
| | 5/15 | 2,200 | 77 | Improved | Less dyspnea on exertion |
| | | | | | Out of bed; no dyspnea while walking about ward |
| | 5/18 | 2,200 | 77 | Stationary | |
| 22 Med. No. 6241 Chronic myocarditis Auricular fibrillation | 3/ 4 | 3,100 | 78 | ..... | Dyspnea; cyanosis |
| | 3/ 5 | 3,500 | 88 | Improved | Much better; less dyspnea |
| | 3/ 8 | 3,500 | 88 | Stationary | |
| | 3/12 | 3,475 | 87 | Stationary | |
| | 3/16 | 3,600 | 90 | Stationary | |
| | 3/19 | 3,500 | 88 | Stationary | |
| | 3/22 | 3,500 | 88 | Stationary | No dyspnea when walking |
| 23 Med. No. 6273 Chronic myocarditis | 3/13 | 2,475 | 51 | ..... | Slight edema of shins; dyspnea; cough |
| | 3/14 | 2,400 | 50 | Stationary | |
| | 3/16 | 2,300 | 48 | Stationary | |
| | 3/19 | 2,500 | 52 | Improved | No edema of shins; much cough |
| | 3/22 | 2,300 | 48 | Stationary | Less cough |
| | 3/26 | 2,600 | 54 | Stationary | Much cough; râles in both lungs; no noticeable change in condition since entering hospital |
| 24 Med. No. 6399 Mitral stenosis | 4/ 7 | 2,500 | 63 | ..... | Slight dyspnea at rest; bloody sputum |
| | 4/10 | 3,100 | 78 | Improved | No dyspnea at rest; no sputum |
| | 4/17 | 3,400 | 85 | Stationary | |
| | 4/20 | 3,200 | 80 | Stationary | |
| | 4/23 | 3,500 | 88 | Stationary | Out of bed |
| | 4/27 | 3,400 | 85 | Stationary | Condition unchanged |
| | 5/ 5 | 3,200 | 80 | Stationary | |
| | 5/ 7 | 2,800 | 70 | Worse | Increased dyspnea |
| | 5/ 9 | 3,000 | 75 | Stationary | |
| | 5/15 | 3,100 | 78 | Stationary | |
| | 5/17 | 3,400 | 85 | Improved, stationary | |
| | | | | | Left hospital in good condition |
| | 5/23 | 3,400 | 85 | Stationary | |

ascites. It is to be expected that the vital capacity would increase corresponding to the diminution of the amount of fluid in the pleural or peritoneal cavities. The findings in the patients we have studied in whom either hydrothorax or ascites, alone or combined, were present are given in Table 3.

In six of the eight cases outlined in Table 3 the hydrothorax and ascites disappeared while the patients were under observation. After the disappearance of the pleural and peritoneal fluid, the vital capacity continued to increase to the extent of from 4 to 6 per cent. in three cases, and 10, 12 and 36 per cent. in the other three. The findings indicate that the decrease in the vital capacity in these cases depended in part on the factors other than the hydrothorax and ascites.

Mackenzie has long believed that anginoid pain or cutaneous and muscular hyperesthesia were evidence of myocardial insufficiency. It is interesting to note that with the onset of such symptoms in two otherwise uncomplicated cases of mitral stenosis, the vital capacity dropped markedly, to rise again with the cessation of symptoms. In one of these cases there

was a rather sharp anginous pain over the precordium. In the other case there was marked cutaneous hyperesthesia over the front of the left chest, over the pectoral muscles, and also over the trapezius muscle in the neck. Deep inspiration did not cause pain in either case. The vital capacity findings are given in Table 4.

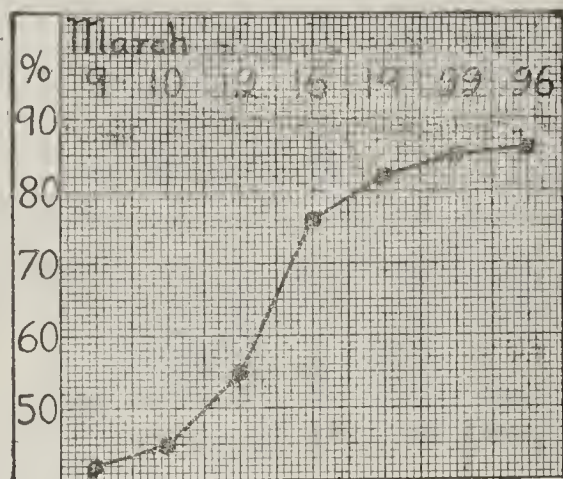


Chart 1—Vital capacity in Case 11.

The vital capacity in a patient with paroxysmal tachycardia was studied during and after an attack. There were no evidences of organic heart disease, and during the paroxysm there were no symptoms referable to the heart. Sixteen hours after the onset of a paroxysm in which the heart rate was 180 per minute, the vital capacity was 58 per cent. Two days later, and twenty-four hours after cessation of the tachycardia, the vital capacity had increased to 83 per cent. A continued rapid rate of the heart in paroxysmal tachycardia is frequently accompanied by marked signs of myocardial insufficiency, but in our case the lowered vital capacity was the only indication of this. The accompanying charts show graphically the changes in the vital capacity in three typical cases (11, 12 and 19). Such charts are excellent objective records of the clinical course which each of the patients has passed through.

REPORT OF THREE TYPICAL CASES

CASE 11 (Med. No. 6261).—*Chronic myocarditis, auricular fibrillation, hyperthyroidism*.—Woman, aged 39, white, admitted, March 9, 1917, discharged, March 30, 1917, had had exophthalmic goiter for the last eight years. Six years ago she had a break in cardiac compensation, since which time her feet had been edematous at different periods. On entrance to the Peter Bent Brigham Hospital there were orthopnea, double hydrothorax and considerable edema of the legs. The usual findings of exophthalmic goiter were present. The area of cardiac dulness measured 19 cm. to the left in the fifth interspace and 2 cm. to the right in the fourth interspace. The cardiac action was absolutely irregular. A systolic murmur was audible over the region of the apex of the heart. Blood pressure was 142 mm. systolic and 90 mm. diastolic. The electrocardiographic diagnosis was auricular fibrillation.

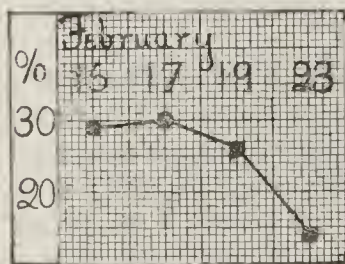


Chart 2.—Vital Capacity in Case 12.

March 10, there was less edema of the legs than was present on admission.

March 12, the edema of the legs had subsided. There was less fluid in the pleural cavities.

March 16, hydrothorax was no longer present.

March 19, 22 and 26, the vital capacity had increased 10 per cent. since March 16. During that time the patient's physical condition had much improved. The pulse rate had

diminished from 80 to 90 to from 60 to 70 per minute, and the heart was well compensated.

CASE 12 (Med. No. 6152).—*Mitral stenosis and insufficiency, myocardial insufficiency, auricular fibrillation, bronchitis, syphilis*.—Man, aged 53, white, admitted, Feb. 15, 1917, died, Feb. 24, 1917, had been told ten years before that he had a valvular heart disease. During the last four years the patient had had occasionally a little dull precordial pain, and also some dyspnea on unusual exertion, and momentary attacks of vertigo. For several years his memory had been faulty, and he had become definitely irritable in disposition. The present illness began three months before with the symptoms of acute bronchitis and dyspnea, which had grown progressively worse. For the last week before admission to the Peter Bent Brigham Hospital the legs had been swollen. Physical examination showed marked orthopnea, anasarca, and deep cyanosis of the face, lips, ears and fingers. The area of cardiac dulness measured 14 cm. to the left in the fifth interspace and 45 cm. to the right in the fourth interspace. The heart's action was absolutely irregular, and there was a pulse deficit of 38 to the minute. There was a systolic murmur audible over the entire precordium, loudest in the region of the apex of the heart. In the longer pauses between heart beats a short early diastolic murmur was heard at the apex. Blood pressure was 130 mm. systolic and 90 mm. diastolic.

February 17, the patient was slightly worse. There was an increase in the edema of the scrotum, and the patient's cough

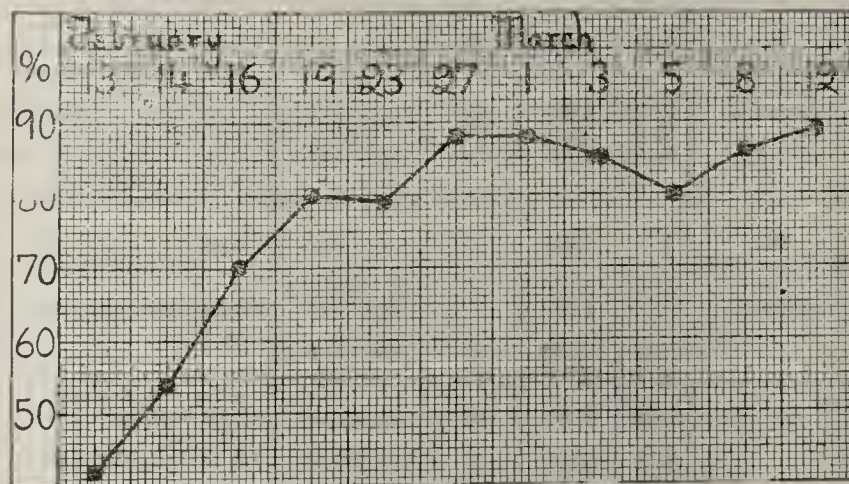


Chart 3—Vital capacity in Case 19.

was more frequent. However, there was less cyanosis than on admission.

February 19, the patient's condition was unchanged.

February 23, the patient was decidedly worse. He appeared to be much weaker physically. The cough was more frequent. He died several hours after the last vital capacity record had been obtained.

CASE 19 (Med. No. 6130).—*Chronic myocarditis, hypertension, auricular fibrillation, chronic nephritis*.—Man, aged 63, white, admitted, Feb. 12, 1917, discharged, March 13, 1917, had unimportant past medical history. The present illness began ten weeks before admission to the hospital with some generalized weakness, slight dyspnea, and fatigue on exertion. For the last three weeks the patient has been dyspneic. Physical examination revealed that the patient was orthopneic. There was considerable edema of the legs. There were coarse râles throughout both lungs. The area of cardiac dulness measured 16 cm. to the right in the fourth interspace. The heart's action was irregular, and the cardiac sounds were but faintly audible. No murmurs were heard. The aortic second sound was accentuated. Blood pressure was 190 mm. systolic and 90 mm. diastolic. An electrocardiogram showed the condition of auricular fibrillation to be present.

February 13, the patient was orthopneic. There was considerable edema of the feet and legs. Numerous coarse moist râles were present throughout both lungs. There was some cough.

February 14, there was much less edema of the feet and legs. Cough persisted.

February 16, the edema of the feet and legs had almost dis-

appeared. But few râles were present in the lungs. Cough persisted.

February 19, the patient lay comfortably in the prone position. The cough persisted.

No change occurred in the patient's condition until March 1. The cough was much less and there was little sputum.

March 3, 5, 8 and 12, the patient's condition remained stationary.

March 13, the patient was discharged from the hospital able to return to his work as a cabinet maker.

SUMMARY

Attention is called to the importance of a decrease in the vital capacity of the lungs as a factor in the production of dyspnea in heart disease. The degree to which the vital capacity is decreased below certain normal standards corresponds closely to the tendency to dyspnea. Since the tendency to dyspnea depends largely on the functional capacity of the heart, the determination of the vital capacity of the lungs may serve as an indirect measure of the cardiac condition. In a series of twenty-four cases it has been found that the clinical condition of cardiac patients varies closely with the changes in the vital capacity of the lungs. An improvement in the functional state of the heart is associated with a rise in the vital capacity. When the condition of the heart is apparently remaining stationary, changes in the vital capacity are not marked, and when there is evidence of increasing cardiac insufficiency, the vital capacity of the lungs falls. Charts showing the variations in the vital capacity of the lungs of patients with heart disease are frequently satisfactory objective records of the clinical course of the disease, and they may be of distinct aid in prognosis.

ABSTRACT OF DISCUSSION

DR. JOSEPH H. PRATT, Boston: Stimulated by Dr. Peabody's work, Dr. Paul D. White and I began a study of the vital capacity in patients at the cardiac clinic at the Massachusetts General Hospital. We have the records now of fifty patients. We find that the vital capacity corresponds closely to the functional condition of the heart as determined by the ordinary methods. Patients who were short of breath after walking slowly on a level for a distance of one or two blocks had usually a vital capacity of 50 per cent. or less. Ambulatory patients rarely have less than 40 per cent. In one case, however, it was 30 per cent. In diagnosis, the test is of great value in distinguishing between true cardiac weakness and those cases of cardiac neurosis that simulate organic disease of the heart. The difficulty in distinguishing between these two conditions is due to the fact that the first symptoms of cardiac weakness are usually subjective. The patient first notices slight breathlessness on exertion, and this may be present in organic heart disease before anything abnormal is found in the physical examination.

The value of the test was shown strikingly in the following case: A man had been treated in the dispensary for a year for myocardial disease. He complained that he was short of breath when he walked on the level a distance of 100 yards. Although nothing abnormal was found on the examination of the heart, the diagnosis had never been disputed. We found that his vital capacity was normal. From careful inquiry I learned that although he claimed to have a feeling of breathlessness while walking, he was able to run up stairs without any discomfort. This showed conclusively that the subjective sensation of which he complained was not due to cardiac weakness. We had mistaken a cardiac neurosis for organic heart disease.

The method is of importance in determining the functional capacity of the heart in patients who are in bed. Recently I had under observation at one time three patients with mitral stenosis. All gave a history of shortness of breath on slight

exertion. In bed they exhibited no signs of cardiac insufficiency. They were able to lie with their heads low; there was no edema, and the pulse in each case was slow. To have tested their cardiac capacity by allowing them to exercise would have been too hazardous. The vital capacity test was made. Two had 40 per cent., the other about 80 per cent. I had previously suspected that there was a large neurotic element in the patient with the high vital capacity. Encouraged by the result of this test she has been taking recently, without discomfort, more exercise than she had for several years. The results of treatment among our ambulatory patients has not been encouraging as measured by the vital capacity test, and in only one case has there been a marked increase in the vital capacity from the use of digitalis, with the patient up and about. In this case, which was one of auricular fibrillation, the increase amounted to 25 per cent.

DR. T. B. BARRINGER, JR., New York: I am able in many ways to confirm the results which Dr. McClure has obtained. In estimating the vital capacity in cardiac patients I have found that it is much lower than in normal persons, and the greater the insufficiency, the lower the vital capacity. In cardiac patients with normal reserve power I have found that the vital capacity is normal. In cardiacs with low reserve power, but no insufficiency, the vital capacity is frequently normal. I have felt that the decrease in vital capacity in cardiac insufficiency was due to the congestion of the lungs which was present. In the treatment of patients by graduated exercises I have found that as the heart's reserve power increases and the clinical condition of the patient improves, the vital capacity goes up. Two years ago I drew attention to a small series of cases in which the average increase of vital capacity during the course of treatment was 25 per cent.

DR. R. G. PEARCE, Cleveland: I have an interesting case which Dr. Hoover and I saw in Lakeside Hospital, in which we estimated the vital capacity of the lungs and the cardiac output by the method proposed by Christianson, Douglas and Haldane, which determines the blood flow through the lungs per minute; that is, cardiac output of the right ventricle. The man had a badly decompensated heart. He had a vital capacity of about 1.2 liters and a cardiac output of 3 liters. After a course of digitalis for three days he had a vital capacity of 1.8 liters and a blood flow per minute of 4 liters. After a week he had 2.4 liters vital capacity and a blood flow of 4.5 liters per minute. The normal man has a cardiac output of 5 or 6 liters per minute. I think this observation is interesting because it checks up cardiac output with vital capacity.

DR. C. W. McCLURE, Boston: A study has been made of cardiac patients who were compensated, and it has been found, as I tried to bring out early in the paper, that the vital capacity in patients with cardiac disease who we say are compensated varies in different patients. If the patient can lead a normal life, the vital capacity is almost invariably above 50 per cent. If the patient is able to do a slight amount of work, but must lead a restricted life, the vital capacity will fall almost invariably to somewhere between 70 per cent. and 90 per cent. of the normal. Patients whose vital capacity is less than 70 per cent., are dyspneic on very moderate exertion. The lower the vital capacity, the easier the patient becomes dyspneic, and patients who are down near 40 per cent. are usually decompensated or become decompensated very easily.

A New Method of Cleaning Slides.—The method of cleaning old used slides given below is new so far as the writer knows, and as it is simple, cheap and effective, it seems to merit publication. The only reagent necessary is commercial (household) ammonia used full strength. The slides are soaked in this indefinitely (at least twenty-four hours), when it will be found that they can be rinsed in water and wiped clean. Stained smears of all kinds covered with immersion oil and tissue sections mounted in balsam are all equally well cleaned. The immersion oil need not be removed before soaking, although it is advisable to wipe off the excess. The ammonia may be used repeatedly if kept in a receptacle with a tight cover to prevent loss.—REUBEN A. JOHNSON, M.D., Minneapolis.

SALVARSAN AND NEOSALVARSAN
MYELITIS

REPORT OF A FATAL CASE

G. W. McCASKEY, M.D.

FORT WAYNE, IND.

It is not surprising that, when so fatal a disease as syphilis of the central nervous system is attacked with a drug so powerful as arsenic, serious results should now and then occur. The gravity of the disease and its general tendency toward fatality, however, fully justify the risk in view of the beneficial results so commonly observed. Only a few cases of myelitis have been so far recorded, although it is probable that a considerable number of unrecognized cases have occurred or been reported under more general captions. Perhaps the most common neurotoxicologic result of the administration of salvarsan has been a hemorrhagic encephalitis. In some cases this has been verified by necropsy and histologic examination. In some of the cases, however, which clinically looked like encephalitis nothing was found histologically in the central nervous system.

The following reports are brief outlines of the few cases recorded, together with the description of my own case.

Bayet¹ reported the following case:

CASE 1.—A man, aged 24, came under treatment for secondary syphilis, three months after the primary lesion. At that time he was given 0.7 gm. of neosalvarsan intravenously. This was well tolerated, although there was a slight general malaise. Ten days later, August 26, he received 0.8 gm., and immediately thereafter developed fever, with a scarlatiniform eruption. There was vomiting for two days. September 1 he was suddenly found paraplegic. There was bladder paralysis with loss of the superficial and deep reflexes, with the single exception of the plantar reflex. There was no Babinski reflex. The spinal fluid was not under increased tension, contained no lymphocytes, and gave a negative Wassermann reaction. This case was not fatal so far as known, but the subsequent history was not followed up.

Socin² reported the following case:

CASE 2.—A woman, aged 38, suffering from syphilis, but without any involvement of the central nervous system, was given 0.5 gm. of salvarsan, intravenously. No symptoms followed this treatment. Five days later the same dose was repeated. No symptoms were manifested for forty-eight hours, at the end of which time she began to have a slight elevation of temperature and, later in the day, general convulsions followed by vomiting and complete apathy. There was a leukocytosis of 10,000 with 86 per cent. polymorphonuclears. About a month later an extensive decubitus developed. Motor and sensory paralysis of irregular distribution was present. This patient for a little more than a year had all the symptoms of a severe myelitis, and died of an intercurrent pneumonia.

The following case of myelitis, apparently caused by the intravenous injection of neosalvarsan, was reported by Chiari³:

CASE 3.—Three months after acquiring a genital chancre, a woman, aged 27, appeared at the clinic with symptoms of secondary syphilis. This was June 1, 1912. That day she received 0.7 gm. of neosalvarsan intravenously. June 4 she was given 1.2 gm., and June 7, 1.4 gm. Immediately following the last injection there appeared a scarlatiniform exanthem that lasted nine days. About the same time that the

eruption disappeared, vomiting began, lasting a week. June 13, she began to show symptoms of paralysis of the lower extremities, which soon became complete. June 19, a large decubital ulcer developed over the sacrum and later became quite extensive. During this time she developed albumin and casts and blood in the urine. The further history of the case was that of a severe progressive myelitis, of which she died, December 15, six months after beginning the treatment. This patient also had a terminal pneumonia. The anatomic findings were those of an inflammatory process, especially involving the gray matter of the cord, but to a lesser extent the white substance as well.

My own case of myelitis, which, as far as I can determine, is the fourth case reported under that title, presents the following history:

CASE 4.—Miss R., aged 40, first consulted me, Dec. 15, 1915. She presented the typical syndrome of tabes dorsalis: the tabetic gait, lightning pains, loss of the knee jerk, and the Argyll Robertson pupil. The blood Wassermann test was negative. The routine blood examination revealed: hemoglobin, 85 per cent; leukocytes, 12,600; polymorphonuclears, 72 per cent.; small lymphocytes, 22; large lymphocytes, 2; transitionals, 4. The spinal fluid was not under very great pressure, but contained excessive globulin, with 16 lymphocytes per cubic centimeter with a +++ Wassermann reaction. The colloidal gold test showed 0000440005. At a later date the gold test was 2120000000. There was no heart involvement, but a mild grade of interstitial nephritis. The urine had a specific gravity of 1.010, with 44 per cent. phenolsulphonaphthalein output in two hours and ten minutes. There was neither albumin, nor sugar, nor casts. The digestive functions were normal. There had been a little diplopia at times, but the eyegrounds were normal on ophthalmoscopic examination.

The patient was placed on the Swift-Ellis treatment at intervals of about two weeks, diarsenol being used intravenously and the blood being taken in about twenty minutes, the serum being given intraspinaly on the following morning. The patient improved satisfactorily, and, after a couple of months' time, neosalvarsan, being procurable, was used instead of the diarsenol.

Early in May, after five months of Swift-Ellis therapy, the treatment was changed to the simultaneous combined intravenous and intraspinal injection. After the usual dose of neosalvarsan intravenously (about 0.6 to 0.8 gm.), an intraspinal injection was immediately given with the following technic:

A solution of neosalvarsan is made so that each cubic centimeter contains 100 mg. With a finely graduated pipet 0.05 c.c. is measured into a sterile glass representing 5 mg. This is taken up into a Luer syringe with 5 c.c. of physiologic sodium chlorid solution. Each cubic centimeter represents 1 mg., and it is very easy to retain in the syringe the exact dose desired.

After the preparation of this dilution the lumbar puncture needle was introduced and as much spinal fluid was removed as was desired for laboratory purposes. The syringe was then directly connected with the lumbar puncture needle in situ, and the spinal fluid allowed to run directly into the syringe, diluting the 1 mg. more or less of neosalvarsan up to 5 or 6 c.c., according to circumstances. The contents of the syringe were then immediately reinjected into the spinal canal. This technic of intraspinal injections is still being used, but the dose does not exceed 1 mg., beginning with about 0.5 mg., and is usually not given on the same date as the intravenous injection, to avoid confusion of reactions.

The patient had been given about four of these treatments at intervals of ten days, the dose of neosalvarsan intraspinaly being gradually increased up to 1.8 mg. June 16, the same sized dose was given without any marked reaction, although the symptoms were somewhat more severe than usual. Eight days later, precisely the same treatment was repeated. The reaction immediately following the treatment was not unusually severe. The leg and back pains were perhaps slightly more severe than they had been following

1. Bayet: Jour. méd. de Bruxelles, 1912, 17, 395.

2. Socin: Cor.-Bl. f. schweiz. Aerzte, Nov. 18, 1916.

3. Chiari: Abstr., Verhandl. d. deutsch. path. Gesellsch., 1913.

previous treatments. On the next day she complained that she could not see well, that the legs were weak, and she was unable to void urine. The slight motor and sensory impairment present in the lower extremities gradually increased to complete paralysis. In the course of from four to five days, signs of a decubital ulcer were found over the sacrum, and this gradually became worse. The patient was taken home from the hospital in about a week's time, after which the symptoms remained about the same. A letter from her physician, dated September 18, stated that she had died from exhaustion, the only additional feature of interest being the enormous extent of the trophic ulcers. There were apparently a number of them over the extremities, and one very large one about 6 inches in diameter and circular in form over the sacrum, which the physician said extended down to and actually laid bare the vertebrae. No necropsy could be obtained.

CASE 5.—In addition to these cases of salvarsan and neosalvarsan myelitis reported under that title, I have been able to find another undoubted case reported by Wile⁴ in discussing the technic of subdural injections. In this case, which was one of ordinary tabes in a man, aged 44, 1 mg. of neosalvarsan was given subdurally, Sept. 24, 1913, the injection being followed for five days by lightning pains and girdle pain. Two weeks later, 2 mg. were given subdurally, and this was followed by lightning pains not so severe as after the first treatment. Ten days later 2 mg. were again given in the same manner. One-half hour after this treatment there appeared extreme pain in the legs followed by urinary retention and paraplegia, and later by decubitus, without doubt the typical picture of acute myelitis. These symptoms grew progressively worse and the patient died, Dec. 5, 1913, about two and one-half months following the treatment. No intravenous injection was given in conjunction with these subdural injections. There seems to be no doubt that this fatal myelitis was due to the subdural injection of 2 mg. of neosalvarsan.

COMMENT

Ravout gave sixty-three subdural treatments of from 4 to 12 mg. of salvarsan in isotonic sodium chlorid solution without ill effect. Wechselmann gave from 0.5 to 3 mg. Wile also gave 3 mg., and I think sometimes considerably more without ill effect.

It is interesting to note that in these five cases of myelitis, with the exception of Wile's case and my own, the medication was intravenous alone. In Wile's case it was intraspinal alone, and in my own case it was intravenous and intraspinal. These cases seem to prove that the myelitis may result alike from the intravenous and the intraspinal medication, and in my own case leaves the question fairly open as to whether the myelitis was the result of one or the other or both.

Socin's case resulted from two doses of salvarsan intravenously, each one containing 0.5 gm., while Chiari's case followed three doses of neosalvarsan of 0.7, 1.2 and 1.4 gm., respectively. Bayet's case followed two doses of 0.7 and 0.8 gm. of neosalvarsan intravenously, eleven days apart, while in my own case at least half a dozen 0.8 gm. doses of neosalvarsan intravenously and from 0.5 to 1.8 mg. intraspinally preceded by several doses of diarsenol with a slightly modified Swift-Ellis technic, had been given.

In Chiari's opinion, these severe degenerative and even destructive effects of salvarsan and neosalvarsan on the central nervous system are due to some abnormal condition of their arsenical content. Obermüller⁵ had already collected five instances of arsenical poisoning in which certain definite cord changes had been

found. These consisted for the most part of degeneration of the anterior cornua, and of certain fibers in the anterior segments of the cord. There were also occasional hemorrhages into the cord. In Chiari's case of salvarsan myelitis, the histologic changes found in the cord bore a very close resemblance to those described in some of the cases collected by Obermüller; and Chiari, therefore, concludes that in his case of myelitis it was the result of the arsenical content of the salvarsan.

This conclusion may seem too obvious to require confirmation, but such is really not the case. As a matter of fact, we are dealing with very complex molecules of the atoxyl series, which undoubtedly undergo fundamental changes within the blood and tissues, giving rise to many intermediate bodies. These chemical reactions and interactions, quite possibly, if not probably, vary widely in different cases. It is known that some of these compounds are intensely toxic, and the conclusion that the myelitis is the direct result of the arsenic finally separated, for example, from the salvarsan molecule in the course of the retrograde chemical changes, instead of some of these intermediate bodies, has something more than a theoretical interest. It can be fairly assumed that many of the unpleasant and serious reactions following the administration of neosalvarsan are due to some of the intermediate bodies above referred to, of the exact nature of which we are for the most part ignorant. In the course of my own clinical observation, I have seen a considerable number of reactions, such as scarlatiniform eruptions, anuresis, chills and fever, intense headache, back and limb pains, and circulatory and digestive disturbances, which, to say the least, were unpleasant and sometimes positively alarming. Reactions of somewhat milder type are certainly very common after the intravenous method. Whether these milder reactions differ only in degree from the severer ones is difficult to determine. It would seem probable that slight neurotropic, or other transient structural alterations, might occur in various organs, from which recovery might rapidly ensue. It would seem that we are constantly confronted with the remote possibility of a catastrophe, such as a hemorrhagic encephalitis or a myelitis. In view, however, of the enormous number of intravenous injections that have been given, running up as they do into many millions, the probability of such accidents must be exceedingly remote.

Wechselmann⁶ is of the opinion that they cannot be explained on purely toxicologic grounds. Clinical observation does, indeed, seem to indicate that the drug alone cannot be wholly responsible for the results. The observation of Querst, for instance, in which eight patients received injections from the same solution, one after the other, the fourth one being fatal, not only proves this but also proves that the fatality was not due to oxidation products caused by standing too long, because the four patients later injected from the same solution remained well.

It does seem, indeed, that there must be something in the chemistry of the patient's body fluids which in some way by its action on salvarsan produces toxic bodies, and it would seem most probable that it is due to some of the abnormally toxic intermediate bodies above referred to. It is, of course, necessary to assume fundamental differences in the chemical bodies found in the organism on one day from those found on

4. Wile, Udo: Technic of the Intradural Injections of Neosalvarsan in Syphilis of the Nervous System, *THE JOURNAL A. M. A.*, July 11, 1914, p. 137.

5. Obermüller: Ueber Arsenlähmungen: Ein Beitrag zur Beurteilung der Nebenwirkungen des Salvarsan, *Berl. klin. Wehnschr.*, 1913 50, 966.

6. Wechselmann: Salvarsan Fatalities, 1913, p. 8.

another. Such an assumption, however, is plausible enough in the light of well known facts along this line.

As Wechselsmann points out, the fact that it is not usually the first dose that causes the damage militates strongly against the theory of a primary hypersensitivity. It seems to me, however, that there still remains the possibility of a sensitization by the first dose somewhat along the lines suggested by this term in a strictly biologic sense, or possibly a very slight initial damage, which makes the tissues more vulnerable to subsequent doses.

Welchsellmann's statement that insufficiency of the kidney is the point of the entire question of salvarsan fatalities has in it a ring of finality; but, in spite of his absolute preeminence as an authority on this question, this appears to me to be dogmatic. In his own case of salvarsan fatality, for instance, the patient received only 0.2 gm. It is difficult to believe that the moderate grade of renal insufficiency (which alone would be likely to be overlooked in salvarsan therapy) could cause a larger accumulation of the drug within the nerve centers than would probably occur with perfectly normal kidneys after the administration of doses at least seven or eight times as large, which have been repeatedly given without injury. It is not my intention to pursue the general discussion of the question of salvarsan fatalities further than to consider its bearings on the question of myelitis. It is interesting to note that in encephalitis hemorrhagica produced by salvarsan, the blood vessels alone seem to be damaged, while the neurons remain intact, this point being confirmed by the careful study of the brain cells by Nissl.

CONCLUSIONS

1. Severe and even fatal myelitis may, though rarely, result from even small doses of salvarsan or neosalvarsan given either intravenously or subdurally.

2. This accident may happen without warning in cases in which the same treatment with identical doses had been well-tolerated before.

3. It is not always, if at all, due to faulty manufacture, as the same solution has proved fatal to one and innocuous to others given within the same hour both before and after the fatal dose.

4. Wechselsmann's conclusion that renal block furnishes the explanation of salvarsan fatalities seems entirely untenable.

5. The most plausible hypothesis seems to me to be the action of toxic compounds in the form of intermediary bodies with especial affinity for the neurons formed in the retrograde changes which occur in the salvarsan compounds and which may vary in different individuals and in the same individual at different times, and of the exact nature of which we are entirely ignorant.

6. Considering the enormous number of these treatments given, the occurrence of myelitis is so rare that it should be ignored as a negligible possibility.

409 West Main Street.

EDEMA AS A DANGER SIGNAL IN THE STARVATION TREATMENT OF DIABETES

ALFRED C. CROFTAN, M.D.

CHICAGO

Since the popularization of the starvation method in newspapers and magazines, diabetics who had been carried along comfortably and safely for years have been clamoring for starvation. When their regular physician would not adopt the treatment, pilgrimages were undertaken to institutions that featured this cure.

My personal experience teaches me that in mild cases and cases of medium severity this rigorous plan is quite superfluous, and in certain types of the disease more dangerous than the old established methods. There is this advantage in the method, that the period of protein starvation that inaugurates every tolerance determination is materially shortened. This is not new, or altogether safe; it is advantageous chiefly from the economic standpoint by reducing the length of the hospital period.

As to tolerance, I have never so far seen an increase of the tolerance for carbohydrates in these milder cases follow a starvation cure; in fact, as a rule, I have found the tolerance reduced.

Alarming degrees of excretion of acetone bodies are apt to supervene in this type during starvation, or to follow the resumption of carbohydrate feeding. True, under the management of an expert and in properly equipped hospitals, these symptoms can as a rule be controlled; but, uncontrolled, in cases handled by routine outside, they are liable to become dangerous.

In very severe cases of acute onset, and in fulminating diabetes in children and adolescents, the method is of use as an emergency measure, the sugar often disappearing with startling rapidity, as rapidly as it generally disappears under a properly conducted oatmeal treatment. I regret to report that I have not, however, witnessed more favorable permanent results after starvation than after oatmeal, and the treatment is decidedly more uncomfortable, both to the patient and to the physician.

In view of the fact that starvation is generally employed outside of institutions and under the management of general practitioners who have neither the time nor the facilities, nor possibly the technical training, to control by daily chemical tests the effect of this strenuous method on the general metabolism of the patients, any clinical sign that is easy of recognition should be of value, especially if it constitutes a warning signal of impending danger from continuation of the routine.

Such a sign is edema occurring in the course of a starvation treatment, a sign that I have had occasion to observe frequently, that I have learned to regard with considerable trepidation, and that I do not find mentioned in the literature, the only reference to it that has come to my notice being a verbal acknowledgment of its occurrence by Woodyatt in the course of a discussion of starvation before the Chicago Society of Internal Medicine. Its occurrence in the course of oatmeal cures is mentioned by von Noorden.

Edema usually occurs suddenly, and is associated with an increase of excretion of the acetone bodies, a reduction in urination, and either a cessation of the weight reduction or even an increase in the weight, despite the withholding of food. On the administration of even small amounts of carbohydrate, the edema

Autocracy and Democracy.—Autocracy finds its strength in its ability to impose organization by force from the top. The essence of democracy consists in the application of the initiative in its own people. If individualism cannot be so organized as to defend itself, then democracy is a faith which cannot stand. We are seeking to impose no organization from the top. We are asking the American people to organize from the bottom up, and this is the essence of democracy itself.—*Weekly Bulletin.*

rapidly disappears, and diuresis is promptly increased without, however, a degree of glycosuria corresponding to the increased urination.

In diabetics, generally, fed on carbohydrates up to or slightly below their tolerance, that is, in diabetics kept free from hyperglycemia and glycosuria, edema is very rare; in fact, diabetics suffering from complicating cardiac or renal lesions in which one would expect edema are generally conspicuously free from the latter.

In hunger, on the other hand, even in nondiabetic subjects, the urinary output generally is below normal in comparison to the liquid intake; hence starving patients not infrequently show no loss of weight for prolonged periods, and occasionally even gain weight. This, of course, can be due only to water retention, and is probably attributable to the retention of the water generated in starvation from the increased forced metabolism of the protein and fats, and from the liberation of water from the shrinking body tissues. No doubt the organism retains this water to maintain a degree of osmotic equilibrium compatible with cell life.

Edema, or its concomitant phenomenon, gain of weight, despite complete withdrawal of food and reduction of liquids, is a starvation phenomenon indicating forced catabolism of body tissues beyond the limits of safety; a degree of tissue destruction that constitutes the main element of danger in the severe types of diabetics, that rarely occurs spontaneously in the milder types of the disorder, and that a rational therapist should attempt by all means to prevent and to counteract.

"Pancreatic rest," postulated by Allen, is certainly not favored under these conditions; for nothing presumably can impose a greater strain on the hypothetic internal function of the pancreas than the disassimilation of products derived from forced tissue catabolism.

Edema occurring in starvation cures is a sign, therefore, to resume feeding; it is a danger signal that, if neglected, and especially if associated with nausea, severe headache and tremors, in my experience, invariably either leads to most alarming coma or, if this is prevented by large doses of sodium bicarbonate, leaves the patient, as far as his tolerance is concerned, in much worse condition than before the starvation plan was inaugurated.

Edema during "starvation" can be prevented by the administration of pancreatized oatmeal-alcohol-glycerin clysmata; I have found that they do not interfere with the rapid sugar reduction, that they prevent the enormous formation of acetone bodies and materially contribute to the comfort of the patient.

25 East Washington Street.

Lister and Vivisection.—Lister carried out his experiments at abattoirs and in his own home on various animals either after they were dead or when they were chloroformed, or, in the case of the frog, when it had been deprived of sensation by being "pithed." Sheep, horses, oxen, rabbits, cats, bats and frogs were the subjects of his experiments, but not in any great numbers as the somewhat formidable catalogue seems to show. Of the edible animals far more were killed during his lifetime for his consumption than by his experiments, and in the former case by men much less gentle in their feelings for animals than he. Without these experiments he would never have been led to his discoveries. Vivisection, he averred before the Royal Commission on vivisection which sat in 1876, had been essential to him.—Wrench, G. T.: Lord Lister, His Life and Work.

HAS THE NEW-BORN CHILD WITH SUTURED CORD A BETTER START IN LIFE?*

GEORGE RENDLEMAN, M.D.

Senior Physician, City Hospital

AND

FRED J. TAUSSIG, M.D.

Visiting Gynecologist, City Hospital

ST. LOUIS

This report is based on the study of 450 babies born at the City Hospital between March, 1916, and April, 1917. In half of these babies the cord was amputated by the suture ligation method of Dickinson; in the other half, the cord was ligated with two tape ligatures, one of which was placed near the skin margin of the umbilicus. No antiseptics were used in either case except a single application of alcohol to the skin margin in the amputated cases. Dry sterile gauze was placed over the umbilicus and left unchanged until the suture was removed or the cord came off, unless the dressing was accidentally soiled. All the babies were cared for by the intern staff of the hospital, supervised in a general way by the senior physician in the obstetric division. The nursing care and records were in charge of Miss Pommel, who has been head nurse of the obstetric division for a number of years. We omitted from both series of cases all premature babies weighing less than 2,000 gm., all operative deliveries and all babies having a serious pathologic condition not associated with umbilical wound healing. In this way we dealt only with normal babies, and eliminated as nearly as possible all differences between the two series, except the manner of treating the umbilical cord. After we had tabulated the results in about 200 cases of each series, we found that additional cases made practically no change in the course of the weight curves, temperature percentages, etc., in the two series, as the mere multiplication of the same experiment could not materially have changed results.

The figure of eight suture¹ was placed 2 mm. within the skin margin of the umbilicus, sweeping around to avoid puncturing the vessels. A moderately fine silk was used for suture material and the suture, if not found clinging to the gauze on the third or fourth day, was cut and removed. In a few instances, through neglect, the suture was not taken out until the seventh or eighth day; there were, however, no apparent untoward symptoms. We have no doubt that the results with the suture method would have been somewhat improved if done only by the resident in charge of the obstetric department. This, however, was impracticable, and would have defeated the main purpose of this inquiry, which was to determine whether or not this method was sufficiently simple to be embodied as part of the hospital routine.

Our personal impressions of the Dickinson suture were favorable. Beyond an occasional slight temporary oozing from the skin stitch there were no complications. A single case of moderate bleeding after six hours occurred in a baby on whom the intern had taken the stitch at the margin of the skin instead of through the skin cuff itself. This was clearly due to faulty technic and not to the method itself. On the

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

1. For a detailed description of the suture ligation method of Dickinson, we would refer the reader to the Transactions of the American Gynecological Society of 1916.

other hand, with the ligation method we had moderate hemorrhage in two instances, requiring secondary ligation.

Since the majority of the mothers left the hospital from the eleventh to the fourteenth day and could not readily be followed up, we have but little to say regarding the effect of the suture method on the prevention of umbilical hernia. It is difficult to see how such hernias can be prevented unless the entire skin cuff is removed and the suture made to include the abdominal fascia. This must of necessity be a dangerous and unwarrantable procedure. The only case of umbilical hernia that occurred as far as we could ascertain among this series of 450 babies was in a child whose cord had been amputated by the Dickinson suture. The hernia occurred one month after birth, and was about the size of a twenty-five cent piece.

No deaths from infection of the umbilicus occurred in either group. In fact, under modern conditions in a well-regulated maternity institution, such a death rate can practically be eliminated by due asepsis, irrespective of the special technic employed in handling the cord. Minor infections, however, are still to be reckoned with, and we should not be satisfied until we have, as Adair puts it, "reduced them to an irreducible minimum." Adair's interesting bacteriologic studies of the umbilicus at birth are deserving of amplification and corroboration. According to him, the presence of pathogenic germs does not predispose to infection of the umbilicus. We think the question may fairly be raised whether the child at birth does not possess an inherited immunity against infection by

in the first ten days besides an umbilical infection, but these other causes should have been equally distributed in the two series, so that a marked difference between the two certainly has significance. We found that in the 225 sutured babies, eighty-five, or 37.7 per cent., developed at some time within the first ten days a temperature of 100 F. or more, whereas the ligated babies showed only fifty-one, or 22.7 per cent., with fever of 100 F. or more. The latter figures correspond exactly with Adair's results in 186 ligated cases with temperature elevations of 100+ F. in forty-two, or

TABLE 1.—TEMPERATURE CONDITIONS

| Day | Sutured Patients | | Ligated Patients | |
|-------------|------------------|-------------|------------------|-------------|
| | Over 99 F. | Over 100 F. | Over 99 F. | Over 100 F. |
| First..... | 33 | 9 | 15 | 5 |
| Second..... | 56 | 22 | 38 | 12 |
| Third..... | 63 | 37 | 38 | 19 |
| Fourth..... | 50 | 24 | 42 | 15 |
| Fifth..... | 27 | 12 | 26 | 10 |
| Sixth..... | 27 | 6 | 11 | 4 |
| Seventh.... | 27 | 4 | 18 | 3 |
| Eighth..... | 30 | 10 | 30 | 7 |
| Ninth..... | 30 | 5 | 27 | 2 |
| Tenth..... | 41 | 8 | 29 | 6 |

22.58 per cent. When analyzed according to the days after birth we found the interesting comparison given in Table 1.

In both series the highest number of temperature elevations was recorded on the third and fourth days, and these were decidedly more frequent among the sutured patients. When, therefore, the suture method is applied by the average intern in the hospital, there is a somewhat greater likelihood of mild infections resulting therefrom than when simple ligation is employed. Doubtless this depends largely on the fact referred to by both Cullen and Dickinson that the cord has no capillaries, while the skin penetrated by the suture does possess such capillaries capable of absorbing infectious material. That these infections were not of serious consequence is seen by the fact that the average loss of body weight from the first to the tenth day in the eighty-five febrile sutured cases was 75 gm., whereas the average loss of the whole series of 225 was 68 gm.

As to disturbance of wound healing as evidenced by a watery odorous discharge, granulomas or prolonged attachment of the cord, we find distinct advantages in favor of the suture method. In twenty-seven instances of the suture method there was a slight tinge of bloody discharge from the umbilicus between the seventh and eleventh days, but never any odorous or free discharge. In the series of ligated babies, thirty-eight presented a bloody or moist discharge between the seventh and eleventh days. This discharge was much more pronounced than in the sutured babies. In five patients there was redness and odor as a result of umbilical necrosis and infection. Four developed granulomas that bled up to the thirteenth day. In forty instances the cord did not come off until between the tenth and thirteenth days. In one of these the baby left the hospital on the eleventh day with the cord still attached. The average length of time elapsing after birth until the separation of the cord was seven and seven-tenth days, which is about what Adair found in his series. Thus in about one third of the patients ligated we have an incompletely healed umbilicus at about the ninth or tenth day, at a time when in most boy babies we would naturally wish to proceed with a

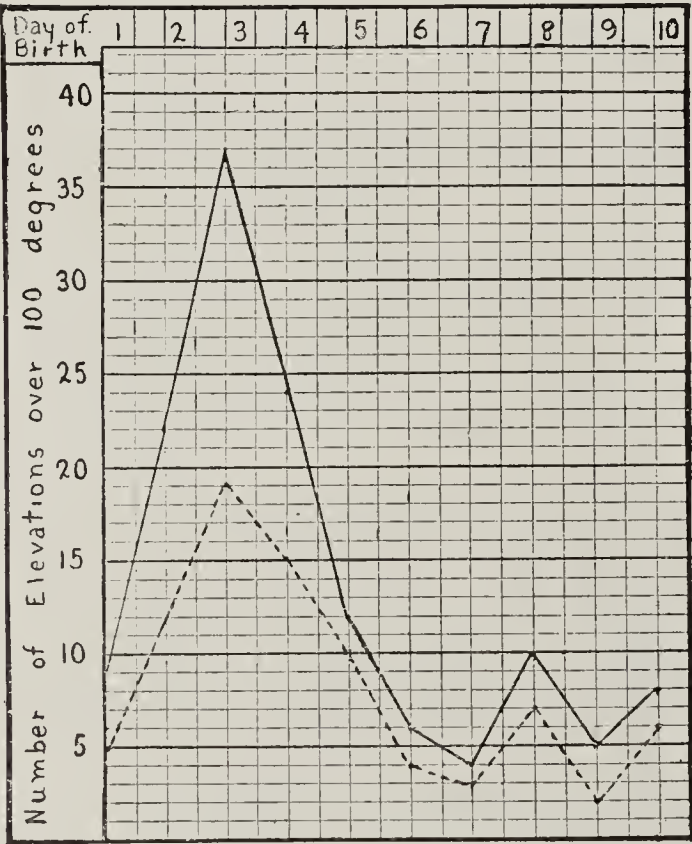


Chart 1.—Temperature elevations over 100 F.: solid line, sutured patients; broken line, ligated patients.

organisms whose habitat is the mother's vulva or vagina. The real danger of infection arises from the hands of the accoucheur or nurse and the instruments and dressings used in the care of the umbilicus. This might very well explain the apparent inconsistency in Adair's bacteriologic findings.

The most striking difference in our two series relates to temperature conditions. Of course we realize that there are other causes for a slight fever

circumcision. We think it cannot be gainsaid that the rapid and complete healing of the umbilical wound by the suture method is a distinct advantage in those cases in which a circumcision is contemplated.

The most important index, however, of the effect of the suture method on the general well-being of the child is the weight curve. In this connection we have thought it worth while not merely to figure out the maximum weight loss of the child, as Adair and other writers have done, but, at the expense of considerable time, actually to plot out in these two series of 225 cases the weight curves for the first ten days. This shows some interesting results, as seen in Chart 2. The average initial weight of the sutured babies was slightly in excess of the ligated babies. The initial drop for the first three days was greater in the sutured babies and persisted for one day longer. From the sixth day on, however, the tables were turned and the sutured babies began to gain more rapidly than the ligated ones. The actual figures were those given in Table 2.

The interpretation of these variations that naturally suggests itself is that the sutured babies are to a certain degree unfavorably affected during the first four or five days as a result of the surgical removal of the cord, but that when at the end of that time the umbilicus has fully healed, these children gain more rapidly than the babies with ligated cord. Unfortunately a considerable percentage of mothers were compelled to leave the hospital after ten days, so that records were incomplete for the following days. While it is unsafe to rely solely on impressions, we believe that the gain of the sutured over the ligated babies from the sixth to the tenth days persisted during the following week. In other words, although suturing the cord at the outset is an increased tax on the strength of the newborn child, after the immediate effects are worn off the more rapid wound healing of the sutured navel brings about a gain in weight proportionately greater than in the child with ligated cord.

TABLE 2.—WEIGHT CURVES

| Day | Ligated Cord | | Sutured Cord | |
|-------------|--------------|--------|--------------|--------|
| | Weight, Gm. | Change | Weight, Gm. | Change |
| First..... | 3,204 | ..... | 3,165 | ..... |
| Second..... | 3,079 | —125 | 3,038 | —127 |
| Third..... | 2,987 | —92 | 2,960 | —78 |
| Fourth..... | 2,980 | —7 | 2,979 | +19 |
| Fifth..... | 3,004 | +24 | 3,014 | +35 |
| Sixth..... | 3,036 | +32 | 3,049 | +35 |
| Seventh.... | 3,073 | +37 | 3,074 | +25 |
| Eighth..... | 3,102 | +29 | 3,094 | +20 |
| Ninth..... | 3,107 | +5 | 3,108 | +14 |
| Tenth..... | 3,136 | +29 | 3,124 | +16 |

No discussion of the suture method is complete without considering the important saving in the time and responsibility of the nurse in charge. Dickinson speaks of the enthusiasm of the nurses in the maternity division for this method. Our experience was similar. Miss Pommel and her associates at the City Hospital repeatedly expressed their delight over the simplified nursing under this method of handling the cord. Many hours can be saved thereby in the course of each month, hours that can be better employed in other ways, for the care of the mother and the child.

SUMMARY

1. We believe that the suture-ligature method will not greatly decrease the number of umbilical infec-

tions. The essential thing is asepsis; and if that is lacking, whether the cord is amputated or ligated is of secondary importance.

2. Umbilical hernias cannot be prevented by this method.

3. The greater immediate loss of weight and greater frequency of slight elevations of temperature after suturing emphasizes the initial shock and the necessity of restricting this method to maternity divisions under the direction of persons of obstetric experience.

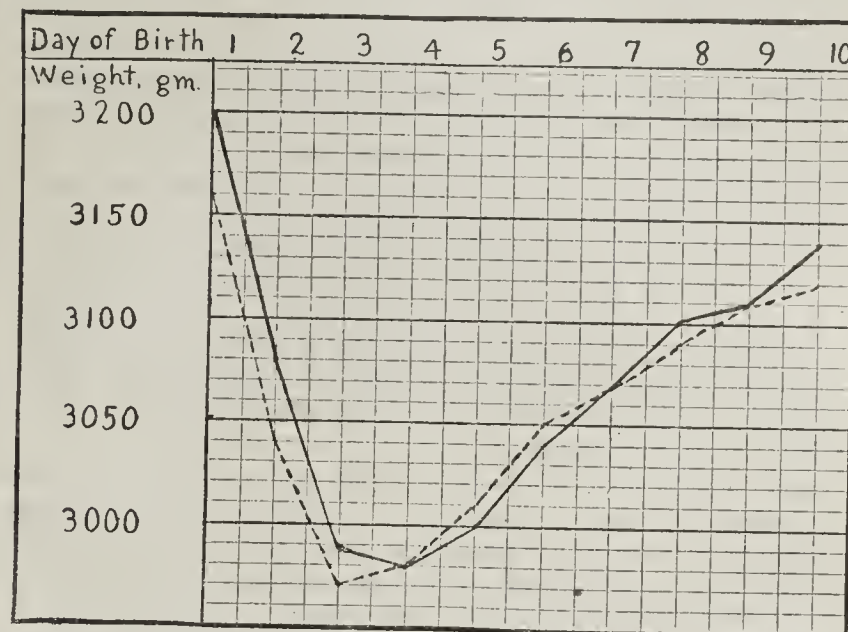


Chart 2.—Weight curve: solid line, sutured patients; broken line, ligated patients.

4. The more rapid gain of the sutured baby after the fifth day shows that the slow healing of the umbilical wound by the ligation method is to some degree a drain on the well-being of the child.

5. The time saved by the nurses when the cord is amputated is considerable, and is of economic importance in the management of hospitals.

6. We therefore urge the adoption of the Dickinson method of treating the cord in all maternity institutions under due precautions. We could find no valid objections to its use; on the contrary, it has certain definite advantages which, though not great, should make it the preferred technic in the treatment of the cord at birth.

ABSTRACT OF DISCUSSION

DR. GEORGE M. BOYD, Philadelphia: Dr. Dickinson's method of ligation of the cord has, undoubtedly, certain advantages. The essayist has shown us, however, that in a certain proportion of cases infection followed. He also shows by his chart that there was a greater elevation of temperature in the first week of the puerperium. We have, therefore, these two factors to consider—the greater elevation of temperature, and the fact that the method will not eliminate infection to as great a degree as I had hoped when I first read Dr. Dickinson's paper.

Obstetric work is emergency work, to a certain degree, and it will always be. While, in the hands of those who are practicing obstetrics as a specialty, this method of treatment of the cord may be carried out in many cases to advantage, since the length of labor, time of delivery, and the presence of the obstetrician are uncertain, the older method of ligation, I think, must still be taught. I should feel, then, that while this method has certain advantages, the older method must still have a field of usefulness.

DR. CHARLES S. BACON, Chicago: I have not practiced this method, but have for a number of years tied the cord right at the junction of the skin and have found that very satisfactory. It obviates the difficulties that are encountered when the cord is tied half an inch or more away from the

skin. There is practically no more trouble in the dressing of the cord thus tied than if the cord were not there. The only thing I do is to pour alcohol over the site at the regular dressing of the baby. I have seen no trouble at all. Therefore, the advantage mentioned by Dr. Taussig in the economy of the dressing would not apply to the cases as I manage them.

DR. ASA B. DAVIS, New York: I have not practiced this method of suturing the umbilical stump. In our hospital service we ligate the cord about 1 inch from the abdominal wall. Dr. Taussig calls attention to the fact that infants do not gain until the umbilicus ceases to granulate and is well started towards healing. We can confirm this by many cases of minor degree, and also in a few exaggerated cases of the so-called "carneous stump," sometimes from one-half to three-quarters of an inch above the level of the abdominal wall. A tedious process of healing follows, aided by cutting away granulations with silver nitrate. During this time the infant is either at a standstill or retrograding. I believe that a very large percentage of digestive troubles, green stools, fever, and jaundice in infants during the first ten days is due to some grade of infection at the umbilicus. This method of treating the umbilicus may be valuable in the hands of trained surgeons in obstetric hospital service. Its general use, sometimes by unskilled and not surgically clean operators, must lead to many fatal results.

DR. F. J. TAUSSIG, St. Louis: I feel that the method is not one which will become popular. It must be limited largely to maternity institutions under the guidance of expert hands. In such institutions I believe it has considerable value as a time saving procedure, and in limiting those rare but serious epidemic infections that occasionally prevail in all maternities.

THE REPAIR OF CLEFT PALATE

A TECHNIC AND THE REASONS FOR IT*

HARRY M. SHERMAN, M.D.

Fellow of the American College of Surgeons

SAN FRANCISCO

Cleft palate, a pure deformity, has no pathology. Its incidence and the part heredity plays in its production have long been studied by Mr. William F. Blades of the Eugenics Record Office, but no deductions can be drawn from the data as yet collected; so we must pass by this interesting phase of the condition, as well as its anatomic complex.

The description of a method for the repair of a cleft palate will be limited to the single sided complete cleft. This is the most common lesion. All technical details applied to it are also applicable to other varieties of the deformity without special indication.

The time at which to operate is of initial importance. I wait until the child has passed the first three or four months of life and has established a satisfactory state of health. I advocate and practice operating before the eruption of any teeth. The infant's mouth at this time is not a too septic place, and sepsis is the greatest obstacle with which we have to contend. This is, of course, long before the incidence of infection of the tonsils or of the pharyngeal adenoid tissue, and also long before the child learns to speak or to attempt any imitation of the voice sounds he hears. It results that we come to the beginning of the work when the child weighs about 15 pounds.

The first step is to narrow the cleft by elastic compression. Commonly the halves of the uvula may be seen to be close together or even touching, separating,

however, when the child opens the mouth, in front and at the back, to cry. The widest part of the cleft is at the front, and the intermaxillary bone projects well in advance of the maxilla on the opposite side of the cleft (Fig. 2). I deprecate measures which perforate the maxillae for the passage of wires to draw the bones together, chiefly because of the possible interference with budding teeth, and the danger of a sequent sepsis. It is possible to draw the bones materially together—so as to make the intermaxillary overlap the maxilla—by elastic band traction, pulling on hooks of the hook and eye variety, fastened in adhesive plaster which is stuck on the child's cheeks (Fig. 1). When the child is quiet, the elastic is steadily drawing the bones together, and its effect is much enhanced when the child laughs or cries. The anterior and middle parts of the cleft are definitely narrowed by this means, as can be seen in the improvement in the appearance of the nose, the flattened nostril and tense ala being deepened and relaxed. As soon as the ends of the broken alveolar arch overlap, the child is ready for the operation on the soft palate.

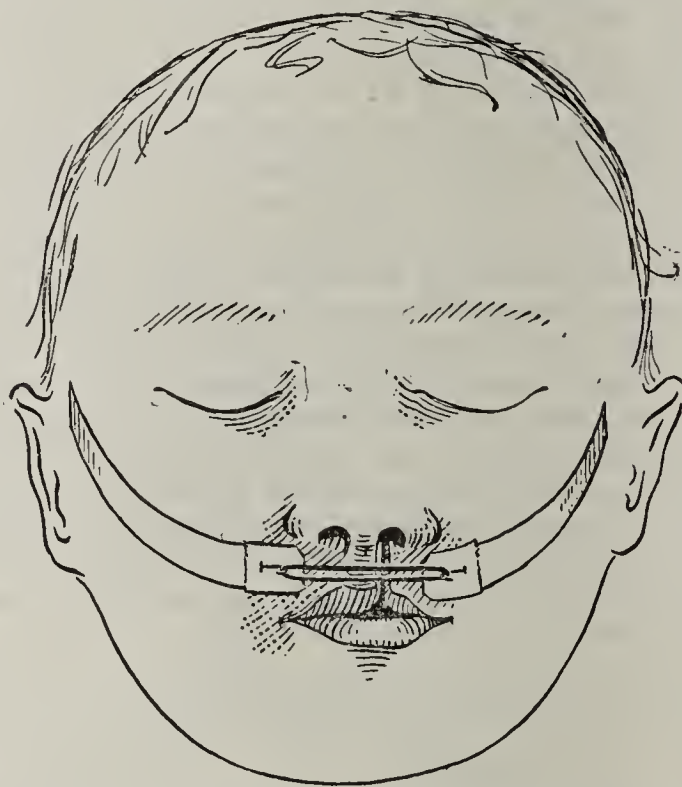


Fig. 1.—Detail of adhesive plaster and hook and elastic compression of the maxillae narrowing the cleft. Note that the inner end of the plaster is put on the cheek outside of the side of the nose and that the posterior end runs up as high as the top of the ear.

All operators today are practically using the Langenbeck or the Lane method of closing the soft palate. The former, recognizing that the cleft represents a failure of union, attempts to correct that fault by putting the parts in union with the least disturbance of tissues. The Lane method splits the velum between its pharyngeal and buccal sides, and turns flaps over from one side to the other. This necessarily jeopardizes the palatal muscles in the splitting, and results in extensive scarring in healing.

The Langenbeck method can be so done as to disturb the muscles individually not at all, though they are, as a group, moved toward the middle line. The statement that the Langenbeck method is inadequate in a wide cleft with a flat palatal arch does not apply to the velum; therefore the Langenbeck is the method I use.

Now, instead of paring the sides of the cleft to get raw surfaces for union, I split them from the attachment of the velum to the tips of the uvular halves. I now suture the posterior edges of the split uvular

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Eighth Annual Session of the American Medical Association, New York, June, 1917.

halves together, tying the knots in the pharynx (Fig. 2), and follow by uniting the anterior edges, tying the knots in the mouth (Fig. 3). By this plan I avoid

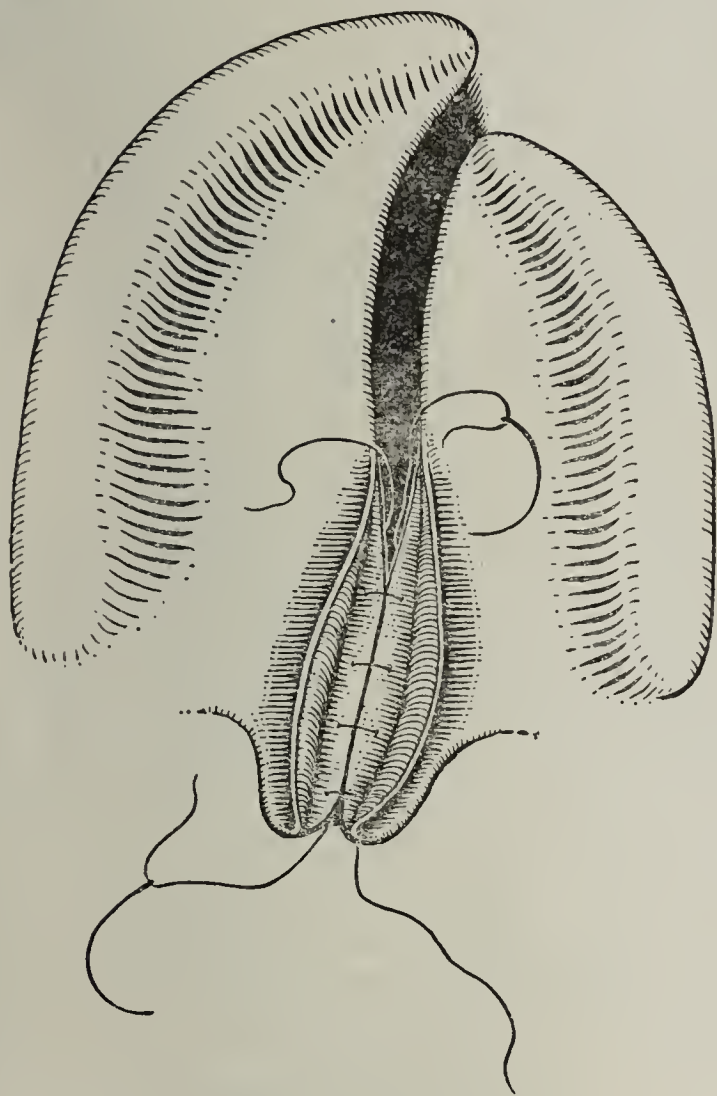


Fig. 2.—Schematic showing of the projection of the intermaxillary bone beyond the maxilla. The margins of the soft palate have been split along their contiguous edges. The posterior flaps are drawn together by sutures which are tied on their pharyngeal surface.

sacrificing any tissue, and if secondary or other sutures are needed, I have all of the original tissue up to the very end. Again, I get broader surfaces of contact for union, though this seems, in failing cases, to be a matter of doubtful value. Finally, I can plan the sutures so as to avoid strangulation of any part of the uvula; and this is a matter of importance, for a shrunken uvula materially limits the palate's usefulness in phonation and deglutition. The plan of splitting the uvula and velum I think originated with the late Hugh Alexander Ferguson of Chicago.

This double pharyngeal and buccal suture line is necessarily stopped at the edge of the hard palate; anterior to that point I use only a buccal suture, and I mattress it. By this means I turn down the edge of each side into the mouth, get broader surfaces of contact for union, and thicker tissue after healing where formerly it was too thin (Fig. 3). I do not attempt to come farther forward by this plan than half the length of the hard palate. This leaves me plenty of tissue in front for the blood supply. I make, on each side, lateral incisions, keeping them outside the posterior palatine foramina and carrying the posterior ends well back. This lets me lift up the whole of the soft palate and move it toward the middle, and to do the same with the mucoperiosteum of the posterior half of the hard palate (Fig. 3). Now around these two flaps, mobilized and approximated and sutured, I pass a piece of ordinary tape, saturated in Moorhof-Mosetig bone wax. This is caught by a stitch, at both the front and the back, on each side, and is so sutured that it acts as a relaxation suture; as it is somewhat

stiff, it is also a sort of splint, and immobilizes the soft tissues involved (Fig. 4). The part where my repaired palates begin to break down is at the junction of the hard and the soft palates. Here the strain seems to be greatest or the circulation poorest. In the bight of my tape the flaps cannot pull apart, the mattress sutures are not torn out, and union must occur. Finally, for purposes of cleanliness, I pack the lateral incisions with iodoform gauze.

The tape is left undisturbed for from ten or twelve to fourteen days; the gauze packings are changed daily until the incisions heal so much that they will not hold the gauze.

Union now gives us a palate with a somewhat shortened uvula, and this is usually destined to become still shorter as contraction of the scar tissue occurs. I have never seen a normally long velum after the operation, but I have seen them very nearly normally long, and with an active musculature, showing that I had not spoiled the nerve supply.

During this period the cheeks and the maxillae are held by the elastic traction, and I now repair the lip so that it shall remodel the alveolar processes and make an approximately normal alveolar arch. I shall not impose on any one the way in which I repair the lip. It is something in accordance with a method I once saw practiced by Charles H. Mayo. Each man must find out the way in which he can do this dainty bit of work best, and follow that way.

In the front of the mouth the mucosa is tightly applied to the bone, and the material for any sliding

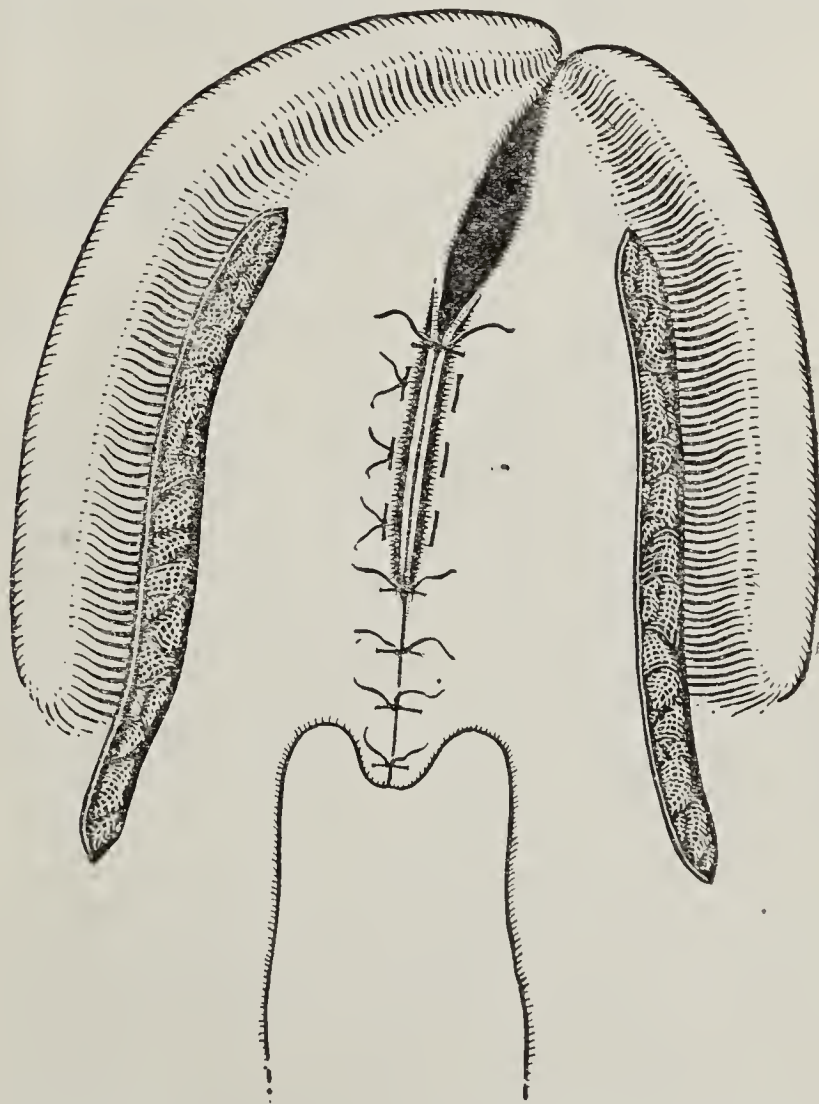


Fig. 3.—The anterior flaps of the split soft palate and uvula have been sutured in the mouth. The mucoperiosteum of the posterior half of the hard palate has been mobilized by the lateral incision and by being separated from the bone, and the edges united by mattress sutures closing the cleft. The lateral incisions are stuffed with iodoform gauze.

plastic is lacking. Here is, however, a perfect place for a Lane flap, not made so big as to open and ruin tooth follicles, but broad enough to bridge the cleft

and long enough to close the whole length of the cleft left open. I take the flap from the wider side and pocket it under the mucosa of the narrower side. It is quite competent to do this to just behind the teeth and to leave no opening, a condition which is most

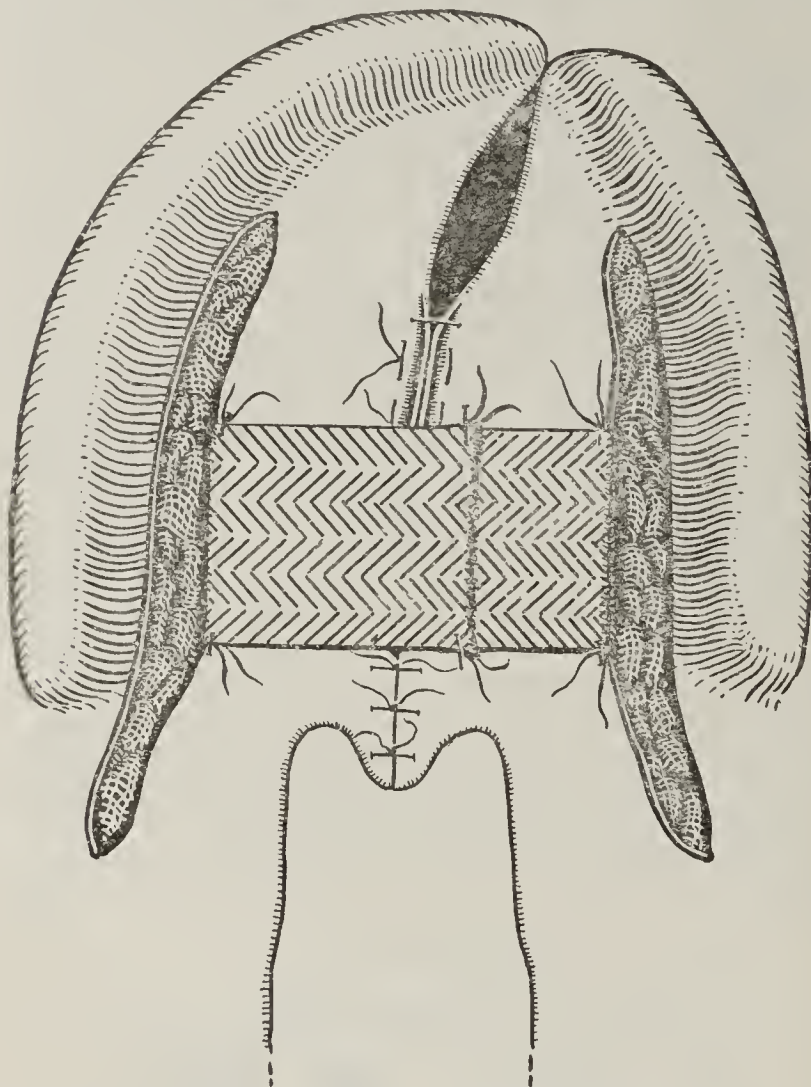


Fig. 4.—The waxed tape in position stitched where the ends meet, so as to maintain a proper tension, and caught by a stitch on each side, in front and at the back to keep it from rolling up into a string. The bone wax stiffens it and prevents its becoming saturated with saliva.

annoying, as it readily permits leakage of fluid into the nose (Figs. 5 and 6).

The suture material is of moment. In the uvula I use fine twenty day chromic catgut or horsehair or fine waxed black silk. The wax really is Moorhof-Mosetig bone wax, and the silk is boiled in it. Horsehair and silk have the disadvantage of usually having to be removed, though they may tear out of their light hold on the uvular mucosa. In the velum and in front of it I use black waxed silk or fine silkworm gut. This is for the sutures that are matted, and it is good policy to leave a long end to facilitate picking it up when the suture is removed. In the front part, for the tacking into its pocket of the Lane flap, the chromic catgut is enough.

I have used the body weight of 15 pounds as an index as to when the child is ready for the operation. Frequently these children are undernourished because they have difficulty in sucking a nipple on a breast or a bottle. So I have them all fed by a catheter in the nose. In a short time a child will learn to acquiesce in the method, and we can be sure that it really is getting a proper amount of food and without undue effort. After the operation, when the palate is freshly sutured, it is a definite advantage to eliminate the muscular act of swallowing and the consequent strain on the sutures in the soft palate. By this method it is quite possible to keep the child gaining in weight through the whole of the operative phase.

In operations on these children the anesthesia is ether, and the ether vapor is blown in through a soft rubber catheter which is fastened by a stitch in the nose, the stitch passing through the septum. The end of the catheter must reach only to the posterior nares. The child's head hangs half over the edge of the table, and is supported by a little shelf. I use a large complex gag, which holds the mouth open, holds the tongue forward, and pulls the corners of the mouth outward. Around the whole operative field I have black or dark blue cloths, sheets, towels, gowns, etc., to obviate the glare of the ordinary white environment. By this means the mouth is in the high light, rather than in the shadow.

350 Post Street.

ABSTRACT OF DISCUSSION

DR. VILRAY P. BLAIR, St. Louis: The Brophy operation was used fifty years ago by an Australian. The Lane is but an enlargement of the Cawley flaps and the Davis could be called a Warren with equal justice. The relationship of various technical steps to each other and to the age of the patient are much more important than the choice of the technical steps themselves. Dr. Sherman has brought out a new and useful technical step. In almost every step of his work and mine we differ radically and I would not have the idea that one technic was any better than the other. As to the matter of age, I am firmly intrenched with those who believe the earlier an operation is done the better. The best time for the closure of the lip is the first twenty-four hours, on account of the feeling of the parents; the second reason for early operation is the ease with which the bones are molded into place; and, thirdly, at this age shock is not a consideration. As to the soft palate, I use the straight

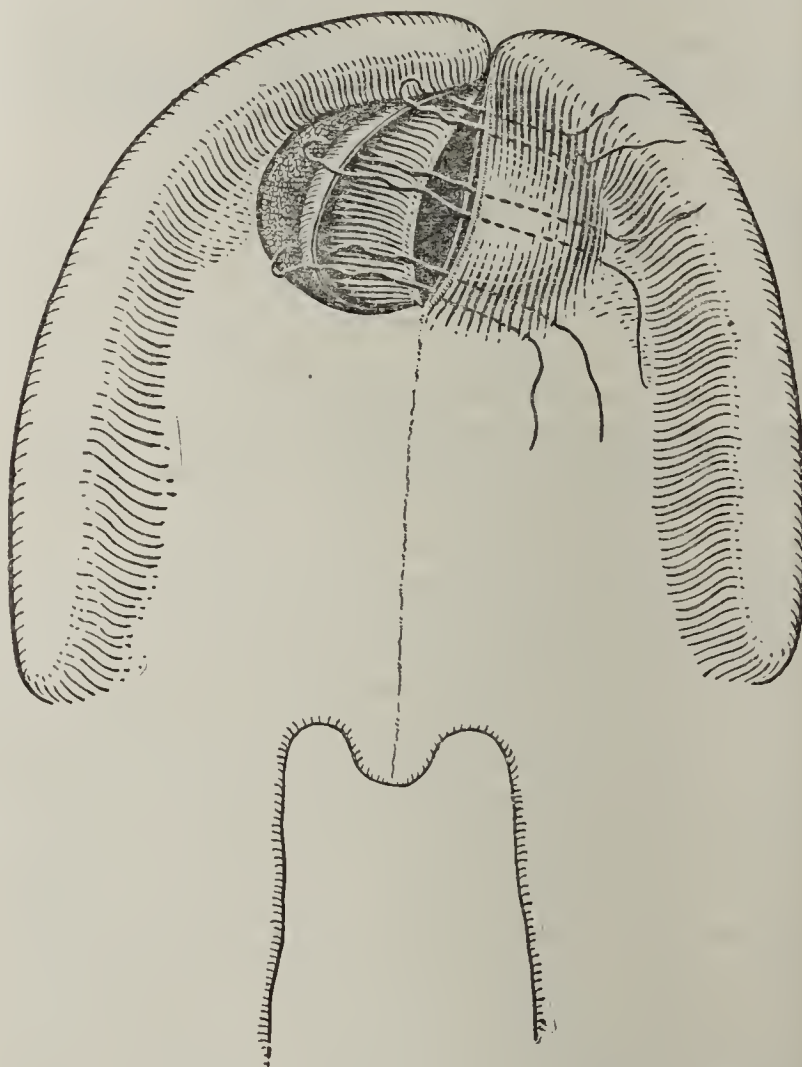


Fig. 5.—The little Lane flap partly turned up, the pocket on the opposite side made ready, and the suture to draw the flap into the pocket placed. The elastic traction and the repaired lip have remodeled the alveolar arch into a normal shape.

Langenbeck operation. If one will wait until the child is 14 months old one can close the whole palate with ease in two operations. There is just enough tissue at birth to close the

palate. After a year we have 39 mm. to close 38 mm. and a space. We must accommodate the methods to the age in this work. In all of these cases there is a considerable spreading of the nostril which will necessitate an operation on the floor of the nose to round it up as on the other side, but where the

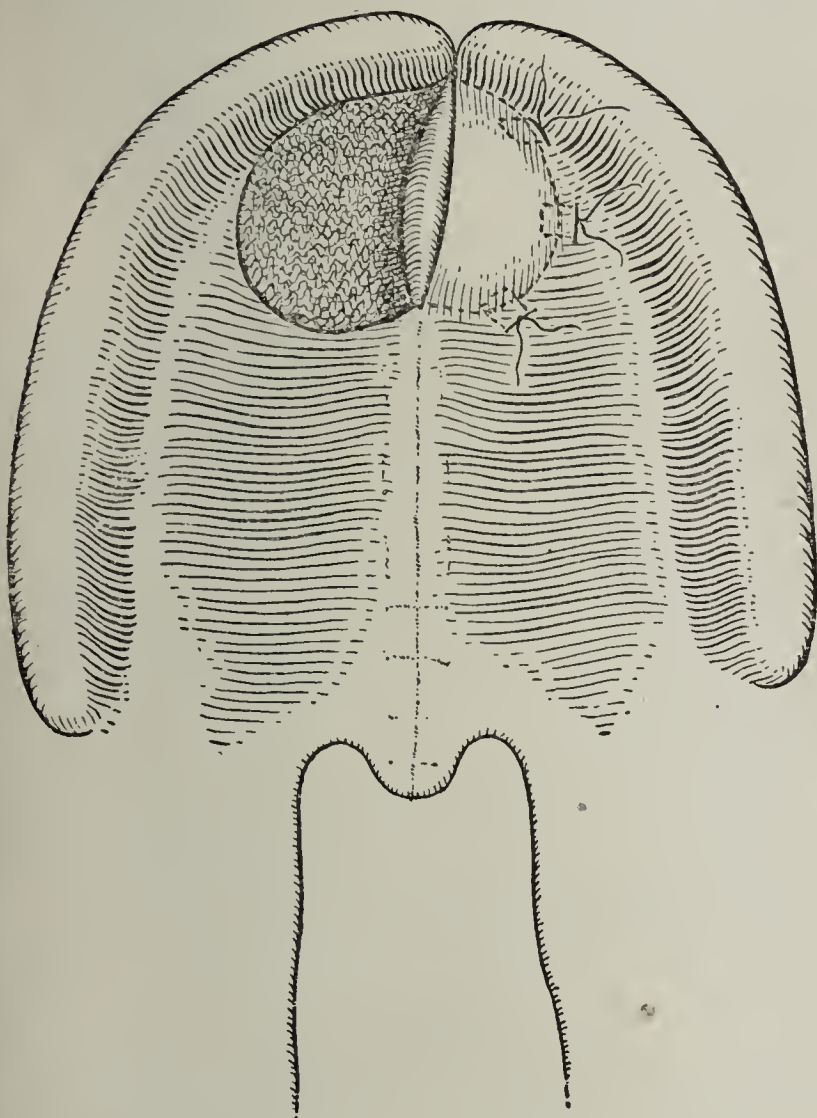


Fig. 6.—The flap drawn into place and held.

cleft remains wide open for a long time, for perfect closure of the lip there must be an operation to restore the nostril. The Brophy operation is usually not practical after three months. Some cases may be closed by elastic traction of a rubber band. There is no end of tricks that one must resort to in this work.

DR. TRUMAN W. BROPHY, Chicago: There are fifteen different congenital defects of the palate, treatment of which requires methods of procedure sometimes slightly and sometimes radically different from all the others. The premaxillary bones are sometimes absent. In that case the fissure is almost invariably in the central line and the nasal bones are deficient.

Having operated on about 4,000 patients with cleft palate, I am convinced that when the alveolar processes are not cleft the operation should be deferred until the patient is between 12 and 14 months old; and that when the alveolar processes are cleft, as well as the whole hard palate, the patient should be operated on in early infancy, before the fifth month.

In complete cleft palate what is accomplished by first closing the lip? The greater deformity is concealed but the cleft is not closed as it should be. By drawing the lip together the anterior part of the hard palate is approximated, but not the enormous breadth of the tuberosities of the jaw. Had the bones been approximated in infancy, the patient would have a normal arch, but this is abnormal. The bones should be put together and fixed so they will unite. To do this the intervening soft parts and compact bone should be removed, the cancellated bone exposed so it will meet cancellated bone and thus be approximated and held quiet until the bones firmly unite. That is the essential thing to do. If there is any better method to pursue than the one I have devised, then let it be made known. A complete cleft palate is not unlike a fracture of bone, separated sutures, or an ununited

fracture. I have never done a Langenbeck operation and I never will, for the reason that the Langenbeck operation calls for lateral incisions in the soft parts.

DR. WALTER B. SWIFT, Boston: I want to emphasize one point omitted in cleft palate treatment. It is the after-treatment. The majority of these patients have some speech disorder which persists long after the operation. The chief object of that operation should be the perfection of speech. In the Massachusetts General Hospital we have, in our speech clinic, evolved a system for the perfection of speech in these cases. Several now possess perfect speech.

DR. HARRY M. SHERMAN, San Francisco: It is a question as to whether the lip should be operated on early or late.

When you put in a needle, little or big, and touch the tooth germ you have penetrated the capsule, and by moving the needle around to find a way between the teeth you inevitably make a relatively big hole. I shall never attain the skill which will enable me to pass between these closely packed-in tooth follicles and pull a wire through without wounding and infecting the follicles.

As regards the tensor palati muscles, I make the incision outside the hamular process and so do not cut them off. I move all of the tissue implicated inwards, and that must stretch the nerves which supply the muscles but may not tear them off, because two or three years later in life I have seen these palates move. Dr. Charles H. Mayo used to put a piece of gauze round the mucoperiosteal flaps as a drain. I use tape instead of gauze, and wax it so that it cannot soak up saliva and perpetuate septic infection in the mouth, and then adjust it to be a relaxation suture. That is my innovation.

Of course training these children to speak is a very important matter. It is especially important in those families in which bad English and bad enunciation are the habit. In families in which good English and good enunciation are the habit, children will speak very well without much special instruction, though they will speak better if they have it.

PREMATURE DETACHMENT OF PLACENTA, WITH DELIVERY OF A LIVE BABY BY CESAREAN SECTION

DAVID S. HILLIS, M.D., Chicago

Attending Obstetrician, Cook County and Provident Hospitals; Assistant Obstetrician, Chicago Lying-In Hospital; Instructor of Obstetrics, Northwestern University Medical School

Mrs. S. G., aged 35, primipara, was in the ninth month of pregnancy. For the past thirty days there had been a small amount of albumin with no casts in the urine. The maximum blood pressure was 120. May 12, the patient was struck in the abdomen by the head of a 3-year-old child, who threw himself in her lap. This caused considerable pain at the time, but was soon forgotten by the patient. May 16, four days later, the patient walked seven blocks; when near her house she was taken with moderately severe pain in the lower abdomen and back, which was continuous, not intermittent. One hour later, fresh blood was discharged from the vagina, in small quantities but continuously. The patient thought that she lost about 4 ounces of blood during the first hour or two. At 3 p. m. (three hours after the pain had started), examination at the Chicago Lying-In Hospital showed: General condition of patient excellent; no signs of shock; pulse 94; color good; fundus one finger below ensiform; uterus tense with increased tenseness at intervals of about two to six minutes, accompanied by pain. Pain, however, was constant in lower abdomen and back. Fetal parts were difficult to outline on account of tenseness of uterus, but back seemed to be to the left, head movable, floating above inlet. Fetal heart tones were 140 to 148 left lower quadrant, regular, rhythmic, but somewhat variable during a minute's observation.

Rectal examination showed cervix not effaced, about 3 to 4 cm. long. The os hardly admitted one finger. During this examination about one-half ounce of very dark colored semifluid blood was expressed from the vagina. At 4 p. m.

the heart tones went to 176, with slight irregularity; otherwise the condition remained the same. At 5:30 p. m. the heart tones were 164 to 168, and somewhat irregular. There were slight uterine contractions, irregular, at intervals of from three to seven minutes. There was constant pain in the back and the lower part of the uterus. Palpation of the uterus immediately caused a tenseness of the uterine wall, equal to the painful contractions which came on spontaneously; the uterus at all times was firmer than normal, and slight bleeding from the vagina continued, some of which was bright in color. Rectal examination showed no change from the findings at 3 p. m. More thick dark colored blood was expressed from the vagina.

At 6:30 p. m. under ether anesthesia, classical cesarean section was done. The child was not asphyxiated. On removal of the baby, a clot of blood was seen lying in the opening of the uterus, and on introducing the hand to remove the placenta, the clot was expelled on to the abdominal wall. The position of the placenta in the uterus showed that it was not praevia. This clot was in shape a circular biconvex disk, 14 cm. in diameter and 4 cm. thick in its middle or thickest portion. It weighed 15 ounces. The surface and edges were smooth and regular in outline, except in one part of the circumference, where there was a small clot about 4 cm. in diameter, ragged and somewhat irregular in outline. This was attached to the edge of the main mass. This clot was very firm, dark, almost black, and retained its integrity in spite of much handling for examination, weighing and measuring. The placenta was lying on the posterior wall of the uterus, with its edges near the incision in the uterine wall as the uterus contracted after removal of the baby. The uterus did not contract well after the removal of the placenta, and $1\frac{1}{2}$ ampules of pituitary extract were injected into its wall directly. This caused a fairly satisfactory amount of contraction, but less than is usually secured by the administration in the same manner of 1 c.c. of the drug. During the suture of the muscle walls, it was noticed that the peritoneum over the entire surface of the uterus appeared mottled, which was evidently due to small hemorrhages under the serosa. The uterus had been subjected to only a minimum amount of traumatism and manipulation. This mottled area was seen on the posterior surface, as well as on the sides and anterior surface, those on the anterior wall not being over the placenta site. The uterus now was contracted in a satisfactory manner, and it was decided not to remove it. The macroscopic appearance of the muscle wall in the incision was normal. The placenta was circular in shape, 30 cm. in diameter; the cord was centrally implanted, and the fetal surface showed no abnormalities. The maternal surface did not show a well marked area of depression, corresponding to the size of the clot, although there was a considerable area, irregular in shape, where the placenta was thinner than the rest and somewhat paler.

The diagnosis was based on the history; the sudden onset of the pain; the character of the pain; the marked irritability of the uterine muscle; the abnormal tenseness of the uterus, and the bloody discharge appearing one hour after the onset of the pains; and in spite of the continuance of the heart tones and the absence of signs of shock on the part of the mother, the absence of these two signs was accounted for by the fact that the separation was not of sufficiently large extent to kill the baby or produce shock; although, in these cases shock is usually present out of proportion to the amount of hemorrhage and apparent traumatism. The patient, who was a robust woman, went home with her baby in excellent condition on the fourteenth day.

The case presents several points of interest:

1. The presence of signs and symptoms definite enough to justify a diagnosis before the death of the baby.
2. The hemorrhagic condition of the entire uterine surface corresponding to Williams' idea of the pathology of premature separation.
3. The value of pituitary extract injected directly into the uterine muscle in these cases.

106 South Michigan Avenue.

Military Medicine and Surgery

CLINICAL MANIFESTATIONS AND TREATMENT OF GAS POISONING

MILTON MANDEL, M.D., CHICAGO

Major, M. R. C., U. S. Army; Chief of Medical Service, U. S. Base Hospital No. 12

AND

W. STANLEY GIBSON, M.D., CHICAGO

Lieutenant, M. R. C., U. S. Army

FRANCE

The ingenuity of the German mind has long been recognized. During the past three years this ingenuity has made itself felt by devising diabolical schemes for the destruction of life—both combatant and non-combatant. Submarine warfare was expected; liquid fire was a possibility; but poison gas was utterly unknown until used by the Germans during the second battle of Ypres in the spring of 1915. Since then, poison gas has been used by all belligerents with telling effect. Since July 19, 1917, our enemy has used a new preparation which for want of a better name is called "mustard" gas.

The victims of this gas present a clean-cut clinical picture characterized by conjunctivitis with excessive lacrimation, laryngeal and bronchial irritation, and superficial burns. These symptoms are usually preceded by epigastric distress and emesis.

When one is exposed to the gas, an odor not unlike mustard is experienced, followed in a number of hours by the symptoms mentioned. The so-called free interval, rarely less than four hours and practically never more than sixteen, is explained by the fact that this "mustard" gas decomposes on exposure to moisture, the symptoms resulting from the action of the products liberated by the decomposition.

SYMPTOMS

The victim, although knowing that he has been exposed, feels perfectly well and usually continues to "carry on" until relieved from duty. The first evidence of trouble usually occurs hours later, when he may be awakened by epigastric distress and violent vomiting, followed soon afterward by the cardinal symptoms:

1. The conjunctivitis is severe; photophobia is common and lacrimation profuse. Puffiness of the eyelids is constant in the severer cases. Corneal involvement is very rare.

2. The laryngitis and bronchitis are primarily irritative—not inflammatory—and nonfebrile. A sense of constriction about the larynx and tightness of the chest are early and usually persistent symptoms. Aphonia is common but usually evanescent. On the other hand, the cough occurs early and is the last symptom to disappear. It is paroxysmal in character, particularly severe at night, and accompanied by a serious discharge in light cases, hemorrhagic expectoration in the most severe, and purulent in the late cases secondarily infected or complicated by bronchopneumonia.

3. The exposed parts, for example, the face, hands, forearms, and in the Kilties the knees, are most commonly affected by burns; frequently the genitals, buttocks, shoulders and back are severely burned; the feet are but rarely involved. During the first forty-eight hours the skin may be merely pigmented, presenting

a blackish, brown appearance, and harsh to the touch. After a number of days, desquamation takes place. More often, however, there is distinct blistering, the vesicles varying in size from a millet seed to 4 or 5 inches in diameter. The burns usually involve only the superficial layers of the skin, although second degree burns are not uncommon. It is our belief that all the symptoms enumerated above are the result of chemical burns; that the mucosae of the eyes, larynx and bronchi, as well as the skin, are excoriated by the gas.

PHYSICAL EXAMINATION

In addition to the conjunctivitis and skin burns, examination reveals a diffuse bronchitis, usually non-febrile, with hurried breathing. True dyspnea is rare except in the very severe cases complicated by bronchopneumonia, or when pulmonary edema develops. Occasionally, the heart is enlarged to the right, with an accentuated second pulmonic tone. The blood pressure, systolic and diastolic, is slightly reduced. The blood picture is in no way characteristic. Slight eosinophilia (from 3 to 5 per cent.) has been noted in patients suffering extensive burns.

The course of this syndrome is self limited, and depends entirely on the amount of damage done and the time elapsing between the gassing and the institution of rational therapy. Complications necessarily modify and alter the prognosis. In very severe cases, pulmonary edema may develop early; and death may occur a few hours after the onset of symptoms. On the other hand, in the lighter cases, convalescence is rapid.

COMPLICATIONS

Bronchopneumonia is unquestionably the most common complications with which we have to deal. It usually comes on from seventy-two to ninety-six hours after the exposure to the gas, and frequently runs a turbulent course with high fever, intense dyspnea and cyanosis, cough, and not uncommonly bloody expectoration. The termination is either by lysis in two to three weeks, or fatally in a few days from a superimposed pulmonary edema *which is not of cardiac origin*. Unlike the chlorin gas, this more recent product affects the heart but little. The myocardium, as demonstrated by necropsy, is not damaged. To be sure, at times the heart is enlarged, transversely; but this is purely compensatory, as the pulmonary changes necessarily increase the work of the right ventricle. Albuminuria is not uncommon, but true nephritis has been extremely rare in our experience. This is quite remarkable, as the burns involving skin and mucous membranes are frequently quite extensive.

We regret exceedingly that we cannot discuss prognosis. The cases which have come under our observation included every degree of severity; some of the patients were ready for duty in a few days, while other cases were severe, with and without complications. Also, the number has been sufficiently large to justify very definite conclusions. To publish these conclusions would be unfair to our allies and ourselves, and might be of value to our enemy.

TREATMENT

The intensity of the symptoms depends largely on the rapidity with which treatment can be instituted. We suggest the following procedure, viz.:

1. Knowing that this gas decomposes on exposure to moisture, we consider it highly important that the victims be given an entire change of dry clothes as

soon as is practicable, and that dry sleeping quarters, preferably above ground, be procured.

2. Phlebotomy should be performed for the early pulmonary edema which develops in the very severe cases.

3. Oxygen inhalations are of questionable value, but should be tried.

4. The eyes should be irrigated with boric acid solution; alkalis should be used internally, and 10 per cent. sodium bicarbonate solution should be applied externally for cutaneous burns.

5. For the distressing paroxysmal cough opiates are indicated, preferably codein or heroin, in sufficient dosage to allay the irritation of the respiratory mucosa. Antispasmodics, such as belladonna, apparently aggravate the respiratory symptoms, owing to their drying effect.

6. Complications should be treated as they arise.

SUMMARY

1. An interval (from four to sixteen hours) of freedom from distress exists between the actual gassing and the onset of the symptoms.

2. The cardinal symptoms, conjunctivitis, laryngitis, bronchitis and skin burns, are all due to the excoriating effect of the gas.

3. The principal complications are early pulmonary edema and relatively late bronchopneumonia.

4. Dry clothing and sleeping quarters may prevent the development of symptoms after slight exposure, and possibly may lessen the severity in those more severely gassed.

[EDITOR'S NOTE.—The "mustard gas" from German shells is well known to the Allies in regard to its composition and the steps to be taken to protect against it. The gas is liberated from liquid in the shell; and when the liquid is scattered on the clothing or skin, or when the men move over ground wet with the liquid, burns will result. Protection against the liquid should be care to avoid contact. The liquid is dichlorethylsulphid. As the gas has very little odor, the men may delay in applying their respirators and be gassed or, in order to have better vision, they may neglect to adjust the whole face-piece and suffer a lacrimatory effect. The eye symptoms disappear, and no permanent injury results. The English box respirator is a complete protection to the eyes and lungs against the gas.]

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

ATOPHAN.—A proprietary brand of phenylcinchoninic acid. It complies with the standards for phenylcinchoninic acid, U. S. P., but melts at from 208-212 C.

Actions, Uses and Dosage.—See New and Nonofficial Remedies, 1917, p. 239, under Phenylcinchoninic Acid and Phenylcinchoninic Acid Derivatives.

Manufactured by Schering and Glatz, New York. U. S. patent No. 1,075,171 (Oct. 7, 1913; expires 1930). U. S. trademark No. 84,596.

Atophan Tablets.—Each tablet contains atophan 0.5 Gm. (7½ grains) and a small amount of cacao.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

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SATURDAY, DECEMBER 8, 1917

INFLUENCE OF THE SEX GLANDS ON DEVELOPMENT

The influence exerted by the genital glands on the other parts of the reproductive apparatus, and on the body generally, is a remarkable illustration of the chemical correlations that may exist in the organism. That the lack of the sex glands—a situation which arises as the result of castration—may bring about conspicuous alterations in physique and modifications of the expected development is a fact long familiar. When the removal of testes or ovaries is carried out early enough, that is, before the period of puberty, the development of the so-called secondary sexual characters is interfered with. We must regard the germ cells, says Starling, not only as representing the cells from which the individuals of the new generation may be developed, but also as concerned in the formation of chemical substances which, discharged into their hosts, affect many or all of the functions of the latter, with the object of finally subordinating the activities of the individual to the preservation and perpetuation of the species.

Even more striking than the long observed failure of development in the absence of suitable hormones furnished by the sex glands, a result that is essentially negative in character, are the positive alterations in bodily evolution that result from the introduction of female factors into the developing male, and vice versa. By means of transplantation experiments, in particular, it has been possible to show that the sexual glands direct an influence on sex characters through something resembling an internal secretion. Remarkable instances have been afforded by Steinach¹ in particular. For example, he transplanted to castrated young male rats and guinea-pigs the ovaries of their sisters; the males became in weight, size, and in all proportions of their body like females. The mammary glands were highly developed and even secreted milk, whereas the growth of the penis was obviously inhibited. On the other hand, young castrated female guinea-pigs increased in weight and size after implantation of

testes, and became in all the proportions of their body like males. The castrated male is feminized by the ovary, the castrated female is masculated by the testis. Besides, the feminization and the masculation in the experiments of Steinach were also manifested in the transformation of the sexual behavior of the experimental animals.

It is apparent from this and other evidence which might be cited that the hormone of the sex glands acts in a sex-specific character, as Lipschütz² has recently termed it; that is, the male gonad furthers the development only of male sex characters and inhibits the development of female sex characters, whereas the female gonad furthers the development of female sex characters and inhibits the development of male sex characters.

Steinach has gone a step farther in recent years in suggesting that the organism is nonsexual until it has reached a definite stage in embryonic development. The sexual transformation of the body is believed by him not to begin until the puberty gland has become differentiated into male or female. In support of this view, Lipschütz cites the observations that a castrated hen assumes the plumage and the spurs of a cock, whereas it is well known that the castrated cock keeps his plumage and spurs. From these facts, he adds, we must conclude that the development of the male plumage and the spurs does not depend on stimulation by the male sexual gland, whereas the female sexual gland transforms a male-kite plumage into a female one and inhibits the growth of the spurs. The male plumage and spurs become male sex characters, according to Lipschütz' interpretation, not because they result from an action of the male sexual gland on the nonsexual soma, but because the development of these nonsexual characters is influenced in the female by the internal secretion of the female sexual gland. The hormones of the sex gland may thus further or inhibit the natural continuance of conditions foreshadowed in the embryonic form.

THE BANANA AGAIN

Several years ago we called attention to the banana as an undervalued source of nutriment.³ The defense of this fruit, which ought to be available at comparatively low cost in times of normal commerce and transportation facilities, almost invariably provokes protests from persons who maintain that the banana is a cause of indigestion and a treacherous dietary component which is at best to be looked on as a luxury, harboring insidious dangers to alimentation. Since our earlier comments in which the fallacies of the still current prejudice against the banana were

1. What Determines the Development of the Secondary Sexual Characters? editorial, THE JOURNAL A. M. A., Feb. 17, 1912, p. 484; The Modification of Secondary Sexual Characters, Feb. 21, 1914, p. 618.

2. Lipschütz, A.: On the Internal Secretion of the Sexual Glands, Jour. Physiol., 1917, 51, 283.

3. The Undervalued Banana, editorial, THE JOURNAL A. M. A., Jan. 27, 1912, p. 276.

exposed, several investigations, notably those by A. R. Rose and others at the New York Post-Graduate Medical School and Hospital, have served to fortify the wider use of the banana as a wholesome, palatable and nutritious article of food. The latest of these dietary studies⁴ has even gone so far as to put beyond criticism the appropriateness of the banana as a food for young children.

What is the banana, from the standpoint of the student of nutrition? It is essentially a highly edible source of carbohydrate comparable, in its richness of foodstuffs, with the most popular of fruits. Like other members of this group of products, the banana undergoes specific changes in the course of its ripening. The nutrient carbohydrates in the banana comprise essentially one fifth of the entire fruit. In the green specimens this carbohydrate is in the form of a starch, but on maturing this is converted first into sucrose and finally into invert sugar. The proteins amount to less than 1 per cent., and their nature is at present unknown. The fat and fiber are negligible. The ash is important both in amount and in the kind of its constituents. Looked at simply as a source of food fuel or energy, the banana yields over 400 calories per pound. Olives, sweet potatoes and corn are the only common fresh fruits and vegetables that have a higher fuel value than the banana. Other fruits and vegetables that may be classed with the banana as having approximately 1 calorie per gram are grapes, plums and potatoes, together with figs, which are almost identical with bananas, and dates, with a fuel value equal to that of grapes.

Raw starch has not proved to be a satisfactory nutrient for the human body. No one thinks of eating the starchy potato uncooked; and the tolerance of the human alimentary tract for the uncooked starchy chestnut has decided limitations. It is obviously unwise, therefore, to expect the raw banana, eaten in the stage in which much unconverted starch still remains in the fruit, to prove free from the same objections that apply to other unripe or uncooked starchy foods. Even the green banana can be eaten with impunity if the pulp is thoroughly cooked, as is done in the case of the comparable potato. The chief reason for the unfavorable reputation attained by the banana, when eaten uncooked, appears to lie in the failure of most persons to understand what a ripe banana really is.

The chemist has closely followed the changes that the skin and pulp of the banana undergo simultaneously during ripening, a process facilitated by heat in the presence of air. Bananas that are merely yellow are not ripe. Pease and Rose remind us, in harmony with numerous published analyses, that characteristic changes take place in the peel as the fruit matures. The thick, turgid covering of the green banana

becomes thinner and more pliable; the color passes from green to pale yellow, deepening to golden yellow with brown spots; and finally the peel becomes brown all over. Bananas are edible raw when the brown spots appear, and need not be refused as overripe when the peel is entirely brown if the covering is intact and the pulp shows no signs of fermentation. The brown color of the ripening must not be confused with the brown patches due to bruising.

The proof of the pudding is the eating. Utilization experiments have demonstrated that the underripe banana when baked is utilized to about the same extent as the potato, and is similar to this vegetable in its nutritive value. There has in no case been any suggestion of deleterious effects from eating the banana baked or raw when fully ripe. In the late yellow stage, before the development of the distinct golden color, the raw fruit can be consumed by normal persons in small quantities (say one or two bananas) without discomfort or apparent harm. Nevertheless the recent authors are of the opinion that the raw fruit should not be given to children at this stage. Pease and Rose have conducted enough actual feeding trials on young children to justify the statement that the banana can with profit enter liberally into the child's dietary, provided it is fully ripe or well cooked. If eaten baked in the yellow stage of ripeness, or if eaten raw when fully ripe, the banana makes a delightful and highly nutritious article of food. Its composition does not warrant the use of the banana as the main component of the child's dietary, but it can compete well with other fruits, and is decidedly to be preferred to candies. The nutritional value is relatively high, approximately one calorie per gram of pulp; and its carbohydrates, when it is fully ripe or cooked, are not less assimilable than those of cereals and potatoes. In the raw food, the digestibility is directly proportional to the ripeness of the fruit. There is no positive evidence that the banana influences bowel movements. In the many tests there was no suggestion whatever of any deleterious effect from consuming large amounts of fully ripe bananas. Prolonged use of the underripe fruit, on the other hand, developed undesirable symptoms.

Let the important fact be emphasized again that the banana ought not to be eaten raw until after the brown spots begin to appear. At this stage, we are reminded by the investigators cited, the banana assumes a full golden yellow and is in its most attractive appearance. A completely browned skin, they properly add, is not in itself a sign of overripeness, and such fruit should be judged by the texture of the pulp. The brown color of the peel, however, should not be confused with the darkening due to bruises. An injured banana is soon invaded by molds and yeast cells through the abrasions and the broken end; the banana "finger," therefore, should not be broken from the "hand" or stem, but

4. Pease, M. C., and Rose, A. R.: The Banana as a Food for Children, *Am. Jour. Dis. Child.*, November, 1917, p. 379.

cut off in such manner as to leave a good margin between the cut surface and the pulp.

When we have at length learned to recognize ripeness in the banana and have ceased to eat the unripe fruit because we mistake its yellow tinge as the sign of a wholesome stage, we may further come to appreciate a positive advantage in the "sterile package" represented by the undamaged peel. Bailey's investigations have shown this to be practically impervious to bacteria. Therefore—and this is worthy of distinct emphasis—a banana properly handled is "uncontaminated by dirt and pathogenic germs even if purchased from the push cart in our congested streets." How many other foods that are edible without cooking can make an equally meritorious claim?

MILK PRODUCTION AND DISTRIBUTION

We have several times referred to the growing importance of the economic aspects of milk production and distribution. The cost of milk to the consumer is so intimately bound up with public health interests that it has long been impossible to separate sharply economic and sanitary issues. Under the pressure of war conditions, this relation is becoming closer than ever.

New York investigators have found that in October of this year a definite decrease in milk consumption in that city could be noted. In 2,200 families visited, the daily amount of milk produced had fallen to 3,193 quarts, as compared with 4,797 quarts in the previous year. Coincident with the decrease in amount of milk purchased, there was a shifting from the better grades of milk to the cheaper, 266 families abandoning Grade A milk for Grade B, and sixty-seven changing from Grade B to Grade C. Dipped milk also was substituted for bottled milk, and the sale of condensed milk increased. The investigators found that 2,148 children under 6 years of age were drinking tea and coffee. In view of these facts, it is not surprising that the New York City Health Department believes that the recent increase in infant mortality in that city is due to a decreased use of high grade milk.

It is, indeed, high time that we should have the cost investigations that are now being made or projected in various parts of the country. If competent investigators are armed with ample authority to secure the facts, some interesting results may be anticipated. Certain opportunities for inquiry and reform have been evident for a long time. The waste involved in current distributing methods appeals to the most superficial observer as quite without justification. In the well known Rochester, N. Y., investigation, it was found that in one small section of the city, fifty-seven dealers delivered milk to 363 homes, traveling altogether some 30 miles. The same service could have been given by one distributor traveling 2 miles. Plans for cooperative dealing have been worked out;

why are they not put into effect? Committees meet, discuss and decide, but no action is taken. Selfish interests—always a little more persistently aggressive than unselfish—contribute powerfully to a policy of inaction. Some observers express much curiosity as to the profits of the large milk distributing companies, not merely at the present time but during the last ten years. Has the public been getting a square deal?

Then there is the dairy farmer, himself, that potent political factor in all agricultural states. What state official is going to "antagonize" the rural vote? In many state legislatures the country members outnumber those from the city districts. State institutions are dependent on the legislature for their appropriations. Is it a fact that the actual cost of milk production warrants the enormous price increase that has taken place all over the country in the past few months? Crops of the chief cattle foods are said to have been very large in most sections. The cost of producing and storing these foods may have increased, but not greatly for the average farmer, tilling his own soil and milking his own cows. Does the increased price demanded by the farmer for his milk represent a genuine rise in cost production, or is the traffic being charged all it will bear? One responsible health officer over his own signature answers this question in no uncertain way.¹

It is to be hoped that the investigations now under way will be real investigations, and that the questions here raised will be answered authoritatively. This is no time for hoodwinking ourselves or others, or for being tender with the feelings of selfishly interested groups, or for resting content with half way information or half way measures.

LOW ARTERIAL BLOOD PRESSURE

The emergency of the war, with its countless experiences of surgical shock, has directed attention to the problems of low blood pressure more emphatically than has ever been done before. Recent timely experimental contributions to this subject in *THE JOURNAL* by Pike and Coombs,² Henderson and Haggard,³ and Guthrie⁴ bear witness to the importance and the intricacy of this much debated topic. It would be both futile and presumptuous to attempt in a brief editorial comment to unravel the difficulties presented. It may be worth while, however, to note for the reader less well versed in the phenomena encountered in connection with shock, that low arterial pressure, per se, may be due to at least two quite different causes, apart from failure of the heart itself. An

1. Wright, F. W.: Month. Bull., Dept. of Health, New Haven, Conn., November, 1917.

2. Pike, F. H., and Coombs, Helen C.: The Relation of Low Blood Pressure to a Fatal Termination in Traumatic Shock, *THE JOURNAL A. M. A.*, June 23, 1917, p. 1892.

3. Henderson, Yandell, and Haggard, H. W.: Observations on Surgical Shock, *THE JOURNAL A. M. A.*, Sept. 22, 1917, p. 965.

4. Guthrie, C. C.: Experimental Shock, *THE JOURNAL A. M. A.*, Oct. 27, 1917, p. 1394.

actual deficiency of blood in the circulation, such as occurs after marked hemorrhage, reduces the output of the heart so that it may become insufficient to take the place of the blood flowing through the capillaries. The obvious form of relief for this condition is to replace effectively the fluid lost. Constriction of the arterioles may raise the blood pressure; but as Bayliss⁵ has clearly pointed out in a review of the subject, while it is evident that constriction of the arterioles would raise the pressure in such cases, by diminishing the rate of outflow through the capillaries, the result would be to decrease the supply of blood to all organs whose arterioles are affected, so that no real gain would be obtained. There is an abundance of evidence now at hand to show that when arterial pressure is lowered through loss of blood it cannot be brought back except to a certain degree by the injection of simple saline solutions in a volume equal to that of the fluid lost. The fluid thus introduced rapidly leaves the blood vessels, in small part perhaps through prompt elimination by the kidneys, but in far larger measure by passage into the tissues, as has been pointed out by Bogert, Underhill and Mendel.⁶ Several investigators have maintained, and in this they are supported by Bayliss, that if the viscosity of the solutions injected to replace lost blood is raised to that of blood, as can be done by using gum or gelatin solutions in saline, the restoration of blood pressure and volume is far less transitory than is the case with saline solutions alone. The difference in this case, says Bayliss, is due to the osmotic pressure of the colloids injected, by which loss of water by the kidneys and to the tissues is prevented. In animals this has been accomplished by the addition of gelatin or gum acacia to Ringer's solution. Colloids that exert no osmotic pressure are ineffective. Perhaps the intravenous injections of glucose as performed by Erlanger and Woodyatt⁷ will prove more satisfactory.

But there is another condition of low blood pressure in which the volume of blood is entirely normal, even when the heart is beating efficiently. The result is due in such cases to peripheral vasodilatation. Bayliss has well analyzed this situation by saying that what is here required is clearly to restore the normal tonic contraction of the vessels. In these circumstances an increased volume of blood may be useless or even harmful, if the heart cannot correspondingly increase its output. Even when no sign of heart failure can be detected, however, injections of suitably viscous saline solutions do not produce any permanent rise in arterial pressure in this category of cases. The vasomotor mechanism is not exhausted under these circumstances, so that the employment of suitable

substances to act on it may bring success in restoring the pressure. It is a striking fact that a fall of arterial pressure by itself produces peripheral vasoconstriction through nervous channels; and a rise in pressure appears to induce vasodilatation.

These distinctions, already familiar to the intensive student of the circulation, need to be impressed on all who tend to put every instance of low arterial blood pressure into a common category and assign it to a uniform cause. In shock one has to deal with even more complex conditions in which the condition of the venous circulation, the nutrition of the nervous centers, an altered chemical composition of the circulating medium, and perhaps other as yet entirely unanticipated factors referable to the tissues themselves may play the decisive rôle.

Current Comment

CHOLESTEROL ESTIMATIONS IN BLOOD

The rapid development that the clinical chemical examination of the blood has experienced as a diagnostic technic in the past few years has led to the exploitation, so to speak, of various blood constituents as indexes of functional derangement. In some cases these attempts have been successful in offering new or better indications of pathologic conditions that cannot be so well diagnosed by other means now available. These contributions, notably such as relate to the nonprotein nitrogen, the uric acid, the sugar and the lipid content of the blood, have repeatedly been referred to in *THE JOURNAL*. With an extension of the use of microchemical methods in clinical laboratories, and the accumulation of first hand experience regarding what they can reveal in the clinic, a better critique of chemical blood analysis will gradually be evolved, and the demonstrably useful features will be retained as a part of the laboratory routine. This entire phase of clinical observation is passing through much the same stages as were traversed in the development and perfecting of the now highly successful and invaluable methods for the morphologic examination of the blood. With this preface we may refer again to the subject of the cholesterol content of the blood, summarizing the best evidence available up to the present time. The hopes of the past have not all been realized. It seemed likely at one time that hypercholesterolemia would prove to accompany cholelithiasis. Indeed, the formation of gallstones has been charged to a high content of cholesterol in the blood. The latest statistics, by Gorham and Myers¹ of the New York Post-Graduate Medical School and Hospital, indicate that the findings in cholelithiasis are quite inconstant. They conclude that since hypercholesterolemia may be found in many conditions and is not uniformly constant in cholelithiasis, it would seem that the blood cholesterol possesses only a limited diag-

5. Bayliss, W. M.: Methods of Raising Low Blood Pressure, *Proc. Roy. Soc., B*, 1916, **89**, 380.

6. Bogert, Lotta J.; Underhill, F. P., and Mendel, L. B.: *Am. Jour. Physiol.*, 1916, **41**, 189, 219.

7. Erlanger, Joseph, and Woodyatt, R. T.: Intravenous Glucose Injections in Shock, *THE JOURNAL A. M. A.*, Oct. 27, 1917, p. 1410.

1. Gorham, F. D., and Myers, V. C.: Remarks on the Cholesterol Content of Human Blood, *Arch. Int. Med.*, October, 1917, p. 599.

nostic usefulness in this condition. Gorham and Myers agree with several previous observers² in the conclusion that in pathologic conditions hypercholesterolemia is comparatively common, being reported in arteriosclerosis, nephritis, obstructive jaundice and diabetes, though it is not invariable in these diseases. A content of cholesterol lower than normal is a greater rarity, however. It has been recognized for some time to occur particularly in anemias, notably those of the pernicious type. Here it may have considerable significance, especially in view of the reputed anti-hemolytic action of cholesterol. The possibility of cholesterol administration at once suggests itself; but it is still too early to foresee the result of such procedure with any certainty. The occurrence of an augmented quantity of cholesterol in diabetes is in harmony with the lipemia that so often occurs in this disease; so that cholesterol may perhaps here be taken as an index of the lipid content of the blood and of diabetic lipemia in general.

NEPHRITIS, BLOOD LIPOIDS AND ACIDOSIS

The pathologic manifestations of nephritis are no longer interpreted solely in the light of the altered excretion of urinary products as a result of defective kidney function. Frequently there are more remote disturbances of physiologic performance attributable in ultimate analysis no doubt to the renal defects of the organism, yet not explicable directly as kidney phenomena. The confusion of cause and effect in relation to nephritis has been illustrated in the occasional coincidence of gout and nephritis. An illustration of an abnormality associated with certain stages of kidney disease, yet not obviously concerned with inability to excrete urine, has been clearly presented by Bloor³ at the Harvard Medical School in a study of the blood lipoids by the analytic methods so successfully elaborated by him. The abnormalities in severe nephritis were found to be a high content of fat in the plasma and corpuscles, and an increased amount of lecithin in the corpuscles. The cholesterol values remain essentially normal. These abnormalities are the same as are found in alimentary lipemia, and for this reason are regarded as the result of a retarded assimilation of fat from the blood. Bloor points out that the most frequent of other conditions in which abnormalities of the blood lipoids are common is diabetes, and a prominent symptom of severe diabetes is "acidosis"—a decreased "alkali reserve" in the blood. Recent investigations⁴ have established the fact that acidosis is frequently a feature of severe nephritis, and in most of the cases of certain types studied, acidosis was probably present, as evidenced by the dyspnea, low carbon dioxide tension in the alveolar air, and coma. Since an adequate alkalinity of the blood and tissues is necessary for their normal functioning, it seems very probable, says Bloor, that the retarda-

tion of fat assimilation found in nephritis is one manifestation of a general phenomenon brought about by a decreased blood and tissue alkalinity. After all the defects for which acidosis has recently been made responsible, what detrimental features of a depleted alkali reserve are we to expect next?

CLEMENCEAU—A PHYSICIAN

The man of the hour in France is Georges Clemenceau, noted as an editor, as Prime Minister of France, as a "wrecker of cabinets," and characteristically as "the stormy petrel of French politics." It will come as a surprise to physicians to know that this conspicuous figure in the political life of France is a physician, the son of a physician, and that for a time, according to the *New York Times*, he practiced medicine in Stamford, Conn., and in New York. Clemenceau was born in 1841, was licensed to practice medicine in 1865, and between 1865 and 1869 established himself on West Twelfth Street in New York City. Failing in the practice of medicine, he became an instructor of the French language and literature in Miss Aikens' Young Ladies' Seminary at Stamford, Conn. Here he married one of his pupils, Miss Mary Plummer of Springfield, Mass. He returned to France in 1870. Of his career as a physician but little is known. Among his works is one on the "Generation of Anatomic Elements." It is quite probable that his training as a physician influenced his political career. We quote from an article in the *Nineteenth Century*, 1907:

The materialist doctor in him does not shrink from the ridicule one incurs by talking about a "total view of the universe," but the idealist appears at every moment in the social reformer.

Public Instruction in Cooking.—The Ministry of Food of Great Britain, and the London County Council, have provided facilities for instruction in cookery. According to *Commerce Reports* a number of schools have been established for teaching how to cook war foodstuffs, where persons may take the course without cost. The London County Council has a number of traveling kitchens equipped on motor cars which travel about London giving demonstrations on such subjects as: voluntary rations; food that serves the same purpose as meat; how to get the best value for money; substitutes for wheat flour; use of oatmeal, barley flour, maize meal and other cereals; economical use of sugar, aids and substitutes; catering for a week; unwise purchasing; the evils of underfeeding; the relation of price to value; kitchen economies; the fireless cooker, the "hot water jacket" and similar apparatus, and other devices for the saving of fuel. Courses in domestic economy have been provided in both the day schools and evening institutes. Children are required to attend these schools between the ages of 5 and 14 years. The course in domestic science is taken during the last two years of their attendance. Pupils devote one-half day each week to this subject. In some districts pupils devote half of the week for three to six months to these courses. The materials prepared in the cookery schools are sold to the children and teachers at about 90 per cent. of their cost. In January, 1917, there were 178 cookery centers, 56 laundry centers, 128 combined cookery and laundry centers, and 72 housewifery centers, providing for about 65,500 children. In addition to this there are evening instructions in war time meals, and advanced courses in domestic science offered by the polytechnic institutes.

2. References to the literature are given by Denis, W.: *Jour. Biol. Chem.*, 1917, **29**, 93.

3. Bloor, W. R.: *The Blood Lipoids in Nephritis*, *Jour. Biol. Chem.*, 1917, **31**, 575.

4. Peabody, F. W.: *Clinical Studies on the Respiration*, II, *The Acidosis of Chronic Nephritis*, *Arch. Int. Med.*, December, 1915, p. 955.

Medical Mobilization and the War

MEDICAL OFFICERS NEEDED BY NAVY

Surgeon-General Braisted of the United States Navy announces that the Navy has not yet reached its maximum in needs for commissioned medical personnel, and that it is still welcoming offers of service for such duty. THE JOURNAL will be glad to send to physicians who are interested in this service a circular of information, and application blanks.

RED CROSS ACTIVITIES IN ITALY

Temporary organization of Red Cross agencies in Italy to meet the present emergencies has been perfected. Carl Taylor has been installed as general manager in Rome, and Edward Ayre Hunt has been placed at the head of the civilian relief department.—Ambulance companies and other personnel have been transferred to Italy from France. Money has been appropriated for buildings in Genoa for receiving refugees, and the king has turned over his royal villa at Monzo, to refugees from the invaded regions of Italy.

ANTITUBERCULOSIS WORK IN FRANCE

The mission headed by Dr. Livingstone Farrand sent to France by the Rockefeller Foundation to combat the threatened increase of tuberculosis in that country will organize its work into three sections. It is planned to establish in one of the arrondissements in Paris and in certain large provincial towns organizations consisting of dispensaries, clinics and laboratories and provision for domiciliary attendance. This work will be under the direction of Dr. Miller. A second section under Dr. Charles White will undertake the distribution of assistance, and a third section under Professor Gunn will deal with publicity. This section has already begun its work in the organization of traveling exhibitions, meetings, cinematograph displays, etc.

REGULATIONS UNDER SELECTIVE SERVICE LAW

Section 151 B of the new selective service regulations concerns especially medical students and hospital interns registered under the law. It becomes effective December 15.

"Except in the following cases, no registrant may enlist voluntarily in the military or naval service of the United States.

"Under such regulations as the Surgeon-General may prescribe and on receiving permission from the Surgeon-General to do so, any medical student, hospital intern, dentist, dental student, veterinarian, or veterinary student may enlist in the enlisted reserve corps of the Medical Department, and thereafter on presentation by the registrant to his Local Board of a certificate of a Commissioned Officer of the Medical Department of the Army that he has been so enlisted, such certificate shall be filed with the Questionnaire and the registrant shall be placed in Class V on the ground that he is in the military service of the United States. There is no other ground on which such persons (as such) may be placed in a deferred classification."

The effect of classification in Class V is to exempt or discharge from the draft. Regulations to carry out these paragraphs will be issued by the Surgeon-General. The effect of the new regulations will be to extend to first year medical students, after Dec. 15, 1917, essentially the same privileges in respect to Army service as are now enjoyed by students of the second, third and fourth year classes. The approval of the Surgeon-General will be granted to such students in well recognized medical schools only.

Since, under existing conditions, it is extremely unlikely that further calls for the present draft will be made before December 15, the fear expressed by first year medical students that they may not be able to continue their medical course is unwarranted, if they have not already been cited for the draft by their local board. In that case, the Medical Department has no authority.

NEWS OF THE BASE HOSPITALS

Base Hospital No. 30 Mobilized

Base Hospital No. 30, organized in the University of California Medical School, has been ordered to mobilize for the training of the enlisted personnel at Fort Mason, San Francisco. For this purpose it has been placed under the command of Col. Elmer A. Dean. Most of the officers of the organization have already had military training, and at present are in active service in various parts of the country. Those ordered for immediate mobilization with the unit are:

Major Eugene S. Kilgore, director and chief of medicine; Capts. Jule B. Frankenheimer, Louis P. Howe and Arthur L. Fisher, and Lieuts. Malcolm Goddard, Hiram E. Miller and John M. Rehfish.

The remainder of the official personnel are to be assembled when the organization is ready for foreign service. These include: Drs. Elbridge J. Best, Ernest H. Falconer, Arthur C. Gibson, C. R. Giles, Charles M. Richards, Howard E. Ruggles, Hudson Smythe, Charles L. Tranter, Herbert S. Thomson, William W. Washburn, Alanson Weeks, Nathan P. Wood, J. Homer Woolsey and Harold W. Wright.

NEWS OF THE TRAINING CAMPS

Fort Riley

The closing of the training camp at Fort Benjamin Harrison has brought a number of new men to Fort Riley. Lieut.-Col. William H. Tefft comes to take command of Evacuation Hospital No. 7, to which Major Don C. Peters from Camp Sheridan, Ala., has also been assigned. Major S. J. Turnbull from Fort Benjamin Harrison is in command of Hospital Train No. 24. Lieuts. D. C. Sherman, Albert V. Braden and G. L. Longworthy from Fort Benjamin Harrison are assigned to Evacuation Hospital No. 7; also Lieut. S. D. Bevell, who comes from Camp MacArthur, at Waco, Texas. Major Maurice H. Krebs has reported from Fort Benjamin Harrison as an instructor. Two motor driven evacuation ambulance companies have been organized to which have been assigned Capt. Harmon H. Ashley and Lieuts. George J. Culver, Theodore M. Wiersen and Frederick H. Spencer, all from Fort Benjamin Harrison.

QUARANTINE AT CAMP FUNSTON

Dry weather still continues. Practically no rain has fallen since October 25. Heavy fogs every morning keep the dust down, but the days are clear and warm. Efforts to control dust-borne diseases, especially pneumonia and meningitis, have resulted in quarantining Camp Funston. All student officers and instructors at the medical officers' training camp have been forbidden to enter Camp Funston except on official business. At the same time, all officers and men at Camp Funston has been forbidden to use the street cars, or to attend moving picture shows, theaters, or dances at Junction City, Manhattan or Army City. An isolation camp has been established outside Camp Funston, in which have been placed all contacts, suspects and carriers. Active measures are being carried on for the sterilization of carriers, the prophylactic treatment of contacts and the improvement of hygienic conditions. Overcrowding in company barracks has been greatly reduced, and adequate ventilation is being enforced. As a result, meningitis is markedly diminishing in Camp Funston, and last week's report showed simultaneous falling off in pneumonia. So far, Fort Riley has escaped any meningitis invasion, and the number of cases of pneumonia have been small.

THANKSGIVING WEEK

But the real event of the week has been Thanksgiving. For the first time in years in most cases, and for the first time in their lives in some cases, medical officers spent Thanksgiving away from their families. Leave for seven days was given to half of the instructors, and to all student officers whose work was completed. Furloughs were given to 10 per cent. of the enlisted men. Many spent the day in Kansas City, Topeka and other nearby cities. But the majority of the men remained in camp. All classes were off, and all unnecessary work was discontinued. The Sunday and holiday routine was followed. True to American traditions, the principal function of the day was the Thanksgiving dinner. In each mess hall at 12 a bounteous meal was served, consisting of soup, roast turkey with oyster stuffing, mashed potatoes and gravy, celery and olives, green peas, tomatoes and other vegetables, mince and pumpkin pies, ice cream and coffee. The turkeys were a prime lot which had been brought to the reservation alive and fattened for several weeks. The mince pie was the real New England variety, and contained some ingredients that never were made in Kansas. In fact, one enthusiastic and well fed officer was heard to declare after dinner that his piece of pie was the first real drink he had had since he left home.

Sanitary Instruction at Fort Riley

In the past four months a project has been developed at the medical officers' training camp which we believe in many ways is unique in this country. This is a field sanitary laboratory (1) to train medical officers in the use and construc-

tion of the various types of sanitary apparatus which they might be required to construct in the field, and (2) to make a study of the different types of apparatus in current use, with a view to their betterment or the development of new and more efficient types. The laboratory is outdoors, occupying a considerable area of ground. A reserve corps medical officer in charge of an evacuation hospital may be called on to decide what he will do with the excreta, human and animal, of his organization. He may decide to burn it, as one solution of the problem. With no sewers, and no stream to help him out, he must dispose of the solid and liquid excreta of the thousand or more patients and soldiers for whose health he is directly responsible. The incineration of human excreta, especially when highly infective, requires special apparatus which must be constructed out of any materials available; that is, must be really "home-made," and yet must be perfectly efficient. After the regular course of lectures in hygiene and sanitation, the students are taken over in small groups to the laboratory and shown many of the approved types of apparatus for this purpose. These are carefully explained, often shown in operation, the relative merits of the different types elucidated, and the conditions under which one might be available, and another not available, thoroughly gone into. The question of manure may be taken up. How is it to be disposed of and how is fly breeding to be prevented while it is being disposed of? The various methods of doing this are shown, and the apparatus, necessarily large and cumbersome, and the essential points of construction are explained. All of these have been made by the enlisted men, under the guidance of the director and his associates, and with no skilled mechanics to help. A large Panama railroad iron incinerator for manure was built. This involved the use of old rails, and something over ten tons were required. The Union Pacific lent some old rails, which had to be dragged by mules for several miles. These were drilled on the ground, U-bolts were made out of bar iron by the blacksmith of an ambulance company in his portable forge, nuts made from flattened horseshoes cut into squares were punched and threaded, and the whole was put up on six piers made from stone collected from the adjacent hill. This sort of work can be learned only by seeing the actual thing itself. Moreover, each class is now required to make drawings and actual plans of these pieces of apparatus, and a wholesome rivalry has grown up among the officers. Lately one can see a dozen or two officers with their camp stools perched in front of a field oven, a special latrine, an incinerator or what not, drawing away for dear life.

About forty pieces of apparatus have been constructed, and a considerable number are now on the road to completion. For the winter a large 50 foot tent has been set up on a frame and boarded in. Part of the work will be carried on there in inclement weather. At present a large apparatus for delousing clothing is nearly finished, and especial attention is being turned to the means of combating vermin in general.

The second purpose of the laboratory has been investigation, so far as this is possible with the facilities at hand. This has, however, already borne fruit in that a new incinerator, especially adapted to the needs of such organizations as a field hospital or evacuation hospital when immobile, has been devised, and has been put into successful operation. It is hoped it will develop into a standard type, especially since the waste heat is utilized, which means a great saving in fuel, which is so important under present service conditions. One other departure in the form of a portable latrine has been developed here, and many small improvements on existing apparatus. The exhibit was commented on

favorably by the English and French commission when at Riley, and during the past week the commanding officer, Lieutenant-Colonel Bispham, has received instructions from Washington to have blueprints made of all exhibits and expedited to the Surgeon-General's Office. This will have been completed by the time this reaches our readers. The work will be carried on through the winter months and into new lines.

The director, Major Charles Spencer Williamson, M. R. C., and his associates, Capt. J. G. Shewbrooke, M. R. C.; Lieut. William E. Pretts, M. R. C., and Lieut. David Schmalhorst, M. R. C., are endeavoring to make the scope of the laboratory entirely practical, but governed by the same aims as any civil laboratory. At present, two modifications of a certain standard device are being tested, side by side, in respect to fuel consumption and rapidity of operation, so that when one type is recommended it will be on the basis of actual comparative experimental evidence.

The activities of the laboratory are quite diverse. Methods and apparatus for disposal of garbage, for delousing clothing, for disposal of manure, for prevention of fly breeding, for incineration of solid excreta, for disposal of sullage water, for destruction of flies, for preservation of food in the field, and for improvisation of field cooking apparatus are some of the subjects receiving attention.

NEWS OF THE CANTONMENTS

Thirty-First Division, Camp Wheeler, Macon, Ga.

Assistant Surgeon-General Rucker, U. S. P. H. S., visited the camp last week, while inspecting the work of the service in Macon and the area about the camp. The Public Health Service has been of great assistance by cleaning up the surrounding country, and especially by putting the dairies, ice cream factories, restaurants, etc., in a sanitary condition.

MEASLES

Our measles epidemic will soon be a thing of the past. The maximum number of cases was 1,201, and the greatest number of admissions in one day was 175. The epidemic began, October 22, was at its height, November 14, and was practically over by December 1. Of approximately 10,000 new men who came into the camp, 3,000 developed

measles. It appears that the nonimmune in the draft men amounted to 30 per cent. of the whole. We are all glad now that the thing is over, instead of having it drag along for months, while we are on the way and in an inclement winter climate.

PNEUMONIA

The greater part of the pneumonia has been found among the new draft men, not in the old guardsmen. Major Zinser, M. R. C., has arrived from the Surgeon-General's Office to make a thorough epidemiologic study of pneumonia. Colonel Duncan asked this of the Surgeon-General when he was here. Both General Gorgas and Professor Welch thought it necessary and promised the help of the Surgeon-General's Office and the Rockefeller Institute in the study of pneumonia to its final analysis. Pneumonia stands in the same relation to the camp of 1917 that typhoid did to the camp of 1898. The origin and transmission must be elucidated as the origin and transmission of yellow fever, typhoid, meningitis and other epidemic diseases have been elucidated.

The whole division is now supplied with overcoats. This will surely reduce the amount of bronchitis, grip and pneumonia.

FOOD CONSERVATION

Captain Eddy, M. R. C., and three assistants are at work in the camp studying the conservation of food. It is to be



A lecture at the Medical Officers' Training Camp, Camp Greenleaf, Fort Oglethorpe, Ga. Major James B. Griffin, M. R. C., lecturing.

noted that they will reduce the amount of waste, whether or not the ration can be safely reduced.

BASE HOSPITAL NOTES

Major Halsey arrived Saturday, November 24, to take charge of the medical service. Major Hans Zinsser is now chief of the laboratory staff. Major Black of the Surgeon-General's Office spent two days at the hospital and gave a very interesting and instructive talk. The staff has been augmented by the arrival of sixteen new officers, twelve of whom are quartered in framed pyramidal tents. The nursing corps was increased by the arrival of a "carload" Wednesday morning. Lieutenant Cook has returned from New Orleans after taking a special course in fracture surgery. There are at present under treatment in the hospital 991 patients.

ONE HUNDRED AND SIXTH SANITARY TRAIN

The ambulance service of the camp has received many compliments on the efficient service rendered. Ambulance Company No. 121, commanded by Capt. Robert Ashworth, Alabama, has been permanently detailed on this service with good results.

We are much pleased at the low sick rate we have been able to maintain in the train, having consistently maintained the lowest rate of any unit in the division, despite the fact that during the recent epidemic of measles our men worked longer hours and were subjected to more general exposure than those of other units. Lieutenant Plante of the British Army lectured to the medical officers' class recently and gave many valuable tips and suggestions which we hope will prove helpful when we reach the trenches. Captain Crupper, Infantry, British Army, will talk to the medical officers' class on medical organization as carried on on the western front.

Thirty-Fifth Division, Camp Doniphan, Fort Sill, Okla.

SANITARY POLICE

The most important development of the past week was the establishing of a sanitary police, under control of the division surgeon, for the city of Lawton. For some time there has been a growing feeling that the insanitary conditions in the city of Lawton would sooner or later mean trouble both for that community and for the soldiers that go to Lawton. The facilities of Lawton to meet the wants of the military population of Camp Doniphan, more than twice the population of the city of Lawton itself, were obviously inadequate. The ambitious vender who would sell "red hots" and soft drinks to soldiers that were eager to get a variation from the regular camp mess did a flourishing business, in which the exchange of his wares for the good cash of the soldiers was the primary consideration, rather than the care and cleanliness with which the food was prepared.

The important work of regulating and controlling the situation has been detailed to Major W. S. Lawrence, M. C., N. G., who has been made assistant health commissioner for the city of Lawton. Under his immediate supervision, there has been established a first-aid station where venereal prophylaxis is given. There has been established also a municipal isolation hospital where the city's cases of contagious diseases will hereafter be treated. Aside from the military police, Major Lawrence will have the assistance of two experienced sanitary inspectors furnished by the state board of health.

Possibly for the first time in their existence the hotels and restaurants of Lawton have been asked to clean up and maintain cleanliness in their kitchens. Since the order to clean up will be controlled by the stationing of military police at the door of the establishment that fails to comply with the order, there can be no doubt that the orders will be promptly complied with. Drs. Duke and Sapper of the state health office have been in conference with Major Lawrence, the city officials and leading business men of Lawton, and the combined efforts of these men, no doubt, will succeed in providing for Lawton the long needed sanitary improvement.

DISEASE INCIDENCE

There were but two deaths to record for the past week, one from meningitis and one from pneumonia, the latter following a case of typhoid fever. The latter case is of interest in that the patient had received his last immunization against typhoid and paratyphoid one week before the development of his illness. All together, the health of the camp is very good, the morbidity rate, inclusive of injuries, being just a fraction above 3 per cent.

CARDIOVASCULAR EXAMINATIONS

Capt. Ralph C. Brown, M. R. C., has completed his work on cardiovascular conditions; a total of 487 cases were examined by him. Of these men, 354 were accepted and sixty-seven rejected; sixty-six were conditionally accepted for special service and will be transferred to the base hospital, where they will be under further careful observation and where tracings will be made to determine more fully their condition. Captain Brown reports that the majority of rejected patients showed mitral stenosis. This is rather interesting, since most of these men had been subjected to physical examination two or three times before they were brought before the cardiovascular board. Among other interesting findings of this board are a case of transposition of the viscera, and one of traumatic aneurysm of the carotid artery, following injury to this vessel from a stab wound.

PERSONAL NOTES

Capt. Ralph C. Brown, M. R. C., of the cardiovascular board, returns to Chicago, going temporarily on the inactive list until Base Hospital No. 13, of which he is a member, is ordered out.

Lieut. J. W. Follin, sanitary engineer, has been added to the staff of the division surgeon.

Seventy-Seventh Division, Camp Upton, Yaphank, N. Y.

During the past three weeks many promotions have been announced in the medical personnel of this division. In the new base hospital the services have now been well organized, and in many instances specialists of international reputation have taken charge of their respective special departments.

DISEASE INCIDENCE

We have thus far been singularly fortunate with our pneumonia patients. They have not been numerous, and there have been no deaths, a result which appears to be largely due to the early employment of the Cole serum. Most of our cases seem to be of the Type I infection, which is fully recognized to respond most satisfactorily to this method of treatment. Highly mixed infections have not been frequent, doubtless also accounting largely for our good fortune thus far.

The death of Major Richard Weil, who was intimately known to many of the workers at this cantonment, has been much regretted by all members of our staff.

Our good fortune in regard to the contagious diseases has been thought to be largely due to the fact that we have thus far drawn our recruits chiefly from a dense urban population in which, naturally, the susceptible material has passed through these standard infections in large part before coming to the cantonment. It is difficult otherwise to account for our very small percentage of measles, mumps and diphtheria. Only a single case of the last mentioned contagion has appeared at the base hospital, and our few sporadic cases of mumps have thus far shown nothing of an epidemic character. In the past the same statement was true also of measles, which has been such a serious factor in some camps, particularly in those drawing their material from a largely rural population. The recent assignment of colored troops from the South to Camp Upton bears out in a very striking way this assumption. Among the colored troops from New York City and its environs, now numbering several thousand, not a single case of measles or mumps has developed; but in a small battalion of those from the South, ten cases of measles and two of mumps appeared within the first week. Rigid quarantine measures have been enforced, however, and it is hoped that in this way we may at least prevent the spread of these diseases to other troops.

PSYCHOLOGIC TESTS

An interesting side light on the question of the alleged conscientious objector has been developed by the findings of a psychiatric board composed of Major Hammond, Captain Rosanoff and Lieutenant Pearse. Excluding those who for natural, national and entirely honorable reasons desire to evade service in our Army, this board found that nearly 90 per cent. existed in instances of clear mental disease or degenerates. It is regrettable that public examinations of this character of the nonmilitary population cannot be conducted, and that the defectives of this type outside as well as within the Army should be confined in asylums or similar public institutions.

MENINGITIS

A single and early fatal case of epidemic cerebrospinal meningitis has appeared in the camp. Apparently the case

originated from an extramural infection, and thorough examination of all contacts has disclosed no carriers as yet.

ANTHRAX

A somewhat unusual case of anthrax was discovered in which the clinical diagnosis was that of a septic meningitis, possibly epidemic. Lumbar puncture showed the cerebrospinal fluid to be turbid with a growth of anthrax bacilli. Postmortem examination showed the infection to have probably been of intestinal origin, although one skin lesion suggested the possibility of inoculation through this avenue. This also seems to have been acquired outside the encampment.

NOTES

The weekly meetings of the Upton Medical Society have been largely attended, and the programs have been of a very high and instructive character. Major E. K. Dunham gave us a most interesting illustrated talk on the newer methods of antisepsis. Major Thomas Darlington discussed fatigue. Lieutenant Pelitier of the Medical Corps of the French army gave a most interesting lecture, illustrated by lantern slides of the Carell-Dakin method of treatment of surgical injuries and wounds. Dr. Haven Emerson, commissioner of health for New York, discussed the subject of tuberculosis, chiefly from a statistical standpoint and concerning its methods of propagation, especially as applied to such compact communities as the military camp. Next week the medical society is to be addressed by W. H. Park, director of the Research Laboratories of the New York Board of Health.

Among the distinguished medical visitors of the camp have been Rufus Cole, Alfred Kohn and A. R. Dochez from the Rockefeller Institute.

Eighty-Fourth Division, Camp Zachary Taylor, Louisville, Ky.

Orders have been received regarding equipment and baggage that may be taken by troops designated for duty with expeditionary forces in Europe. Each officer below the grade of major, and each contract surgeon, acting dental surgeon and acting veterinarian may have baggage not to exceed 250 pounds. This allowance includes Equipment C, professional books and all necessary clothing and bedding for extended field service. Containers for personal baggage for the above named officers shall be the standard trunk locker and bedding roll or similar containers of their approximate equivalent volume. Mosquito bars, head nets and khaki clothing will not be taken.

PSYCHOLOGIC TESTS

More than 10,000 men have been given the intelligence tests by the psychologic board that is now sitting at Camp Zachary Taylor. The board is headed by Lieut. Marion R. Trabue, chief examiner, formerly engaged in psychologic work at Columbia University. Other members are Lieut. Clarence S. Yoakum, University of Texas; Lieut. Heber S. Cummings, Kansas Agricultural College; Lieut. Edgar A. Doll, Cornell University; Dr. Eugene C. Rowe, Michigan Normal School; Dr. James W. Bridges, Ohio University; Calvin P. Stone, Jeffersonville Reformatory, and John K. Norton and J. David Houser of Leland Stanford Junior University.

The men are graded after examination by scores ranging from zero to 414, and are arranged into five grades, from A to E. For a man to make Grade A, his score must be between 300 and 414. This is known as the very superior grade, and the Grade A men are characterized as being skilled in abstract thinking. Grade B ranges between 250 and 299. This is the superior grade, and the one usually made by the typical officer. Grade C is the "average" grade, ranging from 100 to 249. This grade is usually made by the typical private. Grade D consists of the unskilled laborer class, is called "Inferior," and is from 50 to 99. The lowest is E, with scores ranging from zero to 49. These men are classed as "very inferior," and are dull, ineffective or feeble-minded or nearly so. The majority of men of this class are recommended for discharge on account of deficient mentality.

The examinations are conducted in an unoccupied ward of the base hospital, an entire company being put through at one time. The examination is made out on a printed pamphlet consisting of about twenty pages. Each man is given a pamphlet and pencil, and is told what to do in each test by an instructor. The man must put a cross in the largest of a row of squares printed across the sheet, all different sizes, but nearly the same. He must at a glance underline the highest and lowest row of figures; take dictation of numbers and sentences, etc. The illiterates and others who fail at the written examination are given individual examinations to

show their mechanical sense and skill. They are given bells and locks in pieces to be put together. If they do not show any mechanical skill, they are given the various tests used at institutions for the feeble-minded and at emigrant stations. Failing these simple tests, the man is rated as being deficient in mentality and is discharged. In one group of 300 examined, the board found ten imbeciles. One private made the highest grade recorded, 409 out of a possible 414. All officers will be examined, and are expected to make 250 or over.

At Camp Lee, where the medical officers were examined, several were found to have made only "average" grades. The medical officer in command found on investigation that the men who had made the low marks had consistently bungled up paper work. They were watched more closely, and if they did not show any sign of improvement, they were discharged. At this camp the officers in the Engineering Corps ranked highest in the intelligence tests, followed by infantry, quartermaster and medical officers last.

Contrary to general belief, no amount of study seems to improve the men's grade. If given the same test two years from now, they would make practically the same grades, and they are believed to show completely the capability of the brain.

This rating of the men will be of great advantage to the officers. The quick thinkers can be chosen for important pieces of work. While some man may have a high grade from an intelligence test, he may not make a good soldier, as he may be both physically and morally wrong. The results are carefully checked over, and a form is made out with a complete list of names of each company with a man's grade opposite his name. A regimental list is also made out for the division commander. The board will probably complete its work by January 1, when it will probably be ordered to another camp.

It is believed here that the results of the intelligence tests will influence the selection of candidates for the next officers' training camp.

MEASLES

Measles has spread to nearly every company of the Three Hundred and Thirty-Fifth Infantry, composed mostly of men from southern Indiana, all but two companies being quarantined. Most of the patients have been taken to the base hospital, while the men with milder cases are kept in the regimental hospital.

Two Y. M. C. A. secretaries have gone into voluntary quarantine in order to serve the men in the two quarantined regiments.

BASE HOSPITAL

There are now 681 patients in the base hospital, sixty-three with wounds and injuries. With venereal diseases there are now on duty 363 gonorrhea patients, twenty-three syphilis, and nineteen chancroid patients. New measles cases, twenty-two in all, were reported during the week from eight different organizations. The total percentage of sick was 3.74 or, omitting "wounds and injuries," 3.31. The division comprises 24,716 men at present, with 1,034 reported sick. The total number received to date has been 27,000, and 2,017 have been discharged by the reviewing board. The tuberculosis board has been actively at work, examining each officer and drafted man. Pulmonary tuberculosis has caused a large proportion of the rejections, several of those rejected being officers. Trachoma has also caused a large number of rejections, most of these patients being from eastern Kentucky counties. Few patients with primary syphilis are being rejected, these being now treated at the camp. Men with tertiary cases are rejected.

Eighty-Fifth Division, Camp Custer, Battle Creek, Mich.

The most interesting event of the past week was the visit of Colonel Chamberlain of the Surgeon-General's Office. He made a complete inspection of all departments of the sanitary troops.

Major Edwards, the new sanitary inspector, is rapidly developing the plans of sanitation necessary for the well-being of the camp. He is particularly anxious to obtain the proper air space, floor space and head space in the various barracks so that the men in their sleeping quarters will have the proper ventilation. The fact that there is a minimum amount of pneumonia in the division speaks for the results of this plan of ventilation.

THREE HUNDRED AND TENTH SANITARY TRAIN

There is much of interest in the activities of the sanitary train. Football, basketball, orchestra, minstrel shows all make the long evenings pleasant for the men.

The field hospitals and ambulance companies are working in conjunction with each other in their plan of training. The ambulance companies are setting up dressing stations and are operating between the trenches and the field hospital which is set up a mile or two from the dressing station ready for action in every particular, each department fully equipped and ready for work.

The night time is being utilized for the purpose of training. It is understood that the wounded are transported at night. Major Jackson, director of ambulance companies, has worked out an original idea of training ambulance drivers to drive at night without lights. He works out his scheme by having the eyes of the drivers covered so that they cannot see, and then instructs them in feeling their way along the road. The major figures that they can learn conditions of the road and locations much in the same manner as the blind utilize their other senses in determining location. The men of the various companies are enjoying this night work tremendously, and are becoming proficient in doing all the work, such as tent pitching and striking and road work, as well as they do by daylight. One of the most difficult problems to teach men is definite location at night without the use of a compass. They are taught to work out directions so that becoming lost or walking around in a circle is practically impossible.

Eighty-Seventh Division, Camp Pike, Little Rock, Ark.

Camp Pike is receiving rapidly its quota of troops from the northern cantonments. These men are as a class robust, ruddy-cheeked, and physically fit. There is little evidence of an undernourished condition or of hookworm and anemia, a state of affairs widely prevalent among the men first received at this place.

The time-honored custom of "passing the buck" has not been entirely eliminated in this connection, a certain percentage of these northerners being in a physical condition warranting their discharge rather than their transfer to Camp Pike. Some of these drafted men who intentionally or through accident just prior to draft became unfit were sent on anyway and have been crippling about the camps for some time. These men are unfit for drill, and unless they can do office work, cannot be trained to any extent. A recent order from the War Department has been issued expressly for the purpose of stopping this practice. It is to the effect that whenever a county or parish sends up a man who proves to be unfit for military service, the man shall be returned to the board sending him and the board required to send up another man who is fit. A special board of examiners is now on duty at the base hospital for the purpose of expediting the return of these men to their respective boards. Lieut. John Thorpe, Chicago, who is at present attached to the Three Hundred and Twelfth Sanitary Train, is assisting the division surgeon in this work.

BASE HOSPITAL AT FORT LOGAN H. ROOTS

Fort Logan H. Roots, which is about 3 miles distant from Camp Pike, has been designated as the site of a base hospital of 500 beds, to supplement the base hospital at Camp Pike. Lieut.-Col. George F. Jueneman of the Medical Corps is to be in command. In order to build at Fort Roots a hospital of this size, it will be necessary to utilize the brick barracks at this post. The post hospital at Fort Roots was used as a base hospital for Camp Pike during the early days of the construction work at the camp. The location is ideal, Fort Roots being situated on a high bluff overlooking the Arkansas River.

Lieut. E. J. Wentworth, of the orthopedic staff at the base hospital, concluded his course of lyceum lectures with two lectures on the spine. Lieutenant Wentworth spent some time emphasizing the fact that medical officers should strive always to assume the "posture of a soldier." He said the criticism had often been made by line officers that too many of the medical officers did not "look or act like soldiers." Lieutenant Wentworth's lecture were followed by one by Major McKenna of the base hospital, formerly of Chicago, on surgery of the bones and joints. The lecture was illustrated with fifty-two lantern slides which showed what might be accomplished in the work on the joint cavities. One of the most interesting and entertaining lectures given at the lyceum course recently was one by Major Amos Gale Straw of Boston, who is in charge of the roentgen-ray department in the base hospital at Camp Pike. This lecture was general in character, and dealt with Major Straw's nine months' experience in an evacuation hospital in France. One of the major's amusing

experiences was that of being continually mistaken in England for the noted movie actor, the late John Bunnie.

The following assignments of commanding officers have been made in the sanitary train: Major R. H. Davies, director of field hospitals and assistant adjutant of the Three Hundred and Twelfth Sanitary Train; Capt. Paul R. Howard, director of Field Hospital No. 345; Lieut. Charles D. Mason, director of Field Hospital No. 346; Capt. William Carstopphen, director of Field Hospital No. 347, and Capt. James Slack, director of Field Hospital No. 348. In the ambulance companies, Capt. Nolan Stewart is in command of No. 345; Capt. John B. Steele of No. 346; Lieut. Charles Lerrigo of No. 347, and Capt. Thomas McCabe of No. 348. The first three field hospitals and the first three ambulance companies are motor drawn; the fourth field hospital and the fourth ambulance company are animal drawn.

HEALTH OF THE CAMP

Health conditions at Camp Pike are in the main very good. There has been some cerebrospinal meningitis lately, the focus of infection apparently being some troops brought from a northern cantonment.

Eighty-Ninth Division, Camp Funston, Fort Riley, Kan.

ISOLATION CAMP

An isolation camp has been instituted at Camp Funston for all men who have been in contact with patients that have developed contagious or infectious diseases here. The camp is located on the Pawnee flats of the Fort Riley Reservation, and consists of tents with wooden floors and sides. The training of the isolated men, none of whom are actually sick, will proceed just the same as though they were with their organizations, as far as this is practicable. Provisional companies are being formed from men belonging to the same regiments or organizations, and these men drill as units, being carefully watched for any symptoms of disease that might develop. The colored troops have a separate portion of the camp from the white troops. The camp is under the supervision of Lieut.-Col. Frank Weed, and is officered by members of the One Hundred and Sixty-Fourth Depot Brigade. The cooks and kitchen police are also from the depot brigade, none of the "contacts" being allowed in the kitchens. Food is cooked here and carried by the men of the different groups to their tents to be eaten.

Mumps contacts, measles, meningitis carriers, meningitis contacts, tonsillitis, diphtheria, scarlet fever, and epidemic conjunctivitis contacts are all in separate groups and are not allowed to intermingle.

When the actual contacts can be ascertained, this arrangement will prevent whole companies from being quarantined, which has been the necessary and established procedure until this time.

SEARCH FOR CARRIERS

As an additional sanitary measure, cultures are being made from the throats of all men in the search for carriers. Enough men have been removed from all barracks where there are not 500 cubic feet of air per man to give the correct allowance. Beds are so arranged that the foot of one bed is opposite the head of the bed at the side of it, thus aiding in preventing droplet infection from sneezing or coughing at night. Beds must be at least 18 inches apart. An officer also inspects each barracks at midnight to see that a sufficient number of windows are opened.

DISEASE INCIDENCE

All of the diseases of the camp show a declining incidence, with the exception of measles, mumps and pneumonia. I am not permitted to give official figures.

HEALTH OF EXTRA CANTONMENT ZONE

The nearby towns of Junction City and Manhattan have become somewhat alarmed over the situation, as the result of rumors that have been fallaciously spread which are probably distorted accounts about the necessity of our sanitary precautions. They talked about quarantining soldiers from these towns, but finally reconsidered. All soldiers of the cantonment have already been prohibited by order from going to movies, attending church socials, or in any way congregating into large groups, among which may be carriers. Two cases of meningitis have developed in Manhattan and one in Junction City. As a precaution, the throats and noses of all workmen who live in these towns are being sprayed daily with dichloramin-T, the same treatment that is given the soldiers.

DISEASE CONDITIONS AMONG TROOPS
IN THE UNITED STATES

Extracts from Telegraphic Reports Received in the Office
of the Surgeon-General for the Week Ending
Nov. 23, 1917

1. Total strength of Troops in United States as reported....1,067,698
Annual admission rate per 1,000 (disease only)..... 1,619.8
Non-effective rate (all divisions)..... 38.6
2. National Guard, strength (Divisions in United States) 403,573
Annual admission rate per 1,000 all divisions (disease only) 1,732.9
Non-effective rate all divisions (all causes) 44.5
Divisions showing admission rate for disease higher than average:
Camps Bowie, Wheeler, Beauregard, Kearney, Sevier, Cody, Doniphan
and Shelby.
Divisions showing non-effective rate all causes higher than average:
Camps Bowie, Beauregard, Wheeler, Sevier, Kearney, Shelby, Cody
and MacArthur.
3. National Army, strength (Divisions in United States).....426,310
Admission rate per 1,000 all divisions (disease only).... 1,444.6
Non-effective rate all divisions (all causes) 30.7
Divisions showing admission rate for disease higher than average:
Camps Travis, Jackson, Funston, Pike, Dodge, Dix and Lewis.
Divisions showing non-effective rate all causes higher than average:
Camps Pike, Funston, Jackson, Travis, Lewis and Dix.
4. Venereal Disease—
Annual admission rate Regulars in United States..... 146.1
Annual admission rate National Guard (Divisions in U. S.).. 68
Annual admission rate National Army (Divisions of U. S.)... 69
National Guard Division having rate above average: Camps Doniphan,
Eowie, Logan, Beauregard and Wheeler.
National Army Division having rate above average: Camps Jackson,
Dix, Travis and Gordon.
5. Number of cases of pneumonia 616
Highest number in any one division(31st Division) 150
Number of cases of meningitis 77
Highest number in any one division(89th Division) 20

6. NEW CASES OF SPECIAL DISEASES REPORTED DURING
THE WEEK ENDING NOV. 23, 1917

| Division | Pneumonia | Dysentery | Malaria | Venereal | Paratyphoid | Typhoid | Measles | Meningitis | Searlet Fever | Strength of Command |
|----------------------|-----------|-----------|---------|----------|-------------|---------|---------|------------|---------------|---------------------|
| 27th, Wadsworth.. | 2 | ... | ... | 15 | ... | ... | ... | ... | ... | 31,882 |
| 28th, Hancock.... | 3 | ... | ... | 13 | ... | ... | ... | ... | ... | 28,739 |
| 29th, McClellan... | 5 | ... | 4 | 12 | ... | 1 | 17 | 1 | ... | 26,503 |
| 30th, Sevier..... | 97 | ... | 2 | 17 | ... | ... | 802 | 5 | ... | 27,385 |
| 31st, Wheeler..... | 150 | 2 | 15 | 31 | ... | ... | 496 | 3 | ... | 22,759 |
| 32d, MacArthur.. | 1 | ... | ... | 11 | ... | ... | 93 | ... | 3 | 26,661 |
| 33d, Logan..... | 13 | 3 | 4 | 64 | ... | ... | 4 | 1 | ... | 32,899 |
| 34th, Cody..... | 7 | ... | 1 | 14 | ... | ... | 226 | ... | ... | 25,673 |
| 35th, Doniphan... | 19 | ... | ... | 171 | ... | ... | 66 | 4 | 7 | 25,601 |
| 36th, Bowie..... | 36 | ... | ... | 56 | ... | ... | 1038 | 2 | ... | 27,749 |
| 37th, Sheridan.... | 4 | ... | 1 | 16 | ... | 2 | 30 | 1 | 1 | 24,104 |
| 38th, Shelby..... | 14 | 2 | 4 | 33 | ... | ... | 454 | 3 | ... | 29,268 |
| 39th, Beauregard.. | 68 | ... | 10 | 80 | ... | ... | 738 | 4 | ... | 10,987 |
| 40th, Kearney.... | 5 | ... | 2 | 13 | ... | ... | 95 | 5 | 1 | 24,549 |
| 41st, A. L. Mills... | 9 | ... | ... | 22 | ... | ... | 72 | ... | 4 | 28,811 |
| 76th, Devens..... | 2 | ... | ... | 34 | ... | ... | 11 | ... | ... | 27,025 |
| 77th, Upton..... | 2 | ... | ... | 11 | ... | ... | ... | 1 | ... | 25,444 |
| 78th, Dix..... | ... | ... | ... | 49 | ... | ... | ... | ... | ... | 16,701 |
| 79th, Meade..... | 4 | ... | ... | 10 | ... | ... | 14 | ... | ... | 33,301 |
| 80th, Lee..... | 9 | ... | 3 | 38 | ... | 1 | 75 | ... | ... | 35,056 |
| 81st, Jackson.... | 4 | 1 | 4 | 143 | ... | ... | 528 | 1 | ... | 17,341 |
| 82d, Gordon..... | 2 | ... | ... | 57 | ... | ... | 125 | 3 | ... | 33,000 |
| 83d, Sherman.... | 6 | 1 | ... | 41 | ... | ... | 13 | ... | 1 | 32,569 |
| 84th, Taylor..... | 10 | ... | ... | 8 | ... | ... | 107 | 10 | ... | 24,019 |
| 85th, Custer..... | 1 | ... | ... | 9 | ... | ... | 41 | ... | ... | 10,773 |
| 86th, Grant..... | 4 | ... | ... | 24 | ... | ... | 2 | 1 | ... | 22,569 |
| 87th, Pike..... | 51 | 1 | ... | 12 | ... | ... | 201 | 6 | 20 | 22,273 |
| 88th, Dodge..... | 12 | 1 | ... | 22 | ... | ... | 17 | ... | 5 | 21,917 |
| 89th, Funston.... | 20 | ... | ... | 17 | ... | ... | 504 | 20 | 3 | 28,649 |
| 90th, Travis..... | 26 | 1 | 10 | 70 | ... | 1 | ... | ... | ... | 30,962 |
| 91st, Lewis..... | 8 | ... | ... | 21 | ... | ... | 33 | 4 | 1 | 35,167 |

7. ANNUAL RATE PER THOUSAND FOR SPECIAL DISEASES

| | Regulars, U. S. Army, in U. S. only, 1916 | Regulars in U. S., Week Ending Nov. 23, 1917 | National Guard, All Camps, Week Ending Nov. 23, 1917 | National Army, All Camps, Week Ending Nov. 23, 1917 | American Expedi- tionary Forces, Week Ending Nov. 16, 1917 |
|--------------------|--|---|---|--|---|
| Pneumonia..... | 2.59 | 9.1 | 55.7 | 19.6 | 7.2 |
| Dysentery..... | 3.97 | 0.8 | 0.9 | 0.6 | 0.0 |
| Malaria..... | 12.52 | 1.7 | 5.4 | 2.0 | 0.9 |
| Venereal..... | 91.00 | 165.1 | 68.0 | 69.0 | 81.1 |
| Paratyphoid..... | 0.31 | 0.0 | 0.0 | 0.0 | 0.0 |
| Typhoid..... | 0.21 | 0.0 | 0.4 | 0.2 | 0.0 |
| Measles..... | 50.29 | 51.7 | 533.6 | 167.2 | 31.5 |
| Meningitis..... | 0.29 | 1.1 | 3.7 | 5.6 | 0.0 |
| Searlet fever..... | 0.59 | 1.1 | 2.1 | 3.6 | 1.3 |

ORDERS TO OFFICERS OF THE
MEDICAL CORPS

Lieut.-Col. ROBERT H. PIERSON, relieved at Camp Travis, Fort Sam Houston, Tex., and to Camp Logan, for duty as Division Surgeon.
Major HENRY P. CARTER, relieved at Camp Lee, and to Camp Logan, Houston, Tex., for duty as Division Sanitary Inspector.
Lieut.-Col. ROBERT L. CARSWELL, relieved at Fort Sam Houston, Tex., and to Camp Greene, Charlotte, N. C., for duty as Division Surgeon.
Major ISAAC W. BREWER, relieved at Fort Ethan Allen, Vt., and to Camp Greene, Charlotte, N. C., for duty as Division Sanitary Inspector.
Lieut.-Col. WILLIAM R. EASTMAN, relieved at Fort Clark, Tex., and to Camp Greene, Charlotte, N. C., for duty as Division Surgeon.
Col. FRANK R. KEEFER, relieved at the Hawaiian Dept. and to San Francisco, Calif., to report in person to the commanding general, Western Dept. for assignment to duty.
Lieut.-Col. HORACE D. BLOOMBERGH, relieved at the Hawaiian Dept. and to San Francisco, Calif., to report in person to the commanding general, Western Dept., for assignment to duty.
Major FRANK W. WEED, relieved at Camp Funston, Fort Riley, Kansas, and to Camp McClellan, Anniston, Ala., for duty as division surgeon.
Major CHESTER R. HAIG, relieved at Camp Sheridan, Montgomery, Ala., and to Hoboken, N. J., for duty with hospital to be organized at Hoffmans' Island.
Col. DEANE C. HOWARD, to the following-named camps for the purpose of inspection and on completion to his proper station, Camp Funston, Fort Riley, Kan.; Camp Beauregard, Alexandria, La.; Camp Pike, Little Rock, Ark.; Camp Sevier, Greenville, S. C.
Major EDGAR KING, to Camp May, N. J., to inspect a hotel building under consideration for use as a hospital and on completion will return to his proper station.
Col. EDWARD R. SCHREINER, now on duty at the U. S. Army General Hospital, No. 1, Williamsbridge, N. Y., be assigned in addition to his other duties, as lecturer on military medicine and surgery at the Columbia University, New York City.
Col. HENRY C. FISHER, from Camp Wheeler, Macon, Ga. to Camp Joseph E. Johnston, Jacksonville, Fla., to inspect and recommend sites for a base hospital at that place.
Major SAMUEL S. CREIGHTON, to Camp Logan, Houston, Tex., for temporary duty in connection with instruction of the Medical Dept. and upon completion to return to his proper station.
Col. WILLIARD F. TRUBY, relieved at Leon Springs, Tex., and to Fort Sam Houston, Tex., for duty in the office of the Dept. Surgeon.

ORDERS TO OFFICERS OF THE MEDICAL
RESERVE CORPS

Alabama

To Camp Beauregard, Alexandria, La., for duty, from Fort Oglethorpe, Lieut. JAMES H. PHILLIPS, Dora.
To Camp Dix, Wrightstown, N. J., base hospital, Lieut. GEORGE C. KILPATRICK, Mobile.
To Camp Greene, Charlotte, N. C., Third Division Headquarters Military Police, from Camp Greenleaf.
To Camp Wheeler, Macon, Ga., base hospital, from Camp Greenleaf, Lieuts. THOMAS K. LEWIS, JOHN D. SHERRILL, Birmingham.
To Fort Oglethorpe, Ga., for instruction, Lieut. CHARLIE H. CHAPMAN, Geneva.
To Hoboken, N. J., for duty, from Fort Oglethorpe, Lieut. GROVER C. HAMILTON, Birmingham.
To Philadelphia, Pa., Evans Dental Institute, for instruction, from Newport News, Va., Capt. MACK ROGERS, Birmingham.
To Philippine Dept. for duty, from Camp Dix, Lieut. MANNIE A. FORT, Grand Bay.
To his home and the inactive list from Camp Wheeler, Lieut. ALBERT S. ZIMMERMANN, Larkinsville.

Arizona

To Fort Oglethorpe, Ga., for instruction, from Camp-Cody, Lieut. ROGER V. PARLETT, Whiteriver.

Arkansas

To Camp Kearney, Linda Vista, Calif., base hospital, from Fort Oglethorpe, Lieut. JAMES W. RAMSEY, Jonesboro.
To Camp Shelby, Hattiesburg, Miss., base hospital, from Fort Riley, Lieut. FRED S. WATSON, Amity.
To Camp Sherman, Chillicothe, Ohio, base hospital, from Fort Benjamin Harrison, Capt. SCOTT C. RUNNELS, Little Rock.
To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Riley, Lieut. WYLIE R. FELTS, Judsoma.

California

To Camp Kearney, Linda Vista, Calif., base hospital, Capt. BYRON P. STOOKEY, Los Angeles; Lieut. HARRY E. FOSTER, Berkeley.
To Camp Lewis, American Lake, Wash., base hospital, Lieut. FREDERICK A. COLLIER, Los Angeles.
To Camp Meade, Annapolis, Md., base hospital, from Post-Graduate Medical School, New York City, Lieut. THOMAS R. PETCH, Eureka.
To his home and honorably discharged from Camp Kearney, Lieut. CHARLES H. FREEMAN, Oakland.
To the inactive list, from Fort Oglethorpe, Lieut. ANDREW B. WESSELS, San Diego.

Canal Zone

To Fort Oglethorpe, for instruction, from Army Medical School, Lieut. WILLIAM B. FOSTER, JR., Ancon.

To Walter Reed General Hospital, Takoma Park, D. C., for duty, from treatment at the Walter Reed General Hospital, Major WILLIAM A. DUNCAN, Ancon.

Colorado

To Camp Bowie, Fort Worth, Texas, base hospital, Capt. LEWIS B. McKINNIE, Colorado Springs.

Honorably discharged on account of being physically disqualified for active service, Lieut. LOUIS A. PACKARD, Denver.

Connecticut

To Army Medical School, Washington, D. C., for orthopedic instruction, from Camp Bartlett, Lieut. WILLIAM F. COLLINS, New Haven.

To Camp Funston, Fort Riley, Kan., Eighty-Ninth Division for duty, from Fort Benjamin Harrison, Lieut. EDWARD J. HOWLAND, Colchester.

To Camp Travis, Fort Sam Houston, Tex., for duty, from Fort Oglethorpe, Lieut. ARTHUR F. McDONALD, Waterbury.

To Camp Upton, L. I., N. Y., as member of board for examination of command for tuberculosis, from Walter Reed General Hospital, Lieut. RAYMOND V. QUINLAN, Meriden.

To Camp Wheeler, Macon, Ga., base hospital, from Fort Oglethorpe, Lieut. GEORGE H. DALTON, New Britain.

To Hoboken, N. J., for duty, from Fort Oglethorpe, Lieut. SYDNEY V. KIBBY, Hartford.

To New Haven, Conn., for duty as a medical member of examining board and recruiting officer, Lieut. JAMES A. HONEIJ, New Haven.

To New York City, Neurological Institute, for intensive training in brain surgery, Capt. DANIEL C. PATTERSON, Bridgeport; from Psychopathic Hospital, Boston, Capt. OTTO G. WIEDMAN, Hartford.

To Philadelphia, Pa., Evans Dental Institute, for instruction, from Camp Greenleaf, Lieut. WATERMAN LYON, New Britain.

To Portland, Ore., for assignment to duty with aero squadrons from Fort Riley, Lieut. WILLIAM P. BALDWIN, New Haven.

To the inactive list, from Fort Oglethorpe, Lieut. GEORGE P. CHENEY, New London.

Delaware

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Oglethorpe, Lieut. BRUCE H. BEELER, Wilmington.

District of Columbia

To Army Medical School, Washington, D. C., for instruction in orthopedic work, Lieut. JOHN A. TALBOTT, Washington.

To New York City, for a course of instruction in urology, from Pittsburgh, Lieut. IVY A. PELZMAN, Washington.

To Washington, D. C., for duty in the Surgeon-General's Office, Capt. SCOTT D. BRECKINRIDGE, Washington.

Florida

To Camp Bowie, Fort Worth, Texas, for duty, from Fort Oglethorpe, Lieut. HARPER L. PROCTOR, Jacksonville.

To Camp Greene, Charlotte, N. C., Headquarters Military Police, from Camp Greenleaf, Lieut. SHORES E. CLINARD, Gretna.

To Hoboken, N. J., for duty, from Fort Oglethorpe, Lieut. JOHN C. HOLLEY, Pace.

To report to the Commanding General, Southeastern Department, for assignment to duty, from Chickamauga Park, Ga., Lieut. T. Z. GASON, Jacksonville.

Georgia

To Atlanta, Ga., Aviation Section, Signal Corps, Emory University, for duty, Lieut. ERNEST S. COLVIN, Atlanta.

To Camp Greene, Charlotte, N. C., Headquarters Military Police, from Camp Greenleaf, Lieut. RUFUS T. GRAHAM, Stillmore.

To Camp Wheeler, Macon, Ga., Headquarters Military Police, from Fort Oglethorpe, Lieut. JAMES H. MacDUFFIE, JR., Columbus.

To Fort Logan H. Roots, Ark., for temporary duty, from Camp Greenleaf, Lieut. BENJAMIN H. MINCHEW, Waycross.

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Oglethorpe, Lieut. EARL K. LAZENBY, Camak.

To Rockefeller Institute, New York City, for instruction in pneumonia, and on completion to Camp Gordon, base hospital, Lieut. JAMES H. BUTLER, Augusta.

Idaho

To Camp Wheeler, Macon, Ga., Thirty-First Division, as member of board for examination of command for tuberculosis, from Camp Doniphan, Lieut. CLYDE E. WATSON, Nampa.

Illinois

To Ann Arbor, Psychopathic Hospital, for intensive training in his specialty, from Fort Benjamin Harrison, Lieut. CARL G. S. RYDIN, Chicago.

To Army Medical School, Washington, D. C., for instruction in orthopedic surgery, Lieut. CARROLL L. STOREY, Oberlin.

To Boston, for duty, from Camp Grant, Major THOMAS A. WOODRUFF, Chicago.

To Camp Custer, Battle Creek, Mich., Eighty-Fifth Division, for duty from Fort Benjamin Harrison, Capt. WILLIAM J. UPPENDAHL, Peoria.

To Camp Doniphan, Fort Sill, Okla., for duty, from Fort Oglethorpe, Lieut. DAVID R. SCOTT, Macomb.

To Camp Hancock, Augusta, Ga., Twenty-Eighth Division, for duty, from Fort Benjamin Harrison, Lieut. ALEXANDER A. DRILL, Chicago.

To Camp Gordon, Atlanta, Ga., base hospital, from Fort Benjamin Harrison, Lieut. GILBERT M. LOEWE, Chicago; as member of board for examination of command for tuberculosis, from Camp Sheridan,

Montgomery, Ala., Lieut. JAMES A. BRITTON, Chicago; from Fort Benjamin Harrison, Lieut. OTTO J. SCHOTT, Chicago.

To Camp Greene, Charlotte, N. C., Headquarters Military Police, from Camp Greene, Capt. GEORGE A. KELSO, Chicago.

To Camp Logan, Houston, Texas, base hospital, Lieut. OLIVER C. HARGREAVES, Chicago.

To Camp Pike, Little Rock, Ark., for duty, from Fort Oglethorpe, Lieut. HERSCHEL V. BRUNKER, Casey.

To Camp Shelby, Hattiesburg, Miss., for duty, from Fort Oglethorpe, Lieut. MAURICE WILLIAMSON, Alton.

To Camp Sherman, Chillicothe, Ohio, base hospital, from Fort Benjamin Harrison, Lieut. ADOLPH M. TEIXLER, Chicago.

To Camp Upton, L. I., N. Y., base hospital, from Post-Graduate Medical School, New York City, Lieut. GEORGE E. O'GRADY, Chicago.

To Camp Wadsworth, Spartanburg, S. C., for duty, from Fort Benjamin Harrison, Capt. NATHAN S. DAVIS, Chicago.

To Camp Wheeler, Macon, Ga., base hospital, from Fort Benjamin Harrison, Lieut. MAURICE W. BYRNE, Chicago; as member of tuberculosis examining board, from Fort Benjamin Harrison, Lieut. EDWARD BUCKMAN, Chicago; from Fort Sill, Lieut. EDWARD G. SEPPELE, Chicago.

To Fort Riley, Kan., for instruction, Lieut. RAYMOND F. ELMER, Chicago; NORTON W. BOWMAN, Flora.

To Hoboken, N. J., for duty, from Fort Oglethorpe, Lieut. PETER T. SPURCK, Peoria.

To Montgomery, Ala., for duty, from Fort Benjamin Harrison, Capt. CHARLES DUDLEY, Chicago.

To Pittsburgh, for instruction in military roentgenology, from Fort Oglethorpe, Lieut. ELMER M. SMITH, Georgetown.

To Portland, Maine, for duty, from Camp Greenleaf, Lieut. JAMES A. VALENTINE, Newman.

To Kelly Field, San Antonio, Texas, for duty, from Fort Benjamin Harrison, Lieut. WILLIAM E. MERCER, Liberty.

Honorably discharged, Lieut. MERLE H. WHITLOCK, Canton.

To his home and the inactive list, from Camp Taylor, Major FREDERICK MENGE, Chicago.

To his home and the inactive list, on account of being physically disqualified for active service, Lieut. AUSTIN I. BROWN, Murphysboro.

Indiana

To Anniston, Ala., base hospital, from Fort Benjamin Harrison, Lieut. JESSE L. STOWERS, Indianapolis.

To Camp Devens, Ayer, Mass., base hospital, from Fort Benjamin Harrison, Lieut. ROBERT C. COCHRANE, Indianapolis.

To Camp Meade, Annapolis Junction, Md., base hospital, from Orthopedic Hospital, New York City, Lieut. LOUIS A. BOLLING, Attica.

To Camp Sherman, Chillicothe, Ohio, for duty, from Fort Oglethorpe, Lieut. BROSE S. HORNE, Gas City.

To Camp Wheeler, Macon, Ga., base hospital, from Fort Benjamin Harrison, Capt. JAMES W. DUCKWORTH, Indianapolis; Lieut. JOHN W. PAHMEIER, Indian Springs.

To Oklahoma City, Okla., for instruction in orthopedic surgery, from Camp Cody, Lieut. REAVILL M. WALDEN, Evansville.

To Pittsburgh, for instruction in military roentgenology, from Allentown, Pa., Lieut. HARRY O. JONES, Berne.

To his home and honorably discharged, from Camp Grant, Capt. DANIEL A. CAMPBELL, Boonville.

To his home and honorably discharged, on account of being physically disqualified for active service, from Camp Grant, Lieut. GEORGE C. CARPENTER, Terre Haute.

Honorably discharged, from Camp MacArthur, Lieut. SIDNEY G. CORTNER, Olisco.

Iowa

To Camp Beauregard, Alexandria, La., base hospital, from Fort Riley, Lieut. ARLO R. ZUERCHER, Cedar Rapids.

To Camp Dodge, Des Moines, Iowa, base hospital, Lieut. EDWARD T. EDGERLY, Ottumwa.

To Fort Ontario, N. Y., for duty in his specialty, from St. Elizabeth's Hospital, Washington, D. C., Capt. RICHARD G. EATON, Cherokee.

To Hoboken, N. J., for duty, from Fort Oglethorpe, Lieut. HOWARD M. WILLIAMSON, Olin.

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Riley, Lieut. ROSCOE D. TAYLOR, Spencer.

To Pittsburgh, Pa., for instruction, and on completion to Fort McHenry, Md., for duty with United States Army General Hospital No. 2, Capt. JOHN R. WALKER, Fort Madison.

To Portland, Ore., for assignment to duty with aero squadrons, from Fort Riley, Lieut. JOHN E. STANSBURY, Cedar Rapids; JAMES H. O'DONOGHUE, Storm Lake.

To San Antonio, Texas, Kelly Field, for duty, from Fort Benjamin Harrison, Lieut. DONALD McELDERRY, Ottumwa.

Kansas

To Fort Riley, Kan., for duty, from Fort Riley, Lieut. ANDREW ENGBERG, McPherson; THOMAS M. GREENWOOD, Circleville; CLYDE L. MORRIS, Kansas City.

To Kenosha, Wis., The Nash Motors Co., for duty, from Fort Riley, Lieut. CHARLES V. HAGGMAN, Scandia.

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Riley, Lieut. THOMAS S. VENARD, Ness City.

To Oklahoma City, Okla., for instruction in orthopedic work, from Douglas, Ariz., Lieut. MARION TRUEHART, Sterling.

To Portland, Ore., for assignment to duty with aero squadrons, from Fort Riley, Lieut. EMANUEL H. CLAYTON, Arkansas City; WILLIAM A. McCULLOUGH, Delevan.

To the inactive list, on account of being physically disqualified for active service, Lieut. ROBERT E. EGGAN, Springfield.

Kentucky

To Camp Cody, Deming, N. M., base hospital, from Fort Benjamin Harrison, Lieut. GEORGE A. CRAFTON, Fulton.

To Camp Lewis, American Lake, Wash., for duty, from Fort Oglethorpe, Lieut. TIMOTHY T. GIBSON, Middlesboro.

To Camp MacArthur, Waco, Texas, from Fort Benjamin Harrison, Lieut. LEONARD CHAMPION, Cadiz.

To Camp McClellan, Anniston, Ala., for duty with Headquarters Military Police, from Camp Greenleaf, Lieut. LOGAN FELTS, Lewisburg.

To Camp Taylor, Louisville, Ky., base hospital, from University of Pennsylvania, Major WALLER C. BULLOCK, Lexington; Capt. JOHN J. MOREN, Louisville.

To Fort Riley, Kan., for duty, Capt. JOHN L. FARMER, Allensville.

To Hoboken, N. J., for duty, from Fort Oglethorpe, Lieut. WILLIAM H. NASH, Finchville.

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Oglethorpe, Lieuts. HIRAM S. EGGERS, Louisville; ROBERT A. IRVIN, Clay City.

To Philadelphia, Pa., Evans Dental Institute, for instruction, Lieut. WILLIAM G. ECKMAN, Covington.

To Portland, Ore., for assignment to duty with aero squadrons, from Fort Riley, Lieuts. PAUL D. MOORE, Calliown; WALTER COX, Lexington.

Louisiana

To Camp Beauregard, Alexandria, La., as member of board for examination of command for tuberculosis, Lieut. HENRY C. LOCHTE, New Orleans.

To Philadelphia, Pa., Evans Dental Institute, for instruction, from Fort Oglethorpe, Capt. JOHN SMYTH, New Orleans.

To Salt Lake City, Utah, to establish a Physical Examining Unit at that place, from Aviation Section Signal Corps, Seattle, Wash., Lieut. LOUIS LEVY, New Orleans.

Maine

To Camp Joseph E. Johnston, Jacksonville, Fla., base hospital, from Camp Gordon, Capt. BERTRAND D. RIDLON, Portland.

To Pittsburgh, Pa., for instruction, and on completion to Fort Riley, base hospital, from Fort Riley, Lieut. FRANK W. MERRITT, Jay.

Maryland

To Camp Gordon, Atlanta, Ga., as member of board for examination of command for tuberculosis, from Camp Sheridan, Lieut. ALGERNON D. ATKINSON, Baltimore.

To Camp Logan, Houston, Texas, as assistant to division surgeon, from Camp Greenleaf, Capt. THOMAS R. CHAMBER, Baltimore.

To Camp Meade, Annapolis Junction, base hospital, Lieut. FRANK C. MARINO, Baltimore.

To Fort Myer, Va., for duty, from Washington Barracks, Capt. MAYNARD J. SIMMONS, Indian Head.

To Memphis, Tenn., Aviation School, Park Field, for duty, from Fort Benjamin Harrison, Capt. COMPTON WILSON, Friendship.

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Oglethorpe, Lieut. ALEXANDER B. KALBAUGH, Western Port.

To Philadelphia, Pa., Evans Dental Institute, base hospital, Capt. HUGH W. BRENT, Baltimore.

Honorably discharged, on account of being physically disqualified for active service, Lieut. JAMES ETHERIDGE, Baltimore.

Massachusetts

To Army Medical School, Washington, D. C., for instruction in orthopedic surgery, from Camp Devens, Lieut. RICHARD A. CUNNINGHAM, Boston.

To Boston, Mass., Aviation Section, Signal Corps, as member of examining board No. 2, Capt. ROBERT F. SOUTHER, Boston; as member of examining board No. 1, Lieut. WILLIAM J. HARKINS, Boston.

To Camp Devens, Ayer, Mass., base hospital, from University of Pennsylvania, Major WILLIAM F. WESSELHOEFT, Boston; Lieuts. WILLIAM F. WOOD, Boston; from Fort Benjamin Harrison, SOMERS FRASER and RICHARD J. R. CAINES, Boston.

To Camp Sevier, Greenville, S. C., base hospital, from Fort Benjamin Harrison, Lieut. JOHN W. TRASK, Lynn.

To Camp Sheridan, Montgomery, Ala., base hospital, from Fort Benjamin Harrison, Lieut. WYATT S. ROBERTS, Boston.

To Camp Wheeler, Macon, Ga., base hospital, from Fort Benjamin Harrison, Lieut. EDMUND A. ROGERS, Boston.

To Fort Adams, Miss., for duty, from Camp Devens, Lieut. VICTOR S. MERRITT, Springfield, Mass.

To Fort Oglethorpe, Ga., for instruction, from Boston Psychopathic Hospital, Lieut. WILLIAM T. RUMAGE, Arlington.

To Fort Riley, Kan., base hospital, from Fort Riley, Lieut. LEON NEWMAN, Boston.

To Fort Terry, N. Y., for duty, from Camp Devens, Capt. ARTHUR P. PERRY, Boston.

To New York City, Neurological Institute, for instruction in his specialty, from Camp Greene, Lieut. ALFRED P. CHRONQUEST, Hathorne.

To Rockefeller Institute, for instruction, and on completion to his home and the inactive list, Major THOMAS E. CHANDLER, Boston; Lieut. MILE C. GREEN, Boston.

Michigan

To Camp Greene, Charlotte, N. C., Third Division, for duty as division sanitary inspector, from Camp Greenleaf, Major SAMUEL C. GURNEY, Detroit.

To Fort Riley, Kan., for instruction, Lieut. NATHAN J. JESSUP, Detroit.

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Benjamin Harrison, Capt. CHARLES E. LONG, Grand Haven; from Fort Riley, Lieut. WILLIAM H. MEDDAUGH, Sand Creek.

To Peoria, Ill., The Holt Tractor Co., for duty, from Fort Riley, Lieut. EDWARD P. WAID, Salem.

To Pittsburgh, Pa., for instruction in military roentgenology, from Fort Oglethorpe, Lieut. JESSE O. PARKER, Owasso.

To Portland, Ore., for assignment to duty with aero squadrons, from Fort Riley, Lieut. HARVEY B. McCRORY, Birch Run.

To San Antonio, Kelly Field, for duty, from Fort Benjamin Harrison, Capt. HENRY S. BARTHOLOMEW, Lansing.

To Walter Reed General Hospital, Takoma Park, D. C., for duty, from orthopedic hospital, New York City, Lieut. HAROLD A. BECK, Detroit.

To his home and honorably discharged, on account of being physically disqualified for active service, from Fort Benjamin Harrison, Capt. EDWARD C. RUMER, Flint.

Minnesota

To Camp Custer, Battle Creek, Mich., base hospital, from Allentown, Pa., Lieut. HERBERT H. THOMPSON, St. Paul.

To Camp Pike, Little Rock, Ark., base hospital, from Fort Benjamin Harrison, Lieut. PAUL R. HANKEE, Camion Falls.

To Camp Shelby, Hattiesburg, Miss., base hospital, from Fort Riley, Lieut. LLOYD T. DAVIS, Minneapolis.

To Fort Riley, Kan., base hospital from Fort Riley, Lieut. WILLIAM J. EGAN, Rochester.

To Minneapolis, Aviation Section, Signal Corps, for duty, Capt. ALOYSIUS S. FLEMING, Minneapolis.

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Riley, Lieut. BENJAMIN W. KELLY, Aitken.

To Portland, Ore., for assignment to duty with aero squadrons, from Fort Riley, Lieuts. THORFINN THARALDSON, Cottonwood; NELS P. ANDERSON, Dunnell.

Mississippi

To Camp Greene, Charlotte, N. C., Third Division, for duty as assistant to divisionsurgeon, from Camp Greenleaf.

To Camp Lee, Petersburg, Va., for duty, Lieut. GEORGE BASKEVILLE, Winona.

To Fort Riley, Kan., for instruction, Lieut. CLEVELAND DAVIS, Morgan City.

To his home and the inactive list, on account of being physically disqualified for active service, from Camp Meade and Walter Reed General Hospital, Lieut. CANNING T. BELL, De Kalb.

Missouri

To Camp Beauregard, Alexandria, La., base hospital, from Fort Riley, Lieut. RALPH L. COOK, St. Louis.

To Camp Funston, Fort Riley, Kan., for duty as division sanitary inspector, Capt. FRANK L. MORSE, St. Louis.

To Camp Pike, Little Rock, Ark., for duty, from Fort Riley, Lieut. PAUL B. CLAYTON, Odessa.

To Camp Taylor, Louisville, Ky., as member of board for examination of command for tuberculosis, Lieut. ROY W. JOHNSON, St. Louis.

To Camp Wheeler, Macon, Ga., base hospital, from Camp Greenleaf, Lieut. LLOYD L. TATE, St. Louis.

To Fort Ontario, N. Y., for duty, from Fort Riley, Lieut. WILLIAM L. KENNEY, St. Joseph.

To Fort Riley, Kan., for duty, from Fort Riley, Lieut. EVERETT L. MORGAN, Graham; for instruction, Lieut. GEORGE O. WILHITE, St. Louis.

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Riley, Lieuts. JOHN H. TIMBERMAN, Marston; EDWARD C. WITTWER, Mountain Grove; FRANK HEDGES, Pattonsburg; St. Joseph.

Montana

To Clintonville, Wis., The Four Wheel Drive Co., for duty, from Fort Riley, Lieut. EDWARD A. SWEET, Helena.

To Fort Riley, Kan., base hospital, from Fort Riley, Lieut. EDWARD D. O'NEILL, Kalispell.

Nebraska

To Camp Greenleaf, Fort Oglethorpe, Ga., base hospital, from Camp Greenleaf, Capt. EGERTON T. WILSON, O'Neill.

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Riley, Lieut. IRVIN C. MUNGER, Lincoln.

To Portland, Ore., for assignment to duty with aero squadrons, from Fort Riley, Lieut. WILLIAM E. DOANE, North Bend.

To Presidio, San Francisco, Calif., for duty as acting quartermaster, from Fort Riley, Lieut. HENRY A. JOHNSON, Tekamah.

Nevada

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Riley, Lieut. WILLIAM L. HOWELL, Gardnerville.

New Hampshire

To Camp Custer, Battle Creek, Mich., for duty, from Fort Benjamin Harrison, Capt. CHARLES A. STURTEVANT, Manchester.

To Camp McClellan, Anniston, Ala., for duty as division sanitary inspector, from Fort McKinney, Me., Major HERBERT I. HARRIS, Fort Constitution.

To Camp Wheeler, Macon, Ga., base hospital from Fort Oglethorpe, Capt. HENRY L. STICKNEY, Manchester.

New Jersey

To Camp Dix, Wrightstown, N. J., base hospital, Lieuts. JAMES S. GREEN, Elizabeth; from Camp Sevier, JAMES F. WALLIS, Pleasantville.

To Camp Joseph E. Johnston, Jacksonville, Fla., base hospital, from Camp Sevier, Lieut. WALTER F. KEATING, Ridgewood.

To *Camp Lee*, Petersburg, Va., for duty, from Fort Oglethorpe, Lieut. FRANK L. FIELD, Far Hills.

To *Camp Upton*, L. I., N. Y., base hospital, from Post Graduate Medical School, New York City, Lieut. ROCCO M. NITTOLI, Newark.

To *Fort Riley, Kan.*, for instruction, Lieuts. LEROY L. COLSH, Maplewood; NEIL C. STEVENS, Morristown.

To *Governors Island, N. Y.*, for duty with the 413th Telegraph Battalion, Lieut. ABSALOM A. LAWTON, Somerville.

To *Newport News, Va.*, for duty, from Walter Reed General Hospital, Takoma Park, D. C., Capt. MAURICE ASHER, Newark.

To *Philadelphia, Pa.*, Evans Dental Institute, for instruction, from Camp Greenleaf, Lieut. THOMAS A. CLAY, Paterson.

To *Philadelphia, Pa.*, University of Pennsylvania, for instruction, and on completion to *Camp Dix*, base hospital, Lieut. NELSON K. BENTON, Newark.

To *Washington Barracks*, Washington, D. C., for duty, from American University, Lieut. ANTHONY G. SACCO, West Hoboken.

New Mexico

To *Camp Wheeler*, Macon, Ga., Thirty-First Division, as member of board for examination of command for tuberculosis, from Camp Doniphan, Lieut. ORIN J. WHITCOMB, Raton.

To *Fort Oglethorpe, Ga.*, for instruction, from Camp Cody, Capt. OLIVER H. HAYMAKER, Roswell.

New York

To *Albany, N. Y.*, for duty with base hospital No. 33, from Fort Niagara, Lieut. FREDERICK W. McSORLEY, Salem.

To *Ann Arbor, Mich.*, Psychopathic Hospital, for intensive training in his specialty, from Fort Benjamin Harrison, Capt. REEVE TURNER, New York City.

To *Army Medical School*, Washington, D. C., for instruction in orthopedic surgery, from Fort Niagara, Major FREDERICK N. C. JERAULD, Niagara Falls; Capt. SURSE J. TAYLOR, Albany, from Fort Ethan Allen, Lieut. GEORGE J. GANOW, Fort Dickinson; from Fort Benjamin Harrison, Lieut. MELVIN G. HERZFELD, New York City.

To *Boston, Mass.* for orthopedic instruction, from Fort Ethan Allen, Lieut. WALTER J. SMITH, Waterville.

To *Camp Beauregard*, Alexandria, La., base hospital, from Rockefeller Institute, Capt. MORRIS B. BEECROFT, Albany.

To *Camp Cody*, Deming, N. M., for duty, from Fort Benjamin Harrison, Lieuts. LEON H. PRIOR, Buffalo; SAMUEL ROTH, New York City.

To *Camp Devens*, Ayer, Mass., as member of board for examination of command for tuberculosis, Capt. BRUNO S. HOROWICZ, New York City; from Fort Benjamin Harrison, Lieut. ALBERT BOWEN, Rochester.

To *Camp Dix*, Wrightstown, N. J., base hospital, from Plattsburg Barracks, N. Y., Major MENUS S. GREGORY, New York City; from Fort Benjamin Harrison, Lieut. ELLSWORTH J. SMITH, Larchmont.

To *Camp Greene*, Charlotte, N. C., for duty as division sanitary inspector, from Fort Ethan Allen, Major ISAAC W. BREWER, Geneva.

To *Camp Greenleaf*, Fort Oglethorpe, for duty from Camp Greenleaf, Lieut. JOHN H. FLYNN, Brooklyn.

To *Camp Hancock*, Augusta, Ga., base hospital, from Augusta, Ga., Capt. SAMUEL M. STRONG, New York City; from Fort Benjamin Harrison, Lieut. VALENTINE V. BOURKE, Brooklyn.

To *Camp Logan*, Houston, Texas, for duty, from Fort Benjamin Harrison, Lieut. GEORGE W. BEEBE, St. Johnsville.

To *Camp Meade*, Annapolis Junction, Md., for duty, from Army Medical School, Lieut. SAUL L. MEYLACKSON, New York City; from Fort Oglethorpe, Lieuts. LEE A. HADLEY, Syracuse; WILLIAM BLANCARD, New York; from New York City, Lieuts. SAMUEL PAR-NASS, Brooklyn; WILLIAM G. PHILLIPS, JR., Brooklyn.

To *Camp Mills*, Garden City, L. I., for duty, Capt. CONSTANTINE J. MacGUIRE, New York City.

To *Camp Sevier*, Greenville, S. C., base hospital, from Fort Benjamin Harrison, Lieut. LOUIS B. SACHS, New York.

To *Camp Sheridan*, Montgomery, Ala., for duty, from Fort Oglethorpe, Lieut. BRICKHOUSE WILSON, New York City.

To *Camp Upton*, L. I., N. Y., base hospital, from Fort Porter, Major HOWARD FOX, New York City; from Fort Benjamin Harrison, Lieut. ARBOR D. MUNGER, Brooklyn; from New York City, Lieut. MAURICE LENZ, New York; from University of Pennsylvania, Lieut. RICHARD F. SEIDENSTICKER, Brooklyn.

To *Camp Wheeler*, Macon, Ga., base hospital, and on completion to his proper station, Major HANS ZINSSER, New York City; as member of tuberculosis examining board, from Fort Benjamin Harrison, Lieut. MAXWELL K. WILLOUGHBY, Auburn; for duty, from Fort Terry, Lieut. GEORGE N. ACKER, Second, New York City; from Camp Greenleaf, Lieuts. HAROLD B. SCOVERN, New York City; BENJAMIN C. RUSSUM, Brooklyn; JAMES E. WEATHERFORD, Brooklyn; WARREN C. FARGO, New York City.

To *Fort Benjamin Harrison, Ind.*, for duty from Fort Porter, Major JUNIOUS H. McHENRY, New York City.

To *Fort Oglethorpe, Ga.*, for duty with Evacuation Hospital No. 6, from Fort Jay, N. Y., Lieut. ALBERT MARGULIES, Brooklyn.

To *Fort Riley, Kan.*, for duty in his specialty, from Camp Wheeler, Capt. ROBERT KING, Buffalo; for instruction Capt. MARK H. WARD, Suffern; Lieuts. MATHER CLEVELAND, THEODORE B. REED, New York City; for duty, Lieut. EDWARD H. McCAFFREY, Brooklyn; for temporary duty in the base hospital, from Rockefeller Institute, Lieut. WALTER P. BLISS, New York City.

To *Montgomery, Ala.*, for duty, from Fort Benjamin Harrison, Capt. EDGAR S. BULLIS, Glens Falls; GUSTAVUS C. DARLINGTON, New York City; from Fort Oglethorpe, Lieuts. MAX DOBRIN, PERRY L. HELMICK, New York City.

To *Newport News, Va.*, for duty at Camp Stuart, from Camp Greenleaf, Lieut. HENRY S. BARTHOLOMEW, New York City.

To *New York City*, for duty with Base Hospital No. 3, from Rockefeller Institute, Major GEORGE BAEHR, New York City; to *Bellevue Hospital*, for instruction, and on completion to *U. S. Army General Hospital, No. 1*, Williams Bridge, New York, for duty, from Allentown, Pa., Lieut. THOMAS E. LAVELLE, New York City; for instruction in orthopedic surgery, from Camp Bartlett, Lieut. IRA W. LIVERMORE, Gowanda; for duty, from Aviation Section, Signal Corps, Lieut. FEDOR L. SENER, Brooklyn; to *Vanderbilt Clinic*, Cornell Medical College, from School of Roentgenology, Lieut. HARRY R. FOERSTER, New York City.

To *Pittsburgh, Pa.*, for instruction in military roentgenology, from Fort Oglethorpe, Lieut. WILLIA MENGEL, New York City.

To *Philadelphia, Pa.*, Evans Dental Institute, for instruction, Capt. HARRY B. HUVER, Williamsburg; on completion to his home and the inactive list, Lieut. ALEXANDER L. SMITH, Rochester.

To *Plattsburg Barracks*, New York, to reexamine certain candidates for commissions, and on completion of this duty to his proper station, Capt. SANGER BROWN, Second, White Plains.

To *Rockefeller Institute*, for instruction in laboratory work, Lieuts. HARRY PLOTZ, Brooklyn; from Army Medical School, JULIAN S. MEYER, New York; HARRY C. SCHMEISSER, New York City.

To *Tenafly, N. J.*, for duty, from Army Medical School, Lieut. BRYON D. WHITE, Brooklyn.

To his home and the inactive list, Capt. JOSEPH McDONALD, New York.

To his home and the inactive list on account of being physically disqualified for active service, from Camp Wheeler, Lieut. HENRY S. FRUITNIGHT, New York City.

To his home, from Camp Gordon, Lieut. CARLTON A. LEE, Brooklyn.

Honorably discharged, Capt. LOUIS HAUSWIRTH, New York City; Lieut. ALFRED BRAUN, New York City.

North Carolina

To *Neurological Institute*, New York, for instruction, Capt. EDWIN B. FEREBEE, Raleigh.

To *New York City*, Bellevue Hospital, for instruction and on completion of this course to *Rockefeller Institute*, for further instruction and on completion to *Camp Sheridan*, base hospital, Capt. EVERETT A. LOCKETT, Winston-Salem.

To report by wire to the commanding general, Southeastern Dept., from Chickamauga Park, Lieuts. LOUIS H. WEBB, Chapel Hill; NEWTON G. WILSON, Summerfield.

North Dakota

To *Camp Beauregard*, Alexandria, La., base hospital, from Fort Riley, Lieut. GEORGE V. JAMIESON, Devils Lake.

To *Camp Shelby*, Hattiesburg, Miss., base hospital, from Fort Riley, Lieut. JOHNSTON C. JACKMAN, Minot.

To *Fort Riley, Kan.*, base hospital, from Fort Riley, Lieut. ADOLPH G. MAERCKLEIN, Ellendale.

To *Montgomery, Ala.*, Aviation Mobilization Camp, for duty, from Fort Riley, Lieut. HIRAM LaM. YOUTZ, Willow City.

To *New York City*, Neurological Institute, for intensive training in brain surgery, from Fort Benjamin Harrison, Capt. JAMES P. AYLEN, Fargo.

Ohio

To *Camp Dix*, Wrightstown, N. J., for duty, from Fort Benjamin Harrison, Lieut. SAMUEL J. ELLISON, West Union.

To *Camp Dodge*, Des Moines, Ia., base hospital, from Fort Oglethorpe, Lieut. ROBERT R. SATTler, Cincinnati; from Fort Benjamin Harrison, Lieut. RALPH W. FAUS, Wellington.

To *Camp Grant*, Rockford, Ill., for duty, from Fort Benjamin Harrison, Lieut. EDWIN G. SCHWARZ, Cleveland.

To *Camp Jackson*, Columbia, S. C., for duty, from New York City, Lieut. GEORGE B. BOOTH, Toledo.

To *Camp Sevier*, Greenville, S. C., for duty, from Fort Benjamin Harrison, Lieut. ARTHUR W. CARLEY, Dayton.

To *Fort Oglethorpe, Ga.*, for a course of instruction, from Camp Cody, Lieuts. FRANK E. SNIDER, Madisonville; from Post Graduate Hospital, New York City, BARNEY J. HEIN, Toledo.

To *Fort Riley, Kan.*, for a course of instruction, Lieut. FRED L. ANDREWS, Cleveland.

To *Oklahoma City, Okla.*, for a course of instruction in orthopedic surgery, Lieut. ZALMON O. SHERWOOD, Geneva.

To *Philadelphia*, Evans Dental Institute, for a course of instruction and upon completion of this course to return to his proper station, from Columbus Barracks, Capt. GEORGE C. SCHAEFFER, Columbus.

To *Washington, D. C.*, for duty as pharmacologist at the American University, from Gas School, Fort Sill, Ark., Capt. JAMES D. PILCHER, Cleveland; to Government Hospital for Insane, for duty, from Army General Hospital, No. 1 Capt. WILLIAM A. SEARL, Cuyahoga Falls.

To his home and honorably discharged from the Medical Reserve Corps, on account of being physically disqualified for active service, from Camp Wadsworth, Lieut. CHARLES C. MANDEVILLE, Galien.

To his home and relieved from further active duty in the Medical Reserve Corps, from Fort Des Moines, Lieut. LOUIS A. CORNISH, Cincinnati.

Honorably discharged from the Medical Reserve Corps on account of being physically disqualified for active service, Lieut. JERRARD W. COOMBS, Camden.

Oklahoma

To *Fort Riley, Kan.*, base hospital, from Fort Riley, Lieut. CHARLES C. GARDNER, Ashland.

To Hoboken, N. J., for duty, from Fort Oglethorpe, Lieut. THOMAS M. BOYD, Norman.

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Oglethorpe, Lieut. JAMES R. BOST, Cashion.

To Portland, Oregon, for assignment to duty with aero squadrons, from Fort Riley, Lieuts. FRANK R. BUCHANAN, Canton; PENDELTON GARDNER, Haileyville.

To Camp Travis, Fort Sam Houston, Tex., base hospital, Lieut. ARTHUR T. BLACHLY, Portland.

To Hoboken, N. J., for duty, from Fort Oglethorpe, Lieut. LEONARD M. VINCENT, Crane.

Pennsylvania

To Army Medical School, Washington, D. C., bacteriologic laboratory, from Fort Benjamin Harrison, Lieut. SOLOMON F. HOGE, Philadelphia.

To Camp Custer, Battle Creek, Mich., for duty, from Fort Benjamin Harrison, Lieut. HENRY B. INGLE, Bedford Springs.

To Camp Greene, Charlotte, N. C., for duty with Headquarters Military Police, from Camp Greenleaf, Lieut. JOSEPH J. AUSTRA, Philadelphia.

To Camp Greenleaf, Fort Oglethorpe, for instruction, Lieut. JAMES C. McCONAUGHEY, Wayne.

To Camp Lee, Petersburg, Va., base hospital, from University of Pennsylvania, Lieut. FREDERICK J. GARLICK, Philadelphia.

To Camp Logan, Houston, Tex., base hospital, from Orthopedic Hospital, New York, Lieut. RALPH L. RUTLEDGE, McKeesport.

To Camp Meade, base hospital, Capt. EDWARD McI. HALEY, Blossburg.

To Camp Mills, Garden City, L. I., base hospital, from New York, Lieut. JOHN W. FREY, Ovalon.

To Camp Sherman, base hospital, Lieut. LAWRENCE H. FITZGERALD, Pittsburgh.

To Camp Taylor, Louisville, Ky., for duty, from Fort Oglethorpe, Lieut. CLARENCE H. KETTERER, Butler.

To Camp Travis, Fort Sam Houston, Tex., for duty, from Fort Oglethorpe, Lieut. DeWITT B. NETTLETON, Sewickley.

To Camp Wheeler, Macon, Ga., base hospital, Major JOSEPH SAILOR, Philadelphia; from Fort Benjamin Harrison, Lieuts. JAMES B. CARROLL, Dunbar; REEVES W. DECROW, Collegeville; from Atlanta, Ga., Lieut. RUBEN A. E. PETERSON, Allentown; from Fort Oglethorpe, Lieuts. THOMAS W. DRUCE, Philadelphia; FRANCIS E. DONNELLY, Wilkes-Barre, from Camp Shelby, Hattiesburg, Miss.; Lieut. JOHN H. MUSSER, JR., Philadelphia.

To El Paso, Tex., for duty, with Ambulance Co. No. 1, from Chickamauga Park, Ga., Lieut. HUGH M. SHANNON, Philadelphia.

To Fort Oglethorpe, for instruction, from Camp Meade, Lieut. JOHN W. MANN, Pittsburgh.

To Fort Riley, Kan., for instruction, Lieut. BENJAMIN ROBINSON, Philadelphia.

To Garden City, L. I., N. Y., for duty, Major WALTER S. CORNELL, Philadelphia.

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Oglethorpe, Lieut. ALBON E. FICHTNER, Johnston.

To Hoboken, N. J., for duty, from Fort Oglethorpe, Lieut. HARRY M. READ, York.

To Newport News, Va., for duty at Camp Stuart, from Camp Greenleaf, Lieut. FRANK D. CAMPBELL, Slippery Rock.

To Philadelphia, Pa., for duty with base hospital No. 20, Major GEORGE M. PIERSON, Philadelphia; to Evans Dental Institute, for instruction, and on completion to Wrightstown, N. J., base hospital, Major GEORGE M. DORRANCE, Philadelphia; for duty, from Neurological School, University of Pennsylvania, Capt. JOHN LOWMAN, Johnston; to Evans Dental Institute, for instruction, Lieuts. HARRY S. CARMANY, HAROLD A. FLETCHER, Philadelphia; to Jefferson Hospital for duty, from Neurological School, University of Pennsylvania, Lieut. GUY M. MUSSER, Punxsutawney.

To Walter Reed General Hospital, Takoma Park, D. C., for temporary duty, from Camp Meade, Lieut. JAMES H. BALDWIN, Philadelphia.

To Williams Bridge, N. Y., United States General Hospital, No. 1, for temporary duty, from New York Orthopedic Hospital, Lieut. JAMES L. GILMORE, Pittsburgh.

To Pittsburgh, Pa., for instruction in military roentgenology, from Fort Oglethorpe, Capt. JOHN J. McKENNA, Philadelphia; Lieut. PATRICK J. O'DEA, Scranton.

To Rockefeller Institute, for instruction in the therapy of pneumonia, Lieut. CLIFFORD C. HARTMAN, Pittsburgh; for instruction and on completion to his proper station, from Camp Hancock, Lieut. WILLIAM M. PARKINSON, Philadelphia.

To his home and honorably discharged on account of being physically disqualified for active service, from Newport News, Va., Lieut. FREDERICK W. KNIPPEL, Mercer.

South Carolina

To Camp Greene, Charlotte, N. C., for duty with the Headquarters Military Police, from Camp Greenleaf, Lieut. ISAAC H. GRIMBALL, Ridgeland.

To Camp Robinson, Sparta, Wis., for duty, from Fort Oglethorpe, Capt. THEODORE C. STONE, Aiken.

South Dakota

To Fort Sill, Okla., base hospital, from Camp Pike, Capt. THOMAS W. MOFFITT, Deadwood.

To Portland, Ore., for assignment to duty with aero squadrons, from Fort Riley, Lieut. FRANCIS T. READ, South Shore.

Tennessee

To Army Medical School, Washington, D. C., for instruction in orthopedic surgery, Capt. Alphonse H. Meyer, Memphis.

To Camp Gordon, Atlanta, Ga., as member of board for examination of command for tuberculosis, from Fort Oglethorpe, Lieut. ENOCH S. SEALE, Nashville.

To Camp Greene, Charlotte, N. C., for duty, from Fort Oglethorpe, Lieut. CURTIS R. SENTER, Memphis.

To Fort McPherson, Ga., base hospital, from Camp Greenleaf, Lieut. CHARLES D. BLASSINGAME, Memphis.

To Fort Myer, Va., from Camp Meade, Lieut. ALLEN L. LEAR, Sewanee.

To Fort Oglethorpe, Ga., for duty with Field Hospital No. 3, from Fort Oglethorpe, Lieut. LOUIS F. VERDEL, Memphis.

To Oklahoma City, Okla., for instruction in orthopedic surgery, from Fort Oglethorpe, Lieut. BENJAMIN L. SCHOOLFIELD, Memphis.

To Walter Reed General Hospital, Takoma Park, D. C., for duty in connection with the Mobile Operating Unit, from Army Medical School, Lieut. PAUL E. McNABB, Knoxville.

Texas

To Camp Logan, Houston, Tex., for duty with the Headquarters Military Police, from Camp Greenleaf, Lieut. PIERRE F. HIGGINS, Fort Worth.

To Camp Meade, Annapolis Junction, Md., for duty, from Fort Oglethorpe, Lieut. KARL CHAMBERS, Jasper.

To Fort Oglethorpe, Ga., for instruction, from Camp Cody, Lieuts. HENRY BRADBROOK, Cat Spring; ROBINSON H. SALMON, Maypearl.

To Oklahoma City, Okla., for instruction in orthopedic surgery, from Camp Fort Bliss, Lieut. FREDERICK E. HUDSON, Anson.

Virginia

To Camp Jackson, Columbia, S. C., for duty, from Fort Oglethorpe, Lieut. BERNARD BARROW, Barrows Store.

To Philadelphia, Pa., Evans Dental Institute, for instruction, Lieuts. LEWIS G. RICHARDS, Roanoke; from Fort Oglethorpe, JOHN B. HALLIGAN, Petersburg; for instruction and on completion to his proper station, from Fort Myer, Lieut. MINOR G. LILE, University.

To report by wire to the commanding general Southeastern Dept. from Chickamauga Park, Lieut. JAMES C. MOTLEY, Abingdon.

To his home and the inactive list on account of being physically disqualified for active service, Lieut. GRANVILLE EASTHAM, Rapidan.

Washington

To Camp Lewis, American Lake, Wash., base hospital, Lieuts. HIRAM S. ARGUS, EDWIN A. MONTAGUE, HARRY G. WILLARD, Tacoma.

To Camp Mills, Garden City, L. I., for duty, Lieut. IVAN J. D. SHULER, Seattle.

West Virginia

To Camp Cody, Deming, N. M., base hospital, from Camp Cody, Capt. LEWIS C. COVINGTON, Charleston.

To Camp Greene, Charlotte, N. C., for duty as assistant to the Division Surgeon, from Camp Greenleaf, Lieut. WILLIAM H. McLAIN, Wheeling.

To Camp McClellan, Anniston, Ala., for duty with Headquarters Military Police, from Camp Greenleaf, Lieut. WILLIAM NELSON, Hansford; from Fort Benjamin Harrison, Lieut. ADLAI E. CALLAHAN, Parkersburg.

Wisconsin

To Camp Beauregard, Alexandria, La., base hospital, from Fort Riley, Lieut. EMIL A. RUKA, Bascobel.

To Camp Grant, Rockford, Ill., base hospital, from Fort Benjamin Harrison, Lieut. ARTHUR C. DANA, Fond du Lac.

To Camp Jackson, Columbia, S. C., as member of board for examination of command for tuberculosis, from Camp Sheridan, Capt. MICHAEL R. WILKINSON, Oconomowoc; Lieut. HARRY C. MIX, Green Bay.

To Fort Riley, Kan., for duty, from Fort Riley, Lieut. GERHARD A. BADING, Milwaukee.

To Fort Sheridan, Ill., for duty, from Fort Benjamin Harrison, Major OTHO A. FIEDLER, Sheboygan.

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Riley, Lieuts. RAYMOND A. HEBRON, Cataract; ALBERT H. KULIG, Dodge; CHARLES M. PEARSON, Ogema; EDWARD P. EVANS, S. Milwaukee; ATHOL H. WEDGE, Waupun.

To Newport News, Va., for duty at Camp Stuart, from Camp Greenleaf, Lieut. GEORGE H. SCHLENKER, Cazenovia.

To New York City, Neurological Institute, for intensive training from Psychopathic Hospital, Boston, Mass., Lieut. CHARLES C. ROWLEY, Winnebago.

To Portland, Ore., for assignment to duty with aero squadrons, from Fort Riley, Lieuts. DONALD G. HUGO, Chilton; HIRAM A. FULTON, Eau Claire; REUBEN J. ELLIOT, National Home; LESLIE A. VAN DER LINDE, Wautoma.

To his home and to report by wire to the Surgeon-General from Camp MacArthur, Lieut. JAMES GURNEY TAYLOR, Milwaukee.

To the inactive list, from University of Pennsylvania, Lieut. ORVILLE R. LILLIE, Milwaukee.

CORRECTIONS

Attention is called to the following corrections in previous lists of orders to medical officers:

In the issue of October 6: *To Fort Benjamin Harrison* for instruction, CHARLES A. ROBERTSON of Hopkinsville, Ky., instead of C. A. Robertson of Ridgetop, Tenn.

In the issue of November 24: *To Camp Cody*, base hospital, from Fort Benjamin Harrison, Lieut. ELMER E. JOHNSON, Philadelphia, instead of Elmer S. Johnson, Oregon, Wis.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Pneumonia Quarantine Ordered.—The health commissioner of Chicago issued a notice, November 25, to the effect that "Pneumonia is a contagious disease and under city ordinances must be reported to the Department of Health. Beginning December 1, the Commissioner of Health will placard all reported cases of pneumonia."

Personal.—Col. William Stephenson, M. C., U. S. Army, department surgeon, Central Department, has been transferred to a similar position in the Eastern Department, with station at Governor's Island, N. Y.—Col. Henry I. Raymond, M. C., U. S. Army, Fort Mason, Calif., has succeeded Colonel Stephenson as department surgeon, Central Department.—Dean Arthur I. Kendall of Northwestern University Medical School, Chicago, delivered an address on "Recent Development in Intestinal Bacteriology," before the Philadelphia Pathological Society, November 2.

Clinical Conference on Tuberculosis.—The first clinical conference on the early diagnosis of tuberculosis under the auspices of the State Council of Defense, the State Department of Public Health and the Illinois Tuberculosis Association, constituting the Cooperating Committee on the Tuberculosis War Problem of Illinois, was held at Springfield, November 22-24. This conference was attended by thirty physicians, each delegated as county medical director on tuberculosis from his respective county. The clinical work was carried out in the dispensary of the Springfield Tuberculosis Association, the Springfield Open Air Colony, St. John's Hospital and the laboratory of the State Department of Public Health by Dr. Orville W. McMichael and Dr. Ethan Allen Gray, Chicago, Dr. James Pettit, Ottawa, and Dr. George Thomas Palmer, Springfield. This is the first of several conferences provided for in the Illinois tuberculosis war program, to provide one physician proficient in the diagnosis and treatment of tuberculosis in each county to meet the war time needs of the military and civil population.

INDIANA

New Hospital.—A contagious disease hospital is to be built as a separate unit of the Indianapolis City Hospital at a cost of \$90,000. The plans call for the construction of a two-story brick and concrete building.

Smallpox Epidemic.—An epidemic of smallpox is reported to prevail in Fort Wayne, where there are now more than 200 cases. In addition there are forty-three cases in Grabill, New Haven, Hometown, Allen and Aboite.

New Medical School.—The University of Notre Dame has established a medical department, which is offering the first two years of the medical course. Two years of college work are required for admission, constituting, with the two medical years, the first four years of the six-year combined course for the baccalaureate and M.D. degrees.

KENTUCKY

Hospital for Insane Burns.—The building for tuberculous patients at the State Hospital for the Insane, Lakeland, was destroyed by fire, November 26.

Personal.—Dr. Henry Enos Tuley, dean of the Medical Department of the University of Louisville, has accepted the appointment of superintendent of Louisville's new City Hospital from Mayor Smith.—Dr. A. E. Ferguson, Austin, has been appointed a member of the State Tuberculosis Board, succeeding Dr. Richard T. Yoe, Louisville, term expired.—Dr. W. Lucien Heizer, Bowling Green, secretary of the State Tuberculosis Commission, and formerly State Registrar of Vital Statistics, is ill with diphtheria at his home in Bowling Green.

MARYLAND

Personal.—Dr. Harry S. Jarrett, Towson, who has been under treatment at the Mercy Hospital, Baltimore, has returned home, and his condition is much improved.—Dr. Lewellys F. Barker of the Johns Hopkins Hospital delivered a lecture, illustrated by lantern slides, at the New York

Academy of Medicine, December 7, on "The General Diagnostic Study by the Internist."

Dental and Medical Affiliation.—The first joint meeting of the Maryland State Dental Association and the Baltimore City Medical Society took place at Osler Hall, Baltimore, November 30. Dr. Weston A. Price, Cleveland, director of the National Institute of Dental Research, addressed the meeting on "Some Studies on the Relationship Between Oral Focal Infections and Localized and Systemic Diseases."—A recent affiliation has been effected between the Medical and Chirurgical Faculty of Maryland and the State Dental Association, whereby the dentists have become members of the faculty. A dental library is being collected.

MICHIGAN

New Hospital for Marquette.—A contagious disease hospital, to cost \$10,000, will be erected by the St. Luke's Hospital Association in Marquette.

Tri-County Sanatorium Planned.—A meeting was held at Grand Haven, November 8, at which the question of erecting a tuberculosis sanatorium to be used jointly by Muskegon, Ottawa and Allegan counties was discussed. It is believed that a tri-county sanatorium can be much more economically administered than a separate institution for each county.

Personal.—Dr. Bartlett H. McMullen, mayor of Cadillac, underwent an operation recently in Rochester, Minn., for disease of the jaw, and is reported to be doing well.—Dr. James W. Inches, health officer of Detroit, who has been on duty in France, expects soon to return on leave.—Dr. George M. Belhumeur, Negaunee, has been appointed chief of the Kimbley Clark Company at Niagara, Wis.

MINNESOTA

Fellowships in University.—Fellowships in medicine, surgery, nervous and mental diseases, ophthalmology and otolaryngology are available at the University of Minnesota, under annual stipends in the three-year course, respectively, of \$500, \$750 and \$1,000.

Society Organizes.—Thirteen members of the medical profession of Stillwater and Washington counties met at Stillwater, November 19, and reorganized the Washington County Medical Society, electing the following officers: president, Wade R. Humphrey; vice presidents, Drs. Gustavus A. Newman and Burton J. Merrill, and secretary-treasurer, Dr. Frank G. Landeen, all of Stillwater.

Personal.—Dr. Marion M. Hursh, Grand Rapids, is remodeling the parsonage of the Methodist Church, and will use it as an office and hospital.—Dr. Donald E. Baxter, Minneapolis, sailed for France, November 23, to take charge of the reconstruction of the Children's Hospital under the general war board.—Dr. Richard O. Beard of the College of Medicine of the University of Minnesota, Minneapolis, was the principal speaker at a mass meeting of citizens of Willmar and Kandiyohi counties to exploit the establishment of a general hospital.

Southern Minnesota Physicians Meet.—The annual meeting of the Southern Minnesota Medical Society was held in Mankato, November 26 and 27, under the presidency of Dr. Aaron F. Schmitt, Mankato. Addresses were delivered by Col. Henry S. Greenleaf, M. C., U. S. Army, Fort Snelling; Major William J. Mayo, Rochester; Lieut. Edward W. Ryerson, Chicago, and others. The following officers were elected: president, Dr. Melvin S. Henderson, Rochester; vice presidents, Drs. Alphonse E. J. Sohmer, Mankato, and Peter F. Holm, Wells, and secretary-treasurer, Dr. George F. Merritt, St. Peter.

Hospital News.—At a meeting of the Commercial Club, held in Rice Lake, November 14, resolutions were passed favoring the erection of a hospital to cost \$9,500.—A thoroughly modern and well-equipped hospital building, with accommodation for twelve or fourteen patients, is to be erected in Appleton, in the spring. About \$5,000 has already been subscribed for the enterprise.—The West Cottage at the Glen Lake Sanatorium was formally opened by the Hennepin County Sanatorium Commission, November 24. The opening of this cottage provides forty-four additional beds for the sanatorium, making a total of 104 beds.

MISSOURI

Personal.—Dr. Oscar J. Raeder, assistant superintendent of the City Sanitarium, St. Louis, has resigned his position to study neuropathology at the Boston Psychopathic Hospital,

under Elmer E. Southard.—Dr. John J. Evans, Manes, being compelled by a paralytic stroke to retire from practice, has been elected an honorary member of the Wright County Medical Society.

Hughes Brothers Convicted.—Drs. Ulysses S. G. Hughes and John H. Hughes, Kansas City, charged in the federal court with illegal drug selling, and convicted, are said to have been sentenced, November 19, to four years' imprisonment in the Federal Penitentiary, Leavenworth. One brother was convicted on eleven counts, and the other on nineteen, and both are said to have been previously convicted on the violation of the Harrison Narcotic Law, in the federal court in Kansas.

NEW YORK

State Troopers Aid in Maintaining Quarantine.—An outbreak of smallpox in the Cattaraugus Indian Reservation recently made it necessary to quarantine the entire reservation. Owing to the size of the reservation a detail of state troopers were despatched to the reservation on the request of the state health department. They effectively surrounded the reservation and maintained a satisfactory quarantine.

New York City

Harvey Society Lecture.—The fourth lecture of the Harvey Society series, delivered at the New York Academy of Medicine, December 8, was by Prof. Aldred S. Warthin, M.D., of the University of Michigan, Ann Arbor, on "The New Pathology of Syphilis."

New Section Hospital.—Dr. Henry Fairfield Osborn, president of the American Museum of Natural History, in cooperation with H. F. Beers, superintendent of construction of the museum, has designed a field hospital suitable for use in the army, and in Red Cross and general hospital work. The hospital is constructed in 5-foot units so that it can be taken apart and reconstructed by unskilled labor, and can be easily transported. The device can also be converted into a dwelling house. A large model is on exhibition at the American Museum of Natural History.

Personal.—Dr. James P. Warbasse, Brooklyn, has been elected president of a newly organized body known as the Consumers' Cooperative Society, the object of which is to arouse trades unions and consumers in general in a plan for the establishment of cooperative stores which will do away with the middleman's profit.—Dr. and Mrs. Simon Baruch celebrated their fiftieth wedding anniversary, November 27, by a reception at Sherry's, at which more than 1,000 guests were present.—Dr. William Seaman Bainbridge has had the degree of LL.D. conferred on him by the trustees of Lincoln Memorial University. Dr. Bainbridge is about to sail for foreign service.—Dr. Abraham Stone, Williamsburg, narrowly escaped death by gas asphyxiation in his home, November 20.

Annual Meeting of County Medical Society.—The one hundred and twelfth annual meeting of the Medical Society of the County of New York was held on the evening of November 25. Resolutions were passed for presentation to Congress aiming at the repeal of Section 209 of the excess profit tax, which imposes a tax of 8 per cent. on all incomes over \$6,000 per annum derived from labor. It was pointed out that this law worked a great injustice to medical men in that they were not only taxed for working but any time they entered the service their income from the practice of medicine stopped altogether. The following officers were elected: president, Dr. Howard C. Taylor; vice presidents, Drs. Charles H. Peck and Samuel A. Brown; secretary, Dr. Daniel S. Dougherty; assistant secretary, Dr. J. Milton Mabbott, and treasurer, Dr. James Pederesen.

Two Committees Working for New Drug Laws.—November 28, two conferences were held in this city for the discussion of ways and means of controlling the traffic in habit-forming drugs. One of these committees was the Whitney Legislative Committee. This committee has decided to make a thorough investigation of the drug evil as it exists in this city at the present time. Beginning December 5, it will hold a series of hearings at which it will take testimony in regard to various phases of the drug traffic. What the committee desires to accomplish is to put the law in such shape as to prevent future addiction and to cure as many of the present addicts as possible. The other committee which met at the same time was the New York City Committee of Drug Evils. The members of this committee agreed that what was most needed was federal control of the traffic in narcotic drugs of a definite and comprehensive sort. The statement was made by Dr.

Campbell, physician in charge of the Harlem Prison, that there were from 10,000 to 15,000 young men in New York City who were drug addicts and in need of some compulsory form of treatment. A bill was submitted for the consideration of this committee which provides that the government shall destrict the sale and manufacture of narcotic drugs through the imposition of a tax which would tend to make the distribution of drugs prohibitive for any but legitimate purposes.

PENNSYLVANIA

Personal.—Major John A. Hawkins, M. R. C., U. S. Army, Pittsburgh, who is now stationed at Allentown, was presented, November 22, with a fund of more than \$4,500 for the equipment of the ambulance companies under his command.—Dr. John J. Coffman, Scotland, has resigned after eighteen years of service as secretary of the Franklin County Medical Society.—Dr. Samuel G. Dixon, state commissioner of health, who has been ill in the Pennsylvania State Hospital, Philadelphia, is reported to be convalescent.

Philadelphia

Baby Clinic Opened.—A baby clinic in charge of Dr. Lida Stewart-Cogill was opened yesterday at the Women's College Hospital. Instructions will be given to mothers daily.

Women Doctors Needed for Army.—According to Dr. Emily Dunning Barringer, New York, vice chairman of the Medical Women's National Association, who spoke at the meeting of the Women's Hospital Medical Society, in the Women's Medical College Hospital, November 21, twelve women physicians who are physically, morally and mentally fit are needed to serve with the American Army. The women who volunteer must be able to speak French.

Personal.—Dr. Edwin B. Cragin, professor of obstetrics and gynecology at Columbia University, New York, addressed the Obstetrical Society of Philadelphia at the College of Physicians, December 6, on "The Functions of a Woman's Hospital in a Large City," and was the guest of honor at a reception held at the Rittenhouse Hotel immediately following the meeting.—Dr. Charles S. Turnbull has been reappointed a member of the board of managers of the State Institution for Training of Deaf Children.—Dr. Robert C. Barrett has been elected acting roentgenologist to the Orthopedic Hospital during the absence of Dr. Ralph S. Bromer on military service.

RHODE ISLAND

Mass Meeting for Nurses.—November 11, a mass meeting was held in the Rhode Island State Medical Society Building, Providence, under the auspices of the Rhode Island Association of Graduate Nurses, to interest nurses in enrolling for home service in cantonment hospitals. Dr. G. Alder Blumer, Providence, presided.

Personal.—Dr. Frank A. Fearney, Narragansett Pier, has been appointed medical examiner (coroner) for the town of Narragansett, to succeed Lieut. Malford W. Thewlis, M. R. C., U. S. Army, resigned to enter military service.—Dr. Ransom H. Sartwell has been appointed resident physician to state penal institutions, with the exception of the almshouse, and the Exeter School for the Feeble-minded.

WASHINGTON

Personal.—Dr. William F. West has been appointed a member of the board of health of Everett, succeeding Dr. John F. Beatty, resigned on appointment as health officer.—Dr. Leon G. Woodford has resigned as city health officer of Everett to accept a position of superintendent and physician in charge of the Snohomish County Tuberculosis Sanatorium, Aldercrest.—Dr. Jarrett H. Farrell, Spokane, has been appointed bailiff in the court of Superior Judge Oswald.—Dr. Edward B. Nelson has been elected president, Dr. Foster M. Hoag, vice president, and Dr. I. Rebecca L. Muir, secretary-treasurer of the staff of the Deaconess Hospital, Spokane.

WISCONSIN

Campaign for Hospital.—The campaign to raise \$500,000 for Columbia Hospital, Milwaukee, was opened, November 20, at a meeting and banquet held in the Hotel Pfister, and John G. Bowman was the chief speaker of the evening.

Personal.—Dr. Frederick M. Harris, formerly health officer of Fond du Lac and director of the state cooperative laboratory at St. Agnes Hospital, has resigned to enter private practice.—Dr. Frederick C. Christensen, Racine, underwent

operation for appendicitis, November 17, and is reported to be doing well.—Dr. George N. Hidershide, Arcadia, is seriously ill with pneumonia.—Dr. Hugh P. Greeley, Waukesha, has gone to New York to take up special research work at the Rockefeller Institute.

Sanatorium Notes.—After listening to the plea of Dr. Fred T. Nye, Beloit, for the establishment of a sanatorium for Rock County, the county board, November 16, postponed action until the January meeting of the board.—The Ashland County Board, by unanimous vote, November 16, adopted the resolution favoring a tuberculosis sanatorium, and made an appropriation of \$40,000 toward the erection of a building, with the provision that Bayfield and Iron counties aid in the project.—The board of supervisors of LaCrosse County, November 15, made an appropriation of \$15,000 to complete the LaCrosse County Tuberculosis Sanatorium, which will be ready for occupancy in the spring.

CANADA

Hospital Burns.—The Hotel Dieu War Hospital at Ste. Hyacinthe, Que., was destroyed by fire, November 28. The patients, 1,000 in number, were removed in safety.

Diphtheria Death Rate Lowered.—During November the death rate from diphtheria has materially lessened in the province of Ontario. In fact, it dropped to the lowest figure in the history of the province. During the month in 1917 there were 432 cases reported, with sixteen deaths, as against 467 cases in the same month in 1916, with twenty-eight deaths. The health officials state that in the month free antitoxin was distributed at a cost of \$3,907 which has no doubt brought about the low death rate from that disease. Infantile paralysis has almost disappeared from the province.

Personal.—Col. Harry M. Jacques, Toronto, medicals overseas, was invested with the Distinguished Service Order at Buckingham Palace, Nov. 29, 1917.—Lieut.-Col. Herbert S. Birkett, dean of the medical faculty of McGill University, Montreal, who has been overseas two years in command of McGill University Base Hospital, has resigned on account of continued illness. Lieut.-Col. John M. Elder, Montreal, has taken over the command.—Dr. Howard A. Kelly, Baltimore, visited Guelph, Ont., November 30. He was the guest of Dr. Alfred T. Hobbs of the Homewood Sanitarium. Dr. Kelly held a surgical clinic at the General Hospital, performed two or three operations, and gave an illustrated lecture on the use of radium in the treatment of disease. He was banqueted by the physicians of Guelph, and in the evening addressed the two Canadian clubs on "The Civic Duty of the Christian Citizen."

GENERAL

Roentgenologists to Meet.—The fourth annual midwinter meeting of roentgenologists will be held at the Hotel Traymore, Atlantic City, Friday evening and Saturday, Jan. 4 and 5, 1918, to which all physicians interested are invited.

Tri-State Physicians Meet.—The forty-fourth annual meeting of the Tri-State Medical Society of Indiana, Ohio and Michigan was held in LaPorte, Ind., November 21, under the presidency of Dr. Miles F. Porter, Fort Wayne, Ind. At the banquet in the evening, Dr. Frank R. Leeds, Michigan City, Ind., presided as toastmaster, and addresses were delivered by Rev. C. B. Moulmier, S. J., Regent of Marquette University, Milwaukee, Wis., on "Necessity of Standardizing Hospitals"; by Albert J. Ochsner, Chicago, on "After Treatment of a Surgical Case," and by Dr. Frank Billings, Chicago, on "Russia as Observed by the Red Cross Commission." The following officers were elected: president, Dr. Julius H. Jacobson, Toledo, Ohio; vice president, Dr. George V. Brown, Detroit; secretary, Dr. George W. Spohn, Elkhart, Ind. (reelected), and treasurer, Dr. Harry F. Mitchell, South Bend, Ind. (reelected). Detroit was selected as the place of meeting for 1918.

Bequests and Donations.—The following bequests and donations have recently been announced:

Hospital for Crippled and Deformed Children; Rosewood State Training School, Owings Mills, Md.; Presbyterian Eye, Ear and Throat Hospital; Provident Southern Hospital, and Maternité Hospital, Baltimore, each \$2,000, by the will of Ferdinand Dietsch.

New York Post-Graduate Hospital, \$1,000, the proceeds of a benefit, for the use of a babies' ward.

Adirondack Cottage Sanatorium, Saranac, N. Y., one-half the residuary estate of Robert W. Patterson, which is valued at about \$1,000,000.

Lakeside Hospital, Cleveland, \$1,000,000, and St. Vincent's Charity Hospital, Cleveland, \$200,000, by the will of Oliver H. Payne, New York.

Alumni Association of the Jefferson Medical College, an ultimate bequest of \$10,000, to become operative on the death of his widow, and to be known as a memorial to his widow and mother, by the will of Dr. Joseph M. Malatesta.

Lankenau Hospital, Philadelphia, a donation of a building fully equipped and valued at \$60,000, by Charles A. Smith; cash contributions of \$8,000, and a donation from the alumnac of the nurses' school of \$5,000 for a free bed for nurses.

St. Agnes Hospital, Philadelphia, cash donations of \$1,700 on donation day.

Trade Commission Acts on Salvarsan Patent.—The Federal Trade Commission has entered orders for licenses to three firms to manufacture and sell arsphenamine, the product heretofore known under the trade name of salvarsan, patent rights to which have been held by German subjects. The orders for licensees are subject to acceptance and agreement by the licensees to the stipulations made by the commission. On such acceptance and agreement, these licenses will be formally granted by Secretary L. L. Bracken, acting for the commission. The three firms licensed to manufacture and sell arsphenamine are Dermatological Research Laboratories of Philadelphia; Takamine Laboratory, Inc., of New York, and Herman A. Metz Laboratory of New York. While the price of the product is not at this time fixed by the commission, the right to fix prices is retained, and a price of \$1 per dose to the Army and Navy, \$1.25 per dose for hospitals, and \$1.50 per dose for physicians, are the prices at which some, at least, of the licensees have stated that they intend to offer the licensed drug. The trade commission's action was taken under Section 10 of the Trading With the Enemy Act under direction of Commissioner Fort, on recommendation of C. H. McDonald, Edward S. Rogers and Francis Phelps, in charge of granting such licenses. The Public Health Service has prepared rules and standards for the manufacture and testing of arsphenamine, and will supervise its manufacture, authority having been conferred on the Public Health Service by the Secretary of the Treasury, and the observance of the rules and standards become a condition of the license.

FOREIGN

Sixty Years of Medical Practice.—The profession in Holland recently celebrated the sixtieth anniversary of the entrance into practice of one of their leading physicians, R. Krul of 's-Gravenhage. He has published a number of works on medical history and other subjects. His first work, in 1881, was on the evils of quackery.

Deaths in the Profession Abroad.—Rt. Hon. Sir Leander Starr Jameson, Bart., M.R.C.S. (Eng.); M.B., B.S. (Lond.), 1875; L.S.A. (Lond.), 1876; M.D., University of London, 1877; aged 64; formerly of Kimberly, South Africa; who as Dr. Jameson led the raid from Cape Colony into the Transvaal in 1895; died at his home in London, November 28. Dr. Jameson began his South African career as administrator of Rhodesia, British South Africa in 1891; four years later he led the raid into the Transvaal, took part in the battle of Kugersdorp, and surrendered to the Boers, the whole transaction occupying only four days. After his release he was indicted and tried in London, and sentenced to imprisonment for ten months, but was released after seven months on account of ill health. He returned to South Africa, and in 1900 was elected member of the Cape Legislative Assembly for Kimberly. In the same year he was appointed director of the DeBeers Consolidated Company, and two years later of the British South African Company. In 1904 he was made Premier of Cape Colony and served in this capacity until his retirement. Then he returned to London.—A. Ballori, a prominent alienist of Rome, aged 70, was recently killed by a homicidal paranoiac. He escaped a similar attack made by a patient, a few years ago, when one of the nurses sprang in front of the physician and received the fatal injury.—J. Peyrot, agrégé professor of surgery at the University of Paris and senator, aged 74.—F. C. Barraza, professor of organic chemistry at the University of Buenos Aires, and assistant professor of ophthalmology, aged about 55.

British Minister of Public Health.—Our London correspondent has from time to time referred to the proposition of creating a minister of public health, which means a position in the cabinet. According to an Associated Press dispatch for December 4, this has culminated in the appointment of Sir Christopher Addison, M. P., minister of reconstruction, to this position. According to the newspapers, he "hopes to carry a bill through parliament before Christmas forming a new ministry to operate a scheme of 'revolutionary character.'"

This scheme is said to aim at the nationalization of the medical profession, involving free medical attendance for every one without charge. Premier Lloyd George, the *Express* adds, says the time is ripe for such a change." Sir Christopher Addison has been in the public eye for many years. He graduated from the University of London in 1893; he has been lecturer on anatomy at St. Bartholomew's Hospital; examiner of anatomy in the Universities of Cambridge and London; a member of the Faculty of Medicine, chairman of the Board of Intermediate Medical Study, and member of the Board of Human Anatomy and Morphology of the University of London; has served as secretary of the Anatomical Society of Great Britain and Ireland, as professor in anatomy in University College, Sheffield, and as editor of the *Quarterly Medical Journal*. He is the author of monographs on "The Pancreas and Adjoining Viscera," "Topographical Anatomy of the Abdominal Viscera and Especially the Gastro-Intestinal Canal in Man," and many other brochures on the subject of anatomy, and is joint author with Major Jennings of the book entitled, "With the Abyssinians in Somaliland," which appeared in 1905. Since 1910 Sir Christopher Addison has been a member of parliament from the Hoxton District of Shoreditch, and more recently parliamentary secretary of the board of education, and undersecretary of state, ministry of munitions.

PARIS LETTER

PARIS, Nov. 8, 1917.

The War

COMPASS LOCALIZER FOR THE EXACT DETERMINATION OF THE DEPTH OF PROJECTILES

At a recent session of the Académie de médecine, M. Nemirovsky exhibited a new apparatus for localizing a projectile in a few minutes without making any measurements, calculations or diagrams, thus eliminating the most frequent sources of error. A rod index indicates the exact position of the projectile. The compass is used with the roentgen rays and, by means of an ingenious attachment, can be adapted to any screen. It is based on the method of the double image; the first is supplied by the standard ray, the second proceeding from the tube moved along a trifle. The localization can be made a few minutes before the operation because it is not necessary (as in the case of other compasses) to make the radioscopic test to disclose the approximate position of the projectile. It is easy and simple to adjust, and the results obtained are exact. During the operation, the compass guides the operator to the foreign body, no matter what route of approach is chosen. It permits, besides, the localization of many projectiles and their extraction with the same apparatus at the same time. The apparatus being firm and solid cannot get out of order, neither during the sterilization, nor during the operation, and the rods are interchangeable, numbered and graduated.

SURGICAL TREATMENT OF STUBBORN REFLEX CONTRACTURES OF THE EXTREMITIES

At one of the recent meetings of the Société de chirurgie de Paris, Dr. Le Fort of Lille read a paper on this subject which can be summarized as follows: Reflex contractures, in the great majority of cases, are amenable to medical treatment. They have a tendency to cure themselves, as a rule, and hysterical reflex contractures occur often. Psychotherapy, isolation and physiotherapy are the basis of all treatment. But certain severe and stubborn forms may lead to fibrous contractures and definite disability, and in these exceptional cases, surgery can and should intervene. Tenotomy is indicated, but it is often followed by a recurrence. In the intractable cases, arthrodesis can be done as a last resource. The peripheral sympathectomy of Leriche gives very good results when vasomotor disturbances predominate; it acts only indirectly on the muscular contractures. Excision of the cicatrix, the origin of the reflex trouble, can be attempted when the cicatrix is imperfect or painful and when complete excision is possible. Resection of the sensory nerve trunks is an excellent procedure, when anesthesia of these trunks by means of cocaine relieves the contracture. When this is inapplicable, when all other methods have failed, when the condition is very grave and the patient accepts the risk of a serious operation, an experienced surgeon may, perhaps, in a few cases, and only when all these conditions are fulfilled, attempt the resection of one or two posterior roots, corresponding to the zone of the cicatrix, if such resection can, as for the lumbar and sacral nerves, be made outside of the investing dural sheath.

THE HEMATOLOGIC INDICATIONS FOR IMMEDIATE TRANSFUSION SOON AFTER A WAR WOUND

Drs. Depage and Govaerts (of the Belgian army), at one of the recent meetings of the Société de chirurgie de Paris, showed that one can make a diagnosis of a possibly fatal hemorrhage immediately after the patient has been wounded. Experience has shown that if the number of red blood cells in the venous blood is notably diminished, if less than 4,000,000 in the first six hours, the prognosis is nearly always fatal. In such cases, the injection of artificial serum is useless; consequently, blood transfusion is an absolute indication. These principles apply solely to cases of wounds of the extremities. With wounds of the viscera, the red cell count is influenced by many factors, and the interpretation of a blood analysis is always difficult. The above figures apply only to healthy adults, which soldiers usually are. Under these conditions, one can, by taking cognizance of the time elapsed since the occurrence of the injury, consider as evidence of an extremely grave hemorrhage, hence a positive indication for immediate transfusion, the following counts: Less than 4,500,000 in the first three hours, less than 4,000,000 in the first eight hours, and less than 3,500,000 in the first twelve hours. Depage and Govaerts have practiced systematic blood transfusion in cases of wounds of the extremities where blood examination, based on these principles, has demonstrated the existence of grave hemorrhage. Among fourteen patients, three died of a subacute infection (gas gangrene, *Bacillus perfringens* septicemia). It is evident, then, that when an infection is in the course of development during the first few hours after the wounding, transfusion is unable to save the life of the patient. Among the remaining eleven cases in which there was no subacute infection, eight were completely successful. Of the three failures, one was due to hemoglobinuria, and in the other two it can only be surmised that the transfusion of one-half liter of blood was insufficient. In certain cases, therefore, it will be necessary to inject, not one-half liter, but a whole liter of blood. For that purpose one may make use of two donors, having first made sure that their blood is not reciprocally agglutinable.

The immediate effect of the transfusion is most remarkable, very different from that which follows the injection of artificial serum. In some cases the result is truly astonishing. The patient, previously unconscious, seems to revive, the mucous membranes resume their color, and there is every evidence of a great change for the better in the condition of the patient. The blood pressure rises immediately, and this improvement is permanent. If the blood pressure drops within a few hours, it is a sign of a subacute infection for which, unfortunately, we have no remedy at the present time. A blood count made a few days later shows that the injected red blood corpuscles are not destroyed, that is, if one has taken precautions against agglutination. The anemia present is like that following moderate hemorrhage. The red blood cell count is never lower than 2,500,000. It seems, then, that great progress can be realized, thanks to this early detection of hemorrhages, sufficiently serious to menace life. If the blood count shows that the hemorrhage of itself will be fatal, then transfusion is an absolute indication. Transfusion can be done under the most simple technic without any danger to the donor, and proves a life-saving measure for patients irremediably doomed were it not for this heroic treatment.

Marriages

LIEUT. CHARLES GERALD LAROCO, M. R. C., U. S. Army, Cleveland, to Miss Marie L. Kelley, both of Cleveland, in St. Louis, November 18.

LIEUT. WILLIAM CHRISTIAN JENSEN, M. R. C., U. S. Army, to Miss Myrtle R. Hatch, both of Worcester, Mass., at Oak Park, Ill., November 29.

ALFRED JAMES LEARY, M.D., Newton, Mass., to Miss Helen M. Howard of Portsmouth, N. H., November 21.

CHARLES LEROY ZIMMERMAN, M.D., White Eagle, Okla., to Miss Edna Robbins of Oklahoma, recently.

CHARLES L. SEITZ, M.D., Evansville, Ind., to Miss Arnia Lloyd of Shelbyville, Ind., November 19.

FRANCIS PETER BOYD, M.D., to Miss Margaret H. Shea, both of Springfield, Mass., November 22.

HERBERT ROGERS ETHERIDGE, M.D., to Miss Courtenay Arps, both of Norfolk, Va., November 21.

Deaths

Thomas Freeman Moses, M.D., Waltham, Mass.; Jefferson Medical College, 1861; aged 81; acting assistant surgeon, U. S. Army, during the Civil War; a Fellow of the American Academy of Medicine; from 1870 to 1894, a professor in the Urbana (Ohio) University, and for eighteen years president of the institution; died at his home, November 21.

Levi Pickett Esslinger, M.D., New Market, Ala.; University of Alabama, Mobile, 1903; aged 42; formerly a Fellow of the American Medical Association; a member of the Medical Association of the State of Alabama; a specialist on diseases of the eye, ear, nose and throat; died in a hospital in Nashville, Tenn., August 6, from gastric ulcer.

James William Koontz, M.D., Greenville, Ky.; Kentucky School of Medicine, Louisville, 1894; aged 47; formerly a Fellow of the American Medical Association; local surgeon for the Illinois Central System; a director of the Inter-Southern Life Insurance Company, Louisville; died in a hospital in Charleston, W. Va., November 20.

Asst. Surg. Dudley W. Queen, U. S. N. R., Temple, Texas; University of Louisville, Ky., 1912; aged 31; a member of the State Medical Association of Texas; for six months an officer of the Medical Reserve Corps of the Navy, and on duty on the U. S. Destroyer *Cassin*, which was torpedoed a few days ago; died in Ireland, November 20.

John R. Dink, M.D., Brandenburg, Ky.; Louisville (Ky.) Medical College, 1894; aged 49; a Fellow of the American Medical Association; for many years health officer of Neade County; selective draft examiner, for his district; died in St. Joseph's Infirmary, Louisville, November 17, two weeks after an operation for abscess of the brain.

Basil M. Woolley, M.D., Atlanta, Ga.; Atlanta (Ga.) Medical College, 1882; aged 82; a Confederate veteran; who was struck by an automobile, October 26; died from his injuries in the Davis-Fischer Sanitarium, Atlanta, October 28.

George William Fraker, M.D., Excelsior Springs, Mo.; University Medical College of Kansas City, 1891; Eclectic Medical University, Kansas City, 1906; aged 59; died in Wesley Hospital, Kansas City, Mo., November 8.

Eugene B. Nash, M.D., Cortland, N. Y.; Homeopathic Hospital College, Cleveland, 1874; aged 79; formerly professor of materia medica in the New York Homeopathic Medical College; died at his home, about November 6.

Simeon Cole Bradley, M.D., Nyack, N. Y.; College of Physicians and Surgeons in the City of New York, 1880; aged 62; a retired practitioner; also a graduate in pharmacy; died at his home, November 13, from heart disease.

Daniel M. Bloom, M.D., New Waterford, Ohio; Eclectic Medical Institute, Cincinnati, 1875; aged 64; formerly a member of the Ohio State Medical Association; died in his office, October 26, from heart disease.

James Nelson Harris, M.D., Chicago; Indiana Medical College, Indianapolis, 1907; a Fellow of the American Medical

Association; a colored practitioner; was shot and killed in his office by his fiancée, November 15.

Charles Watson Snyder, M.D., Clyde, Mich.; College of Physicians and Surgeons, Chicago, 1903; aged 37; a Fellow of the American Medical Association; died at his home, November 15, from nephritis.

William O. Benson, M.D., Milford, Ind.; Hering Medical College, Chicago, 1900; aged 48; formerly a member of the Indiana State Medical Association; died at his home, November 11, from pneumonia.

Abraham Philip Fetherolf, M.D., Allentown, Pa.; Bellevue Hospital Medical College, 1865; aged 74; surgeon to the Lehigh Hospital and Sanitarium, Allentown; died at his home, November 19.

D. Howard Johnston, M.D., Philadelphia; Hahnemann Medical College, Philadelphia, 1883; a member of the Medical Society of the State of Pennsylvania; died at his home, November 9.

John H. Sloan, M.D., Sante Fe, N. M.; Cincinnati College of Medicine and Surgery, 1881; aged 65; formerly a member of the New Mexico Medical Society; died at his home, November 15.

William S. Deutsch, M.D., St. Louis; Missouri Medical College, St. Louis, 1892; aged 46; a Fellow of the American Medical Association; died at his home, October 9, from diabetes.

George W. White, M.D., Canon City, Colo.; Medical College of Ohio, Cincinnati, 1868; aged 72; died at his ranch on Cottonwood Creek, about 30 miles from Canon City, November 10.

Honoré Joseph Coté, M.D., Boston; Tufts College Medical School, Boston, 1899; aged 56; a Fellow of the American Medical Association; died, November 7, from cerebral hemorrhage.

Hiram M. Tabor, M.D., Olive Hill, Ky.; Kentucky School of Medicine, Louisville, 1899; aged 50; formerly a Fellow of the American Medical Association; died at his home, November 8.

William Huber Hoffa, M.D., Benton, Pa.; Medico-Chirurgical College of Philadelphia, 1904; aged 36; coroner and sheriff of Columbia County; died at his home, November 11.

J. George Stuckey, M.D., New Philadelphia, Ohio; University of Wooster, Cleveland, 1889; aged 55; a member of the Ohio State Medical Association; died at his home, October 15.

George Lindenmeyr, M.D., New York City; College of Physicians and Surgeons in the City of New York, 1888; aged 51; died at his home, November 15, from heart disease.

M. L. Withers, M.D., Wallace, Va.; College of Physicians and Surgeons, Baltimore, 1878; aged 69; died in a hospital near Richmond, Va., November 10.

Edwin G. Rummel, M.D., Butler, Ohio; Western Reserve University, Cleveland, 1898; aged 45; died at his home, November 14, from pneumonia.

Albert Monroe Wortman, M.D., Baltimore; Washington University, St. Louis, 1873; aged 65; died at his home, November 12, from diabetes.

Leonidas B. Martin, M.D., Peoria, Ill.; Rush Medical College, 1868; aged 72; died at his home, November 2.



Died in the Service
MAJOR RICHARD WEIL, M. R. C., U. S. ARMY, 1876-1917
(See *The Journal*, last week, p. 1899)

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

NOSTRUMS IN RETROSPECT

A Review of Worthless or Unscientific Proprietary Mixtures Previously Criticized

[FOREWORD.—The article that follows is the second¹ of a series written primarily for the purpose of reviewing the findings of the Council on Pharmacy and Chemistry on certain unscientific or worthless proprietary mixtures. Although the preparations which will be taken up in this series have been extensively dealt with in previous reports, the fact that they are still widely advertised and sold indicates the need of further publicity. The series is written by a man who is thoroughly conversant with the work of the Council on Pharmacy and Chemistry and can speak authoritatively on questions dealing with the actions of drugs in the treatment of disease.]

[ARTICLE II]

ANASARCIN AND ANEDEMINE

By S. Q. Lapius, M.D.

"Anasarcin" and "Anedemin" are the twin nostrums of cardiac pseudotherapy. They are dubbed "twin nostrums" not so much because of any similarity in their formulas, that being a minor consideration in the average nostrum, but because of the close similarity in their methods of exploitation, the therapeutic claims made for them, and the time and place of their birth.

It may be remembered that they both claim Winchester, Tenn., as their birth-place, and they appeared on the market at about the same time; furthermore, a comparison of the claims formerly made for both of them indicated that one mind conceived the main idea that lies back of their exploitation. While Anasarcin is especially dealt with in this article, much of the discussion applies with equal force to Anedemin.

A LUSH FIELD FOR NOSTRUMS

Cardiac disease, with its resultant renal involvement, is frequently encountered; and running, as it does, a chronic course, it offers an almost ideal field of exploitation for the typical nostrum vendor. By a typical nostrum vendor we mean one whose knowledge of his product is far below that of his appreciation of a certain element of human character. On this element rests the whole secret of the nostrum vendor's success. It is variously termed credulity, gullibility and child-like simplicity, but it is that which often causes even the most conscientious clinician to turn aside from the use of the best known and most dependable drugs at his command, in the face of disappointment and failure, and employ some vaunted mixture which in his saner moments he scorns to use.

Anedemin is said to consist of a "Scientific Combination of three of the more recently investigated members of the Digitalis Series, with Sambucus." That is, of apocynum, strophanthus and squill with elder. It is difficult to know just what idea it is intended to convey by the statement that it is a "scientific combination" of these drugs, for it is unscientific to mix three drugs of this group for use in fixed proportion in a wide range of conditions, if indeed, there is ever any indication for their use.

The great disadvantages of strophanthus and apocynum pertain to the extreme uncertainty of their absorption from the gastro-intestinal tract. Strophanthus is occasionally

absorbed promptly, sometimes so slowly that the therapeutic effects are not induced until an amount equal to several times that which would prove fatal if all of it were absorbed into the circulation has been administered, and unfortunately, one cannot control the absorption which may continue until a fatal effect is induced. This is true to an even greater degree of apocynum, and it was due to the recognition of this fact that apocynum was not admitted to the U. S. P. IX, the Committee on dosage having agreed that no safe and effective dose could be given.

THE COUNCIL'S PREVIOUS FINDINGS

In 1907 the Council on Pharmacy and Chemistry examined the literature used in the exploitation of Anasarcin and Anedemin and published its report. Anasarcin tablets, it was pointed out, were said to contain the active principles of *Oxydendron arboreum* (sour wood), *Sambucus canadensis* (elder) and *Urginea scilla* (squill), and the following claims were made for the nostrum:

- "Does what dropsy medicaments have hitherto failed to accomplish."
- "Superior to digitalis, strophanthus, scoparius, squills, acetate of potash and the hydragogue cathartics all put together."
- "The only known relief and permanent cure of dropsies."
- "Unrivalled heart tonic."
- "The most powerful agent known."
- "Safe in administration."
- "Non-toxic as ordinarily administered."
- "Will nauseate some persons," but "the reaction from the temporary depression is prompt."
- "In Bright's disease, both the interstitial and parenchymatous forms of nephritis, acute or chronic, no remedy . . . to equal it in efficacy."
- "Without increasing the debility of the patient or interfering with nutrition by producing loss of appetite . . ."
- "This treatment is to be continued without cessation until all symptoms of dropsy have disappeared."

A comparison of the earlier claims with those now being made (see advertisement reproduced from the *New York Medical Journal*) illustrates one of the results of the work of the Council. Today the nostrum exploiter avoids the cruder forms of obvious misstatement, but continues to make, by inference, claims that are equally misleading. It will be observed in this case that a more cautious pen worded the later advertisement, but there is still evident the intent to convince the reader that Anasarcin is superior to the official drugs in the treatment of cardiovascular diseases. The facts are that Anasarcin is at best a dangerous remedy in the hands of the average clinician in the treatment of such conditions, and its use is at all times to be condemned.

No competent investigator has ever investigated the pharmacology of sour wood (*Oxydendron arboreum*), and it appears to have no therapeutic value other than that due to a slight acidulousness. Elder (*Sambucus canadensis*) contains a trace of a volatile oil as its most important constituent, according to the British Pharmaceutical Codex of 1911 (p. 908), but it is difficult to explain why a trace of volatile oil should be considered important. Elder may be dismissed without further consideration in connection with Anasarcin tablets.

THE PHARMACOLOGY OF SQUILL

This leaves only squill among the constituents of Anasarcin for consideration. Sollmann (Manual of Pharmacology, 1917, p. 409) in discussing the advantages claimed for squill over other drugs of the digitalis group, says: "Dixon, 1906, points out that any superiority is outweighed by its disadvantages: uncertain absorption; strong gastro-intestinal irritation." Squill was formerly used as expectorant and diuretic, the activity having been attributed to two amorphous glucosids, scillipicrin and scillitoxin, but Ewins, 1911, found these to be impure mixtures. A later investigator claimed to have isolated two glucosidal agents from squill, but similar claims have often been made only to be disproved later, and we know of no confirmation of the claims regarding the isolation of any pure principles from squill having any true typical digitalis action.

The statement quoted from Sollmann is accepted by practically all pharmacologists, and we may say with certainty that squill is decidedly inferior to digitalis in the treatment of cardiovascular, and cardiorenal diseases, and certainly

1. The first article dealt with "Bell-Ans" ("Papayans-Bell") and appeared in THE JOURNAL, Nov. 24, 1917, p. 1815.

no active principles of squill were known to the scientific world at a time that the remarkable claims were first made for Anasarcin by an obscure pharmacist of Winchester, Tenn. Indeed, if Anasarcin were all that it was claimed to be, its discovery would have made Winchester as famous as a certain Wisconsin city was said to have been made by a popular beverage.

It has been abundantly demonstrated, and it is now almost universally accepted among well informed pharmacologists and clinicians, that all digitalis principles exert the same kind of action on the heart after they enter the circulation in effective doses, though they differ to an extraordinary degree in the intensity of their action and in their undesired side-actions such as nausea and vomiting. When the use of Anasarcin (squill) is followed by immediate improvement after digitalis has failed it merely shows that the dosage of digitalis was insufficient or that it was discontinued and the squill mixture was substituted before the full therapeutic effects of the digitalis developed.

WHEN THE DIGITALIS GROUP IS CONTRAINDICATED

If the administration of a sufficient dose of digitalis is not followed by improvement in the circulation it shows that the heart is incapable of responding to such treatment and the further use of any of the drugs of this group is distinctly contraindicated. This is confirmed by the experience of nearly every competent observer of digitalis therapy, and numerous fatalities have resulted from the failure to appreciate this fact and further administer some other member of the group, such as strophanthus or squill.

It is now well known that the cardiac effects of toxic doses of squill, and other members of the group, resemble closely those of cardiac disease, and it is often impossible to determine whether the behavior of the heart in a given case is attributable to insufficient dosage, to excessive dosage, or to the progress of the cardiac disease itself. If this occurs when one uses the best known members of the group it is certain that it occurs even more frequently when others that are less understood, are employed. In the light of this knowledge of the dangers attending the incautious use of any member of the digitalis group, and more especially the use of impure principles, such as are commonly obtained from squill, it is impossible to condemn sufficiently the recommendation that the use of Anasarcin should be continued without cessation until all symptoms of dropsy have disappeared.

Digitalis bodies are not suited for the treatment of all cardiac disturbances, and it is, of course, self-evident that a time must come in the treatment of chronic cardiac disease when the heart is incapable of responding to any form of treatment with improvement. But, unfortunately, it never loses its response to toxic doses, and to push the administration of any drug or mixture containing any drug of the entire digitalis group—and especially those, like squill, in which the side actions are most prominent—beyond the point of tolerance is to court certain disaster.

THE TREATMENT OF CARDIAC DROPSY

While it is quite certain that many lives have been sacrificed to the failure to understand this phase of cardiac therapy, it is equally certain that many lives have been sacrificed because of insufficient dosage, and one can steer a safe course between these dangers only by using the best known preparation available, and in the present state of our knowledge it is indisputable that digitalis and the tincture of digitalis are best suited for the treatment of cardiac disease except in those few cases in which intramuscular or intra-

venous administration must be employed temporarily for immediate effect.

The secret of prescribing successfully for the relief of dropsy in cardiac disease consists in understanding the effects of digitalis on the heart, in administering it until these effects indicate that the desired object has been obtained, and stopping, or interrupting, the administration at that point until the effects begin to wear off. Cumulation, so called, is a positive advantage in such cases. It merely means that the desired therapeutic effects once induced persist for a time, and that further medication is unnecessary during such persistence of action. Eggleston has recently shown (*Arch. Int. Med.*, July, 1915, p. 1; abstr., *THE JOURNAL*, July 31, 1915, p. 459) that the full therapeutic effects of digitalis can be induced in suitable cases within a few hours even with oral administration.

We are not aware of a single publication in which a careful detailed clinical study of Anasarcin has been reported. The claims made for Anasarcin, past and present, indicate either a deliberate purpose to mislead or crass ignorance of the rudiments of pharmacology and therapeutics. The exploiters of the nostrum claim that thousands of physicians have found Anasarcin tablets of unsurpassed remedial value in the treatment of disorders of the circulatory system and of ascitic conditions.² It must be admitted that too many physicians have prescribed Anasarcin, otherwise the manufacturers would not have continued to spend thousands of dollars in advertising it in medical journals during a period of more than ten years.


Doctor, this article is meant to be a candid discussion with you, whether you use Anasarcin or not, because every clinician is vitally interested in the customs that obtain in the practice of medicine, and we wish to put a hypothetical question to you. Answer it, at least to yourself, in exactly the spirit in which it is put. Suppose that you prescribe Anasarcin for a patient who is critically ill with cardiac disease. He dies. Are you willing to tell the relatives frankly just what you used and the

nature of the evidence on which you based your choice of this nostrum? Let the supposition be carried further and say that the case was hopeless, and agree that digitalis and all other drugs would have been equally ineffective. Granting all this, would your explanation satisfy? Would you in all candor dare to offer such an explanation? Try it as a hypothetical case before you are forced to apply it.

2. Former estimates of the number of physicians who prescribed Anasarcin appear to have been too high, possibly based on the ratio obtaining in Winchester, Tenn. Inquiry at five fairly busy drug stores in a large eastern city showed that in no instance was the pharmacist even acquainted with the name. One pretended to be, and manifested pity for the enquirer's ignorance in supposing that it could be imported during the war! He was obviously merely less honest than the others, who frankly admitted they had never heard of it.

Alternating Method of Exterminating Mosquitoes.—The two Sergeants, who have contributed much to tropical medicine, recently presented to the Académie des Sciences at Paris a report on what they call the alternating breeding-place method. They state that as the larvae of mosquitoes require about three weeks in water before the larvae develop into perfect winged insects, by diverting the water away, leaving the area without standing water, the stranded larvae will die off. The larvae deposited in the diverted water can likewise be killed off by diverting the water back again into its primary place. By thus alternating, week by week, the breeding places, the mosquitoes get no chance to develop, while the expense of this alternate draining may be minimal in comparison with the expense of oiling large areas of water, etc.

NEW YORK MEDICAL JOURNAL



TABLETS

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Correspondence

THE CARREL-DAKIN TREATMENT

[Dr. Welch and Dr. Bevan request the publication of the following letter, which is a reply to the one appearing in THE JOURNAL, November 17, page 1727. A reply by Dr. A. T. McCormack is postponed till next week through lack of space.—ED.]

Dear Bevan:—Thank you for your letter about the Carrel treatment of wounds, in which I am much interested.

I had the opportunity a year ago at Compiègne to observe the method and results of this treatment, and was most favorably impressed, as every one who has been there is. There can be no question that Carrel deserves the credit—and a very considerable credit this is—of recalling the attention of surgeons to the possibility of the sterilization of infected wounds by chemical means. The idea is, of course, not new, but is the original listerian one. That the Carrel-Dakin procedure actually accomplishes such sterilization sufficiently for surgical purposes is quite conclusively demonstrated, and whatever changes be made in his technic as the result of further experiences, he will deserve the credit of reapplying a great surgical principle of wound treatment, which had been practically abandoned, just as Lister will always have the credit of introducing the principles of antiseptics, though his technic be abandoned.

I was particularly interested when at Compiègne in following the Carrel method of bacteriologic control of the flora in the wound. I studied the smears made day by day from the wounds. These smears at first gave information concerning the numbers, and to a considerable extent also, the kinds of bacteria present. It was fascinating to watch the reduction, often astonishingly rapid, at other times slower, of these bacteria under the irrigation by the Dakin fluid. It was a quite novel thing to find the bacteriologist occupying this relation to the surgeon and telling him when the wound could be safely closed. The cicatrization after closure under this bacterial control was amazingly rapid.

The only other place where the Carrel treatment was consistently and correctly applied was by Depage at La Panne, which I did not visit, but I was told the results were admirable. Hutchinson returned from La Panne when I was in Paris, and was about to introduce the Carrel method at the American Ambulance at Neuilly.

Undoubtedly the technic of the Carrel treatment is elaborate and requires an intelligence and skill on the part of the surgeon which cannot be counted on for the average surgeon. The preparation of the Dakin solution also requires chemical skill. There are certainly difficulties in carrying out the Carrel treatment under the condition of actual warfare, and opinions may differ as to the extent of its applicability under these conditions; but this does not alter the fact that Carrel has made a very important contribution to the subject of wound treatment, and that surgeons should acquaint themselves with the principles and technic, and try to overcome the difficulties of applying the treatment as widely as possible.

I am not at all in sympathy with Sherman's efforts to have the treatment made obligatory or to have the Surgeon-General order this or any other method of treatment as the only correct procedure. There is not the slightest danger of any such thing happening. I am, of course, in sympathy with every effort looking to earlier treatment of wounds received at the front than was customary in the earlier stages of the war, and probably many wounds could be promptly closed which now are allowed to become badly infected, and thus the field for the Carrel treatment would be narrowed.

I see no conflict with the teachings of surgical pathology in Carrel's work. Of course, the cells and fluids must be relied on to take care of invading bacteria, and Almroth Wright felt, as you seem to feel, that what Carrel was aiming to do—destroy bacteria on the surface of wounds—was unimportant compared with reliance on the cellular defenses. Experience with the Carrel method, however, proves con-

clusively that the destruction of these surface bacteria without injury to the body tissues is of primary importance. So many who discuss this question seem to lose sight of the fact that a great principle is really involved, viz., that of the sterilization of wounds by chemical methods without damage to cells, and the influence of such sterilization on the repair of wounds. Carrel's work is fundamental on this point.

I understand that the Germans have taken over the Carrel method of wound treatment and are applying it most successfully. It would be melancholy to repeat the experience with Lister, who, discredited in his own country by all the surgeons, was taken up in Germany and his principles were there established so that his country had to accept him. I wish that you could have been at Compiègne and could have seen the actual results. These are quite unequaled, as Almroth Wright himself told me, and as so many have testified. We have enough in the way of control by other methods, I think, to justify this statement.

I visited Blake, whose great work is not in the line of wound treatment, but in the treatment of fractures. Halsted has been using the Carrel method in suitable cases for a long time, for over a year, and is most enthusiastic over it, but seems to feel that not many surgeons will master it.

Of course, much has appeared in the newspapers which is exaggerated and deplorable, and this is calculated to create a prejudice against Carrel; but I do not think that he is responsible for this.

WILLIAM H. WELCH, M.D., Baltimore.

"THE TREATMENT OF INFECTED WOUNDS"

To the Editor:—In THE JOURNAL, Nov. 10, 1917, p. 1645, appeared a review of the book by Carrel and Dehelly on "The Treatment of Infected Wounds." The larger part of the "review" is devoted to adverse criticism of statements ascribed to myself. While I am in no way responsible and had no previous knowledge of the matter in the book in question, the reviewer indulges in so many statements that are misleading or incorrect, that I deem it desirable to draw attention to the matter. In doing so, I wish to confine myself as far as possible to definite questions of fact, believing that the obvious animus of the reviewer will be adequately recognized by those who have interest in such matters.

The reviewer apparently regards it as fair play to record a list of antiseptics with which I have worked and to attach to them fantastic names which do not appear in the book nor have ever been employed by me, but which he apparently derives from advertising matter with which I have no connection in any way. He then proceeds to state, "Yet in all these 'discoveries' the potent agent has always been active chlorin (positively charged chlorin [Cl^+]), the same substance with which the medical profession has had well tried experience when employing calcium hypochlorite (bleaching powder) and the much abused solution of chlorinated soda (Labarraque's solution)." This statement is disingenuous and misleading. That "active chlorin" was contained in the substances is not surprising, since that was the object avowedly sought; but that positively charged chlorin ions, Cl^+ , are the active agent in each case is a gratuitous assumption without a shred of evidence. As a matter of fact, hypochlorite solutions appear to ionize mainly to ClO^- ions. That the chloramins dissociate differently is evident from the fact that while the hypochlorites bleach indigo solutions, the former do not. Moreover, their reactions with many other substances, including proteins, are often quantitatively and qualitatively different. The suggestion that Cl^+ ions are the active agents in all the chlorin antiseptics is as without basis as the assumption of the equivalence of white arsenic and salvarsan. If any one imagines that the various chlorin antiseptics are chemically equivalent, he will be speedily disillusioned if he perform the simple experiment of putting pieces of any animal tissue in the solutions and observing the result.

The reviewer states that "the authors uphold Dakin's claim that this solution . . . is isotonic with the blood." As a matter of fact, I have never made such a claim, and have always known the solution to be hypertonic.

The reviewer states that "Dakin's solution is *not* neutral, but is alkaline, and should be alkaline when prepared in the manner described." My actual statement is as follows: "The solution is acid to phenolphthalein suspended in water, but *still alkaline to litmus*."

Commenting on the use of phenolphthalein in aqueous suspension instead of in solution, the reviewer states, "It is, indeed, surprising that phenolphthalein should thus be used when every student in elementary analysis is taught that it is not reliable in such conditions." This statement is absolutely incorrect so far as the testing of hypochlorite solutions is concerned. Apparently the reviewer is unaware of the fact that hypochlorites react with the ordinary solutions of phenolphthalein to give chlorinated products and alkaline caustic soda, thus giving false indications of alkalinity. The use of phenolphthalein suspensions in water for testing the reaction of hypochlorite solutions has occasioned no difficulty in the hands of even inexperienced workers, and undoubtedly serves to avert the use of highly irritating solutions.

The reviewer, in contesting the approximate neutrality of the solutions, makes the following naive comment: "If to some of Dakin's solution alkali be added, and the solution then tested by phenolphthalein, it will still give the 'neutral' reaction." It has apparently escaped the notice of the reviewer that this condition was deliberately sought. The use of a balanced solution of hypochlorite containing "buffer salts" (bicarbonates or borates) was purposely chosen because such solutions "are able to retain their essential neutrality even after the addition of limited quantities of acid or alkali." It will, of course, be recalled that exact neutrality is an ideal and unobtainable condition, and that in everyday usage a solution is said to react acid, alkaline or neutral simply with regard to some arbitrarily chosen indicator.

Finally, may I add a word of personal explanation. No one deplores more than I do the ludicrous exaggerations of the daily press as to the utility of the solution which has become associated with my name. As a matter of fact, in none of my own writings in scientific journals have I coupled my own name with the solution, but have simply described the preparation as an approximately neutral sodium hypochlorite. In December, 1915, I wrote, "It would seem as if the time had come for a statement to the effect that what we have all been striving for is to find the best means of preparing, preserving and applying the powerful antiseptics, hypochlorites and hypochlorous acid, the main properties of which substances were discovered by distinguished French chemists many generations ago." So far as the hypochlorites are concerned, this is as true now as then.

H. D. DAKIN, New York.

COMMENT OF THE REVIEWER.—I regret that Dr. Dakin has made it necessary to deny any personal animus in my review of "The Treatment of Infected Wounds," by Carrel and Dehelly. What criticisms were made were made solely for scientific reasons.

Dr. Dakin places an unusual interpretation on my statement, "Yet in all these 'discoveries,' the potent agent has always been active chlorin (positively charged chlorin [Cl^+]). . . ." Contending that the statement is disingenuous and misleading, Dr. Dakin says: "That 'active chlorin' . . . was the object avowedly sought, but that positively charged chlorin ions, Cl^+ , are the active agent in each case is a gratuitous assumption without a shred of evidence." In other words, Dr. Dakin differentiates between active chlorin and positively charged chlorin (*atoms, not ions*. The term *ion* was not used in the review). This is quite contrary to present day concepts. According to modern chemistry, oxidation may "be considered to involve ultimately the assumption of positive, or the loss of negative electrical charges by ions or atoms" and defined "as consisting fundamentally in the loss of electrons by atoms or ions" (Stieglitz: Qualitative Chemical Analysis, The Century Company, 1911, Part I, page 252). Thus hypochlorous acid [(Cl^+OH)], which, besides ionizing into H^+ and ClO^- dissociates into Cl^+ and OH^- , hypobromous acid (Br^+OH), hypoiodous acid (I^+OH) and their derivatives have as a common characteristic an atom with an unstable positive charge and a tendency to convert

this atom into the common, stable, negative variety (Stieglitz and Senior, *Jour. Am. Chem. Soc.*, 1916, **38**, 2727), and therefore are *active* oxidizing agents. There is also convincing evidence to show that the chloramins (described by Dr. Dakin) contain positively charged chlorin as in the case of hypochlorite: (1) The formulas described by Dakin and methods of preparation (the replacing of a hydrogen atom of an amido group by chlorin) strongly suggest that the chlorin is positively charged. (2) On hydrolysis, they yield hypochlorous acid. (3) They are *active* oxidizing agents. I believe that if Dr. Dakin will consider these points, along with the classic researches of W. A. Noyes, Julius Stieglitz, Harry Shipley Fry, Lauder W. Jones and others, he will be convinced that I did not err.

In referring to the "isotonicity" of the Dakin-Daufresne solution ("Neutral" Solution of Chlorinated Soda, N. N. R.), I inadvertently had in mind an article by Daufresne, instead of Dakin. In this article (Daufresne, Maurice: L'hypochlorite de soude chirurgical. Différence entre la solution de Dakin et celle de Labarraque, *Presse méd.*, Oct. 23, 1916, p. 475), Daufresne states that "elle est sensiblement isotonique au sérum sanguin" ("it is perceptibly isotonic to blood serum"). I am sorry that this statement was attributed to Dr. Dakin; it happened, undoubtedly, because of the close association that has existed between the names of Daufresne and Dakin in their mutual work. However, so far as I am aware, this is the first time Dr. Dakin has publicly admitted the hypertonicity of the solution.

When I commented on the use of phenolphthalein, I did not have reference to its use as a solid instead of in solution. My contention was and is that phenolphthalein is "not reliable in such conditions," i. e., in the presence of *bicarbonates* and *hypochlorites*. The assertions in the review concerning the fallacy of the phenolphthalein indicator were made advisedly as a result of both theoretical considerations and a number of experiments. Dr. Dakin himself states that "hypochlorites react with ordinary solutions of phenolphthalein to give chlorinated products and alkaline caustic soda, thus giving false indications of alkalinity." This statement is in accord with my contentions, as, of course, phenolphthalein is only an indicator when in solution, whether it be added as such or "dusted" on as a powder. Furthermore, when we speak of neutrality, it should be understood that the neutrality is closely comparable to that of water. Dakin's solution does not have such neutrality, but is distinctly alkaline, part proof of which is the evidence offered by Dr. Dakin that it is "*alkaline to litmus*." Even under normal conditions, litmus is a more reliable indicator of alkalinity than phenolphthalein. Dr. Dakin's definition of neutrality would seem to be rather hazy, especially when, in the condition employed, the indicator is unreliable. The sooner writers will recognize that a solution is really neutral when the concentration of the H and OH ions is the same as exists in water, the sooner will there be less confusion in medical chemistry.

Dr. Dakin states that in none of his writings in scientific journals has he coupled his name with the solution. It might not be amiss to quote from page 23 of the recent "Handbook of Antiseptics" by Dakin and Dunham: "Neutral Sodium Hypochlorite Solution ('Dakin's Solution')."

THE REVIEWER.

"THE HANDICAP OF PROPRIETORSHIP IN MEDICINE"

To the Editor:—The article in THE JOURNAL, November 24, page 1818, with this title does us a gross injustice, and in reply thereto we beg leave to submit the following:

For reasons which every publisher (yourself included) understands, it is not practicable for us to reproduce in full, in the columns of *Therapeutic Notes*, all the clinical papers to which we wish to direct the attention of our readers. But that the article of Dr. Mundell was not garbled to make capital for Parke, Davis & Co. is quite apparent on comparison of the omitted portions with a previous paper by the same author reprinted in the January (1917) issue of the *Notes*, and herewith submitted together with clippings from

other issues of the *Notes* which prove that we have not hesitated to present to our readers the dangers incidental to the misuse of Pituitrin as well as the advantages of its proper use.

Therapeutic Notes, in quoting other journals, puts into its readers' hands the means of investigating the fairness of its quotations. It is a house organ—true enough; but the organ of a house which has always appealed to the honor as well as to the progressiveness of the medical profession. Its publishers could not afford to resort to deception in advertising their products through this or any other medium.

The profession is indebted to Parke, Davis & Co. for Pituitrin (among other medicaments), and it is to the profession that the manufacturers look for the ultimate verdict. The contraindications are quite as important as the indications, and, as the excerpts submitted show, we have taken account of these, not only in forming our own estimate, but in presenting the evidence to the readers of *Therapeutic Notes*.

We cite these facts that you may give us a square deal in an early issue of THE JOURNAL if so disposed.

PARKE, DAVIS & Co., Detroit.

[COMMENT.—THE JOURNAL has no desire to discuss Parke, Davis and Company's motives in omitting certain parts of Dr. Mundell's paper. What THE JOURNAL did was to publish those parts of Dr. Mundell's paper on the "Present Status of Pituitary Extract in Labor" that Parke, Davis and Company left out of their circular. That it is not practicable, as Parke, Davis and Company points out, for the manufacturers of proprietary products to reproduce in full all clinical papers dealing with such products is obvious. It is not so obvious why such concerns in abstracting or quoting papers of this kind should delete those parts that are unfavorable to the products dealt with rather than those that are favorable. Curiously, however, whenever an author is quoted only in part those parts are almost invariably those favorable to the product.—ED.]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

NO DRAFT OF MEN OVER 31 YEARS OF AGE

To the Editor:—1. I should like to know whether medical men (over the present draft age of 31 years) are to be drafted now or whether there is any possibility that this will be the case after the first of the year.
2. If the new draft age limit (from 18 to 45) is passed by Congress, will they take men from "country practices" where there is only one physician? My reason for wishing to know this is that if there is to be this necessity I should rather enlist than wait until the last and be drafted.
S. E. L.

ANSWER.—1. Under the present law, neither physicians nor other men over 31 years of age come within the selective service.

2. It is impossible to predict what may occur under new laws which may be passed until after these laws are passed. There is nothing in the present selective service law or in the regulations which would permit a special drafting of the medical profession.

TOEING IN

To the Editor:—What should I do, if anything, for a 2 year old child who "toes in" to an unpleasant extent when walking, although when standing he keeps the feet straight? The legs are well developed and are straight. He has had no illness except measles, and is in sturdy health. Is it worth while to apply braces, or will this fault correct itself in time?
W. J. W.

ANSWER.—A slight degree of toeing in is entirely natural, and indicates a strong foot. It is much to be preferred to a "toeing out" gait. Sometimes, however, it is present in an exaggerated degree; in such cases the trouble can be easily remedied by the use of a straight lasted shoe with a lift of one-fourth or three-eighths inch put under the outside of the sole. Great care must be taken that the shoes are sufficiently long. The empty space inside the shoe should extend at least one-fourth inch beyond the ends of the toes. It will be found that the heel will wear off unevenly on one side, and this should be kept squared up and not allowed to run over.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

- ALABAMA: Montgomery, Jan. 8. Chairman, Dr. S. W. Welch, Montgomery.
- COLORADO: Denver, Jan. 8. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
- DELAWARE: Wilmington, Dec. 11-13. Sec., Dr. H. W. Briggs, 1926 Jackson St., Wilmington.
- DISTRICT OF COLUMBIA: Washington, Jan. 8. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.
- HAWAII: Honolulu, Jan. 10-13. Sec., Dr. G. A. Batten, Box 375, Honolulu.
- INDIANA: Indianapolis, Jan. 8-10. Sec., Dr. Wm. T. Gott, 84 State House, Indianapolis.
- MARYLAND: Baltimore, Dec. 11. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown.
- MINNESOTA: St. Paul, Jan. 2-4. Sec., Dr. Thomas McDavitt, 741 Lowry Bldg., St. Paul.
- MISSOURI: St. Louis, Dec. 17-19. Sec., Dr. George H. Jones, 206 Washington St., Jefferson City.
- NATIONAL BOARD OF MEDICAL EXAMINERS: New York City, Jan. 9-17. Sec., Dr. J. S. Rodman, 310 Real Estate Bldg., Broad and Chestnut Sts., Philadelphia.
- NEW HAMPSHIRE: Concord, Dec. 10-12. Sec., Dr. W. T. Crosby, Beacon Bldg., Manchester.
- NEW MEXICO: Sante Fe, Jan. 14. Sec., Dr. R. K. McClanahan, East Las Vegas.
- NORTH DAKOTA: Grand Forks, Jan. 1. Sec., Dr. G. M. Williamson, Grand Forks.
- OKLAHOMA: Oklahoma City, Jan. 8-9. Sec., Dr. J. J. Williams, Weatherford.
- OREGON: Portland, Jan. 1. Sec., Dr. Herbert S. Nichols, Portland.
- PENNSYLVANIA: Philadelphia, Jan. 8-10. Sec., Nathan C. Schaeffer, State Capitol, Harrisburg.
- RHODE ISLAND: Providence, Jan. 3. Sec., Dr. B. U. Richards, State House, Providence.
- SOUTH DAKOTA: Pierre, Jan. 8. Sec., Dr. P. B. Jenkins, Waubay.
- UTAH: Salt Lake City, Jan. 7-8. Cor. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.
- VIRGINIA: Richmond, Dec. 11-14. Sec., Dr. J. W. Preston, McBain Bldg., Roanoke.
- WASHINGTON: Spokane, Jan. 1. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.
- WISCONSIN: Madison, Jan. 14. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

Maine March Examination

Dr. Frank W. Searle, secretary of the Maine Board of Registration of Medicine, reports the written and practical examination held at Portland, March 13-14, 1917. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Five candidates were examined, all of whom passed. Three candidates were licensed through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|------------------------------|-------------------|------------|-----------|
| Loyola University | (1916) | | 79 |
| Bowdoin Medical School | (1916) | | 78 |
| Tufts College Medical School | (1909) 82; (1915) | | 83 |
| McGill University | (1916) | | 92 |

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|--|------------------------------|------------|------------------|
| Dartmouth Medical School | (1891) | | New Hamp. |
| Cincinnati College of Medicine and Surgery | (1900) | | Ohio |
| University of Vermont | (1912) | | Vermont |

Alabama July Examination

Dr. S. W. Welch, chairman of the Alabama State Board of Medical Examiners, reports the written examination held at Montgomery, July 9-13, 1917. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Forty-four candidates were examined, of whom 32 passed and 12 failed. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|------------|------------|
| Birmingham Medical College | (1915) | | 76.3, 79.2 |
| University of Alabama (1917) | 75.9, 77.3, 77.8, 79, 79.4, 79.5, 80, 81.3, 84.1, 84.2, 84.2, 85.4. | | |
| Atlanta Medical College | (1916) 77.2; (1917) 78, 83.8, 84.8. | | |
| Chicago College of Medicine and Surgery | (1916) | | 75.4 |
| Loyola University | (1916) | | 75.9 |
| University of Louisville | (1916) | | 84.5 |
| Tulane University of Louisiana | (1909) 76.8; (1917) 76.3, 76.8 | | |
| Johns Hopkins University | (1917) | | 85.6 |
| Columbia University | (1916) | | 87.8 |
| Jefferson Medical College | (1916) 85.5; (1917) | | 81.8 |
| Meharry Medical College | (1917) | | 75.2 |
| University of Nashville | (1897) | | 75.3 |
| Vanderbilt University | (1917) | | 75 |
| University of Virginia | (1917) | | 80.6 |

FAILED

| | | |
|-----------------------------------|---------------------|-------------------|
| Birmingham Medical College (1914) | 69, 72.1; (1915) | 55.6, 60.1, 72.9. |
| North Carolina Medical College | (1917) | 69.5 |
| University of Oklahoma | (1914) | 72.6 |
| Jefferson Medical College | (1884) | 70.9 |
| Meharry Medical College | (1914) | 61.3 |
| Memphis Hospital Medical College | (1899) 69.5; (1912) | 69.1 |
| University of Tennessee | (1915) | 69.6 |

Book Notices

PRACTICAL MATERIA MEDICA AND PRESCRIPTION WRITING, WITH ILLUSTRATIONS. By Oscar W. Bethea, M.D., Ph.G., F.C.S., Assistant Professor of Materia Medica and Instructor in Prescription Writing, Tulane University of Louisiana. Second Edition. Cloth. Price, \$4.50 net. Pp. 562. Philadelphia: F. A. Davis Company, 1917.

THE PRESCRIPTION THERAPEUTICALLY, PHARMACEUTICALLY, GRAMMATICALLY AND HISTORICALLY CONSIDERED. By Otto A. Wall, Ph.G., M.D., Professor of Materia Medica, Pharmacognosy and Botany in the St. Louis College of Pharmacy. Fourth Edition. Cloth. Price, \$2.50. Pp. 274, with illustrations. St. Louis: C. V. Mosby Company, 1917.

PHARMACY, THEORETICAL AND PRACTICAL, INCLUDING ARITHMETIC OF PHARMACY. By Edsel A. Ruddiman, Pharm.M., M.D., Professor of Pharmacy and Materia Medica, Department of Pharmacy, Vanderbilt University. Cloth. Price, \$1.75 net. Pp. 267. New York: John Wiley & Sons, 1917.

The first edition of the volume by Bethea was reviewed in THE JOURNAL, Nov. 6, 1915, p. 1667, when the purposes of the book and the general treatment of the subject were described. In the second edition the book has been brought up to date, especially with reference to drugs in the United States Pharmacopeia. New ones have been added, and many dropped, "with a sigh of relief," it is said. In addition to naming all of the pharmacopeial preparations and describing many of them, prescriptions are given which illustrate the manner in which these are advantageously prescribed. Errors and incompatibilities are pointed out. There are clinical and general indexes. Attention might be called to a few errors in proofreading of the names of drugs and chemical formulas, and to the frequent occurrence of the split infinitive and other defects of style which have not been eliminated from this edition. Attention is properly directed by the author to the undesirability of the habit of prescribing proprietary drugs, but it is to be noted with reference to prescription writing, that after giving the Latin terminations of many drugs the author says: "They are always abbreviated, so it is suggested that a study of terminations is not necessary." This is a bad suggestion, as is the one that the prescriptions given in the book are in perfect form to be copied and sent to the druggist, a method of prescribing which should not be encouraged.

Leaving out the section on materia medica. Wall's book covers much the same ground in the matter of prescription writing, with examples, etc., as the book by Bethea, but it is more extended. Most interesting is the history, which it gives, of prescription writing from its beginning in ancient days. The author upholds process patents on proprietary drugs, and the specification of the products of a certain manufacturer in a prescription.

Ruddiman has given interesting, practical and useful statements of things the practicing pharmacist should know, but adapted more especially to the use of students. His book is intended to be supplementary to the information gained from the Pharmacopeia and the National Formulary.

EXAMINATION OF WATER, CHEMICAL AND BACTERIOLOGICAL. By William P. Mason, Professor of Chemistry, Rensselaer Polytechnic Institute. Fifth Edition. Cloth. Price, \$1.25. Pp. 186, with illustrations. New York: John Wiley & Sons, 1917.

In this new edition of a well known laboratory guide, there has been little change in the chemical analyses described; but the tests for "relative stability," free chlorine, and lime and soda values have been added. The bacteriologic methods have been rewritten to conform to the latest edition of "Standard Methods." Unfortunately the normal chlorine maps referred to in the text have been omitted. The illustrations have been materially improved over those in former editions. Amplification of Appendix A, discussing the interpretation of a water examination, would greatly increase the usefulness of the book for elementary students.

Medicolegal

When Right of Appeal to Courts Obtains

(*Brown vs. Harris County Medical Society et al. (Tex.)*, 194 S. W. R. 1179)

The Court of Civil Appeals of Texas, in reversing a judgment that dismissed the plaintiff's application for injunctive relief against expulsion from the defendant society, says that the trial court sustained a general demurrer to the plaintiff's petition, and on his declining to amend the same, dismissed his suit on the ground that it appeared from the petition that the plaintiff had the right to appeal to the board of councilors of the state association, from the proceeding of the defendant society, and that such appeal made provision for adequate relief. The cause having been disposed of by demurrer, this court was not advised, nor was the trial court advised, otherwise than by the allegations of the plaintiff's petition, as to what provision was made for the trial and expulsion of the members of the defendant society, by its by-laws and rules. Therefore the court is unable to say whether or not the plaintiff was tried and convicted in accordance with the by-laws and rules of the association, or whether or not the appeal provided for would have afforded adequate relief, unless the court does know that in his petition the plaintiff alleged that he was tried on charges presented on the night on which he was tried and convicted; that he had no notice or knowledge of the existence of such charges until after he had presented his defense; and that this trial on such charges was contrary to and in violation of the by-laws and rules of the association. The court also knows that the plaintiff alleged in his petition that the provisions for appeal made by the association were wholly inapplicable and inadequate, and would not afford him any relief for the alleged unlawful conviction and expulsion. If the allegations of the plaintiff's petition were true, he had the right to resort to a court of equity for relief, and the trial court erred in holding to the contrary and dismissing his suit on demurrer; in other words, if the plaintiff's allegation that the board of councilors, the appellate body, had no power to review and reverse the action of the local society, in expelling the plaintiff, in the event they should find that he was not tried in accordance with the by-laws and rules of the association, was true, the appeal provided by the association was inadequate and would not furnish the plaintiff relief from such unlawful conviction and expulsion, and in such case he had the right to resort to the courts for relief. The trial court should have overruled the general demurrer, and have heard evidence as to the facts alleged with reference to the rules of the association governing appeals, and in the event the facts alleged were established, the court should have gone further and heard evidence as to whether the plaintiff was tried and expelled in accordance with the by-laws and rules of said association. It is well settled that where an association under its rules expels a member, such member must resort to, and must exhaust, the remedies provided by the association itself, through its constitution and by-laws, before applying to a court of equity for relief. But this court has found no authority for holding that where a member of a voluntary association has been convicted of an offense and expelled in violation of the rules and by-laws of the association, and where the by-laws and other laws of the association do not allow adequate relief by appeal from such conviction and expulsion, such member may not resort to a court of equity for relief. The court thinks the uniform holding of all courts is to the contrary.

Society Proceedings

American Association of Anatomists, Minneapolis, Dec. 27-29.
American Physiological Society, Minneapolis, Dec. 27-29.
Porto Rico Medical Association, San Juan, Dec. 22-23.
Society of American Bacteriologists, Washington, D. C., Dec. 27-29.
Western Surgical Association, Omaha, Dec. 14-15.

Current Medical Literature**AMERICAN**

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York Pa.

November, LXXVI, No. 5

- 1 *Fundal Hysterectomy to Reduce Menstruating Surface. G. K. Dickinson, Jersey City, N. J.—p. 740.
- 2 *Physical Conditions in Women Warranting Sterilization. E. W. Hedges, Plainfield, N. J.—p. 745.
- 3 *Prolapse of Uterus. C. L. Bonifeld, Cincinnati.—p. 750.
- 4 *Operative Treatment of Procidentia. A. T. Jones, Providence, R. I.—p. 752.
- 5 Cervical Lacerations; Their Significance for Patient. F. Reder, St. Louis.—p. 756.
- 6 *Acute Dilatation of Uterus; Report of Cases. N. S. Scott, Cleveland.—p. 763.
- 7 *Carcinoma Occurring in Stump of Cervix, Following Suprapubic Hysterectomy; Report of Cases. E. A. Vander Veer, Albany, N. Y.—p. 771.
- 8 *Recurrences After "Five-Year Period" in Carcinoma of Cervix. X. O. Werder, Pittsburgh.—p. 776.
- 9 Radium; Report of Cases. D. C. Moriarta, Saratoga Springs, N. Y.—p. 781.
- 10 *Mixed Cell Tumor of Kidney Weighing Three Pounds in Infant Ten Months Old. W. E. Darnall, Atlantic City, N. J.—p. 786.
- 11 *Etiologic Study of Vulvar Carcinoma. F. J. Taussig, St. Louis.—p. 794.
- 12 Case of Pseudohermaphroditism. H. D. Purdum, Sykesville, Md.—p. 813.
- 13 Primary Carcinoma of Liver in Childhood; Report of Case. J. Forman, Columbus and J. S. Hattery, Manfield, Ohio.—p. 862.

1—4. Abstracted in THE JOURNAL, Oct. 13, 1917, pp. 1293 and 1294.

6. Abstracted in THE JOURNAL, Oct. 20, 1917, p. 1377.

7. **Carcinoma of Cervix.**—About sixty-five cases of this kind are now on record. Vander Veer points out that because carcinoma of the cervix does occur in a few cases following suprapubic hysterectomy, it is not a point in favor of a panhysterectomy exclusively. The dangers of a panhysterectomy are greater than the risk of a carcinoma occurring secondarily in the cervical stump and being promptly treated. A careful examination should be made of every cervix before the hysterectomy is performed, particularly in women who have borne children. In every case of hysterectomy, the patient should be advised to report promptly if there is any appearance of a vaginal discharge, a curettment done, and a laboratory examination made. Removal of the cervix per vaginam is certainly to be preferred to opening the abdomen in every case in which the disease has not progressed too far, as well as in cases having any discharge. Routine pathologic examination of the myomatous uterus at the time of operation should be done, and in this way unsuspected cases of carcinoma of the uterus, also of the cervix, will be discovered and the proper operation then performed.

8. Abstracted in THE JOURNAL, Oct. 27, 1917, p. 1466.

10. Abstracted in THE JOURNAL, Oct. 20, 1917, p. 1378.

11. **Study of Vulvar Carcinoma.**—The fifteen observations of vulvar cancer made by Taussig illustrate the great malignancy of cancer in younger individuals. Of special interest was the fact that of the five whose age was under 45 years, two had had operations that brought on artificial menopause and these two were by far the most malignant in this series. Previous pregnancies would not seem to be a factor in their development, for six of the fifteen women had had no children and three of them had never been married. The inguinal or femoral lymph glands were involved with certainty in nine of the fifteen women. Only one of these nine women is at present living and this one was operated on only four months ago so that the probability is that she also will die of a recurrence. Taussig says that the fact that no cancer was found in the lymph glands in some of these cases by no means proves that a small nest of cancer cells was not tucked away in some unexamined portion of the tissue removed. Clinical experience shows that in almost every case of vulvar cancer, even in the earliest stages the lymph glands are involved. Even after radical removal of the lymph glands

with the vulvar mass, the chance for a reappearance of the cancer in the glandular system is three times greater than is the local recurrence.

American Journal of Orthopedic Surgery, Boston

November, XV, No. 11

- 14 Volkmann's Contracture: Interstitial Myositis; Report of Cases. A. Steindler, Iowa City, Iowa.—p. 741.
- 15 The 1916 Maryland Epidemic of Infantile Paralysis. R. T. Taylor, Baltimore.—p. 759.
- 16 Subperiosteal Fissure Fractures of Tibia in Children; Report of Cases. S. Kleinberg, New York.—p. 764.
- 17 Combined Medical and Postural Examination of Seven Hundred and Forty-Six Young Adults. L. T. Brown, Boston.—p. 774.
- 18 Orthopedic Innersole for Shoes. H. W. Marshall, Boston.—p. 788.

Annals of Surgery, Philadelphia

November, LXVI, No. 5

- 19 *Treatment of Staphylococcus Septicemia by Transfusion of Immune Blood. R. S. Hooker, New York.—p. 513.
- 20 *Persistence of Bacteria within Sequestrums. K. Taylor and M. Davies, Paris.—p. 522.
- 21 *Case of Diabetis Insipidus as Sequel to Gunshot Wound of Head. E. A. Graham, Mason City, Iowa.—p. 529.
- 22 *Traumatic Brachial Paralysis with Flail Shoulder Joint; Report of Fourteen Cases. T. T. Thomas, Philadelphia.—p. 532.
- 23 Case of Myxofibromas of Abdominal Wall. K. S. J. Hohlen, Lincoln, Nebr.—p. 555.
- 24 Two Cases of Gallstones in Infancy and Childhood. D. N. Eisen-drath, Chicago.—p. 557.
- 25 Four Kinds of Appendicitis. R. T. Morris, New York.—p. 560.
- 26 *Enterostomy and Use of Omentum in Prevention and Healing of Fistula. C. H. Mayo, Rochester, Minn.—p. 568.
- 27 Histopathology of Twenty-Six Cases of Carcinoma of Testicle. S. H. Geist and W. Thalheimer, New York.—p. 571.
- 28 University Hospital Shoulder Splint. S. Pope, San Francisco.—p. 581.
- 29 *Evaluation of Asepsis and Antisepsis. W. F. Fowler, Rochester, N. Y.—p. 583.

19. **Treatment of Septicemia by Transfusion.**—Five cases of transfusion of immune blood for staphylococcus infection are reported and analyzed by Hooker. In four the donors were immunized. The results obtained are decidedly in favor of the efficacy of immunized blood transfusion in chronic staphylococcus septicemias, and especially in those which complicate bone conditions. In this class of cases there is usually ample time to prepare a suitable donor by administration of vaccines, but if the anemia is pronounced no time should be lost in performing a preliminary transfusion of normal blood. In the acute infections, early blood cultures and an immediate start to immunize a donor are of the utmost importance. If urgent, it is best not to wait for full immunization but to give the first transfusion even after one dose of vaccines. If the patient has a fairly good blood volume with a high bacterial blood content, there should be no hesitation in removing a considerable amount of blood by venesection just before transfusion.

20. **Bacteria Within Sequestrums.**—In about 90 per cent. of the specimens of bone examined histologically by Taylor and Davies bacteria were seen lying well within the substance of the sequesterum, usually in nests within the canals or cell spaces. The organisms were recovered more frequently from the sequesterum than from the wound, suggesting a richer flora within the former. One point, however, is especially evident, and that is the greater incidence of the anaerobic group within the sequesterum. Gas-forming anaerobes developed nearly four times more often from the bone than from the wound, while spores were present six times more often. In no case were gas or spore-producing anaerobes recovered from the wound when not recovered from the sequesterum removed from it. The bone itself appears to be the most common site for the persistence of the anaerobic flora. Anaerobic bacilli are probably active factors in the disintegration of sequestrums within the wound. Anaerobic bacilli within the dead bone appear to be associated with the occurrence of "flares" after operations on bones. Flares occurred more frequently after sequestrectomy when the cases were over 120 days old than when the cases were under that age. The authors believe that it is probably impossible to kill by antiseptic treatment the bacteria within the dead bone. The object of treatment must be to remove this focus of infection. The sequestrums may be extracted by operation, or their dis-

appearance hastened by utilizing the solvent action of acid dressing solutions. The persistence of bacteria within the bone probably explains the infection which often follows bone grafts in old compound fractures, and indicates the advisability of postponing that operation as long as practicable.

21. Diabetes Insipidus After Head Wound.—Graham's case is of interest because it seems to bring additional support to the idea that diabetes insipidus is an expression of a disturbance of function of the hypophysis or its neighboring tissue.

22. Traumatic Brachial Paralysis.—The purpose of this paper is to confirm, by further clinical experience, the conclusion reached six years ago on this phase of traumatic brachial paralysis, that is, that the flail shoulder joint is the result of a dislocation and is essentially the cause and not the result of the paralysis. This is shown by the fact that the early operative removal of the flail shoulder results in a cure of the paralysis. If the paralysis and flail shoulder had been caused by a rupture of the brachial plexus, recovery would not have followed, uniformly, treatment restricted to the shoulder joint. According to Thomas's experience, in most cases of traumatic brachial paralysis the shoulder joint is not in the least flail, but on the contrary exhibits limited movement and pain when movement is made. In view of the large number of cases of obstetric palsy reported, hundreds of them in recent years, Thomas is inclined to doubt its occurrence. If it does not occur it then becomes necessary for those who account for the obstetric paralysis by an injury of the brachial plexus to explain the absence of flail shoulder in this class of cases.

26. Enterostomy in Healing of Fistula.—Mayo proceeds as follows: A low-lying loop of distended bowel is elevated into the incision. A segment is freed of gases or fluids and controlled by rubber-covered forceps applied above and below mesentery a purse-string suture of silk is applied in a diameter of half an inch. The bowel is perforated in the center of the point selected for perforation. At a point opposite the the purse string by a knife or cautery. A catheter, size 10 or 12, is inserted several inches into the intestine and held in place after the purse string is tied, by perforating its side with the same needle and tying it into place. Two successive purse-string sutures may be applied by the Stamm-Kader method, but the procedure most satisfactory is that of Witzel, that is, depressing the catheter into the wall of the bowel and suturing together the folds thus formed over the catheter for a space of an inch and a quarter. When the operation is made as a jejunostomy for feeding or for intestinal obstruction in children the Coffey method of incising the peritoneal and muscular layers of the bowel at the point of depressing the catheter into its wall conserves the lumen of the intestine, the tube being placed between the mucosa and the wall of the intestine, and the peritoneum and muscle being approximated over the catheter. This method is rarely followed by a fistula. For additional security and also to favor closure of the opening, pass the catheter through the perforated omentum and then for fixation include the parietal peritoneum, the omentum and the intestine in three sutures. This method maintains a movable, even if adherent, intestine and the omental graft aids in closing the bowel opening by granulation.

29. Evaluation of Asepsis and Antisepsis.—Fowler's investigation of the value of various antiseptics and methods of antisepsis discloses abundant clinical evidence of the efficacy of iodine in skin sterilization, this evidence being corroborated by laboratory findings; the germicidal action of mercuric chlorid is too slow to be of value in sterilization of the skin. Eternal vigilance is the price of asepsis.

Archives of Internal Medicine, Chicago

November, XX, No. 5

- 30 *Renal Function in Gout. C. W. McClure, Boston.—p. 641.
- 31 Amyotonia Congenita of Oppenheim: Report of Six Cases, Full Review of Literature. M. S. Reuben, New York.—p. 657.
- 32 Diagnostic Signs from Scalenii, Intercostal Muscles and Diaphragm in Lung Ventilation. C. F. Hoover, Cleveland.—p. 701.

- 33 Serum Changes Following Protein "Shock" Therapy. W. F. Petersen, Chicago.—p. 716.
- 34 *Ventricular Fibrillation in Man with Cardiac Recovery. G. C. Robinson and J. F. Bredeck, St. Louis.—p. 725.
- 35 Localized and Interlobar Pneumothorax Complicating Pulmonary Tuberculosis; Report of Cases. M. Fishberg, New York.—p. 739.
- 36 Studies on Blood Sugar. L. Hamman and I. I. Hirschman, Baltimore.—p. 761.
- 37 Kidney Function in Diabetes Mellitus. R. Fitz, New York.—p. 809.

30. Renal Function in Gout.—McClure is of the opinion that the apparently frequent occurrence of decreased renal function in cases of typical gout justifies a word of caution against assuming that the faulty excretion of uric acid and of other nitrogenous substances when found is due to derangements in metabolism. The gouty kidney is often functionally deficient, hence the faulty elimination of exogenous uric acid and of other nitrogenous substances by gouty persons may be the result of depression of the functional power of the kidneys. While renal retention explains many of the anomalies occurring in the excretion of uric acid and of other nitrogenous substances in gout, nevertheless this does not explain the nature of gout, nor does it preclude the possibility of there being an underlying perversion of metabolism. The purpose of this discussion has been to emphasize the facts that (1) many of the findings which have heretofore been considered due to disturbances of nuclein metabolism in gout may be explained as the result of renal inadequacy, and (2) that the theories concerning the etiology of gout remain hypotheses without satisfactory experimental bases.

34. Ventricular Fibrillation in Man with Cardiac Recovery.—A case is reported by Robinson and Bredeck in which the patient showed marked cardiac insufficiency and had three attacks of cardiac syncope. During one of these attacks an electrocardiogram was obtained which is typical of ventricular fibrillation. The patient lived thirty hours after this syncopal attack, and numerous electrocardiograms were obtained during this time. One immediately after the intravenous injection of strophanthin showed a deranged cardiac mechanism similar to that observed experimentally by Levy and Lewis during the so-called state of potential fibrillation. The abnormal forms of ventricular complex which occurred frequently, were such as to indicate that there was a derangement of intraventricular conductivity. This may have been the prime factor in the production of the ventricular fibrillation. The occurrence of ventricular complexes indicative of derangement of intraventricular conductivity should be taken as contraindication for the use of drugs such as chloroform, epinephrin and strophanthin, which predispose the heart to ventricular fibrillation. The foregoing case is the first example of cardiac recovery from well established ventricular fibrillation that has been observed in man.

Archives of Ophthalmology, New Rochelle, N. Y.

November, XLVI, No. 6

- 38 Antigenic Properties of Uveal Tissue as Shown by Complement Fixation. A. C. Woods, Philadelphia.—p. 503.
- 39 Case of Aneurysm of Internal Carotid Artery (Intracranial Portion) and Its Effect on Patient's Vision. J. R. Shannon, New York.—p. 518.
- 40 Supernumerary Orbital Muscles. C. C. Rush and J. P. Schaeffer, Philadelphia.—p. 524.
- 41 Case of Total Loss of Vision in One Eye and Partial Loss in Other Completely Relieved by Sellar Decompression Operation. W. R. Parker, Detroit.—p. 528.
- 42 Case of Hemorrhage into Optic Nerve Sheaths as Direct Extension from Diffuse Intrameningeal Hemorrhage Caused by Rupture of Aneurysm of Cerebral Artery. F. H. Doubler and S. B. Marlow, Boston.—p. 533.
- 43 Quantitative Perimetry; Practical Devices and Errors. C. B. Walker, Boston.—p. 537.
- 44 Heterochromia Iridis, Heterochromic Cyclitis and Allied Conditions. E. C. Ellett, Memphis, Mass.—p. 562.

Bulletin of Johns Hopkins Hospital, Baltimore

November, XXVIII, No. 321

- 45 *Histological Study of Fifty Uteri Removed at Cesarean Section. J. W. Williams, Baltimore.—p. 335.
- 46 *Adenomyoma of Rectovaginal Septum. T. S. Cullen, Baltimore.—p. 343.
- 47 *Hematomas of Ovary, Including Corpus Luteum Cysts. E. Novak, Baltimore.—p. 349.

45. **Fifty Uteri Removed at Cesarean Section.**—During the past twenty years Williams has had occasion to amputate the body of the uterus supravaginally and to treat the stump extraperitoneally in fifty cases following delivery by cesarean section. In each instance the specimen has been preserved and subjected to careful histologic examination. The study of this comparatively large material has yielded important information concerning a number of questions; more particularly concerning the mechanism of the separation of the placenta and of the fetal membranes; the amount of decidua retained immediately postpartum; the vascular changes at the placental site; the retraction of the uterine muscle; the occurrence of ascending infection in patients who had been long in labor, or who had been repeatedly examined by persons neglecting rigorous hand disinfection; and finally concerning the characteristics of the cicatrix resulting from previous sections, and its bearing on the correctness of the dictum—"Once a cesarean always a cesarean." But, Williams says, that the evidence at his disposal indicates that the healing of cesarean section wounds is generally satisfactory, provided the convalescence has been normal, and ordinarily does not call for a repetition of the procedure unless definitely indicated by the existence of extreme disproportion or some other conditions. On the other hand, in patients in whom the convalescence has been abnormal, it is probable that the cicatrix will be greatly thinned out and will offer a locus minoris resistentiae. In such cases, a repeated cesarean section may be indicated for the express purpose of avoiding a subsequent rupture. Williams' experiences, however, shows that this is not inevitable and that even should it occur, satisfactory results should follow prompt operation. For practical purposes, therefore, Williams concludes that the behavior of the cicatrix can be regarded with equanimity provided the previous convalescence has been normal, but when it has been disturbed there is a reasonable probability of the occurrence of rupture, and that such patients should be kept under the closest observation during the last months of a succeeding pregnancy.

46. Abstracted in *THE JOURNAL*, Aug. 5, 1916, p. 401.

47. **Hematomas of Ovary, Including Corpus Luteum Cysts.**—A careful study of the menstrual histories of the cases on which Novak's paper is based shows that the hemorrhage which cause follicular hematomas occurs characteristically at or near the supposed time of ovulation, that is, between the seventh and sixteenth days of the menstrual cycles. The bleeding of corpus luteum origin, as might be expected, occurs later, being apparently only an exaggeration of that normally occurring in the stage of vascularization. There is no characteristic menstrual history associated with the presence of hematomas in the ovary.

California State Journal of Medicine, San Francisco

November, XV, No. 11

- 48 Vegetative Nervous System in Relation to General Medicine. F. M. Pottenger, Monrovia.—p. 440.
- 49 Report of Forty-Four Appendicitis Operations in Children Under Fourteen Years of Age. E. K. Willits and M. I. Judell, San Francisco.—p. 444.
- 50 Intranasal Cosmetic Surgery with Special Reference to Rib with Cartilage and Cartilage Transplants. G. Selfidge, San Francisco.—p. 445.
- 51 Diagnosis and Treatment of Acidosis, Especially in Diabetes. A. H. Fowe, Oakland.—p. 451.
- 52 Etiology of Pellagra. J. E. Jennison, San Diego.—p. 456.
- 53 Malingering; Its Diagnosis and Significance. J. H. Catton, San Francisco.—p. 458.
- 54 Remote Effects of Brain Trauma. H. W. Wright, San Francisco.—p. 462.
- 55 Later Developments Along Immunologic Lines. R. A. Archibald, Oakland.—p. 464.

Georgia Medical Association Journal, Augusta

October, VII, No. 6

- 56 Early and Late Gastric Cancer as Shown by Roentgen Ray. G. M. Niles, Atlanta.—p. 109.
- 57 Tumors of Gums. J. L. Campbell, Atlanta.—p. 112.
- 58 Roentgen Examination of Stomach, Duodenum and Appendix. J. S. Derr, Atlanta.—p. 116.
- 59 Modern Artificial Infant Feeding—Simple, Practical and Scientific. W. A. Mulherin, Augusta.—p. 124.

Illinois Medical Journal, Chicago

November, XXXII, No. 5

- 60 Individualization in Treatment of Surgical Inflammations. E. H. Ochsner, Chicago.—p. 305.
- 61 Report of Interesting Case in Its Relation to So-Called Traumatic Hernia. C. R. G. Forrester, Chicago.—p. 308.
- 62 Pyelocystitis in Infancy and Childhood. H. F. Helmholtz, Evanston.—p. 311.
- 63 Importance of Nasal Affections in General Practice. N. Schrollman, Chicago.—p. 314.
- 64 Ileus. C. Langer, Chicago.—p. 317.
- 65 Some Bodily Effects of Depressing Emotions. M. Solomon, Chicago.—p. 322.
- 66 Nasal Dysmenorrhea and Genital Areas of Nose. L. E. Barnes, Chicago.—p. 326.
- 67 Points and Pointers. G. W. Nesbitt, Sycamore.—p. 330.
- 68 Diagnosis and Treatment of Moral Diseases. E. N. Stenn, Chicago.—p. 337.
- 69 Psychotherapy in Obstetrics. H. W. Long, Elmwood.—p. 339.
- 70 Foreigner; Prey of Medical Quacks. H. R. Krasnow, Chicago.—p. 342.
- 71 Asthma. R. H. Brown, Chicago.—p. 345.
- 72 Goiter, Diagnosis and Treatment. L. F. Watson, Chicago.—p. 350.
- 73 Indications for Operation in Acute Mastoid Disease. G. H. Mundt, Chicago.—p. 352.
- 74 Intestinal Stasis. G. B. Kelso, Bloomington.—p. 256.

Iowa State Medical Society Journal, Des Moines

November, VII, No. 11

- 75 Surgery of Thyroid. E. S. Judd, Rochester, Minn.—p. 403.
- 76 Goiter, Use and Misuse of Treatment. E. Grimes, Des Moines.—p. 407.
- 77 Symptoms of Acute Infectious Osteomyelitis. H. L. Beye, Iowa City.—p. 410.
- 78 Choice of Operation in Cholelithiasis and Chronic Cholecystitis. J. E. O'Keefe, Waterloo.—p. 412.
- 79 Significance of Mucous Membrane Disturbances in Upper Respiratory Tract. F. G. Murphy, Mason City.—p. 416.
- 80 Supervision of Public Water Supplies by Health Officer. J. J. Hinman, Jr., Iowa City.—p. 417.

Journal of Biological Chemistry, Baltimore

November, XXXII, No. 2

- 81 Adaptation of Winkler's Method to Biologic Work. W. J. V. Osterhout and A. R. C. Haas, Cambridge.—p. 141.
- 82 Diffusion of Electrolytes Through Membranes of Living Cells. Additive Effect of Salt and Base and Antagonistic Effect of Salt and Acid. J. Loeb, New York.—p. 147.
- 83 *Determination of Small Amounts of Calcium, Particularly in Blood. J. O. Halverson and O. Bergeim, Philadelphia.—p. 159.
- 84 *Calcium Content of Blood Serum in Certain Pathologic Conditions. J. O. Halverson, H. K. Mohler and O. Bergeim, Philadelphia.—p. 171.
- 85 *Biologic Analysis of Pellagra-Producing Diets. Minimum Requirements of Two Unidentified Dietary Factors for Maintenance as Contrasted with Growth. E. V. McCollum and N. Simmonds, Madison, Wis.—p. 181.
- 86 Probable Accuracy, in Whole Blood and Plasma, of Colorimetric Determinations of Creatinin and Creatin. A. Hunter and W. R. Campbell, Toronto.—p. 195.
- 87 *Micromethod for Determination of Calcium and Magnesium in Blood Serum. W. M. Marriott and J. Howland, Baltimore.—p. 233.
- 88 *Micromethod for Determination of Inorganic Phosphates in Blood Serum. W. M. Marriott and F. H. Haessler, Baltimore.—p. 241.
- 89 *Iron as Antidote to Cottonseed Meal Injury. W. A. Withers and F. E. Carruth, West Raleigh, N. C.—p. 245.
- 90 Some Factors Influencing Respiration of Ground Nervous Tissue. C. G. MacArthur and O. C. Jones, San Francisco.—p. 259.
- 91 Direct and Indirect Calorimetry of *Cassiopea Xamachana*. Effect of Stretching on Rate of Nerve Impulse. J. F. McClendon, Minneapolis.—p. 275.

83. **Determination of Calcium in Blood.**—The authors suggest the precipitation of calcium as oxalate directly in the filtrate from biologic fluids after removal of protein, the final estimation being carried out by a refinement of the permanganate titration method. In this paper is presented in greater detail the procedure which experience with this method has suggested as well as data with regard to the accuracy of estimation.

84. **Calcium Content of Blood Serum.**—Data are presented by the authors with regard to the calcium content of human blood serum in certain pathologic conditions, particularly nephritis, as well as of the blood serum of normal men. In the normal cases values lying between 9 and 11 mg. of calcium per hundred cubic centimeters were obtained. In nearly all of the pathologic conditions studied, including cases in which the blood clotted with extreme slowness, a similar range was observed, indicating a great constancy of this element in the blood serum. Distinct decreases were

noted in cases of hematogenous jaundice, eclampsia, pneumonia and particularly uremia. In several cases of uremia increases in serum calcium were noted on improvement in the clinical condition and following administration of calcium lactate. The urinary calcium excretion in severe nephritis was found to be low and calcium lactate administration brought about but slight absolute increases. In cases in which marked general edema occurred, with or without nephritis, the excretion of calcium was unaffected by increased ingestion. In a case of pernicious vomiting of pregnancy with severe acidosis, alkali administration decreased calcium excretion to 8 per cent. of its original value. It is pointed out that calcium determinations on whole blood are of little value unless the relative volume of plasma and corpuscles is known.

85. Pellagra Producing Diets.—McCollum and Simmonds believe that there are two deficiency diseases in the sense in which Funk employed this term. One of these is polyneuritis, which Funk recognized. This is due to a lack of an adequate supply of the unidentified water soluble B which is abundant in all natural foodstuffs but is practically absent from purified starch, polished rice, sugars, and all fats of both animal and vegetable origin. The other is a syndrome in which the two most prominent features are emaciation and xerophthalmia. Scurvy, pellagra and rickets can be accounted for by errors in the diet without assuming a protective substance for each of them.

87. Calcium and Magnesium in Blood Serum.—By the methods described by Marriott and Howland it is said to be possible to determine calcium and magnesium in 2 c.c. samples of serum with a maximum error of less than 5 per cent., a degree of accuracy entirely sufficient for the purposes for which the methods were devised. The methods depend on the fact that solutions of ferric thiocyanate are decolorized by oxalates and by phosphates. Calcium is precipitated as the oxalate and magnesium as the ammonium magnesium phosphate; the precipitates are dissolved in acid and added to solutions of ferric thiocyanate, the degree of decolorization resulting being determined by comparison in small Nessler tubes.

88. Phosphates in Blood Serum.—This method was devised by Marriott and Haessler in order to determine whether or not a retention of inorganic phosphates, with a resulting increase of these substances in the blood serum, occurs in patients suffering from certain types of nephritis. Results obtained by the use of the method in such cases have already appeared. The method depends on the decolorization of solutions of ferric thiocyanate by an acid solution of ammonium magnesium phosphate. The phosphates of the serum are precipitated directly by means of magnesia mixture.

89. Iron as Antidote to Cottonseed Meal Injury.—Feeding experiments with pigs showed that iron salts have a decidedly beneficial action in preventing cottonseed meal injury. Much larger quantities of meal are consumed, deaths have been postponed or averted, and better gains have been made when an iron salt is added to the feed. The suggestion is made by Withers and Carruth that the iron salts combine with, or facilitate oxidation of the harmful substances in cottonseed meal. By thus controlling the toxic factor, it is shown that cottonseed meal injury is not due to a lack of vitamins or to deficiencies in calcium, sodium and chlorine—which analyses might lead one to suspect as the limiting mineral factors in a diet of cottonseed meal and corn.

Maine Medical Association Journal, Portland

November, VIII, No. 4

- 92 Modern Anesthesia. O. E. Haney, Portland.—p. 91.

Medical Record, New York

November 17, XCII, No. 20

- 93 Epizootic of Poliomyelitis Among Dogs. H. Greeley, Brooklyn and W. L. Johnson, Jamaica.—p. 839.
94 Partial Thyroidectomy: Operation for Transplanting and Anchoring Remaining Lobes of Thyroid. E. V. Hubbard, New York.—p. 842.
95 Results of Treatment of Tuberculosis by Means of Bacillus Destroying Compound. (Echinacea; Inula.) V. Von Unruh, New York.—p. 847.

- 96 Value of Roentgenology in Head Injuries. G. W. Welton, New York.—p. 852.
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98 Plea for More Cesarean Sections in Selected Cases. Thirty-Four Consecutive Cases without Mortality to Mother or Child. G. P. Coopernail, Bedford.—p. 856.

Military Surgeon, Washington, D. C.

November, XLI, No. 5

- 99 How Medical Services of Government May Best Cooperate in Time of War. L. A. La Garde and others.—p. 552.
100 Study of About Two Thousand Physical Examinations of Officers and Applicants for Commission Made at Army Medical School. C. H. Goddard.—p. 578.
101 Some Aeromedical Observations. R. N. Greene.—p. 589.

Modern Hospital, St. Louis

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- 102 Contagious Disease Hospital for Immigrants at Ellis Island, N. Y. J. G. Wilson, New York.—p. 313.
103 Controlling Basis for Economical Use of Supplies. H. J. Moss, Baltimore.—p. 318.
104 Hospital Problem of Today—What Is It? J. A. Hornsby, Chicago.—p. 322.
105 Oil as Fuel in Institutions. J. M. Peters, Providence, R. I.—p. 328.
106 Reducing Hazard to Life in Nonfireproof Hospital Buildings. H. F. J. Porter, New York.—p. 333.
107 Publicity as a Means of Education and Support. G. D. Greene, New York.—p. 336.
108 Standardization of Hospitals—Class V, Small Semipublic Community Hospitals. J. A. Hornsby and others.—p. 341.
109 Municipal Training Schools for Nurses. C. H. Shutt, St. Louis.—p. 354.

New Jersey Medical Society Journal, Orange

November, XIV, No. 11

- 110 Protein Poison in Health and Disease. V. C. Vaughan, Ann Arbor, Mich.—p. 417.
111 Study of Tuberculous Lung Lesions as Revealed by Roentgen Ray Plates and Value of These in Physical Diagnosis. H. K. Dunham, Cincinnati.—p. 424.
112 Psychologic Handling of Tuberculous Patient. C. L. Minor, Asheville, N. C.—p. 427.

New York Medical Journal

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- 113 Roentgen Ray in Diagnosis of Pneumonia, Pleural Diseases and Pulmonary Tumors. M. Manges, New York.—p. 917.
114 Labyrinthine Vertigo and Post-Pointing. W. A. Wells, Washington, D. C.—p. 921.
115 New Conception of Arteriosclerosis. I. L. Nascher, New York.—p. 924.
116 Suprapubic Prostatectomy with Mechanical Drainage. C. W. Shropshire and C. Watterston, Birmingham, Ala.—p. 928.
117 Wassermann Reaction in Duplicate. M. Schulman, New York.—p. 929.
118 Case of Acute Erythematous Lupus. G. A. Brown, Philadelphia.—p. 931.
119 Case of Amyotrophic Lateral Sclerosis in Form of Progressively Developing Triplegia. G. B. Hassin, Chicago.—p. 932.
120 Functional Inefficiencies of Teeth Associated with Occlusal Anomalies. M. Hellman, New York.—p. 935.

Northwest Medicine, Seattle

November, XVI, No. 11

- 121 History of Idaho State Medical Association. E. E. Maxey, Boise, Ida.—p. 323.
122 Historical Sketch of Utah State Medical Association. W. B. Ewing, Salt Lake City.—p. 328.
123 Ocular Headache. D. H. Bell, Tacoma.—p. 331.
124 First Aid in Eye Injuries. W. D. Donohoe, Salt Lake City.—p. 334.
125 Sinus Disease and Otitis Media in Epidemic Influenza. J. S. Davies, Tacoma.—p. 336.
126 Removal of Tonsils as Prophylactic Measure in All Children of Four Years of Age, Why and Now. R. W. Perry, Seattle.—p. 339.
127 Health Insurance Legislation and Specialist. R. A. Fenton, Portland, Ore.—p. 342.
128 Spina Bifida. E. O. Jones, Seattle.—p. 344.

Ohio State Medical Journal, Columbus

November, XIII, No. 11

- 129 Cancer of Uterus. J. F. Baldwin, Columbus.—p. 710.
130 Purpura Hemorrhagica. E. W. Mitchell, Cincinnati.—p. 712.
131 Clinical Significance of Muscular Headaches. W. Mithoefer, Cincinnati.—p. 716.
132 Treatment of Diphtheria Carriers. H. O. Ruh and others, Cleveland.—p. 719.
133 Medical License, Medical Practice and Legislation. H. Wright, Cleveland.—p. 725.

Public Health Journal, Toronto

November, VIII, No. 11

- 134 Social Aspects of Venereal Disease Problem. G. Bates and others, Toronto.—p. 287.
- 135 Technic of Bordet-Wassermann Reaction for Use in Public Health Laboratories. H. K. Detweiler, Toronto.—p. 292.
- 136 Military Aspect of Venereal Disease Problem in Canada. F. S. Patch, Montreal.—p. 301.
- 137 Plan for Instruction in Hygiene, Preliminary Medical Inspection of Students and Free Dispensary or Hospital Treatment in Canadian Universities. J. G. Fitzgerald, Toronto.—p. 304.

Tennessee State Medical Association Journal, Nashville

November, X, No. 7

- 138 Glaucoma. E. C. Ellett, Memphis.—p. 263.
- 139 Simple and Radical Mastoid Operations. H. E. Christenberry, Knoxville.—p. 271.
- 140 Hyperchlorhydria as Clinical Entity. G. M. Niles, Atlanta.—p. 275.
- 141 Curability of Syphilis. W. A. Oughterson, Nashville.—p. 279.
- 142 What Profession Can Do Toward Stimulating Health Work in Laity. W. Krauss, Memphis.—p. 282.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

November 3, II, No. 2966

- 1 *Injuries to Peripheral Nerves and Their Treatment. B. Moynihan.—p. 571.
- 2 *Surgical Treatment of Severe Penetrating Wounds of Chest in Casualty Clearing Station. J. Anderson.—p. 575.
- 3 *Surgical Treatment of Severe War Wounds of Chest. J. E. H. Roberts and J. G. Craig.—p. 576.
- 4 Notes in Connection with Above Articles on Surgery of Chest. H. M. W. Gray.—p. 580.
- 5 Plastic Transcostal Thoracotomy. E. M. Cowell.—p. 581.
- 6 *Early Operative Treatment of Penetrating Gunshot Wounds of Chest. F. J. Hathaway.—p. 582.
- 7 *Treatment of Gunshot Wounds of Elbow Joint; Plea for Primary Excision. C. M. Moullin.—p. 583.

1. **Treatment of Injuries to Peripheral Nerves.**—Moynihan summarizes his experience in this field of work as follows: The earliest examination should be made of all wounds in which division of a nerve trunk is probable. If at the casualty clearing station such a lesion is found, end-to-end suture should be adopted forthwith. This is more likely to be possible in cases in which primary suture of the wound, after excision is found practicable. If secondary suture of the wound after the Carrel-Dakin method has been practiced is to be undertaken, the union of divided nerves should be secured at the same time. If these methods have been attempted and have failed, they do not prejudice the later union of the nerve. On the contrary, they probably ensure that an easier and more satisfactory operation can then be practiced. Throughout the whole period before late nerve suture is attempted the strictest attention must be paid to the relaxation and nutrition of all paralyzed muscles, to the maintenance of suppleness in all joints moved by these muscles, and to the preservation of the integrity of the skin. Operations on nerve trunks demand the most scrupulous observance of the ritual of asepsis. There must be the greatest gentleness of manipulation; the nerve must not be injured by instruments or by the surgeon's finger; it must not be separated from its sheath or disturbed overmuch from its bed; it must not be chilled or allowed to dry. All sutures must be of fine catgut, and introduced with most punctilious accuracy. Axial rotation of the nerve must be avoided. The cut ends of the nerve before approximation must show clearly the fibers of which the trunk consists. Nerve grafting is of little or no value; nerve anastomosis is to be sharply condemned; the turning down of flaps from the nerve to bridge a wide gap is useless. Tendon transplantation is of great value in cases in which nerve suture is impossible, or has given a result not entirely satisfactory.

2. **Surgical Treatment of Wounds of Chest.**—Wounds of the chest, as seen at an advanced casualty clearing station, are classified by Anderson into two main groups from the point of view of prognosis: Group A: 1. Entrance and exit bullet wounds. 2. Entrance and exit shrapnel-ball wounds. 3. Wounds caused by small fragments of high explosive missiles. As a general rule these cases do exceedingly well

if treated expectantly and aspirated or operated on when occasion demands. They can usually be evacuated to the base in from three to ten days, and the ultimate results are good. Of course, in a certain proportion of such cases there is sufficient visceral injury to cause immediate or early death, but, as they seldom reach the casualty clearing station, they do not come within the scope of this paper. Group B: 1. Wounds caused by large irregular fragments of high explosive shell which have lodged in the thorax. These are almost always associated with (a) clothing and infection carried in, and (b) open sucking wounds of the chest wall. 2. Tangential wounds of the thorax, enfilading the ribs and driving portions of bone, etc., into the pleura and lung. 3. Entrance and exit bullet wounds in which the exit wounds are explosive in character.

If treated expectantly only a very small percentage of Group B 1 reach the base, and many of those that are evacuated appear to die from the complications of their wounds. In Group B 2 and 3 the prognosis is usually not so severe, but an unduly large percentage develop an infected hemothorax unless the chest wall wound is treated energetically. In the latter group the prognosis, when no operation is performed, is always worse in wounds of parts where there is a liberal muscle covering, for example, in the scapular region. The patients in Group B usually have died hitherto at the casualty clearing station from sepsis and exhaustion, and it is this group of cases which demands more vigorous surgical intervention.

3. **Id.**—The principles Roberts and Craig have tried to follow in the treatment of chest wounds recently dealt with have been: operation at the earliest possible moment, free excision of all infected tissues, removal of the foreign body and cleansing of the pleural cavity or wound of the lung, followed by accurate suture of the lining membrane and tissues over it, whenever possible without drainage. Drainage of the pleural cavity has been employed only when one or other of these principles could not be fulfilled, for example, when a large foreign body, with infection around it, could not be removed. When anaerobic infection of the superficial muscles is present the wound is left open to an extent corresponding to the area of the infection, for example, in the case of a wound of the back when the more superficial muscles alone are infected it is possible to suture the pleura and leave the superficial part of the wound freely drained. There does not seem to be grave objection to washing out with, and possibly leaving inside the pleura, a few ounces of a nonirritating antiseptic, such as alkaline solution of sodium hypochlorite (Dakin's) or other similar solution, but the necessity for this is by no means established.

6. **Id.**—The ideal methods of modern war surgery are (1) early operation, (2) complete excision of wound and damaged tissues, (3) removal of metal fragments and clothing, (4) mechanical cleansing of wound (the use of strong antiseptics is to be avoided), and (5) complete suture of wound. Provided one can get early and complete operation, there is far more danger from secondary than from primary infection. The treatment of wounds of the chest, therefore, follows the same lines as those of the abdomen, head, knee, or other joints; they require just as early operation, and, Hathaway says, the results are just as good.

7. **Treatment of Gunshot Wounds of Elbow Joint.**—The results of primary excision of the elbow joint, according to Moullin, are wonderfully good, provided sufficient bone is removed; that is to say, the lower end of the humerus just above the level of the epicondyles, the whole of the head of the radius and the ulna at the same level. Even if the conditions are such that the wound is already infected, the drainage is so free that a serious degree of sepsis can usually be avoided, and there is not that enormous mass of callus thrown out, binding everything together and locking the fragments so that they cannot move. Owing to the necessity of reeducating the muscles of the forearm, which have been separated from their attachments, it may be twelve months before recovery is complete, but the fingers and wrist can be used after the first few weeks, and, if a suitable splint is provided, the elbow as soon as the wound is sound.

Glasgow Medical Journal

October, LXXXVIII, No. 4

- 8 Two Cases of Friedreich's Ataxia in Adolescents. J. Fergus.—p. 193.
9 Dissolving Senile Cataract in Early Stages. W. B. I. Pollock.—p. 208.
10 *Cases of Rupture of Uterus and Cesarean Section. J. H. Martin.—p. 214.

10. **Rupture of Uterus and Cesarean Section.**—Martin's first case was one of rupture of uterus in the fourth month of pregnancy. The fetus was forced between the layers of the broad ligament. Manual removal of uterine contents was performed. The second case was one of cesarean section on the second day of labor. The membranes ruptured several hours before. The outcome was a live child and recovery of the mother.

Lancet, London

November 3, II, No. 4914

- 11 *Use of Nitrous Oxid and Oxygen with Rebreathing in Military Surgery. H. E. G. Boyle.—p. 667.
12 Circulatory Inefficiency, with Special Reference to Nervous Factor. E. B. Gunson.—p. 670.
13 Presence of Spirochete in Urine in Cases of Trench Fever. A. T. Nankivell and C. E. Sundell.—p. 672.
14 *Operation for Repair of Crucial Ligaments. E. W. H. Groves.—p. 674.
15 *Treatment of Series of Recently Inflicted War Wounds with Proflavine. L. Colledge and others.—p. 676.
16 Rations in Relation to Disease in Mesopotamia. W. H. Willcox.—p. 677.
17 *Influence of Hypnotic Suggestion on Inflammatory Conditions. J. A. Hadfield.—p. 678.
18 Case of Epilepsy Cured by Removal of Calcareous Intraeranal Tumors. T. Thompson and A. J. Walton.—p. 679.

11. **Nitrous Oxid and Oxygen with Rebreathing in Military Surgery.**—This paper is an attempt to procure a more extended use of gas and oxygen with regulated rebreathing in major surgical procedures, and especially in the treatment of wounded. Boyle points out that this anesthetic is nontoxic, and therefore there is less strain put on to the patient, seeing that he does not have to eliminate the drug, be it ether or chloroform, from his system. Moreover, there is no shock after gas and oxygen. However, this combination of anesthetics is not one to place in the hands of the careless or inexperienced—it requires skilful administration, and if used carelessly will inevitably lead to disasters. The method is unsuited when absolute relaxation is required all the time; in some abdominal cases, for instance, gallbladder operations. There have not been any fatalities among 711 cases.

14. **Repair of Crucial Ligaments.**—The principle of the operation devised by Groves consists in forming a new anterior crucial ligament from the iliotibial band and a new posterior ligament from the tendon of the semitendinosus. In each case the new ligament retains its upper attachment in the thigh and is threaded through new canals bored in the femur and tibia, and is sewn to the outer surface of the latter bone.

15. **War Wounds Treated with Proflavine.**—As tested by the authors in the treatment of a series of recent wounds, there appear to be no differences in the properties of the two substances acriflavine and proflavine.

17. **Hypnotic Suggestion.**—Hadfield cites a case of blisters on the skin caused by hypnotic suggestion.

National Medical Journal, Shanghai

September, III, No. 3

- 19 *Differential Leukocyte Count in Beriberi. J. W. H. Chun.—p. 113.
20 Isolation of Streptococci from Rabbits. E. T. H. Tsen.—p. 116.
21 Report of Research Committee of Chinese Medical Men's Association on Height, Weight and Chest Measurements of Healthy Chinese. G. D. Whyte.—p. 111.

19. **Leukocytic Count in Beriberi.**—Differential leukocytic counts in forty-two cases of clinically recognized beriberi seen at the Shantung Road Hospital, Shanghai, during the year 1912 were made by Chun. The differential count published by the author as being that of a normal Chinese is as follows: finely granular oxyphil, 58.0 per cent.; coarsely granular oxyphil, 5.7 per cent.; basophil leukocyte, 0.6 per cent.; hyalin, 9.8 per cent.; and lymphocyte, 25.3 per cent.

The differential count obtained in forty-two cases of beriberi was as follows: finely granular oxyphil, 57.4 per cent.; coarsely granular oxyphil, 5.2 per cent.; basophil leukocyte, 0.4 per cent.; hyalin, 19.5 per cent., and lymphocyte, 17.2 per cent. It will be noted that the hyalin cells average as high as 19.5 per cent., whereas the normal figure among the this notably high percentage of the hyalin cells may serve Chinese ought to be 9.8 per cent. The author suggests that as a help toward the diagnosis of beriberi in difficult cases.

Practitioner, London

November, XCIX, No. 5

- 22 Occurrence of Cleft Palate. J. E. Frazer.—p. 401.
23 Auricular Fibrillation. F. W. Price.—p. 428.
24 Heart Failure and Administration of Digitalis. H. L. Flint.—p. 443.
25 Case of Unilateral Striae Atrophicae (Striae Cutis Distensae) of Thorax, and Case of Macular Atrophy (Maculae Atrophicae). F. P. Weber.—p. 453.
26 Recent Orthopedic Surgery. V. Moxey.—p. 462.
27 Irritative States of Erector Spinae as a Cause of High Blood Pressure. E. F. Cyriax.—p. 468.
28 Internal Secretions. T. B. Scott.—p. 474.
29 Probable Causes of Fatalities at Tonsil Adenoid Operation. J. D. Mortimer.—p. 482.
30 Spirochetal Dysentery and Postspirochetal Paralysis During Epidemic of Relapsing Fever. K. Yacoub.—p. 487.

Bulletin de l'Académie de Médecine, Paris

October 16, LXXVIII, No. 40, pp. 395-434

- 31 The Declining Birth Rate. C. Richet, P. Bar and others.—p. 396. Continuation.
32 The Read Card. E. Maurel.—p. 419.
33 Classification of Antiseptics. C. Richet and H. Cardot.—p. 425.
34 Intramuscular Injections in Treatment of Gonorrheal Sepsis. S. Mélamet.—p. 428.
35 Rupture of the Spine; Reduction; Recovery. Joly and Noury.—p. 430.

Paris Médical

October 13, VII, No. 41, pp. 289-304

- 36 Pneumococcus Infections Simulating Typhoid or Influenza. S. I. de Jong and G. Magne.—p. 289.
37 *Radiotherapy of Tuberculous Peritonitis. E. Albert-Weil.—p. 292.
38 Intoxication from Emetin. C. Mattei.—p. 295.
39 Eruption from Handling Powder from Unexploded German Shells. G. Milian.—p. 299.
40 Nervous Lesions after War Wounds of the Head. H. Gougerot.—p. 301.

37. **Roentgenotherapy of Tuberculous Peritonitis.**—Weil remarks that of all the various methods of treating tuberculous peritonitis that have been applied to date, systematic utilization of sunlight and sea air seem to have the most testimony in their favor. But both require the suitable environment which is within the reach of comparatively few. On the other hand, with the roentgen rays we can apply the chemical rays anywhere, even to outpatients. He has been applying roentgenotherapy systematically since 1914, using large doses of very penetrating rays, filtered. Some of the children had the fibrous form of peritonitis and some the form with ascites. In every case in which there was not already generalization of the disease in the lungs or pronounced cachexia, a complete cure was rapidly realized, with complete restoration of the general health. He uses a Coolidge tube, a 5 mm. aluminum filter, a 20 cm. spark, and a 1.5 or 2 milliamperere current. The exposures are repeated about monthly, but he reduces the strength a little each time to ward off skin trouble. This technic does not entail radio-dermatitis nor generalization of the tuberculosis. After the first series there may be a recrudescence of the fever and persisting malaise, but this reaction was never serious in his experience, and he never allowed it to interfere with his giving the effectual dose of 12 or 14 H units in the course of four successive days on the four quarters of the abdomen. In case of much debility the series can be fractioned to spread out over ten or twelve days.

Presse Médicale, Paris

September 27, XXV, No. 54, pp. 561-568

- 41 *Ankylosis of the Ankle-Joint. Ducroquet.—p. 561.
42 Rabies in Man; Three Cases. H. G. de Cardenal, Legrand and Benoit.—p. 564.
43 White Patches on the Nail. (Les ongles marbrés.) R. Sabouraud.—p. 566.

October 4, No. 55, pp. 569-576

- 44 *Test Tachycardia after Exertion. C. Aubertin.—p. 569.
 45 *Improvised Mask for Anesthetics. M. Savariaud.—p. 571.
 46 Traumatic Deadening of Peripheral Nerves. P. Descouts.—p. 572.
 47 Present Status of Treatment of Gonorrhea in the Male. P. Chevallier.—p. 573.

41. **To Overcome Effect of Stiff Ankle.**—Ducroquet gives serial views showing the mechanical principles involved in the disturbance with ankylosis of the ankle joint. It can be corrected in large measure by wearing a heel that brings the foot and leg into an angle of 70 degrees instead of the right angle with the naked foot. The knee and body must be bent to correspond, but this is not enough to attract attention.

44. **Test Tachycardia.**—Aubertin regards as extremely instructive the varying degrees of shortness of breath and acceleration of the heart beat induced by a given muscular exercise and by the change from a reclining to an erect position. The pulse is counted reclining, and again standing. After the exercise, it is counted standing still and reclining again, allowing a given interval between the counts. A number of tracings are given for comparison.

45. **Improvised Mask.**—Savariaud fits a bag of rubber cloth of the mackintosh type loosely over the patient's face. It is held in place by an elastic band, of garter elastic, passing under the chin and over the top of the head. The cloth piece is 50 by 70 cm. in size, and is doubled over and the edges sewed together to make a bag 35 cm. deep. A hole large enough to admit the tip of the finger is made to the right of the nostrils with a counter opening on the other side. The pressure from the elastic band on the suprahyoid region prevents the tongue from dropping back into the throat. The ears show beyond the elastic band, and as long as they are pink and the patient is breathing regularly, all is well.

Progrès Médical, Paris

October 6, XXXII, No. 40, pp. 331-338

- 48 Shell Shock. H. Damaye.—p. 332.
 49 Galyol, a French Substitute for Salvarsan. P. Richard.—p. 334.
 50 Standardization of Exercise Tests. B. du Coteau.—p. 337.

October 13, No. 41, pp. 339-346

- 51 Physostigmin Slows the Pulse Rate. A. Mougeot.—p. 339.
 52 Camphor and Sesame Oil in Dermatology. L. Bory.—p. 341.
 53 Frame to Aid in Applying Plaster Bandages. H. P. Achard.—p. 342.

Revue de Médecine, Paris

XXXV, No. 3, pp. 133-205

- 54 *Forms of Epidemic Meningitis with Purpura. A. Netter.—p. 133.
 55 *Inflammation of Nerve Roots. (Radiculite cervico-brachiale.) A. Leri.—p. 151.
 56 *Acute Insufficiency of Liver and Kidneys. P. Merklen.—p. 172.
 57 Scapulohumeral Myopathy in Man of Thirty-One. A. Courjon and J. Chalié.—p. 197.

No. 4, pp. 209-278

- 58 Can Acute Appendicitis be a Form of Tuberculosis? L. Landouzy.—p. 214.
 59 *Influence of Hemorrhages on Glycemia. R. Lépine.—p. 230.
 60 The Inorganic Nervous Affections after War Wounds Are the Same as the Hysterotraumatisms of Peace. J. Ferrand.—p. 239.
 To be continued.

54. **Epidemic Meningitis with Purpura.**—Netter remarks that the peculiar gravity of epidemic meningitis with purpura calls for early intraspinal treatment with a polyvalent serum made from as many strains of meningococci as possible. By this means the mortality in France has been kept down to 24 per cent. while British statistics show a mortality of 60 per cent. The purpura may precede the meningitis, and may even develop without meningeal symptoms at any time. The purpura indicates the generalization of the infection, as the meningococcus is found in the skin lesions and in the blood, and there may be involvement of the joints or myocardium, or iridocyclitis.

55. **Irritation of Spinal Nerve Roots.**—Leri reports in detail four cases in which the pains and loss of cutaneous sensibility stretched along the neck, shoulder and arm, corresponding to the innervation from the cervicobrachial spinal nerve roots. The reflexes in the region were also attenuated or lost entirely, and there was paralysis later, with atrophy of the muscles dependent on the brachial plexus. Syphilis could not be incriminated and there was nothing to suggest tuberculosis or gonorrhea in the four men, but the trouble had commenced

with pains in the spine suggesting rheumatism. Leri discovered tender points in the region of the sacrolumbar roots in eighteen or twenty-four cases of ordinary sciatica; in thirteen there was decided lymphocytosis in the cerebrospinal fluid.

56. **Acute Liver-Kidney Insufficiency.**—Merklen gives the details of fifteen cases in which symptoms indicated that the liver and kidneys had suddenly stopped working properly on account of some toxic-infectious influence. In nine cases the disturbances proved rapidly fatal, but in the others the jaundice and uremic symptoms with oliguria and even anuria yielded when copious diuresis was realized, and the men recovered. The condition was much graver to start with than in other forms of infectious jaundice, and estimation of the urea content is the guide to the prognosis. The one thing in treatment is to get the kidneys to working extra freely and keep this up.

59. **Influence of Hemorrhages on Glycemia.**—Lépine relates that a loss of blood corresponding to 1 per cent. of the weight of the animal is almost always followed by hyperglycemia in the healthy animal. Repeated losses of blood may exhaust beyond chance of this recuperating reaction.

Correspondenz-Blatt für Schweizer Aerzte, Basel

October 13, XLVII, No. 41, pp. 1361-1392

- 61 Reconstruction of the Jaws after War Wounds. (Chirurgisch-zahnärztliche Kieferbehandlung.) H. Matti.—p. 1361. Egger.—p. 1365.
 62 *Tumors of the Knee Joint Capsule. J. Züllig.—p. 1368.

62. **Tumors of Knee Capsule.**—Züllig reports a case of giant-cell xanthosarcoma, growing from the synovial membrane of the knee, with a clinically mild course. The patient was a woman of 34 who for ten years had had occasional pains in the right knee with intermissions up to four years. For the last year there had been an effusion at times. It subsided under bed rest and moist heat. The movements of the joint were free, but a movable tumor could be felt close to the patellar ligament. Roentgenoscopy showed the bones normal in the joint but the operation revealed three small tumors in a group and a small fibrous growth, all starting in the synovialis and easily removed. About six months later a fat tissue tumor was removed from the fat tissue around the joint. Histologic examination showed that the first tumors were of the xanthosarcoma type. The patient has had no further disturbance from the knee during the year since. Aside from cases of lipomas, Züllig was able to find only seventeen cases of a tumor of a joint capsule on record. In the eleven sarcoma cases all but three were women. In eight cases the entire capsule was infiltrated with the chondromatous or sarcomatous tissue. In only five of the sarcoma cases was there an isolated tumor. The course was from one to two years except in his case, but in all it was emphasized that there had been no trauma of the knee. The age of the patients ranged from 18 to 39. In one case of small-cell, round-cell sarcoma repeated recurrences required operative measures, and finally the leg was amputated. A myeloid sarcoma in one case has shown no signs of recurrence during the eight years to date. Differential diagnosis is usually by exclusion, the absence of trauma and of pathologic roentgen findings excluding meniscus injury, loose bodies, etc. With round-cell sarcoma, circumscribed excision is not radical enough, but with myeloid and giant-cell sarcomas this seems to be enough under expectant supervision, with repeated roentgen control. Diffuse sarcomatosis and tuberculosis have much in common, but with tumor the use of the knee may be more restricted while, on the other hand, there is not the extreme atrophy of muscles as with tuberculosis. There is little or no pain with sarcomatosis, and no friction sounds as the joint surfaces are intact, and no abscess and fistula production as is liable with a tuberculous knee. Analogous tumors in tendon sheaths are benign; in Spiess' four cases the interval before operation was one, five, twelve and twenty-two years.

Gazzetta degli Ospedali e delle Cliniche, Milan

October 7, XXXVIII, No. 80, pp. 1073-1088

- 63 *Technic for Exclusion of Pylorus. A. Franchini.—p. 1075.

63. Exclusion of Pylorus with Strip of Rubber Sponge Tissue.—Franchini reviews the various technics for exclusion of the pylorus, and expatiates on the superior advantages of a strip of rubber sponge tissue for ligating the pylorus. He uses a strip 16 or 18 mm. wide and 5 or 6 mm. thick, the ends flaring a little to aid in suturing them firm.

Policlinico, Rome

October 14, XXIV, No. 42, pp. 1257-1280

- 64 *Capillary Drainage for Extensive Wounds. C. Canestro.—p. 1257.
- 65 Physical Measures in Treatment of Wounds. M. Sèrena.—p. 1265.
- 66 *Pernicious Malaria Simulating Tetanus. A. Majoli and F. Paoletti.—p. 1269.

September, Surgical Section No. 9, pp. 353-392

- 67 *Malignant Papilloma of Maxillary Sinus. G. Bilancioni.—p. 353.
- 68 Malignant Edema without Gas Production. I. Scalone.—p. 374. To be continued.
- 69 *Technic for Amputations. G. Lerda.—p. 378. Commenced in No. 7, p. 310.
- 70 *Tumors of the Mesentery. P. Gilberti.—p. 386.

64. Capillary Drainage of Wounds.—Canestro keeps up a constant irrigation of the wound by means of three or more strands of wicking brought down from the irrigator and, after passing through the wound, brought down into a jar below the plane of the wound. This ensures continuous capillary irrigation and drainage. If neutral solution of chlorinated soda is used as the irrigating fluid, the secretions in the wound become thoroughly evacuated by this capillary drainage after a certain time, while the simplicity and ease of this technic commend it. A pad of nonabsorbent cotton is laid over the wound, the skin around protected with gauze impregnated with petrolatum. The nurse can see at a glance by the aspect of the efferent wicks that each is working properly. If the wicking is too short to run the entire distance, the wicking entering the wound and that fitted in its depths and conveying away the secretions can be separate pieces.

66. Pernicious Malaria Simulating Tetanus.—The case described emphasizes anew that in a malarial district, whatever the symptoms, the possibility of their being the work of malarial infection alone should never be forgotten.

67. Malignant Nasal Papilloma.—The malignant growth involved the right maxillary sinus and half of the nose of a man of 42, and there was recurrence in the lacrimal sac after its apparently successful removal. In another case in a woman of 56 the cancer involved all the right nasal cavities including the lacrimal sac. The microscopic findings are compared with similar cases on record.

69. Technic for Amputations.—Lerda here concludes his long study of the indications for different technics with various traumatic lesions with an appeal to save every possible scrap of skin, muscles and tendons. The geometric or esthetic aspect of the stump should be absolutely disregarded, and every effort made to maintain intact and vital all parts of the limb that permit this, when operating close to the firing line. The reduced resisting powers of the tissues and the omnipresent infection impose the necessity for the simplest technic, without attempting to suture. Cinematic amputations, such as Vanghetti has been preaching for twenty years, seeking to utilize the power still left in the stumps of the muscles, forming loops out of them, should be reserved till later. Even with a favorable environment for this complicated surgical work, it is often hampered by the difficulty of finding muscles and tendons long enough to make the loops and cross loops necessary for the purpose, and enough skin to line the tunneled loops.

70. Ileus from Mesenteric Fibroma.—Gilberti traces the history of mesenteric cysts back to 1507, but Morgagni in 1760 was the first to report obstruction of the intestine by a mesenteric cyst. In a personal case described, the pure fibroma had not caused any appreciable symptoms until suddenly obstruction of the intestines produced a severe set of disturbances. Probably some unusual accumulation of feces or gas had combined with the movable tumor to occlude the passage. There was no suspicion of the exact cause of the ileus until the operation revealed the mesenteric site of the tumor. The latter had been discovered several months before, immediately after an abdominal contusion.

Riforma Medica, Naples

September 22, XXXIII, No. 38, pp. 913-932

- 71 Mixed Intravenous Vaccination against the Typhoid Group. G. Quarelli.—p. 913.
- 72 Regeneration of External Popliteal Nerve after War Wound. C. Ceni and V. Desogus.—p. 915.
- 73 *Unintentional Muscular Movements and Contractures after War Wounds. S. Ricca.—p. 918.
- 74 Etiology of Sprue. (Psilosi.) G. A. Moscati.—p. 922.

October 6, No. 40, pp. 953-972

- 75 Five-Day Fever in Italian Soldiers. P. Sisto.—p. 953.
- 76 Present Status of Treatment of War Wounds of Peripheral Nerves. G. Moscati.—p. 959.

73. Parakinesia after War Wounds.—Ricca applies this term to deviation from normal of the volitional motor functioning of certain groups of muscles after healing of a war wound. He cites a number of examples of these unintentional by-movements, and emphasizes the importance of breaking up these bad habits as soon as they show themselves. Once well established, the parakinesia may prove quite rebellious. Treatment is by training, with the usual measures for overcoming a tendency to tics of any kind.

Tumori, Rome

June-September, V, No. 3, pp. 229-356

- 77 *Experiences with Rat Sarcomas. G. Serafini.—p. 229.
- 78 *Preceding Injury of Tissues as a Factor in Development of Experimental Tumors. G. Fichera.—p. 258.
- 79 *Bone Metastasis of Hypernephroma. G. D'Agata.—p. 272.
- 80 *The Anatomic Findings and Outcome after Resection of the Stomach. G. Fichera.—p. 305. Continuation.

77. Rat Sarcomas.—Serafini relates that in resecting part of the spleen in a patient with malignant disease of the spleen, he was obliged to resect the splenic artery. Two years have passed to date without a sign of recurrence. This suggested that possibly the shutting off of the splenic vessels was responsible for the unexpectedly favorable outcome. But a long series of experiments on rats refuted this assumption, these rats dying rather sooner than the controls. Other factors must have been responsible in the clinical case mentioned. Further experiences on rats immunized with repeated small injections of spleen tissue or sterilized sarcoma tissue, either promoted the growth of the malignant tumor or had no effect. Injection into the tumors of an emulsion of lecithin seemed to sensitize the growths to the action of the roentgen rays. The sarcomas also showed a moderate inhibition of growth after treatment with rat serum that had been exposed in vitro to the action of the radium rays. But fragments of sarcoma exposed to radium seemed to give prompter and larger growths when the rats were inoculated with them than when the scraps had been exposed to roentgen rays. Inoculation of sarcoma tissue directly into the knee never induced a sarcoma at this point.

78. Preceding Injury of Tissues as Factor in Development of Experimental Tumors.—Fichera protests against the conclusions drawn by Pentimalli from a series of negative experiences in this line.

79. Metastasis of Hypernephroma.—D'Agata's patient was a man of 56 who six months before had noticed a bunch in the parietal bone. Indolent at first, during the last month it had increased in size until it was as large as a hen's egg. The tumor excised was of the suprarenal type of tissue, and D'Agata reviews the literature on the subject of hypernephromas and their metastasis in bones. This latter usually occurs between the ages of 40 and 60; only one case is cited in a younger woman. It has usually been diagnosed as a tuberculous affection until the microscope revealed its true character. The discovery of multiple tumors in an adult should always suggest the possibility of metastasis from hypernephroma; Albrecht advises a lumbar exploratory operation on this basis alone. The bone metastasis may precede clinical manifestations of the primary tumor, as in the case reported. D'Agata not only advises extirpation of the metastasis but insists that the primary tumor should be sought and removed and its site given roentgen exposures. Removal of the bone metastasis alone does not seem to have improved the prognosis in any of the cases on record, the primary tumor continuing its malignant course unmodified.

80. **Resection of the Stomach.**—In this instalment of his monograph, Fichera gives the operative findings and the outcome years later in six cases of gastric ulcer and forty-nine of gastric cancer.

Brazil-Medico, Rio de Janeiro

September 15, XXXI, No. 37, pp. 313-320

- 81 *Mycosis of the Lungs from the Brazilian Oidium. IV. O. Magalhães.—p. 313.
82 Orthopedic Treatment in Little's Disease. A. F. de Magalhães.—p. 316. Commenced in No. 36, p. 306.

September 22, No. 38, pp. 321-328

- 83 Myxosporidium of Brazilian Fishes. A. M. da Cunha and O. da Fonseca.—p. 321.
84 Ancient and Modern Views of Syphilis. D. Speroni.—p. 325.

September 29, No. 39, pp. 329-336

- 85 *Spirochete of Hemorrhagic Jaundice in Rats at Rio. H. de B. Aragão.—p. 329.
86 *Suppuration in the Urinary Apparatus of Infants. N. Gurgel.—p. 330. Commenced in No. 38, p. 321.

81. **Pulmonary Mycosis.**—Magalhães relates that a young man developed mycosis of the lungs, fatal in a little over thirty days, and he knows of three other cases with a similar acute course. In some of the chronic cases he has encountered, the affection flared up into an acute phase, promptly fatal in more than one case. Left untreated, this pulmonary oidiosis is always fatal. The temperature curve is characteristically irregular, and there are signs of softening and breaking down of the parenchyma in the lung. Treatment with potassium iodid is decisive. The septicemia is alike in man and animals. The rabbit is as susceptible to inoculation with the oidium as the guinea-pig to tuberculosis. In macacus monkeys the oidium penetrated the intact mucosa of the mouth and nose.

85. **Spirochete in Rio Rats.**—Aragão reports finding in rats at Rio de Janeiro the spirochete described by Inada and Ito as the *Spirochacta icterohemorrhagiae*, by the Germans as the nodose spirochete, and by Noguchi as the *Leptospira icterohemorrhagiae*. Kidney tissue from the rats was injected into six guinea-pigs, and one died the tenth day with intense jaundice and hemorrhagic foci in lungs and stomach, epistaxis and edema. Emulsions of liver and blood from this guinea-pig reproduced the same disease when inoculated into six others. Clinical cases of infectious jaundice have been described recently in northern Brazil, but the source of the infection could not be discovered in suspected human beings. The discovery of the spirochete in rats at Rio throws more light on the subject.

86. **Suppuration in Infant's Urinary Apparatus.**—Gurgel remarks that the infant's yellowish pallor and restlessness are the first symptoms that call the parent's attention to the trouble. The mucous membranes are blanched, and the child has no desire to eat. With fever in an infant the ear and the urine should be examined at once, but in practice very few take the trouble to examine the urine. He declares it is as important for the infant as for the adult. If not obtainable otherwise, he draws some urine with a catheter. In about 40 per cent. of the cases of fever in infants for which no cause is manifest, pyelitis is responsible, and in about 95 or 98 per cent. of the nontuberculous cases the colon bacillus is found. In the majority of cases the infection of bladder or kidneys has spread from the bowels, possibly by way of the lymphatics. In his experience there was usually a preceding influenza, measles or tonsillitis, and, in one case, paratyphoid infection; in all there was a history of intestinal upset. The pyelitis or pyocystitis generally develops insidiously and runs a protracted course. Left untreated, serious damage may result while the course is benign when the pyuria is discovered early and treatment applied at once. He has obtained excellent results in treatment of pyelitis in infants with methylene blue alone, injecting it into the rectum in a 1, 2 or 3 per thousand solution, twice a day. It generally is eliminated in from thirty to ninety minutes. In three or four days the fever drops and the pus disappears from the urine. The child cannot be deemed cured until repeated examination at varying intervals confirms the absence of pus from the urine. He reports eight cases in detail. In some cases, salol also was

given, but the results were equally good with the methylene blue alone. In another case the *Bacillus lactis-aerogenes* was cultivated from the urine, and it induced in guinea-pigs congestion of the intestines and hemorrhages in the omentum.

Semana Medica, Buenos Aires

August 30, XXIV, No. 35, pp. 247-270

- 87 Edematous or Hydremic Form of Disturbance from Too Exclusive Carbohydrate Feeding of Infants. M. Acuña.—p. 247.
88 Treatment of Ankylosis. E. M. Olivieri.—p. 253. Continuation.
89 The Public Hospitals, Asylums, etc. of Buenos Aires. E. R. Coni.—p. 259. Continuation.
90 Vaccine Therapy of Gonorrheal Conjunctivitis in Adults. J. C. Mira.—p. 264.

September 6, No. 36, pp. 271-302

- 91 *Plantar Tibialis Anticus Reflex. J. M. Obarrio.—p. 273.
92 The State Colony for the Feeble-minded. A. Chueco.—p. 274.
93 Present Status of Treatment of Typhoid. P. V. Cernadas.—p. 279.
94 The Fight against Tuberculosis in Argentina. E. R. Coni.—p. 288.

91. **Plantar Tibialis Reflex.**—Obarrio gives an illustration showing the dorsal flexion, adduction and inward rotation of the foot when the plantar reflex was elicited in a woman with spastic paralysis, negative Babinski, Gordon, Schaffer and Oppenheim signs, while the Strümpell was positive. The muscle showing the reflex action was the tibialis anticus. He has encountered it also in other cases of organic lesions with negative Babinski.

Siglo Medico, Madrid

September 29, LXIV, No. 3329, pp. 725-744

- 95 Further Research on the Blood with Vital Staining. F. Mas y Magro.—p. 726.
96 Technic for Salvarsanized and Mercurialized Serum in Intraspinal Injections. F. Escudé.—p. 730.
97 Medical Precepts and Prejudices on Diet Questions. S. Baglioni.—p. 734. To be continued.

October 6, No. 3330, pp. 745-764

- 98 Lesions in Joint Ligaments. S. G. Hurtado.—p. 749.
99 Diet Questions. S. Baglioni.—p. 753. Continuation.
100 Psoriasis. Sicilia.—p. 755.

October 13, No. 3331, pp. 765-784

- 101 Typhus at Madrid in 1916. G. Marañón.—p. 766.
102 *Suction Extraction of Cataract. J. A. and I. Barraquer (Barcelona).—p. 768. Commenced in No. 3330, p. 746.
103 Means to Reduce Infant Mortality. B. H. Briz.—p. 771.
104 Paroxysmal Tachycardia with Hydatidiform Mole. P. L. Marcos.—p. 773.

102. **Suction Extraction of Cataract.**—Barraquer's success in extracting cataract in the capsule by vacuum suction has been mentioned in THE JOURNAL (June 9, 1917, p. 1789). He here gives a historical review of cataract operations, with illustrations showing the Daviel and Smith technics and his own method. The latter does not require any pressure but merely draws the lens out in toto by vacuum suction through a shallow cup applied to the lens. He also gives illustrations of different apparatus for inducing the vacuum by electricity or a water jet pump. The cataract extractor itself projects from a syringe-like instrument held in the hand like a pen, the thumb controlling a valve that shuts off the suction at will. He dilates the pupil with cocain and epinephrin an hour beforehand. This permits the use of eserine, and hernia of the iris is warded off.

Gann, Tokyo

October, XI, No. 3. German and English Department, pp. 27-46

- 105 *Gastric Tumors in Rabbits Fed with Wool-Fat. Y. Kon.—p. 27.
106 *Hen Sarcoma. T. Ogata and M. Ishibashi.—p. 32.
107 Sarcoma in Mouse Thymus. K. Ichikawa.—p. 34.
108 Fate of Tumor Cells in Blood Stream. M. Takeuchi.—p. 36.
109 *Tumor of Horse Testicle. T. Kimura.—p. 38.

105. **Abnormal Proliferation of Gastric Mucosa after Feeding with Wool-Fat.**—Kon fed rabbits and rats for six months or more with adeps lanae hydrosus, the rabbits taking a daily total of from 5 to 10 gm. with their vegetables. In 50 per cent. nodules developed and adenomatous proliferation in the pylorus region where the lipoid had accumulated. The range of proliferation was wide, one rabbit presenting an enormous adenoma while another under the same conditions had only a minute lump, but in this rabbit there was a tubular adenoma in the liver with considerable lipoidosis. The tongue, gums and lips also displayed a similar tendency to papillomatous proliferation, and there was also in some a tendency to

deposits of lipoid in the skin and falling of the hair. Two plates accompany the article.

106. Chicken Sarcoma.—Ogata and Ishibashi report that they injected subcutaneously in sixty-eight young hens blood serum from hens with one of the three types of sarcoma (the Fujinami, Hayashi and Rous strains). One of the hens injected developed a tumor. It was of the Rous' chondrosarcoma strain. The possibility of thus inducing a secondary tumor seems to be established, thus confirming Busch's similar experience in this line, published in 1914. They warn, however, that as we know of the possibility of blood-borne metastasis, a similar mechanism might explain the secondary tumor growth in this exceptional case. They call attention further to the adsorbing power of kaolin and animal charcoal in respect to tumor virus. When added to a well diluted emulsion of tumor tissue and the whole vigorously shaken up, and then filtered or centrifuged, the filtrate or supernatant fluid never induced tumor growth when injected subcutaneously into hens. On the other hand, the sediment and filter residue proved extremely virulent when injected. By this simple means we have it within our power to materially enrich the tumor-producing substance contained in serum or other fluid mediums.

109. Testicle Tumors in the Horse.—Kimura states that veterinarians found 142 tumors of various kinds among 77,224 horses killed in Japan during the last eight years; fifteen in 241,187 cattle, and three in 477,772 hogs. In the horses there were nine cases of tumor in the lung, malignant in all but one; four in the stomach; one in the uterus; forty-nine in the testicles; eight in the kidney; fifty-three instances of melanoma, and fourteen of sarcoma, seat unknown. The various data are tabulated and compared with similar data from European literature. He gives plates showing the microscopic findings in twelve cases of orchidoma or orchidoblastoma in horses—all of the epithelioma type. There were signs of metastasis in six. The horses affected were mostly stallions, 15 years old or over.

Russkiy Vrach, Petrograd

XVI, No. 18-20, pp. 385-408

110 *Acute Edema of the Lungs. N. A. Kruglevsky.—p. 385.

111 *Treatment of Poisoning from Asphyxiating Gases. V. N. Boldireff.—p. 390.

112 *Behavior of the Vegetative Nervous System during Poisoning from Asphyxiating Gases. N. I. Leporsky.—p. 391.

113 *The Nervous Manifestations with Poisoning from Asphyxiating Gases. M. N. Neiding.—p. 397.

114 *The Nervous and Psychic Condition with Poisoning from Asphyxiating Gases. M. Y. Sereisky.—p. 401.

115 *Intravenous Injections of Oxygen in Treatment of Poisoning from Asphyxiating Gases. K. F. Gakh.—p. 403.

110. Mechanism of Acute Edema of the Lungs from Poisoning with Asphyxiating Gases.—Kruglevsky analyzes the literature on the subject of acute edema of the lungs, citing in particular the views of Yandell Henderson and Martin Fischer on the mechanism of its origin. The old assumption of capillary pressure, as explaining acute edema of the lungs, failed to take into account the conditions of the natural pulmonary circulation, and hence experimental research in this line was based on inadequate premises. Further light has been thrown on the subject by the sudden poisoning from war drift gases as he explains in detail. Edema of the lungs occurs so rapidly that it reaches its height before inflammation has had a chance to develop.

111. Treatment of Poisoning from Asphyxiating Gases in War.—Boldireff urges among other points in treatment that the clothing of the gassed men should all be removed and fresh put on at once, changing even the shoes, as they all hold gas. In moving and in transportation of the gassed men, extreme care is imperative to keep them from jolting and from impure air. Absolute bed rest is imperative, not even allowing them to sit up, for three or five days at least. Talking and smoking should be prohibited, and no smoking should be allowed in their vicinity. As so much of the lungs has been damaged by the gas, the air the men breathe must be uncontaminated. The gassed are peculiarly sensitive to cold, and they must be kept warm and well covered. Fluids must be supplied to the body freely by various means to

dilute the over concentrated blood. Revulsion to the chest, dry or wet cupping or mustard pastes are indispensable, especially when there are signs of incipient edema of the lungs. General venesection is not recommended, and there must be no rubbing of the patient to warm him, as this is liable to induce embolism. Among the tonics found useful have been subcutaneous injections of ether, camphor or atropin, and a few drops of anisated solution of ammonia by the mouth. Strophanthin seems the best heart tonic when one is directly indicated, as this drug acts quickly and does not constrict the vessels. In sectors especially exposed to drift gas attacks, ample supplies of extra clothing, gas masks, and everything needed to combat the gases should be kept on hand, not only for the troops but for the civilian population in the gassed region. Last year, he adds, many children were killed by the asphyxiating drift gases. He warns in conclusion that it is often difficult to differentiate poisoning from this source when the circumstances are not known, and he urges close study of the cases for further differential points.

112. Behavior of the Vegetative Nervous System in the Gassed.—Leporsky records the reaction to atropin of forty gassed soldiers, and further the reaction to epinephrin and to pilocarpin. The findings with each are tabulated and compared. The responses in the majority indicated vagotony to a greater or less degree. In some cases, however, there seemed to be dissociation; some parts of the vegetative nervous system showed increased and other parts lowered tonus. The asphyxia from the gas poisoning evidently starts the centers in the oblongata to extra functioning, and this in turn deranges the functioning of the glands with internal secretions.

113. Nervous Manifestations in the Gassed.—Neiding states that in his 274 cases of poisoning from drift gases there were ninety-six men who showed no symptoms on the part of the nervous system and forty-six with only one, but in 132 there were indications of pronounced involvement of the nervous system, loss or modification of the reflexes and analgesia. Some of the others showed dermatographism, irregular and rapid pulse or respiration, or other signs of nervous disorder, as with a traumatic neurosis. Over 50 per cent. of the 274 men thus presented objective nervous manifestations. Some are evidently traceable to direct anatomic injury of nerve tissue from chemicals in the gases.

114. The Nervous-Psychic Condition in the Gassed.—Sereisky reviews sixty cases of poisoning from gas attacks, and discusses in particular the nervous and mental condition of seven reaching his service six or eight weeks later. The symptoms indicate, he reiterates, that the gases contain some substance or substances which have a direct toxic action on nerve tissue. Inherited nervous taints render the nerve tissue peculiarly susceptible to the action of this toxic substance.

115. Oxygen Intravenously in Treatment of Poisoning from Asphyxiating Gases.—Gakh has only two cases to report in this preliminary communication, but he affirms that the success was striking in both, although as the patients were moribund at the time the benefit was only transient. The symptoms of the gassed show that the organism is perishing for lack of oxygen which the lungs are unable to take up from the air. The experiences with artificial pneumothorax show that a gas can be introduced into the body in large amounts without danger. Gakh's tests seem to demonstrate that oxygen introduced cautiously into a vein is absorbed so rapidly that embolism need not be feared. He injected it with the technic as for artificial pneumothorax, using a morphin needle to introduce the gas into the ulnar vein. All proceeded smoothly in the two cases described, as was anticipated from the theoretical and physiologic premises.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

September 8, II, No. 10, pp. 831-926

116 *Tests of Visual Acuity; the Separable Minimum. C. O. Roelofs.—p. 836.

117 *Peas in Treatment of Deficiency Diseases. D. J. H. Pol.—p. 850.

118. Tuberculosis in the Netherlands. C. A. Cammaert.—p. 856.

119 *Radiology in Gynecology. B. J. Kouwer.—p. 861.

120 Intradural and Extradural Tumor; Two Cases. H. W. Stenvers.—p. 863.

116. **The Separable Minimum in Testing Vision.**—Roelofs describes with a number of plates his research on the smallest space between two dots or lines that can be perceived by the eye. He discusses further how to estimate and record this separable minimum or *Auslösungsvermögen*, as Hering calls this limit of separate perception.

117. **Peas in Treatment of Deficiency Diseases.**—Holst in Norway found a few years ago that the Norwegian gray pea seemed to be effectual in curing ship beriberi. A trial of these peas (*capucijners*) in the Netherlands West Indies showed that they were effectual also in curing Asiatic beriberi, but Pol states that the action of katjang hidjoe, better known as the *Phaseolus radiatus*, of the bean family, is more powerful. These experiences confirmed the deficiency in vitamins as responsible for the symptoms in both these diseases, although the ship beriberi never develops in the acute form sometimes observed with the Asiatic type. With the former, edema gradually extending upward from the ankles is more common than paralysis, and proper food arrests the trouble at once. The European land type of beriberi usually runs a subacute course, and there is always paresis with or without slight edema. Pol reports in detail a case of this kind in a previously healthy man with three healthy children. He developed ascending paresis which gradually became actual paralysis within five or six months. Even the organ of speech was involved, so that speaking fatigued him; the arms and legs were quite paralyzed. By the sixth month the paralysis was apparently grave until the possibility of the trouble being a deficiency disease was suggested, and the diet was changed to include peas and phaseolus. As the supply of the latter soon gave out, the peas were the main reliance. They were given cooked and also in the form of a decoction, of 2 kg. boiled down to 1 liter, added to his usual food. No benefit was apparent for seventeen days, but then the paralysis began to subside, and in two weeks the paralysis of the legs had disappeared, the improvement continuing to progress in arms, hands and around the mouth in turn, the tongue being the last to return to normal. Fortunately, the long interval before improvement began had not discouraged either physician or patient. When improvement began it was rapid for a while and then subsided into a slow and gradual phase of improvement, corresponding to recuperation of the actually degenerated nerve cells. Traces of paresis were still evident by the eighth month, but there is every reason to suppose that complete recovery will follow in time. The man was a sergeant instructor of the fortress artillery and had to work in water part of the time.

119. **Roentgenotherapy in Gynecology.**—Kouwer warns that roentgenotherapy for fibroma of the uterus is still in the tentative stage. Opinions are still divided as to whether the fibroma itself or the ovaries should be exposed. He warns further that our assumption as to the two separate functions of the ovary—the production of the ovum and of the internal secretion—is still purely hypothetical. But we have reason to assume that roentgen exposures carried far enough are equivalent to castration, and we do not know the damage that may be wrought by the exposures even stopping considerably short of this. Instances have come to his knowledge in which roentgenotherapy has been applied to young women to relieve dysmenorrhea, and even women of 35 and 40 are not excluded from roentgenotherapy by those who fail to appreciate the power of the roentgen rays acting in this region. The gynecologists have not failed to warn of the dangers from operations,* and the majority refrain on principle from operating for uterine fibroma unless very serious indications call for it. But, he adds, the roentgenologists are not equally frank in regard to dangers from roentgenotherapy. The medical literature in the Netherlands has no reports of injury of patients from roentgen treatment. He knows that such cases exist, but where are the reports of them? In referring to the Freiburg method of abrupt and very powerful application of the rays, he says that it is not difficult to learn from the very reports of their 1,395 cases sent out by the Freiburg clinic the harm done in this or that case. "How does it happen," he exclaims, "that Freiburg is deaf and blind to them? How can it be explained that, nevertheless, the statements of

König and Gauss are accepted by many as absolute authority?"

Hospitalstidende, Copenhagen

September 19, LX, No. 38, pp. 909-932

121 *Treatment of Diabetes Insipidus. A. Norgaard.—p. 909. Commenced in No. 37, p. 885.

121. **Treatment of Diabetes Insipidus.**—Norgaard discusses the present status of our knowledge in regard to diabetes insipidus, and the literature, and then devotes over thirty-two pages to the detailed description of a case as influenced by treatment of different kinds over long periods.

Hygiea, Stockholm

September 15, LXXIX, No. 17, pp. 865-912

122 *Experiences with Carrel Treatment of Suppurative Processes. K. Gramen.—p. 865.

123 Hydronephrosis with Old Blood Clots in the Cavities. K. Gramen.—p. 871.

124 *Thrombosis and Embolism of Mesenteric Vessels. J. A. Hedlund.—p. 875.

125 Fatigue Phenomena in Taste and Smell. E. L. Backman.—p. 886.

126 The Habitual Posture in Schoolchildren. P. Haglund.—p. 897.

122. **Carrel Treatment of the Suppurating Processes of Peace.**—Gramen applied the Carrel method first in a case in which the leg had been run over by a freight car. While waiting for the shock to subside to permit amputation, a trace of warmth was detected in the foot and conservative measures were applied, but in the course of six weeks the ulceration and necrosis had become so extensive that amputation seemed finally inevitable. The leg was then treated by the Carrel method, and in two days there was marked improvement and the lesions began to heal rapidly. The man is now walking with crutches, the leg 30 cm. shorter than its mate. In other cases of extensive suppurating processes, healing was more rapid and complete than under the ordinary measures. The method has been applied in several hundred cases at the Stockholm Hospital, and the general impression was equally favorable, but occasionally cases were encountered which did no better with this than with other methods. In thirteen cases of appendicitis, cholecystitis or salpingitis, a combination of the Carrel technic with the Mikulicz tampon gave excellent results, placing the Carrel drains inside the sack and tamponing around them. Warming the Dakin fluid to 37 C. seemed to reduce its strength about 0.007 per cent. per day. Patients with burns of the third degree complained of pain from the fluid. In one case of total streptococcus empyema, requiring rib resection, the collapsed lung showed no tendency to expand, but after secondary suture under Carrel treatment, healing proceeded by primary intention and the pneumothorax was gradually absorbed.

124. **Thrombosis and Embolism in Mesenteric Vessels.**—Hedlund has compiled about 373 cases of thrombosis and embolism of the mesenteric vessels, and reports two additional cases from his own experience, both fatal, in women of 40 and 59. The cases on record were nearly all in persons over 36; all but 38 per cent. were in men. In 6 per cent. both arteries and veins were involved; in 50 per cent. the arteries alone. Endocarditis and endarteritis are the usual causes, and some recent serious sickness, such as pneumonia, is common in the antecedents. The clinical picture may set in with bloody diarrhea or symptoms of ileus, with remittent attacks of pain, vomiting, sweats, violent localized peristalsis or paralytic ileus; collapse soon follows, with gangrene of the bowel and peritonitis. In one of his two personal cases there was gangrene from anemia, in the other hemorrhagic infarction, but the clinical picture in both was that of ileus. The course may be briefly fatal or it may drag along for months, the colic-like pain returning about thirty or sixty minutes after a meal, and lasting for from two to four hours, without localized peristalsis or stiffening of the bowel. In one of Hedlund's cases the trouble began with a chronic course, not flaring up into the acute phase until after about nine months.

Ugeskrift for Læger, Copenhagen

October 11, LXXIX, No. 41, pp. 1671-1714

127 Radical Treatment of Abortion in the Home. A. G. Lauritzen.—p. 1671.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 24

CHICAGO, ILLINOIS

DECEMBER 15, 1917

THE CAUSATION AND CURABILITY OF CERTAIN LONG-STANDING ALBUMINURIAS *

DAVID RIESMAN, M.D.

PHILADELPHIA

During the past few years a number of cases of albuminuria have come to my notice in which investigation showed the existence of a local focus, the removal of which led to the disappearance of the albuminuria. Thanks to the work of Billings and his school, we know the importance of foci of infection in the production of systemic disease. It is of interest to note that as early as 1802 Benjamin Rush pointed out in a letter the relation between systemic disease and caries and abscess of the teeth.

That severe local infections, such as ulcerative endocarditis, tonsillitis, and, indeed, most other acute infections, are capable of producing nephritis of the parenchymatous type, is of course a long-established fact. With this form of nephritis, which is an immediate result of the acute toxemia, I am not dealing. The type to which I desire to call attention is entirely devoid of acute features, and has all the earmarks of chronic renal disease. We know how futile is the attempt in the majority of such cases to remove the albumin from the urine by means of drugs or by diet.

These insidious albuminurias are often found in apparently healthy men who, in full confidence, apply for life insurance, only to be refused temporarily or permanently, because of the trace of albumin in the urine. Among adolescent subjects some cases have been classed as cyclic, orthostatic or postural albuminuria, a condition that as yet has no very satisfactory explanation. These cases are rather easily recognized. They give, as Barker and Smith¹ have shown, normal phenolsulphonephthalein outputs, and in other ways behave as cases of a nonprogressive type of renal irritation. Apparently the worst that can be said of them is that they bar the patient from life insurance.

While many cases of albuminuria of slight degree and springing from no obvious cause are due to early interstitial nephritis, there are some in which a careful search reveals a disease focus that stands in etiologic relation to the albuminuria. Let me illustrate this by a few examples:

CASE 1.—J. J. H., a boy, aged 9 years, came under my care because of poor and capricious appetite and general lack of vitality. He had been a difficult "feeding case" as an infant, but had not had any special diseases. From birth he

was sensitive to protein, particularly egg protein, which caused hives, as his mother said, "almost before he swallowed it." Once he passed a little gravel. The tonsils and the cervical glands were enlarged, but the boy was not a mouth breather. There was also some enlargement of the spleen. The urine was very scanty, and for a year or more had contained a small amount of albumin and occasionally hyaline and granular casts. There was no edema. All manner of treatment was tried without producing any marked changes in the urine either in quantity or in quality.

Although the boy had never had a genuine attack of tonsillitis, I thought it best to have the tonsils removed, since they looked unhealthy. They were extirpated under ether, April 1, 1913, nearly two years after the discovery of the albuminuria. Both tonsils were found to contain cheesy masses, and in one there was an abscess. There was also a large adenoid. The second specimen of urine examined after the operation was free from albumin. Then, for a little while traces reappeared; but at the end of about six months both albumin and casts had entirely vanished. The appetite at present leaves nothing to be desired, and the lad is one of the finest and most agile of his age.

CASE 2.—A man, aged 42, a veterinary surgeon, came under my observation in 1913, stating that for years he had had pain in the right lower abdomen, which had sometimes been looked on as appendicitis, sometimes as renal colic. He had never passed blood or gravel, and only once—for about a week in 1911—he had passed pus. He had become more or less reconciled to the diagnosis, made by many medical examiners, of Bright's disease. The urine showed, when I examined it, just as it had done for many years, a small amount of albumin. Jan. 20, 1913, after the confirmative evidence of a roentgen-ray examination, a successful operation for the removal of a stone was performed by Dr. B. A. Thomas. The albumin disappeared quite promptly. When I last saw the patient, he seemed to be entirely well.

CASE 3.—A man, aged 21, a college student, was sent to me by Dr. W. P. Walker of South Bethlehem, because of albuminuria, which had been discovered during an examination for life insurance. Since 1909 the boy had had four sharp attacks of tonsillitis, notwithstanding the fact that he had had an operation for adenoids and enlarged tonsils in 1907. He had passed through measles, chickenpox and whooping cough in early life. The urine had a specific gravity of from 1.016 to 1.024, and contained albumin and sparse hyaline casts and occasional red blood cells. His blood pressure was 120 systolic and 80 diastolic; the weight was 109 pounds. The phenolsulphonephthalein test showed 53 per cent. in the first two hours and 15 per cent. in the third hour. The onset of elimination was somewhat delayed, requiring twenty minutes. The quantity of urine was about normal. While at Yale he was seen by Dr. Tileston, and on one occasion by Dr. Pratt of Boston. Both found the condition that I have described.

In June, 1914, the young man, with a number of other students, fell ill with sore throat, after eating in a certain restaurant. Feeling better at the end of twenty-four hours, he went to his home in Bethlehem, where he immediately had a relapse. The throat was intensely inflamed, and on the swollen tonsils there were discovered follicular spots, as well as areas of whitish exudate. The patient was extremely weak and prostrated, and had great difficulty in swallowing.

* Read at the meeting of the Association of American Physicians, Atlantic City, May 3, 1917.

1. Barker and Smith: *Am. Jour. Med. Sc.*, 1916, 151, 44.

I saw him with Dr. Butler, and felt sure that he had streptococcic sore throat. After his recovery, which ensued without serious interruption, the tonsils, from which he had suffered so much during the preceding four or five years, were thoroughly extirpated. The albumin disappeared from the urine thereafter, and the last account I had from the young man was that he was perfectly well.

When, on one occasion, I discussed the subject of albuminuria due to focal conditions with Dr. B. A. Thomas, he told me that he could supply me with the histories of several striking cases. He has been kind enough to do so, and I copy one:

CASE 4.—A man, aged 22, consulted Dr. J. C. Birdsall, Dr. Thomas' assistant, Feb. 15, 1915, because of albuminuria discovered, Jan. 1, 1914, during examination for life insurance. The urine showed a light cloud of albumin but no tube casts. Examination of the pharynx revealed diseased tonsils. A tonsillectomy was advised, which was done during the summer of 1915. October 9, the urine still showed a cloud of albumin. December 17, the patient suffered an attack of bronchitis. Sputum culture revealed the pneumococcus and the *Staphylococcus albus*. An autogenous bacterin was prepared, of which the patient received a number of injections. The urine was examined several times during the next two months, and on every occasion was found free of albumin.

Dr. Thomas also tells me that he has seen a number of instances of chronic albuminuria in syphilitic patients in whom the albuminuria entirely disappeared after antisiphilitic treatment.

The point that I desire to bring out is that cases of long-standing but otherwise mild albuminuria should not be looked on as incurable, unless evidence on the part of the cardiovascular system, or testimony given by functional tests, clearly demonstrates that the kidneys are diseased. This applies also to the so-called orthostatic or postural albuminurias of adolescents. The albuminuria may be kept up by disease of the tonsils (which is not always discoverable by simple inspection), by dental abscesses, by other infective foci, or by the presence of a stone. It may be made to disappear entirely, at least in some cases, by the removal of the offending focus. This gratifying result does not always set in immediately, but sometimes only after a number of months. The physician, therefore, should not be too soon discouraged. It is probable that kidneys which have been for a long time the seat of slight irritation will always be somewhat sensitive, whence it follows that patients cured of albuminuria should remain under medical observation for a number of years.

1715 Spruce Street.

Automobile Accidents in New York.—In a statement issued by State Commissioner of Health Herman M. Biggs an interesting and significant comparison is made between the number of deaths in the state caused by automobile accidents and typhoid fever, as well as other causes of death. While typhoid fever mortality was reduced 26 per cent. in 1917, the deaths from automobile accidents increased so much as to take the place of typhoid fever as one of the principal preventable causes of death. In September, 1917, there were 155 deaths from automobile accidents, more than the combined mortality from homicide and suicide, and undoubtedly a much greater number of injuries involving prolonged illness and more or less permanent disability. Of these deaths 55 were in New York City, 63 in upstate cities and 37 in rural districts. Typhoid fever caused 84 deaths among 796 patients during September. For the year 1917, up to September 30 there were 755 deaths from automobile accidents, while for typhoid fever there were 434 deaths among 2,840 patients.—*Bulletin* New York State Department of Health.

THE USE OF BISMUTH IODOFORM PASTE IN OUTPATIENT WORK*

VINCENT O'CONOR, M.D.

AND

HENRY A. KREUTZMANN, M.D.

BOSTON

The treatment of postoperative hospital cases, as well as that of minor surgical conditions, comprises the general function of the routine work in the outpatient departments of our larger hospitals.

The chronically obstinate sinuses of osteomyelitis, tuberculosis, fecal fistula, empyema, lung abscess cavities and innumerable similar conditions present problems of no small importance to the outpatient surgeon who must receive the convalescent patient on his discharge from the hospital ward and take over the problem of promoting a rapid and complete recovery.

Another difficulty with which the outpatient surgeon has to deal is the indifference and the neglect of the patient to return regularly for treatment.

It was the hope of obtaining better results than with the means commonly employed that led us to use bismuth iodoform paste, first described and used by Rutherford Morison¹ in the treatment of war wounds at the Northumberland War Hospital, England.

In our work we have used two preparations of bismuth iodoform paste, the original paste and an emulsion.

The paste is prepared according to the formula of Morison. It is composed of bismuth subcarbonate or subnitrate, 1 part, iodoform, 2 parts, and liquid petrolatum, 1 part. We devised the emulsion because of the difficulty of introducing the paste into deeper cavities which necessitated drainage through a narrow sinus. This emulsion, which we have called "liquid bipp" (bismuth iodoform petrolatum paste), is composed of bismuth subcarbonate, 1 part, iodoform, 2 parts, and liquid petrolatum, 4 parts. Both preparations are easily and cheaply prepared.

Our treatment of highly infected wounds has been identical with that described in the British war hospital. The wound is first thoroughly irrigated with sterile saline, or 1:25 boric acid solution. It is then liberally swabbed out with 75 per cent. alcohol. The surrounding skin is shaved and cleansed in the same manner. The wound with all its cavities and pockets is tightly packed with bismuth iodoform paste and closed with the usual silkworm-gut or silk sutures.

The type of cases in which the foregoing has been employed has included only those in which we had previously allowed the wounds to heal by second intention or had drained them with rubber tissue. In the case of the majority of the patients treated with bismuth iodoform paste, the wound healed by first intention, with no resultant sinus, leaving a clear-cut insignificant scar. In highly infected cases, healing was effected by rapid granulation from the bottom.

In two patients with tuberculous cervical adenitis in which suppurating glands were removed from tissue that was thoroughly necrotic, curettage, swabbing with alcohol, and packing with bismuth iodoform paste were followed by complete closure. There was healing by first intention and recovery without sinus formation. We report this because in similar cases

* From the Surgical Outpatient Department, Peter Bent Brigham Hospital.

1. Morison, Rutherford: *Lancet*, London, 1916, 2, 268-272.

it had previously been our custom to employ drainage. The resultant sinus healed by second intention only after many days, and was complicated by excessive granulations.

As to the relative value of bismuth iodoform paste and Beck's paste in the treatment of osteomyelitic sinuses, it is as yet too early to make an accurate or fair comparison. We have convinced ourselves, however, that the injection of the liquid bismuth iodoform mixture, accompanied by the maintenance of proper drainage, has thus far been more satisfactory than any of the older methods of treatment.

The results obtained in the postoperative treatment of a large number of empyema and lung abscess cavities have been extremely encouraging.

In these cases the sinus is completely filled with the liquid bismuth iodoform mixture by instillation with a large glass syringe through the rubber drainage tube. In this way the cavity and sinus are both completely filled with the emulsion, and the drainage tube remains in situ. It is not necessary for the patient to present himself for another dressing for from three to five days.

We have succeeded in obtaining a complete healing in four chronic cases which had obstinately resisted all other methods of treatment during a long period of time. More than half of the recently operated on patients that were given this treatment have progressed at a more rapid and satisfactory rate than prevailed under older methods of treatment.

A decided advantage of this paste is its nontoxicity even when it is used in large quantities. The possible dangers arising from the use of large amounts of iodoform and bismuth are iodoform poisoning and poisoning from lead which may be present in impure bismuth carbonate or subnitrate. Morison² asserts that in his entire series he has had only two patients in whom symptoms of poisoning by either of these drugs were severe enough to demand removal of the paste from the wound.

To prevent the introduction of lead into the wound, each batch of the bismuth salt is first tested for the presence of lead before it is incorporated into the paste.

Hepworth³ reports five cases of poisoning occurring in the Wharnccliffe War Hospital, Sheffield, in which symptoms suggesting plumbism were present. He describes a simple and yet delicate test for the presence of lead which we have used in our work with the greatest satisfaction.

We have been constantly on the watch for any symptoms of poisoning. Thus far we have had only one patient, with a large empyema cavity, in whom there was a blue line localized on the gums about the two canine and the two incisor teeth of the lower jaw. A piece of the bluish red gum was excised and studied microscopically and chemically. Chemical tests for both bismuth and lead were negative. Microscopically, the pigment was found in the layers of the rete. A definite decision as to whether the substance was lead or bismuth sulphite was not made. Since the patient had absolutely no untoward symptoms, the treatment was continued, careful observation being made at each visit. The red blood cells have shown no change, and the urine has not contained bismuth. The empyema cavity is healing rapidly from the bottom.

CONCLUSIONS

The advantages of bismuth iodoform paste lie in its marked germicidal action and stimulation of rapid tissue growth.

It is cheaply and easily prepared, is nontoxic, and requires no great skill in application.

An added feature in outpatient work is that less frequent dressings are necessary and therefore require a decreased number of visits per patient. This is often an economic saving of no small importance to the laboring patient.

The object of this article is to draw the attention of other outpatient departments to this preparation as a valuable addition in the treatment of similar cases in civil practice.

OPERATIVE RISK IN CARDIAC DISEASE *

JOHN M. BLACKFORD, M.D.

SEATTLE

FRED A. WILLIUS, M.D.

AND

S. B. HAINES, A.B.

ROCHESTER, MINN.

General impressions of operative risk in cardiac disease are scattered throughout medical literature, but we have been unable to find any summary of results in a given series of cases. The failure to report such results must be due largely to two reasons: first, the difficulty of accurately classifying cardiopaths into similar groups, and second, the fact that in ordinary work few observers have an opportunity to study any series of such patients needing surgical treatment. These reasons are sufficient to make us feel some temerity in reporting a series of such cases, and yet we feel that such a report may throw some light on the subject.

Experience here has taught us that the best measure of operative risk in cardiac disease is a good clinical impression of the patient's ability to stand physical strain, in addition, of course, to a good history and a physical examination. Cases in which the heart permits the patient to go about, or in which it can be sufficiently restored by treatment to allow this, usually have been considered safe for operation. The "goiter heart," the "fibroid heart," the "prostate heart," etc., are often so remarkably improved following operation as fully to justify the risk. Cardiac disease due to focal infection, particularly tonsillitis and rheumatism, often shows the same happy result following the removal of the focus. A malignant condition complicating heart disease is considered operable if a fair hope of cure is offered, and palliative operations are often indicated in such cases. In very few instances in which there has been urgent need of operation has it been refused on account of the cardiac condition, though in many, the operation has been undertaken only after preliminary medical treatment. The decision in each case is based on several factors: (1) the immediate operative risk; (2) the probable improvement of the condition of the heart following the operation; (3) the patient's relative chance for length of life or general health with and without the operation, and (4) in less serious conditions whether the operative relief will justify the increased risk.

2. Morison, Rutherford: *Brit. Jour. Surg.*, 1917, **4**, 659-678.

3. Hepworth, F. A.: *Lancet*, London, 1917, **1**, 573-574.

* From the Mayo Clinic.

Our experience in general has justified the taking of risks in cases demanding surgical intervention.

A rational classification of cardiac risks on a basis of valvular disease alone is impossible. Valvular disease, with myocardial compensation sufficient to allow marked exertion, does not increase operative risk. With reasonably good compensation, allowing moderate exertion with comfort, the risk is not greatly increased, that is, a mitral stenosis may be slight and not increase the risk. With moderately good compensation the risk is not great, whereas with a very badly damaged myocardium it may be greatly increased. Similarly an aortic lesion without cardiac symptoms is easily operable, whereas the heart would not be considered operable if there was marked angina associated with the lesion. Manifestly the presence of valvular disease alone gives a poor basis for grouping similar cases.

A classification based on attempts to measure the cardiac reserve is also impossible since we have no accurate means of measuring it, and clinical impressions are variable. Angina pectoris, aortic valvular disease with pain, and aortitis with dilated aorta are universally recognized as marked contraindications to operative interference; but the risk in such cases is variable, and so few patients have been operated on that a correct statement of the risk is impossible.

Recent advances in cardiac study, particularly of the electrocardiograph, have given opportunity for better classification. We have studied results in four groups of cases of disordered cardiac mechanism that are universally recognized as bad risks—the worst groups of risks, if we except angina pectoris and allied conditions. These groups are: (1) auricular fibrillation; (2) auricular flutter; (3) impaired auriculoventricular conduction, and (4) impaired intraventricular conduction. No clinician will take exception to the statement that these disorders include the worst of cardiac risks; they give definite objective findings and are accompanied usually by extensive myocardial damage. A history showing any such cardiac disorder should always be very carefully considered.

We did not have an opportunity to examine before operation all the patients having cardiac trouble, and therefore selected only those who had had electrocardiograms taken since August, 1914. These represent the larger number of surgical cases in which cardiac disease was a complication. Undoubtedly a few patients were so obviously in a bad condition that the clinician did not consider a complete examination necessary (that is, an electrocardiogram) and sent them home. If moribund patients and those bedridden by heart disease are excepted, our summary is a fair average of patients in whom cardiac operative risk is necessarily gravely considered. As we have mentioned, angina pectoris has not been included in the series because no evident grounds for grouping similar cases are apparent, and patients suffering severely from the condition are rarely considered operable.

AURICULAR FIBRILLATION

The mechanism of this disorder is now known to be rapid incoordinate contractions of individual muscle-bundles of the auricular wall, that is, fibrillary twitchings, descriptively called "fibrillation." The auricle loses its pumping function and becomes a dilated organ, acting only as a reservoir in the circulation. The condition is characterized in the larger number of cases by a totally arrhythmic pulse and often by a

marked tachycardia. Usually fibrillation is a permanent cardiac disorder, though in a definite percentage of cases it is paroxysmal, with an established sinus rhythm between attacks.

Exophthalmic Goiter.—Extensive experience with hyperplastic toxic (exophthalmic) goiter makes it evident that fibrillation is an end-result of the disease toxin on the myocardium. The fibrillation is found in young patients when the toxemia is severe and has continued a long time. It is usually much less frequent under than above the age of 40.

We have recorded nine patients under 30 years of age, the youngest 21, and twelve between 30 and 40 years of age, a total of twenty-one patients under 40 years. This group comprises the worst risks. Usually the myocardiums of young patients stand the strain well; yet they have given out, and this is evidence of extreme toxemia and stress. A high mortality should be expected. One patient died following a Porter hot water injection; three died in from four to six weeks at home (reported as one cardiac death, two due to pneumonia); two died eight and fifteen months following thyroidectomy; that is, six of twenty-one patients died within fifteen months. We have recently heard from eleven of the fifteen remaining patients. Five report that they are almost or completely well, and six report definite to marked improvement. To recapitulate: Of twenty-one patients under 40 years of age with fibrillation due to exophthalmic goiter, one third are well, one third are improved definitely to markedly, and one third are dead.

In older patients (more than 40 years old) it is expected that the myocardium will break down more easily, and that it will show poorer recuperative power. We have recorded forty-nine patients more than 40 years of age with fibrillation, and have recently heard from twenty-one of them. Three are dead, one being an operative mortality, one dying six years after thyroidectomy and fifteen months after a radical operation on the breast for carcinoma (fibrillation clinically eleven years), and one dying in nine months from "heart failure." Eighteen of the series report as follows: Thirteen are much or completely relieved of cardiac symptoms, four are definitely improved though still cardiopaths, and one reports questionable improvement.

The gross operative mortality of seventy cases of fibrillation associated with exophthalmic goiter is two deaths, or 2.8 per cent., which compares very favorably with the present normal operative mortality of 2.6 per cent.

Thyrototoxic Adenomas.—This group represents the typical *Kropfhers* of Kocher, the "goiter heart." Clinical observation has long shown that certain patients with "simple goiter" after years of good health gradually develop thyrototoxic symptoms and cardiac disease. A considerable percentage of such patients later show auricular fibrillation; in seventeen cases of fibrillation there was one operative death, and two deaths in nine and twenty-three months, respectively. Seven other patients have been heard from; four are almost or completely well, two are definitely improved, and one is questionably improved.

Work on basal metabolism has shown that these patients have a constantly high metabolic rate, comparable to that of typical exophthalmic goiter. This, with the similar myocardial damage and the remarkable cardiac improvement in most cases after opera-

tion, makes the operative risk well worth while, and much smaller than is generally believed.

Other Diseases.—There were nine cases of fibrillation in patients less than 40 years of age and sixteen more than 40, making a total of twenty-five. The operations have been as follows: nine tonsillectomies, four excisions of epitheliomas (two lower lip, one gland of the neck, one larynx), one excision of a gland of the neck for diagnosis (sarcoma), three cholecystectomies and appendectomies, three gastro-enterostomies, two for ulcer, one for carcinomatous obstruction, one Talma-Morrison, one herniotomy, one cataract extraction, one suprapubic stab, and one cauterization of urethral caruncle. There were two early fatalities, one a postoperative death due to decompensation in the case of suprapubic stab, and one from cholangitis following a gallbladder operation. One patient died a cardiac death nine months after tonsillectomy. Three others are dead, one death being reported as due to paralysis, one as due to peritonitis, and one as due to sarcoma. This makes six deaths in the twenty-five cases, only two of which were due to the cardiac condition. In recent reports from eleven patients, all but one say they are definitely to markedly improved as regards the cardiac complaint. The patients who had tonsillectomies seem to have done particularly well.

AURICULAR FLUTTER

This disordered cardiac mechanism is recognized as due to the rapid coordinate contractions of the auricles, stimulated by foci of irritation located in the auricular wall outside the normal pacemaker. The auricles contract at a rate of 200 to 380 and the ventricles usually at one half the auricular rate, though any rhythm from a 1:1 association to complete heart block may exist. The pulse is regular in one half of the reported cases and grossly irregular in the other half. The degree of block may vary from time to time, and most patients are subject to paroxysmal "weak spells," owing to a sudden decrease in the degree of block allowing the ventricles to assume the full auricular rate. The condition is usually chronic, and may exist for years. A "weak spell" during the operation is an evident danger, though we have not observed it. Four patients have been operated on, all included in the foregoing under fibrillation. These patients are of particular interest as apparently being the first proved cases of flutter in which an operation has been done.

We have reported elsewhere¹ that these four patients were subjected to vigorous digitalis and rest treatment until fibrillation was brought on and then the operation was done. Three of the patients had exophthalmic goiter, though one had a cholecystectomy and tonsillectomy in the clinic, and a thyroidectomy elsewhere later. One other patient had had a tonsillectomy. All the patients with exophthalmic goiter resumed a normal rhythm after the operation, and two had no cardiac symptoms. The last patient (tonsillectomy) reports himself greatly improved. Thus far, there has been no mortality.

PARTIAL OR COMPLETE HEART BLOCK

One patient with complete block has had three operations in eleven years—appendicectomy, amputation of breast for carcinoma, and excision of recurring skin nodules. The cardiogram was taken before the

last operation, but the pulse was remarkably slow at the former examinations. The patient is alive and reasonably well. Six patients showing delayed conduction-time between auricles and ventricles, that is, auriculoventricular intervals of from 0.22 to 0.28 second, have been operated on as follows: three for diseased tonsils, one for exophthalmic goiter, one for thyrotoxic adenoma, and one for gallbladder disease. Thus far, we have no knowledge of a death in these cases. Four of the patients recently reported that they are markedly improved or cured.

INTRAVENTRICULAR BLOCK

This disorder is due to impaired conduction of the cardiac impulse after it has passed the bifurcation of the auriculoventricular bundle. It is evidence of disease in the main branches of the bundle or in the subendocardial plexus, causing a slow and ununiform diffusion of the contraction stimulus throughout the ventricular wall. Recently Oppenheimer and Rothschild² have excellently presented this subject and have called attention to the serious cardiac damage and the early fatality which it usually indicates. As a basis for clinical interpretation we have used for several years the same criteria which they present, and we are able to confirm their general findings in a larger series of cases (158).

The electrocardiographic curve in this condition shows a prolonged QRS complex (active ventricular phase), and variations of this up to the remarkable complexes which have been described as branch bundle defects. Undoubtedly such curves indicate extremely bad myocardial damage, as may be readily determined by ordinary clinical methods.

Relief of a probable infectious or toxic focus for the cardiac disease has seemed advisable, and operations have been done with this in view. Twelve patients have been operated on: seven tonsillectomies, four thyroidectomies (three exophthalmic goiter and one thyrotoxic adenoma), one ligation for exophthalmic goiter, and one salpingectomy. Six of the seven tonsillectomy cases had histories of rheumatic fever. One patient died of cardiac insufficiency one year after tonsillectomy; seven others (five with definite valvular disease) report definite to marked improvement in general health. It would seem, therefore, in such cases that if a surgical condition appears as a cause or aggravation of the cardiac disease, operation should be undertaken, particularly if goiter or tonsillitis is the disturbing condition. Five of our patients were 30 years of age and two were younger, and improvement is greatly desired for such young patients.

SUMMARY

We do not believe that valvular disease with good or reasonably good compensation should be considered as a contraindication to operation, because the surgical risk is not materially increased in such cases. Careful anesthesia is, of course, essential. In the Mayo Clinic, the record of 120,000 ether anesthetics with but one death under anesthesia is evidence of the remarkable safety of ether when properly administered.

The best idea of the cardiac risk in surgical cases is derived from a carefully balanced impression of the patient's general ability to stand stress. If the patient is ambulatory without marked decompensation, opera-

1. Blackford, J. M., and Willius, F. A.: Auricular Flutter, to be published.

2. Oppenheimer, B. S., and Rothschild, M. A.: Electrocardiographic Changes Associated with Myocardial Involvement, *THE JOURNAL A. M. A.*, Aug. 11, 1917, pp. 429-431.

tion is usually safe. If marked cardiac insufficiency is evident, the patient should be medically treated until a fair degree of compensation is restored.

Surgical intervention should not be undertaken in a cardiopath unless there is definite reason to believe that the surgical relief is essential to reasonable health or will improve the cardiac condition. "Meddlesome surgery" has a fuller meaning in treating cardiopaths.

Extremely severe cardiac disease can often be definitely to completely relieved by the removal of an infectious, mechanical or toxic source of cardiac strain or degeneration. In cardiopaths suffering from goiter the relief is often beyond all expectations. Not infrequently in such cases patients are transformed from confirmed invalids to active, useful persons.

Of one hundred patients operated on with auricular fibrillation, there was a gross surgical mortality of 5 per cent.; but in only 3 per cent. death was due to cardiac disease. That is to say, 3 per cent. represents the increased risk in one hundred patients. Thirteen per cent. have died since leaving the clinic. Forty-seven others report as follows: Eight are subjectively well, twenty are markedly improved and able to lead fairly active lives, sixteen are definitely improved but still obliged to avoid exertion, and three report little or no improvement.

Four patients with auricular flutter were operated on after fibrillation was brought on by treatment. Two are subjectively well, and two are markedly improved.

Seven patients with partial or complete heart block (six partial, one complete) were operated on, with no deaths. Three of the patients are markedly relieved, and one is unaware of cardiac difficulty at present. The complete block is unchanged.

Twelve patients with intraventricular block were operated on, with the result that one died a year following tonsillectomy, and seven report definite to marked improvement, in spite of evident valvular disease.

We wish to emphasize the fact that these results are given with the belief that they represent what are usually considered the worst surgical cardiopathic risks (except angina and allied conditions). With few exceptions they include all cases of bad cardiac disease in the clinic that needed surgical treatment.

Myocardial insufficiency finally reaches a point at which there is no possibility of improvement with any method of treatment with which we are familiar. We know only of the therapeutic test to determine this point in doubtful cases, and the foregoing results show that until such a stage of decompensation is reached the patient should at least be given the chance of surgery. The improvement following surgical interference in suitable cases has been so remarkable as fully to justify accepting the somewhat increased risk. The general tendency unquestionably is to overestimate the danger of operative fatality. In cases in which surgery can relieve, cardiopaths should not be refused operation, at least until a therapeutic trial has been given for the reestablishment of some compensation.

Patients with arrhythmia, particularly fibrillation, stand operation remarkably well after medical treatment. It may be said that the fibrillating auricle has whipped the ventricle until continued ventricular action proves a reasonably good ventricular power, and life depends on ventricular, not auricular, action. Our ability to estimate operative risk depends on our ability to estimate the ventricular reserve, and remark-

ably little reserve seems necessary to carry the patient through good ether anesthesia. That we may err in judgment is evidenced by our three cardiac surgical deaths, and eight other deaths within a year from cardiac insufficiency. However, the general results of definite to marked improvement in about 80 per cent. of suitable cases is ample justification for accepting the increased mortality.

From the foregoing study we seem justified in making the following definite conclusions: first, that many properly selected cardiopaths, often considered hopeless, may be relieved by surgical measures, and second, that the general tendency at present is to require too great a margin of cardiac safety in surgical work.

THE BRUCK PRECIPITATION TEST FOR SYPHILIS

ARTHUR WILLIAM STILLIANS, M.D.

Attending Dermatologist, Cook County Hospital; Consulting Dermatologist, Chicago Lying-In Hospital

CHICAGO

Since the adoption of the complicated complement fixation test for syphilis, repeated attempts have been made to simplify it or to substitute for it a simple chemical test. Most of these substitute tests have been precipitation tests, and so far all have failed to attain any practical degree of diagnostic accuracy. Bruck,¹ the collaborator of Wassermann on the complement fixation test, has recently brought out another, for which he claims specificity. Since the war began he has continued his research under the restricted facilities of a field hospital, and found that the nitric acid precipitate in syphilitic serum dissolved more slowly on neutralization with alkalis, than the precipitate in normal serum. He then sought the quantity of distilled water necessary to dissolve the normal precipitate without dissolving that in syphilitic serum. The test thus evolved has given good results in his hands, and he suggests that it be tried out by other experienced laboratory workers in the hope that it may be of use in diagnosis or at least may shed further light on the character of syphilitic serum. He suggests that it may be of especial value to the military surgeon unable to obtain the help of the Wassermann reaction, in determining whether or not it is necessary to send certain patients back from the front for antisiphilic treatment. In view of the needs of the approaching time of demobilization of the troops, he suggests that any additional aid to the diagnosis of syphilis will be welcome.

As a reagent he uses the acidum nitricum purum of the German pharmacopeia, which is about 25 per cent. nitric acid with a specific gravity of 1.149. Fifteen-tenths c.c. of clear serum is put into a large test tube, 2 c.c. of distilled water added, and the tube shaken. Then, the exact time being noted, exactly 0.3 c.c. of the reagent is added, the tube again shaken, and allowed to stand ten minutes at room temperature. To the white precipitate thus formed, 16 c.c. of distilled water are then added, and the tube, capped by the finger, is carefully inverted three times, the formation of froth being avoided. Again the tube is allowed to stand ten minutes and then inverted three times in the same way, froth formation always being avoided.

1. Bruck, C.: Eine sero-chemische Reaktion bei Syphilis, München. med. Wchnschr., 1917, 64, 25.

After the tube has stood for half an hour at room temperature, the reaction may be read. All tubes showing more than slight opalescence are read as positive, all tubes with clear contents as negative. The author suggests that the reading is easier if the tubes are allowed to stand twelve hours, when the precipitate will be seen at the bottom. The tubes then showing only a slight precipitate, *kleine kuppe*, are to be read as doubtful or negative. The necessity of accuracy in measurement of the reagent, and in timing the various parts of the reaction is emphasized.

In about 200 syphilitic serums there was practically complete agreement with the Wassermann reaction. Only three Wassermann positive serums, from one latent and two secondary cases, gave negative Bruck reactions. On the other hand, one case of congenital syphilis and one tertiary case gave positive Bruck reactions, although the Wassermann test was negative. Of about 200 nonsyphilitics, all were negative except four cases of old infected wounds of knee and thigh, long febrile, and one febrile case of tuberculosis. A positive test in a febrile case, therefore, is not trustworthy.

Bruck does not put forward his test as a substitute for the Wassermann reaction, but thinks that it may possibly be due to the same peculiarity of syphilitic serum responsible for the Wassermann reaction, and that it may be useful in connection with the latter. If it proves a practical aid to diagnosis, it has the great advantages of requiring only a simple laboratory outfit, a single stable reagent, and little time.

I have performed the new test under the conditions prescribed by the author in 209 cases. In fifty-three of these, more than 25 per cent., the results disagreed with those of the Wassermann reaction. In thirteen cases of active early syphilis, in all of which the Wassermann reaction was very strongly positive, the new test was negative. On the other hand, 24 per cent. of seventy-four nonsyphilitics gave positive Bruck reactions. These occurred in one febrile case of septicemia and in sixteen afebrile cases, one of gonorrheal urethritis, one of gonorrheal arthritis, one of xanthoma planum et tuberosum, one of systemic blastomycosis, one of dermatitis venenata, and in one healthy man, three nursing women and eight pregnant women, apparently healthy.

COMPARATIVE RESULTS OF TESTS

| Diagnosis | No. of Cases | Positive Wassermann Reactions Per Cent. | Positive Bruck Reactions Per Cent. |
|-----------------------------|--------------|---|------------------------------------|
| Early active syphilis | 31 | 100 | 58 |
| Late active syphilis | 12 | 92 | 58 |
| Latent syphilis | 54 | 67 | 20 |
| Nonsyphilitic | 74 | 0 | 24 |

Bruck states that either active or inactivated serum may be used for the test. In 115 cases in which I have performed the reaction with both active and inactivated serum, the result was the same in ninety-eight cases, but differed in seventeen. In fourteen cases the active serum gave a positive reaction, the inactivated a negative, while in three cases the reverse occurred. That these differences were not all accidental, from slight differences in technic such as Smith and Solomon² have shown to be important, was indicated by the fact that repetition of these tests in many instances gave exactly the same result. The only departure from the original technic as published by Bruck was

that the tubes were allowed to stand over night, from eighteen to twenty hours, before being read. Attempts to read them within a few hours were discontinued as valueless, for it was impossible to say which tubes would give a precipitate and which would not. The author of the test himself advises that they be allowed to stand twelve hours before being read. In every other respect the technic as given by Bruck has been carefully followed.

Since this paper was begun, Smith and Solomon² have reported their results in a series of 400 cases. They insist on several refinements of technic omitted by the originator of the test; but in spite of their use of these, their results disagreed with those of the Wassermann reaction in 25 per cent. of the cases, and in 302 nonsyphilitics they had 28 per cent. of doubtful or positive reactions. In syphilis of the central nervous system their Bruck reaction differed from the Wassermann in only ten of sixty-nine cases, or 14 per cent. In twenty-two other syphilitics the two reactions differed five times, or 23 per cent. These are better results than I obtained in my series of ninety-seven syphilitics in all stages, for I had 35 per cent. disagreements with the Wassermann reaction, in nearly all of which the Wassermann was correct. On our whole series we agree in having had disagreement between the two reactions in 25 per cent. of cases.

The new reaction in my hands was remarkably weak in early, untreated syphilis, giving negative reactions so often as to make it useless for the diagnosis of this class of cases. To make certain that there was no mistake about the negative Bruck reaction in these cases, I repeated the tests in many of the cases, always with the same result. When this is considered along with 24 per cent. of positive reactions in nonsyphilitics, which were also carefully checked by repetition, the uselessness of the test for diagnostic purposes is apparent.

That syphilitic serum differs from most other serum in regard to the ease with which it can be precipitated has been shown in many ways since Fornet and Schereschewsky,³ in 1907, proposed a ring test for syphilis, made by overlaying the serum in a case of tabes or paresis with the serum in a case of early syphilis. At the line of contact between the two serums, a ring of precipitate appears. Michaelis and Citron showed that mixture of syphilitic serum with extract of syphilitic liver produces a precipitate. Porges and Meier⁴ devised a precipitation test by the use of an emulsion of lecithin as reagent. Klausner offered a test consisting of the dilution of active serum with distilled water, giving a precipitate in twenty-four hours in case the serum is syphilitic. Elias, Neubauer, Porges and Salomon⁵ used sodium glycocholate as the precipitating reagent. To this Herman and Perutz later added cholesterol in a vain effort to perfect the reaction for diagnosis.

The Bruck nitric acid precipitation test seems destined to take its place beside these. In fact, the results obtained by Fritz and Kren⁶ in their trial of the lecithin and sodium glycocholate tests were not very different from the results of the Bruck test. In a

3. Fornet and Schereschewsky: Serodiagnose bei Lues, Tabes und Paralyse durch spezifische Niederschläge, *Deutsch. med. Wchnschr.*, 1907, **33**, 1679.

4. Porges, O., and Meier, G.: Ueber die Rolle der Lipide bei der Wassermann'schen Syphilis Reaktion, *Berl. klin. Wchnschr.*, 1908, **45**, 731.

5. Elias, Neubauer, Porges and Salomon: *Wien. klin. Wchnschr.*, 1908, **21**, 376.

6. Fritz, W., and Kren, O.: Ueber den Wert der Serumreaktion bei Syphilis nach Porges-Meier und Klausner, *Wien. klin. Wchnschr.*, 1908, **21**, 386.

2. Smith, C. E., and Solomon, H. C.: The Bruck Sero-Chemical Test for Syphilis, *Boston Med. and Surg. Jour.*, 1917, **177**, 321.

series of fifty-nine syphilitics, they obtained with the lecithin test 63 per cent. positive reactions, and in twenty-four nonsyphilitics, 50 per cent. positive reactions. With sodium glycocholate there were 65 per cent. positives in syphilitics and only 17 per cent. positives in nonsyphilitics. All the precipitation reactions show in a large proportion of syphilitics an increased amount of some substance which, however, is also present in like amount in a smaller proportion of nonsyphilitics. The fixation of complement by the combined action of syphilitic serum and extract of liver or heart remains the only property of syphilitic serum thus far discovered that is not shared by so large a percentage of nonsyphilitics as to preclude its use for diagnosis.

CONCLUSIONS

1. The Bruck precipitation test for syphilis fails in a considerable percentage of early secondary syphilis.
2. It gives positive reactions in from 24 to 28 per cent. of nonsyphilitics.

THE PHARMACOLOGY OF THE OIL OF CHENOPODIUM

WITH SUGGESTIONS FOR THE PREVENTION AND TREATMENT OF POISONING *

WILLIAM SALANT, M.D.

WASHINGTON, D. C.

The oil of chenopodium is an essential oil which is distilled from American wormseed or Jerusalem oak, a weed quite common in Maryland and in the states farther south. It first came into use in therapeutics in the treatment of ascariasis, but in recent years it has also become the chief remedy against ankylostomiasis, and is at present practically the only drug used for the eradication of this disease. As shown in the reports of the International Health Commission,¹ the number of patients treated with the oil of chenopodium is very large. It has been employed in several million cases of hookworm in the last few years.² Its behavior in the body is therefore a matter of considerable interest, not only to the pharmacologist, but also to those specially interested in the treatment of hookworm and other intestinal parasites. The obvious necessity of making the information concerning its action readily available suggested to me the advisability of presenting this summary of the results of pharmacologic investigations.

PHYSIOLOGIC ACTION

That the action of oil of chenopodium is not confined to the effect on the organisms against which it is directed has been established by experiments on animals. Brüning³ was the first to call attention to its toxicity by tests on different animals, but the action of the drug has since been made the subject of more extensive investigation in this laboratory. Nelson and myself⁴ have shown that oil of chenopodium is a strong local irritant, causing severe inflammation of the mucous membranes. Even very small quantities may prove very toxic and cause death when given to different animals. One-half c.c. of the oil given by mouth to a medium-sized rabbit produced symptoms of

severe poisoning, such as vomiting, convulsions, coma, paralysis, and death. The active dose was smaller for cats, 0.2 c.c. per kilogram of oil of chenopodium being toxic, and 0.25 c.c. per kilogram proved fatal. Dogs were much more resistant than cats, but severe symptoms of poisoning were likewise observed in these animals. Of particular importance is the observation we made that a dose which is not effective at first may cause serious symptoms and death when repeated within one or several days. We noticed that sensitiveness to the oil of chenopodium persisted for from five to nine days. This is well worth remembering when the dose has to be repeated, as is sometimes the case, in the treatment of hookworm, for the first dose may not prove efficacious and a second or third dose is required to accomplish the desired result. Attention was also called to the effect of the nutritional condition and of diet on the toxicity of the oil. Fasting or poorly nourished animals succumbed to much smaller doses. The resistance was noticeably greater, on the other hand, in animals that had been receiving a rich carbohydrate diet for several days before the oil was given, or when the administration of the oil of chenopodium was preceded by a sufficient quantity of fatty oil, such as olive oil, coconut oil, or castor oil. Quantities which invariably caused death were survived without the production of symptoms of poisoning when any of these oils were given shortly before or after the administration of oil of chenopodium. Very satisfactory results were also obtained when several doses of about 15 c.c. of the fatty oils were given during two or three days preceding its administration. That disturbance of renal function may be caused was shown in experiments in which the permeability of the kidney was tested after the administration of the oil of chenopodium, for Bengis and myself⁵ observed that fat-soluble dyes injected subcutaneously or when fed by mouth failed in some cases to be eliminated in the urine of rabbits under these conditions. Its effect on the kidney was further illustrated in another series of experiments in which evidence was obtained indicating that under certain conditions it may cause renal irritation, even when combined with some substances that were otherwise its physiologic antagonists. Albumin and casts were frequently found when it was given in an emulsion in acacia to rabbits. But when oil of chenopodium was dissolved in one of the fatty oils which, as previously mentioned, decreased the general toxicity of oil of chenopodium, renal irritation became more marked. This, as indicated in a recent report⁶ from this laboratory, is probably due to the combined action of the two, that is, the oil of chenopodium and the fatty oil each producing renal irritation, the effect being enhanced when both were given together. It is important to point out in this connection that this does not apply with equal force to carnivorous animals, as the same amounts of oil of chenopodium and coconut oil fed to cats seldom produced these results.

Its poisonous nature was also shown by the tendency to cause depression of the circulation and respiration, as well as to lessen the intestinal movements. In experiments on different animals under anesthesia it was observed that blood pressure may fall considerably in some instances, as 0.02 c.c. of oil of chenopodium per kilogram when injected intravenously may

* From the Pharmacologic Laboratory, Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C.

1. Report Int. Health Com., Washington, D. C., 1915.

2. Personal communication from Dr. Victor Heiser.

3. Brüning, H.: Ztschr. f. exper. Path. u. Therap., 1906, **3**, 564.

4. Salant, W., and Nelson, E. K.: Am. Jour. Physiol., 1915, **36**, 440.

5. Salant, W., and Bengis, R.: Jour. Biol. Chem., 1916, **27**, 403.

6. Salant, W., and Bengis, R.: Jour. Pharmacol. and Exper. Therap., 1917, **9**, 529.

be followed by a fall of blood pressure amounting to 40 or 50 per cent.⁷ Although this was not the rule, it is well to bear in mind that it occurred with sufficient frequency to serve as a warning to the clinician of the nature of the drug he is prescribing. Evidence was obtained that the action might be due to direct effect on the heart. This was also shown in an extensive series of experiments on the isolated frog heart.⁸ Very small quantities proved to be quite active, as one minim of the oil of chenopodium to 100 c.c. of Ringer's fluid, when perfused through a normal frog heart, produced marked depression and sometimes arrest of the heart in diastole. In numerous observations on different animals under chloretone or morphin-ether anesthesia it was also noticed that respiration may be depressed or even completely inhibited⁹ when the oil of chenopodium is injected intravenously in the form of an emulsion. That the oil of chenopodium is a general depressant is further shown by the effect produced on peristalsis.¹⁰ The movements of the isolated intestines in intact animals may be inhibited by the oil of chenopodium. According to Muirhead and Gerald¹¹ uterine contraction may likewise be inhibited if the isolated organ is exposed to the oil, provided, however, the concentration is not too low.

Little is known of its fate in the body, but it might be inferred by analogy that, like other essential oils, it is conjugated with glycuronic acids. It is apparently not eliminated uncombined in the urine or in the bile for its odor in these fluids was never detected. On the other hand, its elimination by the lungs¹² was observed in experiments on animals after its intravenous administration, for the characteristic odor in the expired air was unmistakable. It is evident, therefore, from the experimental data cited above, that the drug is very active. That this also holds for human subjects is shown by the incidence of poisoning with this drug. Levy¹³ reported twelve cases, nine of which were fatal. Coutant¹⁴ reported recently one case of severe poisoning, but the patient recovered. I have been informed of several cases that have come under the observation of the medical officers of the International Health Commission.¹⁵ The substance under consideration should therefore be handled with caution when used for internal medication as it has a tendency to affect the central nervous system, the heart, respiration, digestive organs, and the kidneys. In the presence of renal or cardiac disorders the oil of chenopodium should be given in small doses only, while in advanced cases of chronic nephritis or heart disease its use would seem to be altogether contraindicated.

As the liver undoubtedly plays an important part in detoxifying the oil of chenopodium while abnormal changes in the gastric and intestinal mucosa may accelerate its absorption into the circulation, it may be expected that in hepatic and gastro-intestinal diseases it may likewise prove more toxic. The impor-

tance of the nutritional condition in determining the toxicity of oil of chenopodium has been established by experiments on animals, as has been sufficiently indicated. This applies also to human beings. The case reported by Coutant furnishes evidence of the effects of the drug when administered to the poorly nourished and weak individual. Two doses of 10 minims each given in twenty-four hours were toxic, but the patient was 21 years of age and weighed only 95 pounds.

TREATMENT OF POISONING

Since cases of poisoning are sure to occur, the question of treatment deserves consideration. When large doses have been swallowed lavage may be resorted to with beneficial results. If carried out promptly after the oil is taken it may prove effective in preventing serious consequences, since absorption of the oil from the stomach is slow. In experiments that Livingston and I¹⁶ carried out we often found that several hours may elapse before evidence of absorption into the circulation could be obtained, when the oil was introduced into the stomach of animals, the pylorus having been ligated previously.

The importance of not delaying lavage too long after the poison has been swallowed is further emphasized by the fact that absorption from the duodenum was found, on the contrary, to be very rapid. In some of the experiments in this laboratory the introduction of oil of chenopodium was followed by the immediate appearance of the characteristic effect on the circulation.

No chemical antidote has yet been found. The treatment in cases of poisoning would, therefore, be symptomatic. Stimulation of the respiratory and the circulatory systems would undoubtedly be of value. In experiments on the isolated heart, we found that digitalis and epinephrin are excellent antagonists. The stimulating action of digitalis has been found to be very persistent, and may completely overcome the depression caused by the oil. Caffein was also tried out. It, on the contrary, aided the action of the oil of chenopodium. Heart action ceased altogether when perfusion with caffein followed treatment with chenopodium. The action of caffein in poisoning with chenopodium may be different, however, in intact animals, and is being investigated in this laboratory.

While oil of chenopodium may be regarded as a safe remedy for patients in good physical condition, it should be used very cautiously in poorly nourished and weak or neurotic individuals. A diet containing a liberal amount of fats and carbohydrates, fed at least for several days before the treatment is instituted, may render the drug much safer. The routine administration of large doses of castor oil before and soon after oil of chenopodium, as recommended by Hall and Foster,¹⁷ should be given serious consideration, as it may prove to be of prophylactic value.

16. Salant, W., and Livingston, A. E.: Proc. Soc. Exper. Biol. and Med., 1915, **12**, 132.

17. Hall, M. C., and Foster, W. D.: Oil of Chenopodium and Chloroform as Anthelmintics, THE JOURNAL A. M. A., June 30, 1917, p. 1961.

7. Salant, W., and Livingston, A. E.: Am. Jour. Physiol., 1915, **38**, 67.

8. Salant, W., and Livingston, A. E.: Am. Jour. Physiol., 1916, **41**, 21.

9. Salant, W., and Livingston, A. E.: Am. Jour. Physiol., 1915, **38**, 67.

10. Salant, W., and Mitchell, C. W.: Am. Jour. Physiol., 1915, **39**, 37.

11. Muirhead, A. L., and Gerald, H. F.: Jour. Pharmacol. and Exper. Therap., 1916, **8**, 253.

12. Salant, W., and Livingston, A. E.: Proc. Soc. Exper. Biol. and Med., 1915, **12**, 132.

13. Levy, R. L.: Oil of Chenopodium in the Treatment of Hookworm Infections, THE JOURNAL A. M. A., Nov. 28, 1914, p. 1946.

14. Coutant, A. E.: Chenopodium Poisoning, THE JOURNAL A. M. A., Nov. 25, 1916, p. 1599.

15. Personal communication from Dr. Victor Heiser.

Acute Intestinal Troubles in Germany.—The *Nederlandsch Tijdschrift* quotes from J. Schwalbe in the *Deutsche medizinische Wochenschrift*, No. 33, that diarrhea is prevalent, especially in northern Germany. He has been making a collective inquiry on the subject, and states that on account of the lack of bacteriologic examination it is impossible to say to what extent contagion is involved, but that in any event the bread and the poor quality of the food have certainly not a little to do with it.

THE SYNDROME OF MILD REVERSE
PERISTALSIS *

WALTER C. ALVAREZ, M.D.

SAN FRANCISCO

Digestion seems to suffer very little from disturbances of secretion. Many physicians have commented on the fact that we often discover achylia gastrica accidentally in patients who have no complaint to make about their digestion. The great obstacle to making an early diagnosis of cancer of the stomach is the fact that although the mucous membrane may be almost or entirely gone, these patients ordinarily have no symptoms until the growth is large enough to block the pylorus. They will then have trouble until a channel sloughs through the tumor, after which they may be perfectly comfortable again. Similarly, there may be no complaint of indigestion after extensive resection of the bowel. Men have lived in comfort, except for an occasional diarrhea, after removal of one half of the small intestine. As Taylor¹ has aptly said, we seem to have "duplicate plants" for chemical digestion. If pepsin fails, the pancreatic ferment can come to the rescue, and when that is shut off, the gastric and intestinal ferments can, between them, do remarkably well. On the chemical side, the factors of safety are large; on the mechanical side, there is only the one muscular tube which cannot be replaced.

The conclusion, then, and it is one of the most important that the gastro-enterologist should keep in mind, is that gastro-intestinal symptoms are motor symptoms—they arise when the normal progress of the food is disturbed. We can conceive, now, of four types of motor disturbance: (a) speeding up of the current; (b) slowing; (c) complete stoppage, and (d) reversal. It is strange how little thought has been given in medical literature to the last-named possibility. We know that when a loop of bowel is distended or stimulated at any point, it can send off impulses in both directions, just as a stone thrown into a canal sends waves upward as well as downward.² That retrograde progress from anus to pharynx can rapidly take place has been well known since the time of Galen. All physicians have observed fecal vomiting in ileus; and many have seen the vomiting of suppositories and enemas by nervous women.³ I have talked with a number of intelligent persons who objected to their nutrient enemas because of the bitter taste of the peptones given. Dr. Emge of this city tells me that after severe pelvic operations it has been his custom to give coffee enemas, which soon tinge the vomitus. The first time it happened he thought it was due to hemorrhage, but chemical analysis showed that it was coffee and not blood. This article could be filled with such observations culled from medical literature.⁴

It is now well known that barium enemas almost always flow back into the ileum and sometimes even into the duodenum.⁵ I have seen liquid and gas pass rapidly from the colon to the duodenum in cats. The animals were anesthetized and their abdomens opened under salt solution. In order to produce this back-flow, the rectum was tied off, and the colon filled with a thick soup. After this part of the bowel had become very irritable and highly tonic through its efforts at emptying, some of the material would be rushed well up into the small intestine. We know that reverse peristalsis is normal in the right half of the colon; and the return of feces from the rectum to the upper colon has been observed.⁶ Boldireff and others have shown that the regurgitation of duodenal contents into the stomach is a physiologic and common occurrence.⁷

Granting, then, that reverse transport⁸ of material is a common happening in the tract, and that its severe manifestations, such as fecal vomiting, are generally known, we must face the probability that milder forms are passing unrecognized. A few years ago we were diagnosing hyperthyroidism only in the cretin and in the equally deformed myxedematous; today we look for the "formes frustes" in which there is perhaps some drowsiness, a dry, hairless skin or a deficient menstrual flow. In the following paragraphs I wish to discuss briefly a few symptoms which are often found together, or alternating one with the other in the same patient, and which I believe indicate mild reverse peristalsis. The most important ones and those about which I feel surest are vomiting, regurgitation, heartburn, belching, nausea, "biliousness" and coated tongue.⁹ Less important and more doubtful are globus, foul breath, and the feeling of fulness immediately after the beginning of a meal.

This article is, in many ways, a sequel to one previously published.¹⁰ Those who have read that article will undoubtedly find it easier to understand the arguments advanced at this time. The principal point to be remembered is that the digestive tract is a muscular tube in which material moves from regions of high tone, high rhythmicity and high irritability to regions of lower tone, lower rhythmicity and lower irritability. The presence of food or of an irritating lesion in any part of the tract tends to raise the tone and irritability of that point, and in this way the normal gradient may be upset. The following experiments of Hess and Kelling may help to explain what is meant by the gradient of forces in the tract. Hess¹¹ put a small balloon into the bowel of a dog. A string fastened to the balloon ran out of a gastric fistula and over a pulley. At the end of the string was a little bag which could be filled with shot until its weight stopped the progress of the balloon. Eighteen cm. from the pylorus, 228 gm. were needed to balance the pull exerted by the muscle; 20 cm. farther down the pull was only 90 gm., and 12 cm. below, or 50 cm. from

* From the George Williams Hooper Foundation for Medical Research, University of California Medical School.

1. Taylor: Digestion and Metabolism, Philadelphia, Lea and Febiger, 1912, pp. 152, 153.

2. Cannon, W. B.: Am. Jour. Physiol., 1909, **23**, xxvii; The Importance of Tonus for the Movements of the Alimentary Canal, Arch. Int. Med., October, 1911, p. 117.

3. In a case reported by Treves, enemas of castor oil and methylene blue solution were vomited within ten minutes of their administration. He operated, expecting to find a gastrocolic fistula, but found no such cause for the phenomenon (Lancet, London, 1898, **1**, 643). A review of the literature reveals that a surprising number of these patients have been operated on for supposed gastrocolic fistulas.

4. Weber, F. Parkes: Brain, 1904, **27**, 170. Langmann: Jacobi Festschrift, New York, 1900, p. 375. Schloffer: Beitr. z. klin. Chir., 1898, **24**, 392.

5. Quimby: Am. Jour. Roentgenol., 1914, **1**, 403.

6. Schwarz: München. med. Wchnschr., 1912, **59**, 2155. Drummond: Brit. Med. Jour., 1914, **1**, 240.

7. Boldireff states that in animals which have fasted for some time, intestinal juice will run out of a gastric fistula continuously in large amounts, from 100 to 300 c.c. in fifteen hours (Zentralbl. f. Physiol., 1904, **18**, 457).

8. The term "retrograde transport" will be used in a number of places in which the present state of our knowledge does not permit me to say that actual reverse peristalsis occurs. More work will have to be done before we know in all cases just what type of contraction causes material to move orad.

9. Leube has discussed just these symptoms under the title "Nervous Dyspepsia" in an excellent article in the Verhandlungen des Kongresses für innere Medizin, 1884, **3**, 204.

10. Alvarez, W. C.: The Motor Functions of the Intestine from a New Point of View, THE JOURNAL A. M. A., July 31, 1915, p. 388.

11. Hess: Deutsch. Arch. f. klin. Med., 1886-1887, **11**, 105.

the pylorus, the pull was 75 gm. In a man with a jejunal fistula, I found a similar marked decrease in the pull exerted by the muscle as the balloon went down the intestine. The sluggishness of the ileum was in marked contrast to the great irritability of the jejunum. Kelling¹² has shown a reversal of these forces in dogs in which the ileum was tied just above the ileocecal sphincter. Next day, a manometer tied into the active ileum, 20 cm. above the obstruction, showed pressures varying between 10 and 20 cm. of water; while in the jejunum, the pressure was from 0 to 5 cm. It can easily be seen that under such conditions, fluids would flow backward toward the stomach.

At times, the gradient may perhaps become leveled. In a number of cases of duodenal ulcer, I have watched contraction rings appearing in various parts of the stomach and dying out again, apparently unable to advance as waves in the direction of the ulcer. A still commoner finding with duodenal ulcer and chronic appendicitis is the stomach that fails to empty itself after six hours, in spite of active peristalsis and a patulous pylorus. Roentgenologists used to speak of pylorospasm in these cases, but more and more they are realizing that the pylorus is not always at fault. Those who have learned to milk a cow will understand more easily what I mean, when they remember that it is not powerful and rapid squeezing that brings the milk, but a coordinated contraction beginning at the base of the teat and spreading downward. Many think when the barium meal does not advance that there must be either a contracted area ahead or else that the muscle is atonic. The following experiment shows that neither of these conditions need be present:

A rabbit was anesthetized (with urethan) and its abdomen opened under salt solution. The lower ileum was pinched with a hemostat so that the tissues were slightly bruised. After five or six hours, the bowel above the pinch was found distended with fluid, and contracting powerfully here and there. In spite of this activity and the fact that the lumen of the bowel was in no way occluded, nothing had been able to approach within 15 cm. of the injured, hypertonic region.

In my previous paper, I discussed upsets in gradient due to irritating lesions and to the introduction of food or other substances into the lower part of the tract. Since then, some work on smooth muscle has suggested another and possibly a very important way in which the gradients may be upset. I was able to show that the aboral progress of waves over the stomach is due, at least in part, to the fact that the latent period of the muscles around the cardia is less than that of the muscle in the pyloric antrum.¹³ The muscle at the cardia is very sensitive to trauma or to adverse conditions, while that in the antrum is so hardy that it will often react better after it has been for forty-eight hours in the ice-box. This peculiar difference in the muscle from the two ends of the stomach is probably responsible for the fact that the gradient of latent period is actually reversed in distempered or sickly dogs. In these animals, the disease toxins apparently injure the sensitive cardiac muscle to such an extent that it reacts very sluggishly to strong currents. The antral muscle, on the other hand, generally contracts even more promptly than in normal animals. It seems very probable that this reversal of the gradient has

something to do with the unwillingness of these dogs to take food.¹⁴ Recent work, yet unpublished, shows that a similar reversal takes place in the gradient of latent period in the intestine in these diseased animals.

Very similar observations have been made on the heart. In the ascidian, the heart is a straight tube, one end of which acts for a while as pace-maker because it is the region of highest rhythmicity. It suffers most from fatigue, however, so that before long the other end of the heart is left with the higher rhythmicity; this now takes the lead, and the blood current is temporarily reversed. A similar upset takes place from time to time in the selachian heart.¹⁵ Although the gradient is more stable in the hearts of higher forms of life, it has recently been discovered with the string galvanometer that a number of supposedly normal dogs have atrioventricular rhythm, that is, the gradient of rhythmicity in their auricles is reversed.¹⁶ In some human cases, a reversal has been observed which has righted itself as the patient improved in general health.¹⁷ It seems to me very likely that the steepness of the gradient of forces in the gastro-intestinal tract varies a great deal, not only in different people, but at different times in the same person. The dyspeptic who goes on a vacation probably develops a steeper gradient; rough food will then be carried along without "hanging up" anywhere; his indigestion will go and his bowels will move normally.

Perhaps we can explain in this way the nausea and vomiting of nervous, worn-out women. Some of the most striking manifestations of reverse peristalsis are observed in the hysterical. Roentgenographic examinations and exploratory operations often reveal nothing to account for the trouble, and it can be cured only by rest and overfeeding.

VOMITING

The progress of gastro-enterology has been greatly hampered by the idea that the stomach is the organ of digestion. Even physiologists have been so blinded by this idea that very few of them have paid any attention to the behavior of the intestine during vomiting. My own experience soon convinced me that vomiting may begin with increased tone and activity in the jejunum.¹⁸ I was able to confirm Ewald's statement that in ileus the stomach is filled with intestinal contents long before fecal vomiting appears.¹⁹ Vomiting has been produced in dogs by reversing stretches of jejunum, so that the current would set backward toward the stomach. These dogs could be kept alive and comfortable if fed soft foods slowly. Large meals or rough food would be rejected.²⁰ It has been

14. Alvarez, W. C.: *Am. Jour. Physiol.*, 1917, **42**, 430, 446.

15. Bottazzi: *Ztschr. f. Physiol.*, 1902, **43**, 404.

16. Eyster and Meek: *Heart*, 1913-1914, **5**, 119.

17. Williams and James: *Heart*, 1913-1914, **5**, 112. Hart: *Ibid.*, 1912-1913, **4**, 128.

18. Openchowski (*Zentralbl. f. Physiol.*, 1889, **3**, 4), in describing vomiting says, "In the beginning, great activity of the intestine" (*anfangs starke Unruhe der Gedärme*). Poensgen says waves have been observed to travel from the duodenum on to the stomach in vomiting (*Motor Verriicht. d. menschl. Magens*, 1882, p. 8). Similar statements have been made by Weyfer, quoted by Brinton (*Cyclopedia of Anatomy and Physiology*, London, 1859, **5**, 317) and by Müller (*Handbuch der Physiologie*, 1835, **1**, 485). Boldireff noted, during some experiments, that periods of intestinal activity were often accompanied by vomiting (*Zentralbl. f. Physiol.*, 1904, **18**, 489). I once attended a child with severe recurrent vomiting in whom the attacks were preceded by violent intestinal peristalsis and borborygmus loud enough to be heard across the room. I have also seen vomiting of the food given through a jejunal fistula. Such feeding must be done very slowly with the food exactly at body temperature. Vomiting has been observed also in feeding by duodenal tube (Stoekton: *Diseases of the Stomach*, New York, D. Appleton & Co., 1914, p. 81).

19. Ewald: *Berl. klin. Wchnschr.*, 1907, **44**, 1416.

20. Mühsam: *Mitt. a. d. Grenzgeb. d. Med. u. Chir.*, 1900, **6**, 460. Enderlen and Hess: *Deutsch. Ztschr. f. Chir.*, 1901, **59**, 240.

12. Kelling: *Ztschr. f. Biol.*, 1903, **44**, 249.

13. Alvarez, W. C.: *Am. Jour. Physiol.*, 1916, **41**, 321.

shown repeatedly that the vomiting is not due to the irritation of bile and pancreatic juice in the stomach,²¹ so I believe it must often be due to, and part of, the reverse peristalsis beginning in the bowel. It should be noted that vomiting is often severe with low intestinal lesions and that it may be entirely lacking in serious gastric disease, such as ulcer and carcinoma (without pronounced pyloric obstruction).²²

Vomiting is often severe in pregnancy and with some lesions of the pelvic organs. I refer here not to the so-called "toxemic" but to the "reflex" or "nervous" type of vomiting. I believe the uterus in some way influences and raises the tone, irritability and activity of the lower part of the bowel, so that there is a tendency to reverse peristalsis. The greater activity of the colon may be due to its sharing in the hyperemia of the pelvic organs.²³ It is conceivable also that there may be a spread of tone along the pelvic nerves. Elliott and Barclay Smith found that they could raise the tone of the midregion of the colon, and produce anastaltic waves by stimulating these nerves in animals.²⁴ This tendency to reverse peristalsis in pregnancy was well recognized by Campbell²⁵ who suggested that we utilize it in giving nutrient enemas in the vomiting of pregnancy. He felt sure that these enemas would be carried well up into the small intestine where they could be digested and absorbed. It is interesting that the ancients also recognized this tendency to anastalsis. The Brugsch papyrus advises, as a test for pregnancy, the giving of pounded watermelon in milk; if the woman has flatulence only and no vomiting, she is not pregnant.²⁶ Hippocrates used "hydromel" in much the same way.²⁷ It is not a bad idea that an irritant not sufficient to upset a normal tract might be able to reverse one that already was tending that way.

It seems to me that those who ascribe the vomiting of pregnancy to toxins derived from the fetus do not pay enough attention to the fact that exactly similar phenomena are seen in many women on the first day of menstruation, at the menopause and with some pelvic diseases, such as dragging displacements, fibroids and pus-tubes. There is a large literature on this subject, and the symptoms enumerated are those discussed in this article. They often disappear immediately after hysterectomy, ventrofixation, etc. I have seen similar disturbances in a few men with large

prostates and distended bladders.²⁸ It does not do any good to call these troubles "reflex" when the path cannot be pointed out. Gaskell's research has absolutely demolished Robinson's idea that the solar plexus is an "abdominal brain" with reflex centers.²⁹ The stormy vomiting and dynamic ileus often seen after pelvic operations may be due to a great and sudden increase in the irritability of the colon. One may also explain in this way the severe gastro-intestinal upset seen sometimes after injury to the testis.³⁰

REGURGITATION

Vomiting shades off into regurgitation in many cases.³¹ People will taste certain foods all day; particularly fats, which tend to return from the bowel into the stomach.³² Often in duodenal ulcer, gallbladder disease and chronic appendicitis there will be regurgitation of bile-stained fluid before breakfast. Some women regurgitate only at the beginning of the menstrual period. Troublesome regurgitation may cease a few minutes after the patient has a bowel movement. The distention of the pelvic colon may have been keeping that region overactive and causing it to give off reverse waves.³³ These waves need not be so powerful that they sweep material along before them. Some time ago, while recording the activities of seven different regions of the rabbit's intestine on the same drum, I found that short peristaltic rushes here and there were originating in ripples that were coming, unnoticed by the naked eye, all the way from the pylorus.³⁴ In the same way, I believe it probable that ripples coming from a full and overactive colon, or from the irritable ileocecal region in appendicitis, will run up the bowel and show themselves in the stomach and esophagus as waves of acid regurgitation. The objection may be raised that the connective tissue block at the pylorus which prevents the spread of gastric waves on to the duodenum will likewise prevent the upward spread of reversed waves. I think, however, that since my records from the cat's intestine show that ripples beginning in the duodenum generally coincided with, and probably were part of, waves arriving at the pylorus, it is quite possible that ripples going in the opposite direction can also pass the barrier.

The following case is very suggestive: A constipated infant regurgitated so much that her pillow was always soaked. After weeks of this her bowels suddenly became a little loose, and the day this occurred, the mother was surprised to find the pillow perfectly dry. It remained that way for over a week, until the bowels became constipated again. Apparently the establishment of a good current downward instantly

21. The duodenum has been closed off in man so that all secretions had to go through the stomach on their way to the jejunum, and yet there was no trouble (Moynihan: Brit. Med. Jour., 1901, **1**, 1136). Chlumski performed similar operations on dogs without causing them to vomit (Beitr. z. klin. Chir., 1898, **20**, 519-523). Cholecystogastrotomy in man and dogs does not produce vomiting (Oddi: Confer. Clin. ital., Milan, 1897, **1**, 77). See also Kolhing: Beitr. f. klin. Chir., 1902, **33**, 518. Ledderhose: Arch. f. klin. Chir., 1899, **59**, 153. Wiedemann: Beitr. z. klin. Chir., 1914, **89**, 594. Rosenberg: Arch. f. d. ges. Physiol., 1898, **73**, 419.

22. Faulhaber and von Redwitz: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1914, **28**, 157. Cohnheim and Dreyfus produced vomiting in dogs by distending a balloon in the intestine. They found that a slowing of gastric motility could easily be effected by irritating the bowel, whereas it was not observed after the production of a severe gastritis. They point out that we must look more to the intestine for the cause of gastric disturbances (Ztschr. f. physiol. Chem., 1908, **58**, 56, 82).

23. Carnot and Glenard noticed while perfusing the excised intestine that its activity was greatly increased when the blood flow was more rapid (Compt. rend. Soc. de biol., 1912, **72**, 496, 661). An increased activity of the colon might account for the looseness of the bowels in many women during menstruation.

24. Elliott and Barclay Smith: Jour. Physiol., 1904, **31**, 282.

25. Campbell (Tr. Am. Gynec. Soc., 1878, p. 268) says that the woman with pregnancy or pelvic disease has an irritable tract in which "response is usually by inverted rather than by direct action: eructation, regurgitation, nausea, vomiting, constipation, far more frequently than diarrhea and other manifestations of downward action. The tract gets into the habit of retrostalsis."

26. Neuberger: History of Medicine, London, 1910, **1**, 29.

27. Hippocrates: Adams' Translation, New York, **2**, 242.

28. Herschell describes three cases of vomiting in men with retention of urine; two were cured by beginning the catheter life, the other by operation (Med. Press and Circ., 1905, **130**, 559). See also Hutchinson, Brit. Med. Jour., 1910, **1**, 485. Stockton: Diseases of the Stomach, New York, D. Appleton & Co., 1914, p. 129. Peyer: Samml. klin. Vortr., 1890, p. 3182. Austin: Diseases of the Digestive Tract, St. Louis, 1916, p. 52.

29. Gaskell: The Involuntary Nervous System, London, 1916.

30. An inflamed hydrocele, contusion of the testicle, or operation for hemorrhoids may bring about the picture of acute ileus (Müller: Deutsch. Arch. f. klin. Med., 1912, **105**, 37).

31. Austin: Diseases of the Digestive Tract, St. Louis, 1916, p. 337. Cohnheim: Digestive Disorders, Translated by Fulton, Ed. 3, Philadelphia, J. B. Lippincott Company, 1914, p. 244. Valentin: Lehrbuch der Physiologie, 1847, **1**, 273. Paterson, in describing a case of chronic appendicitis, said: "Thirteen or fourteen years ago the patient began to suffer from 'risings in the stomach,' and seven years ago he began to suffer from attacks of vomiting" (Proc. Roy. Soc. Med., 1910, **3**, Surg. Sect., p. 193).

32. Alvarez, W. C.: The Motor Functions of the Intestine from a New Point of View, THE JOURNAL A. M. A., July 31, 1915, p. 388, Notes 43 and 44.

33. Smith and Lewald say, "The frequency with which colic accompanies regurgitation is suggestive of their common origin." The waves causing regurgitation may arise in the overactive part of the intestine where there is colic (Am. Jour. Dis. Child, April, 1915, p. 271).

34. Alvarez, W. C.: Am. Jour. Physiol., 1915, **37**, 273.

stopped all regurgitation upward. The ancients not only gave purges to stop vomiting, but they stopped excessive purgation by giving emetics.³⁵

HEARTBURN

Before giving my views as to what heartburn is, I must emphasize what it is not. A good many years ago I was surprised to find that only a small proportion of the patients complaining of sour stomach and heartburn have an actual increase in their total acidity and free hydrochloric acid. Titration of the burning fluid that was being regurgitated often showed subacidity, and gastric analyses made during periods of discomfort did not show values any higher than those made during periods of relief. A review of the literature showed that similar observations have been made by every writer who has done any work on the subject.³⁶ As far back as 1884, Reichmann³⁷ stated clearly that although it might be customary for laymen and physicians to ascribe heartburn to an increase in gastric acidity, such an increase could only occasionally be demonstrated.

This fact is not so surprising when we remember that almost all of those who have put from 0.5 to 2 per cent. hydrochloric acid into the human stomach by tube agree that the mucous membrane cannot sense it as pain or heartburn.³⁸ At most, there is a slight feeling of warmth. A number of writers assert that the diseased stomach is so hyperesthetic that it can feel the acid. Talma and his pupils found in a few cases with possible ulcer that the acid would cause pain, rarely burning.³⁹ This idea of a hyperesthetic mucous membrane has been discredited, however, by the work of Hurst,⁴⁰ Löwenthal⁴¹ and Schür,⁴² who showed that persons with ulcer, demonstrated later at operation, could not feel the acid any more than normal persons can. It might also be remarked that heartburn is not a common complaint with gastric ulcer. Recently the work of Ginsburg, Tumpowsky and Hamburger⁴³ indicates that pain felt by ulcer patients on the introduction of acid is due not to a direct irritation of the nerve-endings, but to powerful contractions set up by the acid. Some writers adopted the idea of "hyperaciditas larvata"—a hyperacidity which is present long enough to produce symptoms,

but which disappears about the time the stomach tube is passed. Schmidt thought the persons with pain and heartburn must have lost a protecting layer of mucus over the gastric lining.

It seems to me that the true explanation is the one given by Reichmann³⁷ thirty-three years ago. He had people swallow a little gelatin-coated sponge on the end of a string. This was left for ten minutes in the esophagus just above the junction of the middle and lower thirds. It was found that the fluid expressed from the sponge was acid in the persons who had heartburn and alkaline in normal controls. He concluded, therefore, that heartburn is due to the regurgitation of more or less acid gastric juice through a relaxed cardia into the esophagus. This view has been held independently by a number of observers. Some doubt has been cast on it by the work of Hurst,⁴⁰ who states that the esophagus is not sensitive to acid. This seems strange in view of the fact that those who have experimented with acid have had to give it by stomach tube so as to avoid burning sensations in the pharynx and esophagus. The lower pharynx seems to be much more sensitive than the esophagus, and most persons feel the heartburn in the back of the throat.⁴⁴ Further work is needed before we know just where and how the acid causes burning. Some of my patients who take dilute hydrochloric acid complain of burning, others do not. I have experienced severe and typical heartburn after drinking "acidol"⁴⁵ in water. Some nervous women complain at times of a burning feeling in the epigastrium, as if the stomach were "on fire." This is probably an entirely different thing—a paresthesia which at times moves down over the right hip, showing that it has nothing to do with the stomach.

To my mind the most suggestive thing about true heartburn is its well known association with belching and regurgitation. Patients often say they feel the burning when the fluid comes up. Occasionally it is worse when the sufferer is lying down, perhaps because the gastric juice can then more easily run back up the esophagus. It is often brought on by eating fats which, as I have already pointed out, favor regurgitation. This may be due to the fact that they depress gastric activity while at the same time they stimulate the bowel. Many men suffer from heartburn after using tobacco. In habitués, some regurgitation of gastric juice probably represents the nausea and vomiting of the neophyte.

Many persons with heartburn are relieved by taking alkalis. These drugs may do good in two ways: first, by neutralizing the acid in the stomach, and secondly, by enabling the patient to belch so noisily and satisfactorily that he does not feel the need of doing it again for the rest of the day or night. When there is no regurgitation and belching, there is rarely any heartburn. The fact that many people with subacidity are relieved by soda shows that its virtues are not due entirely to its antacid effect. I have seen a few persons who were made worse by alkalis and were immediately relieved by the administration of hydrochloric acid. I was led to try this by Cannon's⁴⁶ observation that an increase in gastric acidity closes the cardia

35. Paulus Aegineta: London, 1847, 3, 489, 499. Hippocrates also recognized the possibilities of reversing the current. He says, "In confirmed diarrhea, vomiting, when it comes on spontaneously, removes the diarrhea" (Adams' Translation, New York, 2, 252).

36. Schütz made a careful study of 830 cases, and concluded that only a small percentage of people with hyperacidity have symptoms (Wien. med. Wchnschr., 1906, 56, 2241-2410). See also Steele, J. D.: The Relation of Excessive Gastric Acidity to Gastric Symptoms, THE JOURNAL A. M. A., Aug. 18, 1906, p. 496. Stockton: Diseases of the Stomach, New York, D. Appleton & Co., 1914, p. 157. Palfrey: Am. Jour. Med. Sc., 1913, 145, 796. Lockwood: Diseases of the Stomach, Philadelphia, Lea & Febiger, 1913, pp. 461, 465. Von Noorden: Ztschr. f. klin. Med., 1904, 53, 2. Gross, M. H., and Held, I. W.: Ulcus Ventriculi, Arch. Int. Med., March, 1914, p. 445. Verhaegen: La cellule, 1897, 12, 70. Iloway: Arch. f. Verdauungskr., 1902, 8, 135. Blankenhorn, M. A.; Harmon, G. E., and Hanzlik, P. J.: Some Clinical Physiologic and Chemical Observations on Ptomain Poisoning from "Creamed" Codfish, Arch. Int. Med., January, 1916, p. 140. Kauffmann: Ztschr. f. klin. Med., 1905, 57, 491; Arch. f. Verdauungskr., 1907, 13, 622. Leube: Verhandl. d. Cong. f. inn. Med., 1884, 3, 215.

37. Reichmann: Berl. klin. Wchnschr., 1884, 21, 769.

38. Hertz: Proc. Roy. Soc. Med., 1910, 3, Surg. Sect., p. 101. Carlson and Braasfladt: Am. Jour. Physiol., 1914, 36, 163. Ginsburg, Harry; Tumpowsky, Isidor, and Hamburger, W. W.: Contributions to the Physiology of the Stomach, XXX, The Newer Interpretation of the Gastric Pain in Chronic Ulcer, THE JOURNAL A. M. A., Sept. 30, 1916, p. 990. Zimmermann: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1909, 20, 445. Löwenthal: Berl. klin. Wchnschr., 1892, 29, 1188. Schür: Med. Klin., 1911, 7, 919. Schmidt: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1908-1909, 19, 278. Bönniger: Deutsch. med. Wchnschr., 1908, 45, 396.

39. Talma: Ztschr. f. klin. Med., 1884, 8, 407.

40. Hurst: The Sensibility of the Alimentary Canal, London, 1911, p. 12. (In a recent letter the doctor tells me he has changed his name from Hertz to Hurst.)

41. Löwenthal (Note 38, fifth reference).

42. Schür (Note 38, sixth reference).

43. Ginsburg, Tumpowsky and Hamburger (Note 38, third reference).

44. On numberless occasions I have seen barium-containing milk thrown quickly and forcibly back into the upper part of the esophagus. This seemed to be due to powerful contractions of the muscle near the cardia. It must be remembered that sensations derived from the esophagus between the clavicles and nipples may be referred either upward into the throat or downward to the epigastrium (Boring: Am. Jour. Psychol., 1915, 26, 34).

45. Hydrochloride of betain, which liberates hydrochloric acid in solution.

46. Cannon: Am. Jour. Physiol., 1908, 23, 105.

more tightly, and prevents regurgitation into the esophagus. It is possible that some persons have congenitally relaxed or patent cardias. Kelling⁴⁷ has observed this with the esophagoscope. This seems the more likely when we remember that the cardia is not a well formed sphincter like the pylorus. In many of the lower vertebrates it is practically absent.

If heartburn is due to regurgitation of gastric contents into the esophagus, why is it that the food that comes back into the mouth sometimes tastes so fresh and good that it can be chewed and swallowed again, while at other times, in the same person, it is fluid, bitter and intensely acid? It is now well known that there are three physiologically distinct parts of the stomach: the fundus, which holds the food practically motionless, often in layers as it comes in; the muscular antrum, which breaks the food down into a purée and mixes it with the gastric juice, and the *canalis gastricus*, which carries fluids along the lesser curvature and out into the duodenum. I believe the regurgitated food that tastes fresh has come from the top of the pile in the fundus. The burning fluid comes from the antrum or even from the duodenum,⁴⁸ and has probably traveled up the gastric canal.

Heartburn is often very severe and trying in pregnancy, when it may take the place of vomiting. It may be a prominent symptom on the first day of menstruation, with pelvic disease, and at the menopause.⁴⁹ Care must be taken, however, to rule out cholecystitis in these cases. Heartburn may be marked in chronic appendicitis, duodenal ulcer and gallbladder disease—in all of which I think it represents reverse peristalsis from the lesion.

BELCHING

We must first distinguish three types: first, a gurgling sensation which some people feel running up the esophagus; second, involuntary regurgitation of gas from the stomach, and third, a voluntary swallowing of air which goes about half-way down the esophagus only to be brought up noisily again. The people with the third type sometimes get some air into the stomach and feel much better when they get it up again. It seems to me as if they were scratching themselves with the air. Often, as with scratching, the more the victim does, the more he wants to do, so that the only way in which to get some relief is to desist until the desire has passed off.

Although the first two forms are more important clinically, I believe the third one also indicates a tendency to reverse peristalsis. These patients should not be sneered at and simply called aerophagics—they are uncomfortable, and feel that they would be relieved if they could only get up one final enormous belch. Sometimes they secure this by taking a little sodium bicarbonate, and the relief obtained is very real. A man who has been pacing the floor at 2 a. m., suffering with acid regurgitations, will suddenly belch successfully, or vomit a little fluid, and five minutes later he will be dropping off to sleep. The relief obtained is so out of proportion to the amount of air or liquid voided that the main result must be the quieting down of the tract after the reverse waves have succeeded in running out. I can only compare it to the tremendous

psychic and physical relief that comes to a sensitive person who reaches a toilet after he has been restraining a rectum full of gas for hours at some public gathering. The violent peristaltic contractions cease instantly, and the whole body quiets down.

I think all roentgenologists will agree that people do not belch because they have an unusual amount of gas in their stomachs. In seven years' experience, I have seen but one such case. It is also fairly well recognized by thinking physicians that fermentation of the gastric contents can play no part in the causation of belching. The stomach empties so rapidly that the bacteria have no time in which to multiply sufficiently. Sometimes the roentgen ray reveals a large amount of gas in the splenic flexure, pushing up the left leaf of the diaphragm. Naturally, in such cases, no amount of belching can ever bring relief.

Although it is true that many chronic belchers are highly sensitive, nervous persons who are constantly feeling queer things in various parts of their bodies, I would emphasize the fact that careful study of their digestive tracts will often show ulcer, periduodenal adhesions, gallbladder disease or appendicitis. These lesions must be held responsible for the epigastric discomfort and the tendency to reverse peristalsis.

NAUSEA

Nausea is ordinarily the precursor of vomiting. It is strange how little has been written about such a common symptom. The best article I have found is by Boas.⁵⁰ He notes that it is associated with intestinal lesions in which there is abnormal peristalsis, and that in many cases, the stomach probably has nothing to do with it. My own impression has been that nausea is brought out most pronouncedly by reverse tendencies beginning low down in the bowel. Thus, it is often marked in acute inflammation in the lower colon, in acute and chronic appendicitis, and in low intestinal obstruction. As is well known, it is severe in pregnancy and in other disturbances of the pelvic organs. It may be very annoying at the menopause, and Boas has seen it persist for a long time after hysterectomies. The pronounced nausea of some hysterical women may be due to associated pelvic disease. Nausea has been observed also in men with enlarged prostates and distended bladders. I have seen it as the first and, for months, the only symptom of carcinoma of the pelvic colon.

On the other hand, I have never seen or read of it with esophageal disease or with the regurgitation due to cardiospasm. It is usually absent, or only a minor complaint, in diseases of the stomach and duodenum. It has been produced in dogs by the injection of irritant salt solutions through fistulas into the duodenum or jejunum. The dogs appeared to be nauseated when the fluid regurgitated into the stomach.⁵¹ Patients suffering with nausea have sometimes described it so vividly as coming in ascending waves that I have wondered whether they might not be feeling actual reverse waves in the bowel.

The nausea and vomiting caused by disgusting mental impressions, by rolling movements, as at sea, and by cerebral disease might conceivably be due to a reversal of the gradient in the gastro-intestinal tract brought about by an unequal or dissimilar action of the vagus on different parts of the stomach and

47. Kelling: *Ztschr. f. Biol.*, 1903, **44**, 254.

48. Schilling found in six cases that the regurgitated fluid was alkaline. In one man who had hypersecretion and hyperacidity, the fluid which gushed from his mouth seemed to be pure duodenal juice (*Zentralbl. f. inn. Med.*, 1915, **36**, 501).

49. A review of the literature reveals that, if anything, the gastric acidity is lowered in these disorders.

50. Boas: *Berl. klin. Wchnschr.*, 1909, **46**, 1101.

51. Cohnheim and Dreyfus: *München. med. Wchnschr.*, 1908, **55**, 2484.

bowel.⁵² A review of the literature on the vagus shows that this is not improbable. May⁵³ found the inhibitory effects more pronounced on the cardiac than on the pyloric end of the stomach. Stimulation of the vagus has produced regurgitation of intestinal contents into the stomach and even vomiting.⁵⁴ Very similarly, in the heart of the frog or turtle, vagal stimulation tends to reverse the impulse because it depresses the sinus and leaves the auriculoventricular region active. This is more likely to occur in hearts which have been experimented with awhile and in which the sinus region has become disproportionately fatigued.⁵⁵

Some people experience nausea when constipated, and are relieved immediately after emptying the rectum. Nausea may be associated with diarrhea also, if the bowel is trying to clear itself both ways from some irritated region. It is very common to see nausea produced by cleansing enemas. In one of my patients this occurs only if the enema is made irritating by the addition of much salt or soap. Incidentally, Nothnagel and others⁵⁶ have shown that the addition of salt to liquids injected into the bowel will cause them to travel much farther up the tract. It is interesting that the ancients gave hellebore by mouth to purge and by rectum to produce vomiting.

COATED TONGUE AND FOUL BREATH

It is commonly supposed that the tongue, in some sympathetic way; reflects the condition of the gastric mucous membrane. I can find no proof of any kind for these views. They seem to be based on the idea, unfortunately still too prevalent, that most gastrointestinal upsets are due to a gastritis. Recent, more exact necropsy studies, and the examination of tissues secured at operations have failed to reveal the expected changes.⁵⁷ Inflammatory changes were strikingly absent even in the stomachs of a series of alcoholics dying in delirium tremens.⁵⁸

It seems to me that by far the best explanation of the coated tongue has been given by Kast.⁵⁹ He gave lycopodium powder in sealed capsules to a number of persons, and was able to recover the typical spores in the mouths of most of them the next morning. I have repeated these experiments, and have found no difficulty in confirming them. In one case, of a woman who regurgitates a good deal, particularly during the menstrual period, the tongue's coat became yellow from the lycopodium.

It is possible that the particles on the tongue may come from even below the stomach. Grützner and others⁶⁰ have shown in animals and in man that lycopodium spores or other finely divided and easily recognizable material, given in enemas, will travel in a few hours from the rectum to the stomach. Closely corresponding to these experiments are those of Uffenheimer, Dieterlen and others,⁶¹ who found that tubercle and prodigious bacilli injected by rectum could be recovered from the pharynx a few hours afterward, when every precaution had been taken to prevent the animals from licking themselves anywhere or touching their feces. Transmission through the blood stream was also fairly well ruled out.

Laymen and physicians often hold the view that the bad breath associated with "biliousness," a coated tongue, a "dark brown taste" and constipation is due to the exhalation of absorbed toxins. The experiments previously quoted show that the foul breath may just as easily be due to the presence of actual colonic material on the back of the tongue. If these reverse currents are so strong in apparently normal persons, it would not be surprising if they were stronger in the diseased. It goes without saying that these reverse currents must not be blamed for the coated tongue or foul breath in any particular case, until other possible causes in nose, mouth and pharynx have been ruled out.

GLOBUS

Some of us have been unfortunate enough to swallow while a wave or regurgitation was coming up, and we have felt a painful, tearing feeling as the two waves met. It seems to me that this may be the mechanism of globus.⁶² Some persons describe it as a wave ascending or descending along the esophagus. It is suggestive that the hysterical, who are supposed to suffer most from globus, often exhibit the most pronounced symptoms of intestinal antiperistalsis.

A FEELING OF FULNESS AFTER TAKING A FEW MOUTHFULS OF FOOD

In rare cases this will be due to shrinkage of the stomach, brought about by extensive carcinoma or ulcer. Ordinarily, persons with this symptom will be found to have large or even baggy stomachs. Carlson's experiments agree with those previously reported in showing that the sensation of fulness does not originate in the gastric mucosa.⁶³ Leven and Barrett⁶⁴ have commented on the fact that persons who wake in the morning with the feeling that their dinner has not passed on really have empty stomachs, as shown by the roentgen ray. Similarly, Hurst⁶⁵ has found empty stomachs when the patients were sure that they were filled with gas. He found some patients with gastroenterostomy who complained of a feeling of fulness if their stomachs emptied too rapidly into the bowel. Similar distress is caused by feeding too rapidly through a jejunal fistula.

This complaint of fulness is common with chronic appendicitis, in which it is often associated with other signs of back-pressure. Just as the taking of a little food causes the terminal ileum to empty into the cecum,

52. It is not generally known that large branches of the vagus go directly to the upper part of the jejunum (Alvarez, W. C.: *Am. Jour. Physiol.*, 1915, **37**, 276. Mackenzie: *Proc. Roy. Soc.*, 1915, **9**, *Electrother. Sect.*, p. 7; *Jour. Anat. and Physiol.*, 1917, **51**, 287. Gaskell [Note 29]).

53. May: *Jour. Physiol.*, 1904, **31**, 264.

54. Heidenhain: *Hermann's Handbuch der Physiologie*, 1887, **5**, 1. Meyer: *Ibid.*, **5**, 444. Miller: *Jour. Physiol.*, 1911, **41**, 409.

55. Gault: *Am. Jour. Physiol.*, 1917, **43**, 22-41. Drugs which act on vagus endings or ganglion cells are most effective in the sinus region (Flack: *Jour. Physiol.*, 1910, **41**, 64).

56. Nothnagel: *Beitr. z. Physiol. u. Path. d. Darmes*, 1884, 20. Cannon: *Mechanical Factors of Digestion*, London, 1911, p. 150. Rolleston and Jex-Blake: *Brit. Med. Jour.*, 1903, **2**, 68.

57. Beitzke: *Verhandl. d. deutsch. path. Gesellsch.*, 1914, **17**, 433.

58. Hirsch, E. F.: *The Gastric Mucosa in Delirium Tremens*, *Arch. Int. Med.*, March, 1916, p. 354.

59. Kast: *Berl. klin. Wchnschr.*, 1906, **43**, 947.

60. Grützner: *Deutsch. med. Wchnschr.*, 1894, **20**, 896. Swiezynski: *Deutsch. med. Wchnschr.*, 1895, **21**, 514. Reach: *Prag. med. Wchnschr.*, 1902, **27**, 549. Bernheim, Albert: *Movements of Intestines*, *The Journal A. M. A.*, Feb. 16, 1901, p. 429. Hemmeter: *Arch. f. Verdauungskr.*, 1902, **8**, 59. Hemmeter believes the particles travel along the mucous membrane of the intestine. Part of this retrograde transport might be due to the movements of the villi recently described by Hambleton. It might be similar to the cleansing activities of the cilia in the bronchi (Hambleton: *Am. Jour. Physiol.*, 1914, **34**, 446. Brinton: *Cyclopedia of Anatomy and Physiology*, 1859, **5**, 354).

61. Uffenheimer: *Deutsch. med. Wchnschr.*, 1906, **32**, 1853. Dieterlen: *Centralbl. f. Bakteriöl.*, Part 1, Orig., 1907, **45**, 385. Meyer, Karl: Personal communication to the author.

62. Marshall Hall likened globus to colic, produced by conflicting waves distending the intestine between them (*Lancet*, London, 1857, **1**, 82). The ancients thought it was due to a wandering of the uterus up into the neck (Neuberger: *History of Medicine*, London, 1910, **1**, 106).

63. Carlson: *The Control of Hunger in Health and Disease*, Chicago, 1916, p. 111.

64. Leven and Barrett: *Arch. d. mal. d. l'app. digestif.*, 1907, **1**, 142.

65. Hurst: *The Sensibility of the Alimentary Canal*, London, 1911, pp. 22, 28.

a failure of this emptying to take place may delay the emptying of the stomach and duodenum, and may, I believe, cause this feeling of fulness.⁶⁶

BILIOUSNESS

It is well known by thinking physicians today that we have no reason for ascribing this syndrome to hepatic insufficiency. It has probably derived its name from the fact that these persons often find bile in regurgitated or vomited material. It has already been pointed out that the presence of a certain amount of bile in the stomach is normal, and any excess would not indicate disease of the liver so much as an increase in reverse peristalsis. Persons who get severe "bilious" attacks with vomiting, nausea, regurgitation of bile, coated tongue, headache, etc., will, I think, be found ordinarily to have a chronic appendicitis. Their symptoms are really those of reversed intestinal activity.

The relief that these persons may derive from a dose of calomel is not due to any action on the liver,⁶⁷ but, I believe, to a restoration of the normal currents down the tract. In milder cases, the back-pressure may be due to constipation—the current cannot go forward, so it tends to be reversed. It seems to me that a laxative brings instant relief, not by clearing out toxins, but by removing the material which was obstructing and irritating the colon.

CONCLUSION

An attempt has been made to explain a number of gastro-intestinal symptoms in the light of recently acquired physiologic knowledge. I believe that the underlying cause of all of them is a reversal of the currents in the tract. Thus, vomiting is often due to reverse peristalsis in the intestine; regurgitation is a mild form of vomiting; heartburn is due to the regurgitation of gastric juice into the upper esophagus; belching is closely akin to regurgitation; nausea is probably one of the ways in which we perceive reverse peristalsis; "biliousness" is the common name for the reverse peristalsis syndrome; a coated tongue and foul breath are often the results of regurgitation; globus is due to reverse waves in the esophagus, and the feeling of fulness after taking a few mouthfuls is often due to back-pressure in the intestine.

Those who may feel that I have appropriated nearly all of the gastro-intestinal symptoms for this syndrome are asked to remember that if, as seems likely, symptoms are produced almost entirely by disturbances in the motor functions, we should be most conscious of, and most annoyed by, the severest possible form of such disturbance, namely, a reversal of the current.

The question may also be asked, If reverse peristalsis is so common, why do we not see more of it with the roentgen ray? Moreover, how can signs of reverse peristalsis appear from time to time during the progress of digestion, when food is actually going down the tract? First, it must be remembered that most of the disturbances are due probably to ripples coming up the tract. Any oarsman knows that a wave will not carry his boat more than a few feet unless he is very near a shelving beach. My records have shown that ripples can come down the intestine long distances without forwarding the contents, and can

then break into strong waves which rush material along before them. I see no reason why similar ripples cannot travel upward in the wall of the bowel until they show themselves as waves in the stomach and esophagus. When the gradient of forces in the tract is poor, waves can probably travel in either direction. When the stomach is full and active, it will be easier for waves to proceed aborally; when the stomach and small intestine are empty and the colon is full, the waves will more easily ascend. Moreover, animal experiments indicate that the gradient may not be upset to the same extent in all parts of the tract, so that, for instance, reverse waves might be present in the stomach, and normal ones in the bowel. Similarly, the heart that is beating with nodal rhythm sends the blood in the proper direction, although the ventricles are contracting before the auricles. It is conceivable that ripples can ascend the digestive tract even when the gradient is not reversed. To explain what I mean, I will point to the case of a large river like the Missouri, which undermines its banks in places until tons of earth tumble in. In the lower stretches of the river, where the current is not rapid, such a commotion might cause ripples to run a quarter of a mile uphill, and over water flowing in the opposite direction.

Another reason why we cannot expect to see much reverse peristalsis with the roentgen ray is that even normally we cannot follow the food in the small intestine after it leaves the duodenum, and before it reaches the terminal ileum. Actual reverse transport of material has been observed in those parts of the tract which are accessible to roentgenographic study. Twice I have seen definite reverse peristalsis in stomachs free from organic disease. Subsequent operation revealed the cause to be, in one, appendicitis, in the other, duodenal ulcer. More important than visible reverse waves are the reversed impulses that hold back the barium here and there in the tract, in spite of the fact that the muscle is active, and the tube ahead is unobstructed. These are the conditions we see every day.

Many physicians today are satisfied when they have appropriately labeled each case as a "gastritis," a "hyperacidity" or a "biliousness." Their work then ends, as each label carries with it a certain string of prescriptions and, perhaps, a diet. I believe that this paper will have been well worth writing if it helps at all in making men dissatisfied with some accepted ideas, and more inclined to think in terms of disturbed physiology. Such thinking must make for better therapeutics. The physician will more often seek for and find the lesion that is irritating the bowel and giving off the reverse waves. More often, also, will he see the hopelessness of medical "tinkering," and will call in the surgeon at once. If such radical treatment is inadvisable or impossible, he will use a smooth, cellulose-poor diet, which will flow more easily along the impaired gradient. He may, perhaps, be able to improve the gradient by resting and overfeeding the patient. Later, when the pharmacologist gets to thinking along these lines, he may find for us drugs which will restore the downward currents, either by increasing the activity of the upper part of the tract or by decreasing the activity of the lower parts. I hope soon to publish the report of work indicating that some laxatives do alter the gradient in these ways.

177 Post Street.

66. Alvarez, W. C.: The Motor Functions of the Intestine from a New Point of View, *THE JOURNAL A. M. A.*, July 31, 1915, p. 388, Note 66.

67. All pharmacologists agree that calomel is not a cholagogue.

THE TREATMENT OF LEUKORRHEA
WITH LACTIC ACID BACILLI*

FRANK BENTON BLOCK, M.D.

AND

THOMAS H. LLEWELLYN, M.D.

PHILADELPHIA

It is our purpose to give a brief summary of the experiences that we have had in the treatment of leukorrhea by means of the local application of lactic acid bacilli. Our work has extended over a period of two years, which we regard as a sufficient length of time thoroughly to digest our results, and separate the wheat from the chaff of overenthusiasm. Much has previously been done by other investigators in the search for a cure in obstinate cases of leukorrhea, and although we shall not quote the work of others, we gladly give credit and priority wherever it may be due.

Normally, in the healthy adult virgin, the reaction of the vaginal secretion is acid, as a result of the activity of the bacillus of Doederlein. In the patient who is suffering from chronic leukorrhea, however, with the exception of one type, of which we shall speak later, the reaction of the vaginal secretion is distinctly alkaline. After observing these facts in a large series of cases, we formulated the theory that if we could change the reaction of the vagina from alkaline to acid, and maintain an acid reaction, we might be able to control or, perhaps, cure the leukorrhea.

The use of chemicals, drugs and douches was immediately discarded from our work, for the reason that previous experience had shown them to be but ephemeral in effect, and utterly inadequate, so far as anything like a lasting result is concerned. Believing that the alkaline reaction of the vagina in cases of leukorrhea was due to the activity of saprophytic bacteria, which in their proliferation completely killed the normally present Doederlein bacilli, we felt that if we implanted into the vagina a nonpathogenic, acid-forming organism, we could overgrow these saprophytic organisms, and our problem would be solved. At this point let us state that, although our results have been encouraging in many ways, the problem proved to be entirely different when put to a practical test.

Although many organisms might have been used in this work, we selected the Bulgarian lactic acid bacillus because of its accessibility, and also on account of the enthusiastic reports of its use in intestinal saprophytic conditions. Through the kindness of two pharmaceutical laboratories, we were supplied with tablets of lactic acid bacilli and bouillon cultures of the same organism. These, together with a stock culture obtained from the William Pepper Clinical Laboratory of the University Hospital, constituted the source of our supply.

In the beginning of our work we gave all the organisms an equal trial, and found that the best results were to be obtained from the use of bouillon cultures, provided the culture was reasonably fresh. As a practical measure, however, we soon learned that the use of cultures was out of the question, on account of the difficulty of always having a fresh culture on hand. In contradistinction to this drawback in the use of cultures, we found that the organisms compressed in tablet form with lactose were reasonably active and potent over periods of many weeks, provided the simple

precaution of keeping the tablets on ice was observed. To satisfy ourselves that this was the case, we had several of the tablets from one laboratory cultivated and obtained living organisms. Without going into unnecessary detail regarding the various methods of application that we have employed in the development of our work, we shall, at present, merely describe the technic we employ, and then summarize the results obtained in the various types of cases treated.

TECHNIC

The patient is placed in the usual dorsal gynecologic position, and a thorough pelvic examination made, including smears, when indicated. A bivalve speculum is then inserted into the vagina, and the cervix and the upper vaginal canal exposed. The reaction of the vagina is then taken by moistening a piece of litmus paper in the vaginal secretion, after which the vagina is thoroughly cleansed of mucus and leukorrheal discharges by means of a simple alkaline spray, and the vagina is then dried with cotton pledgets. A lactic acid tablet, preferably one that is readily soluble and made with a lactose base, is placed in a medicine glass and moistened with *one or two drops* of sterile water dropped on the tablet by means of a small pipet or eye-dropper. It is important not to supply more than a very few drops of water to the tablet; otherwise the tablet will completely disintegrate and cannot be readily handled.

If the proper kind of tablet is used, and only enough water is applied to moisten it, it will attain the consistency of thick cottage cheese, and may be readily lifted in toto by a pair of forceps. It is then placed in the upper vaginal canal, and spread over the walls and on the cervix by means of the forceps. If the tablet is of the proper consistency, it will adhere to the vaginal mucosa wherever placed, and will show no tendency to run out of the vagina, as is the case with ordinary solutions. The speculum is next withdrawn half way, with its blades open, to allow the upper vaginal canal to close over the tablet that has been applied. Finally the blades are closed and the instrument is withdrawn. No tampons are applied. The patient is instructed to return in a week, and all douching is absolutely interdicted. On her return, the same technic is repeated, and she returns once a week for a reimplantation of the bacilli, until the vagina is acid—a result which in a favorable case is attained in about three or four weeks. After the reaction has become acid, no treatment is given so long as it remains so, although the patient returns at gradually increasing intervals to have the reaction taken. In favorable cases it is usually found necessary to reimplant organisms at intervals of from three to four weeks, since, after that time, the organisms seem to die, or at any rate to lose their potency. We might, therefore, state here that the treatment is seldom a permanent cure but rather a good palliative measure, requiring attention about once a month and superseding douches.

TYPES OF CASES TREATED, AND RESULTS

The cases that we have subjected to this treatment might be conveniently classified in the following groups, which we shall consider separately: vulvovaginitis of children, specific and nonspecific; endocervicitis, both simple and gonorrheal, and senile vaginitis, natural and artificial.

In the treatment of vulvovaginitis in children this method is of little avail as long as gonococci are ap-

* From the Department of Gynecology, University of Pennsylvania School of Medicine.

parently present. When, however, the gonococci have largely disappeared, the use of the lactic acid bacilli seems to be of some value in reducing the discharge and in lessening the vaginal irritation. In many cases, however, the symptoms will return on the cessation of the treatment. In the nonspecific types of vaginitis in children, the results are more encouraging and in a good percentage of the cases treated, we believe that a cure has been established. As some difficulty is often encountered in the introduction of the bacilli into the vagina of children, we have of late introduced the dry tablet into the vagina, and then injected a few drops of water, thus allowing the tablet to dissolve inside the patient. An interesting point we have noted in connection with our work with children is the fact that, before the onset of menstruation, the reaction of the child's vagina is almost constantly alkaline, whether or not disease is present; and it was with considerable difficulty that we obtained an acid reaction in some of these cases.

In the consideration of leukorrheal discharges during the childbearing period, we wish to call attention to the fact that our results were practically nil in cases in which there was a gross pelvic pathologic condition. Similarly, we have nothing encouraging to offer in the treatment of gonorrheal endocervicitis, or when cervical erosion, laceration, or another evident pathologic condition is the cause of the leukorrhea. Such conditions must be treated along the usual lines before any attempt is made to apply the lactic acid treatment. After the exclusion of such cases as we have mentioned, there will be a large number of cases in which the leukorrheal discharge is the chief symptom, and in which no definite disease can be determined. Cases of this type we have classified under the heading of nonspecific catarrhal endocervitis. They will almost uniformly present an alkaline reaction in the vagina, and, in approximately 50 per cent. of the cases, will respond to the treatment we have suggested.

Finally, we come to the consideration of senile or atrophic vaginitis, that most distressing condition which occurs in women past the menopause, characterized by a thin, yellow, malodorous, irritating discharge, and accompanied by intense itching of the genitalia, and sometimes by urinary frequency and burning. The cause of this syndrome is the lack of ovarian internal secretion, due either to natural atrophy of the glands at the time of the normal menopause, or else to their surgical removal. It is in this type of case especially that we have had our best results, and the strange fact is that these cases always show an acid reaction of the vaginal secretions. But, notwithstanding this fact, the application of lactic acid bacilli gives prompt relief, which we have interpreted as being due to the overgrowth of acid-forming saprophytes by the less irritating lactic acid bacilli.

These patients, as a rule, have no relief from douches, or local applications of the usual remedies, and wander from one dispensary to another in search of a cure. Their plight is distressing, and as most of them have been treated by many other physicians before coming into our hands, we feel particularly gratified with the results we have obtained. It must be distinctly understood, however, that we do not claim to have obtained a permanent cure in any of these cases, although we do know that many of them have gone several months without treatment and without symptoms. In the average case, it is necessary to implant the bacilli at monthly intervals, with perhaps a few

months' intermission occasionally. While we shall not give actual figures, we believe that 80 per cent. of our cases of senile vaginitis, whether following the natural or the artificial menopause, have responded to this treatment.

CONCLUSION

We wish to state that this work is offered merely for what it may be worth, and we feel that in selected cases it will constitute a most effectual palliative treatment, being particularly acceptable to the patient on account of the cleanliness and convenience that are consistent with its proper execution.

1503 Girard Avenue—715 North Fortieth Street.

THE ALKALI RESERVE IN THE BLOOD OF PELLAGRINS *

JAMES W. JOBLING, M.D.

AND

ELMER S. MAXWELL, M.D.

NASHVILLE, TENN.

The incidence of pellagra in the Southern States has increased rapidly during the past ten years, but in spite of the advances which have been made in prophylaxis and in treatment, its etiology is still in doubt.

Various views have been advanced by investigators to explain the etiology of pellagra. These views may be divided into two classes: those which deal with it as a communicable disease, and those which consider it to be due to an unbalanced diet. Numerous organisms have been described as the etiologic agent, but sufficient proof has not yet been offered to justify us in accepting any of them. Two conceptions have been advanced by those who believe pellagra is caused by an unbalanced diet. One group of observers believes it is due to the lack of some essential substance in the diet, while the other considers it an intoxication due to the excessive use of some particular kind of food.

It has also been suggested that the disease may be caused by a change in the alkali reserve of the body. Thus, Fairbanks¹ says pellagra is caused by an acidosis resulting principally from phosphoric acid and purins in the blood, though he does not mention the particular kind of food which is responsible. Carmichel,² on the other hand, advocates the theory that pellagra is due to an increase in the alkalinity of the blood caused by the excessive ingestion of fruits and vegetables. It is, of course, well known that certain foods used in large amounts may cause a change in the alkali reserve of the body.

In view of these statements, we decided to report at this time the results obtained in a study of the alkali reserve in the blood of pellagrins.

The study was made with a series of thirty-six patients, including fatal cases, acute cases in which there was subsequent recovery, and chronic cases in which the patients were suffering from recurrences. Van Slyke's³ method of estimating the carbon dioxide combining power of the blood plasma was used. The results are given in the accompanying tables.

* From the Departments of Experimental Medicine and Pathology, Vanderbilt University Medical Department.

1. Fairbanks: Texas State Med. Jour., 1916, 21, 170.

2. Carmichel: Paper read before Tennessee Medical Association, April, 1917.

3. Van Slyke: Jour. Biol. Chem., 1917, 30, 347.

By reference to Table 1, it will be seen that all acute cases except Case 31 came within the normal limit, the average of the acute cases being 61.63 volume per cent. carbon dioxid. The five fatal cases (Cases 14, 16, 20, 31 and 32) averaged 58.6 volume per cent. The chronic cases (Table 2) give an average lower than the acute, though it is well within the normal. The average value of all cases is 59.45 volume per cent. The values for the males and females did not differ.

TABLE 1.—RESULTS IN ACUTE CASES

| Case No. and Age | Color and Sex* | Carbon Dioxid Volume, Per Cent. |
|------------------|----------------|---------------------------------|
| 2—55 | W—♂ | 66.0 |
| 3—27 | W—♂ | 67.0 |
| 4—47 | W—♂ | 67.0 |
| 5—16 | W—♂ | 56.0 |
| 6—14 | W—♂ | 59.5 |
| 7—10 | W—♂ | 64.3 |
| 11—23 | W—♂ | 68.0 |
| 12—56 | W—♂ | 66.2 |
| 13—77 | W—♂ | 64.3 |
| 14—70 | W—♂ | 69.1 |
| 15—32 | W—♂ | 67.1 |
| 16—30 | W—♂ | 63.4 |
| 17—56 | W—♂ | 65.5 |
| 18—25 | W—♂ | 54.0 |
| 20—44 | C—♂ | 57.9 |
| 27—36 | W—♂ | 55.0 |
| 29—22 | W—♂ | 57.0 |
| 31—41 | C—♂ | 52.0 |
| 32—29 | C—♂ | 60.0 |
| 34—40 | W—♂ | 53.4 |

Average of 20 acute cases 61.63
* In the tables, ♂ indicates male and ♀ female.

The averages for the children are somewhat less than those for the adults. Most of the patients were seen at the Davidson County Pellagra Hospital, where the diet was well balanced, though high in proteins. The blood was taken from a number of the patients immediately after admission to the hospital and again at a later date. Thus we found that the change in diet and environment did not perceptibly alter the alkali reserve of the blood.

Viscosity determinations were made on the blood of seventeen patients. Traube's stalagmometer was used.

TABLE 2.—RESULTS IN CHRONIC CASES

| Case No. and Age | Color and Sex | Carbon Dioxid Volume, Per Cent. |
|------------------|---------------|---------------------------------|
| 1—50 | W—♂ | 57.0 |
| 8—65 | W—♂ | 59.5 |
| 9—60 | C—♂ | 67.2 |
| 10—45 | W—♂ | 72.0 |
| 19—62 | W—♂ | 53.0 |
| 21—12 | W—♂ | 52.6 |
| 22—39 | W—♂ | 58.8 |
| 23—67 | W—♂ | 54.3 |
| 24—68 | W—♂ | 55.4 |
| 25—55 | W—♂ | 54.8 |
| 26—12 | W—♂ | 56.9 |
| 28—39 | W—♂ | 54.0 |
| 30—69 | W—♂ | 54.0 |
| 33—68 | W—♂ | 54.9 |
| 35—28 | C—♂ | 56.0 |
| 36—49 | W—♂ | 58.0 |

Average of 16 chronic cases 57.27

The tube was graduated so that at 20 C. (68 F.) 20 drops of alcohol would pass through in one minute. The blood was obtained by venipuncture and drawn into a sterile, dry tube. It was immediately transferred to a centrifuge tube containing dry potassium oxalate crystals in sufficient quantity to make a 1 per cent. solution. The blood was then centrifuged for fifteen minutes in a high power centrifuge, which effectively threw down all cells and platelets, leaving a

clear, colorless plasma. The number of drops passing through Traube's stalagmometer in six minutes was determined, and the average for one minute taken. We found the blood from the seventeen pellagrins to be less viscid than that from twelve normal individuals. As the difference was not great, however, we do not care to make any deductions from it.

CONCLUSIONS

The alkali reserve of the blood in pellagra does not vary from normal in either the acute or the chronic cases; therefore there is no acidosis or alkalosis in pellagra.

The viscosity of the blood shows a slight variation from normal.

THE MECHANISM AND SIGNIFICANCE OF THE GUM MASTIC TEST*

S. L. IMMERMAN, M.D.

Assistant Physician, Philadelphia Hospital for the Insane
PHILADELPHIA

In 1915, Emanuel¹ announced a new colloidal reaction in the spinal fluid. He used gum mastic, a reagent which was very easily prepared. Of thirty tests made in psychiatric patients, there occurred complete precipitation in all the tubes in fourteen syphilitic cases (paresis, tabes and cerebrospinal syphilis). Cutting,² using a slightly modified technic, examined the spinal fluid of 200 psychiatric patients. Only the syphilitic patients gave positive results, but the number of tubes in which complete precipitation occurred varied. Lowrey³ obtained varying degrees of precipitation in twenty different parietic fluids, as well as a few positive results in nonsyphilitic patients.

The present study was undertaken to determine whether different "curves" occurred in cerebrospinal syphilis, tabes dorsalis and paresis, but owing to the apparently irregular results, was extended to determine, if possible, the mechanism of the gum mastic reaction, as well as the examination of syphilitic and nonsyphilitic spinal fluids. Cutting's technic² was used. Briefly it is as follows: A solution of gum mastic is suspended in alcohol and distilled water. This is the reagent. It is precipitated by 1.25 per cent. sodium chlorid, but if a small amount of potassium carbonate is added, there is no precipitate unless protein, certain salts in certain concentration, or a pathologic spinal fluid is also added. In the test, therefore, the reagent, the spinal fluid in various dilutions, and the sodium chlorid and potassium carbonate are mixed. The gum mastic reagent is a pearly translucent fluid. With pathologic spinal fluids, or other substances which alter the mastic reagent, the following changes may occur: (1) loss of translucency without any distinct precipitate; (2) varying degrees of precipitation, without any clear supernatant fluid; (3) large amount of precipitation, with partly or entirely clear supernatant fluid. In the tables, therefore, "clear" refers to a maximum amount of precipitation.

* From the McManes Laboratory of Experimental Pathology, University of Pennsylvania School of Medicine.
1. Emanuel G.: Eine neue Reaktion zur Untersuchung des Liquor cerebrospinalis, Berl. klin. Wehnschr., 1915, 52, 781-804; abstr., THE JOURNAL A. M. A., Sept. 4, 1915, p. 908.
2. Cutting, J. A.: A New Mastic Test for the Spinal Fluid, THE JOURNAL A. M. A., June 16, 1917, pp. 1810-1812.
3. Lowrey, L. G.: Mastiche and Potassium Permanganate Tests Applied to Cerebrospinal Fluid of Insane, Boston Med. and Surg. Jour., 1917, 177, 115; abstr., THE JOURNAL A. M. A., Aug. 11, 1917, p. 482.

The following experiments were performed:

1. Various dilutions of normal blood serum in physiologic sodium chlorid solution (from 0.3 to 16 per cent. blood serum) yields at once the important fact that a given percentage of blood serum always caused the same degree of precipitation of mastic. This is shown in Table 1. For example, the fourth tube of a 10 per cent. solution of blood serum, containing 0.31 per cent. serum, gives a "clear" reaction. The third tube of a 5 per cent. solution of blood serum, containing

tubes will contain the most precipitate or be clear; with low amounts of proteins, the beginning tubes will contain the most precipitate or be clear. (The amount of protein must not be too large or too small to cause no precipitation.) An example follows: With 10 per cent. blood serum, Tubes 4 and 5 were clear, and Tubes 1, 2 and 3 contained precipitate but no clear supernatant fluid; with 2.5 per cent. blood serum, Tubes 2, 3 and 4 were clear, and Tubes 1 and 5 were not entirely clear; with 0.6 per cent. blood serum, Tubes 1 and 2

TABLE 1.—RESULTS OF EXPERIMENTS *

| Percentage of Blood Serum | Percentage of Blood Serum in Each Tube | | | | | | | | | |
|---------------------------|--|-----------------|-------------------|------------------|------------|------------|-------------------|-------------------|-----------------------------|----------------------------|
| | 2.5 ppt ++ | 1.25 ppt +++ | 0.62 partly clear | 0.31 clear | 0.15 clear | | | | | |
| 10 | | | | | | | | | | |
| 5 | | 1.25 ppt +++ | 0.62 partly clear | 0.31 clear | 0.15 clear | 0.07 clear | | | | |
| 2.5 | | | 0.62 partly clear | 0.31 clear | 0.15 clear | 0.07 clear | 0.03 almost clear | | | |
| 1.25 | | | | 0.31 clear | 0.15 clear | 0.07 clear | 0.03 almost clear | 0.019 ppt ++ | | |
| 0.625 | | | | | 0.15 clear | 0.07 clear | 0.03 almost clear | 0.019 ppt ++ | 0.009 almost no precipitate | |
| 0.3125 | | | | | | 0.07 clear | 0.03 almost clear | 0.019 ppt ++ | 0.009 almost no precipitate | 0.004 loss of translucence |
| 16 | 4 ppt + | 2 ppt +++ | 1 ppt +++ | 0.5 partly clear | 0.25 clear | | | | | |
| 8 | | 2 ppt ++ | 1 ppt +++ | 0.5 partly clear | 0.25 clear | 0.12 clear | | | | |
| 4 | | | 1 ppt +++ | 0.5 partly clear | 0.25 clear | 0.12 clear | 0.06 clear | | | |
| 2 | | | | 0.5 partly clear | 0.25 clear | 0.12 clear | 0.06 clear | 0.03 almost clear | | |

* It will be noted that with certain optimum percentages of protein a maximum precipitate is obtained. The types of reactions therefore fall into three groups: Type 1, large quantity of protein, in which the end tubes contain the most precipitate or are clear; Type 2, intermediate quantity of protein, in which all the tubes are clear, or in which the middle tubes are clear or contain the most precipitate; Type 3, small quantity of protein, in which the beginning tubes contain the most precipitate or are clear. Ppt, precipitate; clear, maximum precipitate, with therefore clear supernatant fluid.

TABLE 2.—TYPE 1, LOWEST AMOUNT OF PROTEIN, MOST PRECIPITATE IN BEGINNING TUBES

| Colloidal Gold Reaction | Diagnosis | Mastic Reaction | Globulin Percentage | Wassermann Reaction |
|-------------------------|--------------------|---|---------------------------------------|---------------------|
| | Blood serum, 0.3% | Tube 1, clear; 2, almost clear; decreasing precipitate in other tubes | From 0.2 to 0.6 Blood serum, 0.3% | |
| 555552100 | Tubes dorsalis 1 | None clear; decreasing precipitate toward end tubes. | Tubes dorsalis 1 | Weakly positive |
| 5555531000 | Paresis 3 | None clear; decreasing precipitate toward end tubes. | Paresis 3 | Positive |
| 4-4-4-2+200000 | Poliomyelitis 2 | None clear; decreasing precipitate toward end tubes. | Poliomyelitis 2 | Negative |
| 5-5-5-2+2-00000 | Poliomyelitis 1 | Tube 1, almost clear; decreasing precipitate in other tubes | Poliomyelitis 1 | Weakly positive |
| | Blood serum, 0.6% | Tubes 1, 2, clear; 3, almost clear; decreasing precipitate in other tubes | Blood serum, 0.6% | |
| 5555521000 | Paresis 4 | Tubes 1, 2, clear; decreasing precipitate in other tubes | Paresis 4 | Positive |
| | Blood serum, 1.25% | Tubes 1, 2, 3, clear; 4, almost clear | From 0.6 to 1.6 Blood serum, 1.25% | |
| 5555520000 | Paresis 1 | Tubes 1, 2, 3, clear; 4, 5, somewhat clear | Paresis 1 | Positive |
| 5555542000 | Paresis 5 | Tubes 1, 2, 3, 4, clear; 5, almost clear | Paresis 5 | Positive |

a similar percentage of serum, gives a similar result. Moreover, an examination of this table shows that a certain optimum percentage of serum is necessary to cause a maximum precipitation ("clear"). Above this optimum amount of serum, the amount of precipitation is in inverse proportion to the amount of serum present, and below the optimum, the amount of precipitation is in direct proportion to the amount of serum present. From this it follows that, according to the amount of serum present, three types of reactions will be obtained: With large amounts of protein, the end tubes of the series will contain the most precipitate or be clear; with intermediate amounts of proteins (in which the optimum reaction usually occurs) the middle

were clear, 3 was almost clear, and Tubes 4 and 5 contained precipitate, but no clear supernatant fluid. Sodium chlorid in solution, in amounts equal to that used in the dilutions of blood serum, caused no change in the mastic reagent.

2. Spinal fluids from various pathologic sources were tested with the mastic reagent. At the same time the globulin percentage of these spinal fluids was estimated in the following manner: The protein in 0.2 c.c. of various known dilutions of blood serum was precipitated by Noguchi's butyric acid method and allowed to settle a sufficient length of time (or centrifuged). These tubes were used as standards. The amount of protein precipitated by Noguchi's method in 0.2 c.c.

of spinal fluid and allowed to settle an equal length of time as in the standard tubes was compared with the amount in the latter. This was a crude method, but the readings were satisfactory for the purposes of this study. In addition to the mastic and globulin tests, a Wassermann reaction, a colloidal gold reaction⁴ and a cell count were performed on each fluid. The following fluids were tested:

- (a) Cerebrospinal meningitis, six fluids. In these the meningococci were demonstrated; the Wassermann reaction was anticomplementary in five, and negative in the remaining fluid.
- (b) Poliomyelitis, two fluids. These were doubtful cases; the Wassermann reaction in one case was negative, in the other weakly positive; the colloidal gold readings were atypical of poliomyelitis.

teen years' duration, with epileptiform convulsions of two years' duration.

CASE 5 (Cerebrospinal syphilis 4).—The patient has partial optic atrophy. He had an attack of mania in 1914 followed by a lucid interval, another attack of mania in 1916 followed by a lucid interval, an attack of melancholia early in 1917, and is now somewhat maniacal.

The Achilles tendon and patellar tendon reflexes in the three cases of cerebrospinal syphilis are exaggerated. It will be noted that the spinal fluids in these five cases (tabes and cerebrospinal syphilis) yielded a typical paretic curve. It has been previously pointed out that nonparetic patients and even patients who are not likely ever to become paretic may give a paretic curve with the colloidal gold test.⁵

The results of the mastic tests are shown in Tables 2, 3 and 4. These tables show that no matter what

TABLE 3.—TYPE 2, INTERMEDIATE AMOUNT OF PROTEIN, MOST PRECIPITATE IN MIDDLE TUBES

| Colloidal Gold Reaction | Diagnosis | Mastic Reaction | Globulin Percentage | Wassermann Reaction |
|-------------------------|----------------------------|--|------------------------------------|---------------------|
| | Blood serum, 2% | | From 1.6 to 2.5 Blood serum, 2% | |
| 5555542100 | Cerebrospinal syphilis 4 | Tubes 2, 3, 4, clear; 1, 5, not entirely clear | Cerebrospinal syphilis 4 | Positive |
| 5555411000 | Cerebrospinal syphilis 1 | Tubes 2, 3, clear; 1, 4, not entirely clear | Cerebrospinal syphilis 1 | Positive |
| 00014-4-1000 | Cerebrospinal meningitis 2 | Tubes 2, 3, clear; 4, not entirely clear | Cerebrospinal meningitis 2 | Negative |
| 0001244200 | Cerebrospinal meningitis 7 | Tubes 3, 4, clear; 2, 5, not entirely clear | Cerebrospinal meningitis 7 | Anticomplementary |
| 5555541100 | Paresis 2 | Tubes 2, 3, 4, clear; 1, 5, not entirely clear | Paresis 2 | Positive |
| 00013-3-1000 | Cerebrospinal meningitis 5 | Tube 3, clear; 2, 4, not entirely clear | Cerebrospinal meningitis 5 | Anticomplementary |
| 5555542100 | Tabes dorsalis 2 | Tubes 2, 3, clear; 1, 5, not entirely clear | Tabes dorsalis 2 | Positive |
| 5555542100 | Paresis 7 | Tubes 2, 3, clear; 1, 4, not entirely clear | Paresis 7 | Positive |
| 5555542100 | Cerebrospinal syphilis 2 | Tube 2, clear; 3, 4, not entirely clear | Cerebrospinal syphilis 2 | Positive |

TABLE 4.—TYPE 3, HIGHEST AMOUNT OF PROTEIN, MOST PRECIPITATE IN END TUBES

| Colloidal Gold Reaction | Diagnosis | Mastic Reaction | Globulin Percentage | Wassermann Reaction |
|----------------------------|---|---|--|--|
| | Blood serum, 8% Blood serum, 5% | | From 8 to 5 Blood serum, 8% Blood serum, 5% | |
| 0001331000 | Cerebrospinal meningitis 1 | Tubes 4, 5, clear; 3, somewhat clear Tubes 3, 4, 5, clear; 2, somewhat clear Tubes 3, 4, 5, clear | Cerebrospinal meningitis 1 | Anticomplementary |
| 00013+3+1000 0013310000 | Blood serum, 3.5% Cerebrospinal meningitis 6 Cerebrospinal meningitis 3 | Tubes 3, 4, 5, clear; 2, almost clear Tubes 4, 5, clear; 3, almost clear Tubes 3, 4, 5, clear; 1, 2, almost clear | From 5 to 3 Blood serum, 3.5% Cerebrospinal meningitis 6 Cerebrospinal meningitis 3 | Anticomplementary Anticomplementary |
| 5555541100 | Paresis 6 | Tubes 2, 3, 4, 5, clear; 1, almost clear | Paresis 6 | Positive |

- (c) Paresis, seven fluids. The Wassermann reactions in all were positive, the colloidal gold reactions all typical.
 - (d) Tabes dorsalis, two fluids.
 - (e) Cerebrospinal syphilis, three fluids.
- The Wassermann reactions in *d* and *e* were positive. In view of the colloidal gold readings in these five cases, a brief description of them is merited:

CASE 1 (Tabes dorsalis 1).—The patient has been in the Philadelphia Hospital for the Insane since 1894. He is a fairly advanced though apparently nonprogressing case of tabes dorsalis.

CASE 2 (Tabes dorsalis 2).—In this, a case of five years' duration, there are no symptoms of paresis.

CASE 3 (Cerebrospinal syphilis 1).—Symptoms of bulbar palsy began prior to 1914, how long before 1914 cannot be said.

CASE 4 (Cerebrospinal syphilis 2).—The patient is 62 years old and shows no mental loss. He has had hemiplegia of nine-

the pathologic source of the spinal fluids, the mastic reactions depend on the amount of globulin present. As with blood serum, the type of reaction falls into three groups, according to the amount of protein present. In Table 3 it is seen that three cases of cerebrospinal syphilis, three cases of cerebrospinal meningitis, one case of tabes dorsalis, and two cases of paresis yielded similar reactions. Normal spinal fluid caused no change in the mastic reagent, or occasionally a loss of translucence in one or two tubes.

CONCLUSIONS

1. The amount of precipitation in the gum mastic reaction depends on the quantity of globulin present in the spinal fluid tested. The maximum precipitation is obtained with an optimum amount of globulin.
2. The reaction obtained does not determine whether the fluid is syphilitic or nonsyphilitic.

4. I am indebted to Dr. S. F. Hogue of the Pepper Laboratory for the colloidal gold tests.

5. Immerman, S. L.: Herpes Zoster in Tabes Dorsalis and General Paralysis of the Insane, THE JOURNAL A. M. A., June 2, 1917, pp. 1607-1609, Footnotes 16 and 17.

3. The gum mastic test is not equivalent to or supplementary to the colloidal gold reaction.

4. As a clinical test, the information obtained from the gum mastic reaction can be obtained by much simpler means.

Thirty-Fourth and Pine Streets.

BUTTER AS A VEHICLE OF INFECTION IN TYPHOID*

MARK. F. BOYD, M.D.

Epidemiologist, Iowa State Board of Health; Associate Professor of Preventive Medicine, State University of Iowa, College of Medicine
IOWA CITY, IOWA

Very little reference is made in medical literature to the possibility of the transmission of infective agents through butter. Fewer still are reports of actual dissemination of disease by this agency. Rosenau, Frost and Bryant¹ found *Bacillus coli* in six, streptococci in fourteen and the tubercle bacillus in two of twenty-five samples of market butter collected in Boston. Swithenbank and Newman² cite several investigations in which the tubercle bacillus was found in the butter examined. H. W. Hill³ reports a rural outbreak of diphtheria in which the epidemiologic evidence indicated that distribution of the diphtheria bacillus had been effected through the consumption of butter from a local creamery which had been receiving cream from premises on which existed a case of diphtheria. Hill also reports⁴ an outbreak of from thirty-five to forty cases of typhoid localized to one ward in Anoka. The only discoverable medium of infection was country butter, retailed at a local grocery and made at a farm during the course of an unrecognized case of typhoid.

No other reports have come to my attention in which butter has been considered the medium by which pathogenic organisms were disseminated.

Zac Northrup⁵ has studied the influence of the products of lactic organisms on *Bacillus typhosus*. She finds that the minimum acidity produced by *Bacterium lactis-acidi* which will destroy the typhoid bacillus corresponds to 80° acid in milk and 28° acid in whey. *Bacterium bulgaricum* has less effect, requiring the production of 208° acid in milk or 60° acid in whey to exert the same effect. She finds that the time required for inhibition to take place is in inverse proportion to the minimum acidity producing inhibition. The influence which the other species of bacteria that may be present in milk exert on lactic fermentation prevents any very definite conclusions from being drawn from her experiments. Northrup quotes Boethel, who states that "in butter, typhoid bacteria are found after ten days, especially in butter which is strongly acid, as this enclosed sour brine is a good nourishing medium." She also states that Bassenge, as well as Behla, says that when milk, butter, etc., contain 0.4 per cent. lactic acid, typhoid bacilli are killed within twenty-four hours, although Frankel and Kister found them living even after forty-eight hours.

The meager data available prompt the reporting of the following two outbreaks, in the first of which the epidemiologic evidence implicating butter is quite conclusive, though in the second, the evidence, while suggestive, is not sufficient to be conclusive.

FIRST EPIDEMIC.

Township X is located in the northeastern portion of Iowa, and is altogether rural. In 1915, it had a population of 894, including the 353 persons of the village of Y, in which is situated a creamery. In the dairy farming districts, the practice of churning in the farm home is at present quite obsolete, not being carried on even to secure the butter needed for home consumption. Table butter is secured from the creamery to which the fresh cream or whole milk is sold.

Township X has heretofore been reasonably free from typhoid fever. During August, 1917, seven cases developed between the 12th and 21st and, September 2, one additional case, in which the prodromal period was prolonged, was recognized. Two of these patients lived in the village of Y, and the remainder were scattered widely in the country. The eight cases occurred in six homes, two country homes having two cases each. The last four cases occurred so close together as to indicate simultaneous infection from the same source. Five were females, and three males. Three were between 15 and 20 years of age, two between 20 and 50, and three were over 50 years of age. The occurrence of several cases in one locality, with closely approximated dates of onset, indicates that infection had probably been contracted from a common source at approximately the same time.

None of the patients had been away from home except on trading trips to nearby towns which were free from infection. Careful and detailed inquiries failed to elicit any information concerning opportunities for the contraction of infection through contact, from food or drink consumed away from home, or from foods purchased at retail and brought into the home. The only food brought into these homes at the probable time of infection was butter produced in the local creamery at Y, and consumed by all the patients. Five of the victims were heavy consumers of fresh buttermilk from the same creamery. They were all considered the heavy butter users of their respective households. Twenty-nine persons, including the patients, lived in the six invaded households. In no discoverable particular had these households any common association that would account for the introduction of typhoid bacilli, excepting the butter.

Meanwhile, in a home in an adjoining township, there existed a case of typhoid in which the patient had taken to bed, July 31. From these premises cream was sold to the creamery in Y until August 23. In the early stages of the illness of this patient, proper care in the collection and disposal of the discharges from the patient was not exercised. I was informed, for instance, that undisinfected feces was permitted to stand outdoors for long periods, accessible to flies. During this time, four contact cases developed on the premises, and three other cases in the immediate neighborhood which could be ascribed only to carelessness in the disposal of infective material. After this patient had been sick about a week, a competent nurse was installed.

In the creamery at Y, the cream is not pasteurized before ripening or churning, being usually churned the day following its receipt. Although most of the

* From the Department of Pathology and Bacteriology, State University of Iowa College of Medicine.

1. Rosenau, M. J.; Frost, W. D., and Bryant, R.: Jour. Med. Research, 1914, 30, 69.

2. Swithenbank and Newman: Bacteriology of Milk, p. 220.

3. Hill, H. W.: Third Biennial Report, Minnesota State Board of Health, 1911, p. 203.

4. Hill, H. W.: Fourth Biennial Report, Minnesota State Board of Health, 1913, p. 240.

5. Northrup, Zac: Tech. Bull. 9, Michigan Agric. Exper. Station.

butter is packed for shipment to a commission house in New York City, a small amount of fresh butter is returned to the patrons furnishing cream, and is also sold in the stores in Y.

The epidemiologic evidence clearly indicates that at some time in early August, an infected lot of cream was sent from the foregoing premises to the creamery at Y. Here it was churned, and a small amount of the butter and buttermilk from that churning was distributed in X township.

SECOND EPIDEMIC

P is a thriving town in south central Iowa, having a population of 1,324 in 1915. The town and adjacent countryside is largely populated by Hollanders. In September and October, 1915, eight cases developed in P, and two in the adjacent countryside. One case had occurred during July.

Of the epidemic cases, eight patients had been out of town during the month preceding their illness, but while out of town their exposure to contact infection could not be learned. Patients 2, 6 and 9 had been to the state fair at Des Moines. Patients 3 and 10 had been in the country adjacent to P. Patient 8 had been to Oskaloosa twice, September 15 and October 14, and Patient 11 had returned from San Francisco, August 21.

The other cases, classified according to the dates on which the patients took to bed, are as follows: September 12, two cases; September 14, three cases; September 26, one case; October 3, one case; October 10, two cases; October 24, one case. It is therefore seen that the outbreak was not explosive in character, but covered an extended period of time. From these data it might appear that the cases were not due to the use for a brief period of a common active route of infection.

Of the ten patients, nine were females and one was a male. It will be further noticed that the cases were all among adults or young adults, the youngest, in Case 5, being 14 years old. This is a rather unusual distribution of cases, and the preponderance of cases in adult females is noteworthy.

Classified according to occupation, the patients are thus grouped: housewife, 10, 11 and 1; clerk, 1; telephone operator, 2; college student, 6 and 8; school girl, 5; farmer, 9; at home, 3. There is no preponderance of cases among members of any single occupation. The home sanitation of all cases developing in P was good.

Patients 1, 7 and 9 said their health previous to the attack had been poor. This might possibly indicate that infection took place somewhat earlier than would be judged from the date of taking to bed. The other patients considered their previous health good.

Contact infection seems possible only with Patient 5, who lives next door to Patient 6. No history of contact was obtainable in any of the other cases.

Three patients were sole users of the city water and four used it occasionally. These were Patients 2, 11, 6, 9, 1, 5 and 8. Three (10, 7 and 3) used water from private wells exclusively. A consideration of the distribution of the residence of these patients, the time of onset and their ages and sexes does not indicate that drinking water is responsible for the outbreak.

One patient used condensed milk, two used milk from their own cows, three denied the use of milk,

and four used milk from three separate sources. It is evident that milk can be excluded as a source of infection.

Nine people had eaten ice cream at several different places: four (1, 2, 6 and 8) at W; six (2, 3, 5, 6, 7 and 8) at X; three (3, 6 and 8) at Y, and three (4, 8 and 10) at other places. Patient 9 denied the use of ice cream, and Patient 11 was uncertain. The ice cream sold at W, X and Y is manufactured at different places.

All patients had ordinarily secured their meals at home previous to their illness, but eight patients (1, 2, 6, 7, 8, 9, 10 and 11) had eaten at a church social given by the R church, August 26. Patients 1, 2 and 11 had secured meals at three different restaurants in P, and Patients 3 and 4 had eaten in the country. This church social seems to be the only possible common place of infection, but it seems remarkable, even if infection was contracted there, that Patients 1, 7 and 8 would be five and six weeks in the incubation stage of the disease. It should further be noted that Patients 1 and 7 state that their previous health had been poor, which might indicate nevertheless, that recognition of typhoid was delayed. Among other foods served at the church social were potato salad, chicken sandwiches and ice cream. Patients 1, 2, 7, 9 and 11 ate both potato salad and chicken sandwiches. Patient 8 denied eating anything besides ice cream, and Patient 10 died before the investigation. We have endeavored to find the sources from which were donated the potato salad and the chicken, but so far have been unsuccessful. The ice cream served came from Z, as did also a portion of the butter. Water was not served.

This social had a very large attendance, which was estimated as high as 500. It will thus be seen that probably a little over 1 per cent. of its patrons subsequently developed typhoid. It should be further noted that Patients 5 (contact) and 3 did not attend.

Five patients (2, 3, 4, 6 and 8) used butter from Z, at their homes, and three (1, 7 and 9) used butter from various sources, including Z, in the month preceding their illness. Patient 5 did not use Z butter.

Butter from Z is thus the only common ascertainable medium of infection for those patients who attended the church social and those who did not. The Z butter used at the church social was only one fifth of the total amount of butter used. If some article of food at the social had been the medium of infection, in view of the large attendance, we could ordinarily expect a much larger percentage of cases occurring among those who had eaten there. Furthermore, the incubation period in certain of the cases is long, if the church social is considered the place where infection was acquired. We have been unable to ascertain if the church social patients used Z butter, although it is known that this butter was served.

It was learned that on August 21, the manufacturer of Z butter had purchased thirty-nine pounds of cream from J. V., whose wife had typhoid fever in March and April, 1915. This was the second attack of typhoid which Mrs. J. V. had sustained, having experienced the first while a girl of 3 in Holland. This cream had been churned, with other cream, August 23, without pasteurization before ripening. The butter made from it could therefore have been in the local market by the date of the church social. Efforts were made to secure specimens of the feces of Mrs. J. V. for laboratory examination, but these were refused.

The possibility of transmission by means of butter is therefore the most definite evidence we were able to secure from the second outbreak. Those in charge of the church social were not particularly willing to furnish the desired information.

COMMENT

Milk and cream are very suitable mediums for the multiplication of the typhoid bacillus, particularly in the warmer months, but with the gradual increase of lactic acid in the souring or ripening, the typhoid bacilli undergo a gradual diminution in numbers. If we assume that a certain lot of sweet cream did become infected, what might we be justified in considering the subsequent chain of events? With souring, the typhoid bacilli undergo a gradual reduction in numbers. Furthermore, the infected sour cream is diluted with several times its volume of uninfected cream at the creamery. Dilution and attenuation or destruction of the infective organisms thus occurs. Furthermore, the butter made from such cream is not always immediately disposed of, but different lots may remain in storage or on the retail market for several weeks, during which time the strong salt solution in the butter may effect a further reduction of the number of typhoid bacilli present. Therefore, commercial butter would not necessarily cause an explosive outbreak of disease similar to that caused by infected milk; and, furthermore, the number of cases in proportion to the size of the infected lot of butter would be much smaller when compared with the number resulting from infected milk.

It should be noted that in neither of these instances was the cream pasteurized before ripening with a pure starter. These examples serve to indicate that pasteurization of cream for butter-making is as highly necessary from the standpoint of disease prevention as it is desirable from the standpoint of the prevention of undesirable fermentations.

TREATMENT OF SCIATICA

WITH AN ANALYSIS OF NINETY-ONE CASES *

ISRAEL STRAUSS, M.D.

NEW YORK

Sciatica, until very recently, was considered a distinct morbid entity. It was defined as a neuralgia of the sciatic nerve due to conditions within the nerve itself, or caused secondarily by organic lesions adjacent to the nerve, its roots or their origin in the cord. In the past few years, however, there has been a tendency in practically all the cases to regard the condition as secondary to some organic lesion.

Déjerine and his school have called attention to the segmentary distribution of the sensory disturbances in some cases of sciatica, and this they consider evidence that the site of the inflammation is in the roots and not in the trunk of the nerve. They have given the name of "radiculitis" to this condition. Wertheim-Salomonson asserts that one half of the cases of sciatica which he observed were due to radiculitis; he is of the opinion that most investigators overlook these cases because they fail to recognize the root type of the sensory disturbances. Many authors speak of neuralgia of the nerve, and it is probable that the indiscriminate use of this term has caused skepticism regarding the existence of sciatica as a clinical entity.

A few believe with Gowers that all cases of sciatica are due to a neuritis.

It is held by others that most of the cases of idiopathic sciatica are due to lumbosacral and sacro-iliac disease and sacro-iliac subluxation. In fact, in the discussion of Rogers' paper¹ before the Section on Orthopedic Surgery at the 1916 session of the American Medical Association, some of the members went so far as to deride the idea that there could be an essential nerve inflammation. Now, while there is no question that inflammation of the sacro-iliac synchondrosis, if it is intense enough and of long duration, can cause symptoms which are indicative of irritation of the sciatic nerve or the roots entering into its formation, and although treatment of the primary condition will often remove the manifestations of sciatica, the symptoms which are caused by sacro-iliac disease are so definite that there should be no difficulty in their detection and differentiation from symptoms referable to the sciatic nerve or its roots. The same statement holds true regarding hip disease, which has been regarded by some as causative of sciatica.

As our knowledge has been obtained mainly from the appearance of the nerve when exposed at the operation for stretching, or from pieces occasionally removed at such times, little is known of the pathology of the condition. The nerve is described as being red and swollen, and marked exudation into the nerve sheath and especially into the connective tissue between the funiculi has been observed. Hemorrhages have often been found; occasionally the endoneurium is involved, and degeneration of the nerve fibers has been reported. The microscopic appearance of the nerve and even the edema may, of course, be due to the handling and exposure of the nerve during the operation. The same is true of the hemorrhages that have been found. It may very well be that the true pathologic condition responsible for this disease lies nearer the roots of the nerve, either within the vertebral canal or in parts just outside. There has been no opportunity to examine the nerve in these regions.

ANALYSIS OF CASES

My own experience has led me to believe that there exists a large group of cases in which the lesion, functional or organic, exists in the nerve itself; and in order to verify this fact, I have carefully examined ninety-one cases which have come under my care in the past years. In all these cases, definite organic lesions elsewhere could be excluded. The greater number of these patients were seen in the neurologic service of the Mount Sinai Hospital, and I am indebted to Dr. Bernard Sachs for the privilege of using this material.

The majority were between the thirtieth and sixtieth years of age; and contrary to the statistics of most authors, who give a ratio of five males to one female, the proportion of men and women was nearly equal, namely, fifty-one males and thirty-nine females.

The onset of pain was almost always gradual. The pain began in the sciatic notch or in the lower lumbar region as well, and gradually extended down the course of the sciatic nerve. In most of the cases, the pain at the beginning was not severe but rather of a dull, aching character, so that the patient paid very little attention to it. The pain was sticking, burning or lancinating in character, and radiated downward from the sciatic notch along the posterior aspect of the thigh into the calf muscles and foot. In many of the

* From the neurologic service of Mount Sinai Hospital.

1. Rogers, M. H.: An Analysis of Fifty Cases of Sciatica, THE JOURNAL A. M. A., Feb. 10, 1917, p. 425.

chronic cases it was confined to the calf muscles, principally on their outer aspect, and to the outer side of the foot, where it became persistent and caused as much discomfort as the pain in the thigh and buttock during the early stages.

The influence of posture on the severity of the pain varied. In the early stages the prone position was found to be more comfortable, but in the later stages walking appeared to give relief in some cases. There were no definite points of local tenderness.

In nineteen cases there was distinct paresthesia; in six there were areas of hypalgesia; and in seven, areas of hyperesthesia were found. Each patient was examined with the view of diagnosing radiculitis, but we were unable to detect definite sensory disturbances corresponding to involvement of the roots or segments of the spinal cord. It has been stated that the pain in radiculitis is intensified by coughing and sneezing, and in many of the cases this symptom was present. However, in the absence of definite segmentary disturbances it did not seem to us that the diagnosis of radiculitis was warranted. We found Lasègue's sign present in varying degrees of intensity in nearly all of the cases, and its intensity corresponded with the severity of the affection. In long standing cases the reflexes were always affected. The knee jerks were absent twice (which is very rare), diminished in intensity in twenty-two, and active in twenty cases. The Achilles tendon reflex was absent in ten and diminished in seven cases. Muscular atrophy was present in only eight cases, though very frequently the muscles of the affected leg were flabby. There were no other trophic changes.

The Wassermann reaction in the blood was negative in all of the cases. In sixteen cases, lumbar puncture revealed normal spinal fluids. Syphilis, therefore, can in all probability be excluded as a cause of sciatica. One case which improved under epidural injections yielded a spinal fluid which contained twenty-seven cells. This exceptional finding, together with the presence of bladder symptoms, changes in the abdominal reflexes and weakness in the affected leg, led me to conclude that the condition was not sciatica despite the good result obtained by treatment.

In twenty-eight cases, roentgen examination of the vertebral column and sacro-iliac joints was made. One showed a destruction of the fifth lumbar vertebra of unknown character, four showed mild spondylitic changes in the lumbar vertebrae, and two arthritic changes in the sacro-iliac joint.

The average duration of the illness was six months. The briefest period was three weeks, and the longest, twenty-seven months. In all the cases of this series, organic abnormalities outside the sciatic nerve itself were excluded, and the patient recovered without any treatment except that directed to the relief of the nerve symptoms.

TREATMENT OF SCIATICA

In a consideration of the treatment of sciatica, some attention to the question of prophylaxis is in order. The condition is undoubtedly more frequent during the summer months. This is probably due to the exposure of the body to drafts in order to sleep during hot nights. It is unquestionably true that individual susceptibility to climatic variations exists. Those in whom a draft seems to bring on an attack of coryza, or vague pains in the muscles which are commonly designated as rheumatic, ought to be especially careful not to subject the legs to such exposure. This holds

true regarding the use of the cold plunge or of shower baths by such persons. Probably many cases of sciatica could be aborted in their early stages if patients and physicians would recognize the significance of the early pains and use remedial measures promptly.

In the early stages, rest in bed, the application of warmth along the course of the nerve, especially in the gluteal region, and the administration of large doses of the salicylates are indicated. Complete rest in bed is the one remedy on which stress should be laid. The rest, and moist heat in some form, are the two most efficacious measures in the beginning. All forms of massage are absolutely contraindicated. At this stage they always do harm. Counterirritants likewise are of little benefit. If salicylates are given, they should be administered in large doses.

The salicylates undoubtedly lessen the pain, and in my opinion also exert a beneficial effect on the inflammatory process itself. If the pain is severe, codein should be freely administered. If the attack does not yield to these measures, and especially in those cases which have lasted for weeks or months, recourse must be had to other methods.

There are two methods which have yielded good results: One is the injection of physiologic sodium chlorid solution into the neighborhood of the nerve according to the technic of Lange, and the other is the epidural injection along the lines described by Cathelin. In making perineural injections, the patient lies on the abdomen with a pillow underneath its lower part, and the feet projecting beyond the edge of the table or couch. A line is then drawn from the sacrococcygeal articulation to the lowest point of the postero-external border of the great trochanter. The point of puncture is 1 inch to the outer side of the junction of the inner one third and outer two thirds of the foregoing lines. A trocar and cannula about 20 cm. in length and 2 mm. in caliber is used in the injection. The point of the trocar ought not to project very far beyond the cannula. The needle is inserted directly downward through the gluteal muscles until the nerve is reached. When the nerve is touched, the patient feels a sharp, shooting pain down the leg, and there is very often involuntary contraction of the gastrocnemius muscles. When the nerve is struck, the trocar is immediately withdrawn, and a syringe attached to the cannula. Physiologic sodium chlorid solution is then injected in amounts varying from 100 to 150 c.c. Considerable pressure is sometimes necessary in order to force the fluid into the tissues, and in such cases, care must be taken that the needle is not forced into the nerve. Considerable pain may follow the injection, which, as a rule, subsides after an hour.

It may be necessary to repeat the injection every other day until at least five are given, but as a rule three injections suffice. Alcohol should never be used for these injections.

The epidural space in an adult begins at the lower edge of the first sacral vertebra, where the dura ends. It extends down to the sacrococcygeal articulation. At this level the injections are made. There are certain landmarks by which this opening, the foramen sacrale superius, may be identified. It lies at the end of the crest made by the spines of the sacrum. It has the shape of an inverted V or U, and is about 1 cm. wide and from 1.5 to 2 cm. in length. It is bordered laterally by two prominences, the cristae sacrales laterales, which are usually easily felt by the finger. The opening is covered by a dense fibrous ligament, the liga-

mentum sacrococcygeum. The opening lies generally 2 cm. above the end of the gluteal fold.

The needle used for the injection should be about 8 cm. in length, and 1 mm. in caliber. I have used an ordinary steel needle previously tested as to its flexibility. If greater flexibility is desired, a needle made of platinum iridium may be used; but a broken needle need cause no alarm: it will do no harm if allowed to remain in the epidural space. The needle is to be inserted to a depth of 6 cm. to reach the second sacral vertebra. There is no danger of entering the subarachnoid space, because the dura ends at about the level of the first sacral vertebra; however, to be certain that this space has not been entered, it is well to wait for a few minutes before injecting to see whether there is an escape of cerebrospinal fluid. If possible, when inserting the needle, one should place the patient in the knee-chest position in order more easily to locate the landmarks. If the injection is made with the patient lying on the side with the knees and thighs flexed, the landmarks are not so easily discerned, and the gluteal fold usually lies above the foramen. It may be difficult, if not impossible, to enter the epidural space of very stout persons, especially of stout women. In such cases, recourse must be had to the nerve injection.

It has been my custom to anesthetize the skin and tissue overlying the foramen and the ligament with novocain. In doing this, one must be careful not to cause much swelling, which might obliterate the landmarks. After the needle has been pushed through the skin, considerable resistance is met at the ligament. Once this resistance is overcome, the needle glides into the epidural space. If the patient is in the knee-chest posture, the needle is inserted into the body at an angle of 45 degrees. After it has passed through the ligament the needle is held so that it is horizontal to the body. During the injection, the patient lies on the affected side.

The injection consists of warm sterile physiologic sodium chlorid solution. To the first 10 or 20 c.c. of solution is added 0.125 gm. of novocain with epinephrin, and a few minutes are allowed to elapse after their injection to obtain the full benefit of their anesthetic effect. In all, from 60 to 80 c.c. of solution are injected at a time.

The injections are given at forty-eight hour intervals. They may be given in the office, and the patient will have no difficulty in going home. It is preferable, however, for the patient to remain in bed during the intervals. The average number of injections required is three. Occasionally it may be necessary to give five, but sometimes two or even one suffice to relieve the condition. The most difficult cases to cure are the chronic ones in which the pain is along the outer aspect of the thigh. In some instances this pain persists even after several injections, and then treating the limb with superheated air in the Tyrnauer apparatus is efficacious. The heat treatment alone in the subacute and chronic cases is of no avail. Massage ought never to be used—it appears to do more harm than good. A patient may improve after several epidural injections but not be entirely cured. The injections of sodium chlorid solution along the course of the nerve in the gluteal region may cause the disappearance of the pain. There have been no untoward results from the epidural injections. The knee jerk on the affected side has disappeared for a short time, and sometimes the patient complains of delayed micturition; but these symptoms soon disappear.

The treatment of sciatica by injection of sodium chlorid solution, whether epidurally or in the neighborhood of the nerve, offers a means of shortening the duration of this painful malady from weeks and months to days.

116 West Fifty-Ninth Street.

Clinical Notes, Suggestions, and New Instruments

THE STERILIZATION OF SURGEONS' SANITARY PAPER CAPS *

WALLACE A. MANHEIMER, PH.D., NEW YORK

Paper caps in place of linen caps for surgeons are becoming very popular for a number of reasons. They are cheap, costing less than the laundering and depreciation of linen caps, are cool and light, are automatically adjustable and are free from lint. While there are probably several types of paper hats on the market, the one which has an elastic crape paper insertion in the back is the one to be recommended because it adheres firmly to the head, preventing the dropping of dust on the wound. This hat is made over a block the shape of the head by pasting a paper band of glaccine paper to a crown piece composed of any type of paper. In the back of the paper band is an elastic insert composed of crape paper which permits the hat to be stretched sufficiently to conform to heads of any size. A piece of thick corrugated absorbent paper is pasted on the inside of the paper band just where the hat touches the forehead, in order to absorb sweat. These hats make a neat appearance and have proved satisfactory.

The practice of sterilizing surgeons' caps varies considerably throughout the country, most of the leading hospitals dispensing with the practice altogether. Nevertheless, a great many surgeons require sterilized hats, and for this reason the methods which can be used for the sterilization of the paper cap are set forth below. The hat is made of a glaccine paper which has high tensile strength, but must be handled carefully during sterilization.

METHODS OF STERILIZATION

1. *Hot Air Sterilization*.—At temperatures ranging from 120 to 160 C., hot air is not satisfactory for the sterilization of glaccine paper, of which the hat is made. The paper becomes hard and brittle, and cannot be handled without tearing.

2. *Autoclave Sterilization*.—(a) At 15 to 16 pounds steam pressure for thirty minutes, the *Bacillus subtilis* spores on the threads packed in the hats are destroyed, the paper is browned, and the tensile strength and friability of the paper is only slightly impaired. No dry heat is used.

(b) With 15 to 16 pounds steam pressure for fifteen minutes, 10 inches of mercury vacuum with preliminary heating for fifteen minutes, the hats are sterile, slightly browned, *B. subtilis* spores are destroyed and the strength of the hat is unimpaired.

(c) With 10 pounds steam pressure for fifteen minutes, and a rapid release of steam, three minutes, the hats dry on removal, the color being only slightly changed. The hats are sterile, *B. subtilis* spores are destroyed, and the tensile strength of the paper is unimpaired.

3. *Flowing Steam Forty-Five Minutes in the Arnold Sterilizer*.—The hats are dried for two minutes in a hot air oven. The tensile strength is unimpaired, the hats are slightly browned, they are sterile and *B. subtilis* spores are destroyed.

CONCLUSIONS

1. Paper caps in place of linen caps used by surgeons can be sterilized, if desired, in a number of ways, but not by dry heat, which destroys the tensile strength of glaccine paper.

* From the Research Laboratory, New York Department of Health.

2. The hats can stand the autoclave up to 15 pounds pressure for fifteen minutes without appreciable impairment of strength. The best method to use is low pressure (10 pounds) for fifteen minutes with rapid release of steam from the sterilizer, for the purpose of drying the hats.

3. Flowing steam for forty-five minutes, with two or three minutes in the hot air oven, sterilizes the hat (destroys *B. subtilis* spores) without impairment of the paper.

2350 Davidson Avenue.

FRACTURE REDUCTION WITH THE AID OF A SIMPLE TRACTION APPARATUS

ROBERT SOUTTER, M.D., BOSTON

Assistant Surgeon, Children's Hospital, Boston; Instructor, Harvard University Medical School

This apparatus occupies a space of 24 by 4 inches. It is convenient, therefore, for emergency fracture work at the

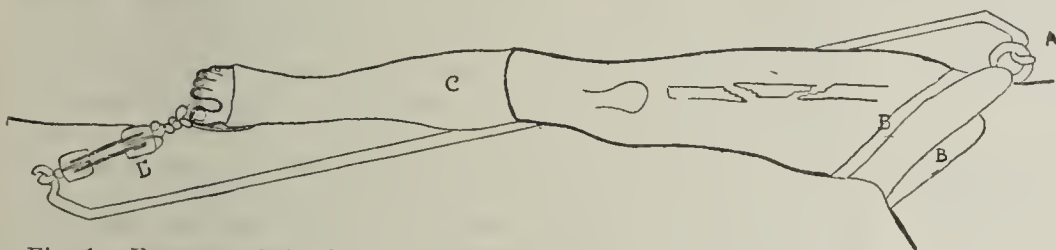


Fig. 1.—Fracture of the femur: Portable traction rod with two double block pulleys, and leather legging, C, applied. The rod is hooked into an iron ring at A. A heavy double canvas belt 4 inches broad is passed around the thigh over a folded sheet, B. The belt passes through the iron ring at A. Instead of the legging, C, a three strand army webbing may be passed around the ankle as shown in Figures 2 and 3. The ankle is well padded before the webbing is applied.

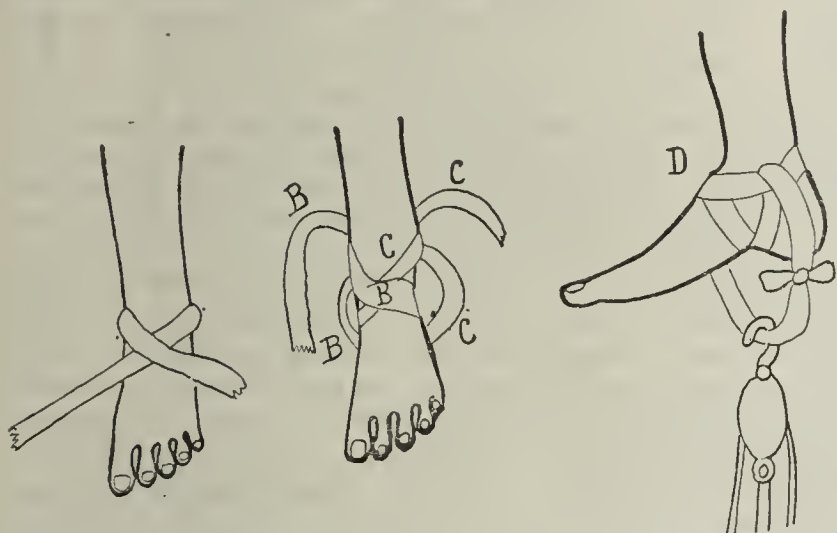


Fig. 2.—Dr. Hayward Cushing's knot for temporary traction during operations on the leg. The ankle is well padded with heavy felt passed around under the webbing. The webbing is crossed in front of the foot. The end B and the end C may be traced in the illustration. On the outside of the ankle, the end C crosses in front to the inside under the foot, then upward on the outside, and is looped around the original outside piece.

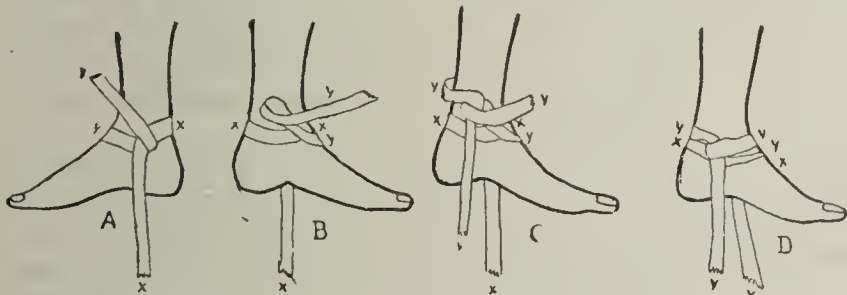


Fig. 3.—Knot used by Dr. Hawley for temporary traction on the leg. The webbing should be triple or double. It may be traced by the accompanying drawings. A heavy felt pad should be put around under the webbing.

front, or in hospitals in which a fracture table is not available. It is also applicable for the open reduction of fractures, for bone graft operations, and for plating, wiring or banding. It can be used for fractures of the shoulder, the shaft of the humerus, the elbow, the forearm, the wrist, the hip, the shaft of the femur, the knee, the tibia or fibula or both.

The control of the traction is simple; it need not be removed for open operation or for the application of the dressing, splints or plaster.

Traction is applied by means of two double or triple block pulleys; one pulley is hooked to the rod, and the other to the ankle for traction on the leg. Countertraction is applied



Fig. 4.—Fracture of the lower leg: Method of applying tape to the ankle, using Cushing knot (see Fig. 2).

at the hip by a broad canvas belt over a folded sheet (for padding). The belt goes through a large iron ring which hooks over the traction rod.

For traction above the elbow, an army webbing strap doubled is passed over a folded pillow case (for padding) around the forearm, flexed at right angles, or a heavy pad is placed around the wrist and the webbing attached over it by one of the knots shown in the accompanying illustrations. The webbing is hooked to one pulley, and the other pulley is hooked to the rod. Countertraction is applied to the other end of the rod by means of a canvas belt passed around the chest high under the arms. The canvas belt passes through a heavy ring. The rod is hooked to this ring (Figs. 1, 2, 3, 4, 5, 6, 7 and 8). It is important to pad the webbing. The countertraction at the hip should be well padded to avoid injury to the sciatic nerve. A slip noose should not be used on the arm or leg. Several knots are suggested in connection with this method of reducing frac-



Fig. 5.—Fracture of the forearm: Traction applied to the assistant's wrist.

tures; one devised by Hayward W. Cushing, and another used by Dr. Hawley.

For open operation on the arm or forearm, the rod is placed on the operating table, a pillow over it, and the patient lies on the pillow. The exposed rod is covered with a sterile sheet allowed to hang over it. Sterile webbing is used, and a sterile pillow case folded for a wrist or a forearm pad. The pulleys and the tape are covered with sterile sheets. When the leg is prepared for operation, the rod



Fig. 6.—Fracture of the forearm: A pad is placed about the wrist, and the knot described in Figure 3 is applied to the wrist. This knot distributes the pressure and prevents constriction. The operator or an assistant controls the hand while traction is being made.

may be covered by sterile sheets. The traction is controlled by a nonsterile assistant.

This apparatus is part of a larger portable traction apparatus used by me for over twelve years.¹ The apparatus consists of a rod, 8 feet long, with an offset and hook at each end. The rod is strong and jointed to make it portable.

1. Soutter, Robert: Boston Med. and Surg. Jour., 1907, 157, 724-726; Operations on Bones, Joints, Muscles and Tendons, Ed. 1, New York, the Macmillan Company, 1917, pp. 35, 227, 229.

In a large hospital, a fracture table, such as Dr. Hawley's, leaves little to be desired.

For the satisfactory treatment of fractures, a portable traction apparatus is often necessary. The apparatus described in this article has proved of great value for use

APPENDICITIS AND THE GYNECOLOGIST

ROBERT T. MORRIS, M.D., NEW YORK

About an inch and a half to the right of the navel and a trifle caudad, one will find on deep pressure a hypersensitive point in cases of chronic appendicitis of one of the four chief kinds. This tender point does not belong to cases of acute appendicitis. It does not belong to cases of pelvic irritation or infection, except in company with a similar tender point to the left of the navel. This tender point to the right of the navel will serve to give differential diagnosis between cases of chronic appendicitis and various pelvic irritations or infections.

Why does not this tender point to the right of the navel belong to acute appendicitis? Why does it not belong to right-side pelvic disturbances? In order to answer these questions, we must inquire into the nature of the tender point. At that site we shall find the right lumbar sympathetic ganglion. On the left side of the navel we find the left sympathetic lumbar ganglion. Apparently these ganglia represent the sensitive points. There is no direct nerve connection between the appendix and the right sympathetic lumbar ganglion. How, then, are we to account for the tenderness on pressure? This problem introduces the question of sensorimotor synapse. Head has marked out areas of skin irritation belonging to certain organs, following the studies of Ross and of Sherrington, who showed that irritated internal organs frequently send impulses to superficial areas of the body. I postulate that the irritated appendix sends an efferent impulse to a segment of the spinal cord, and from that segment of the spinal cord an efferent impulse goes out to the skin over the area described by Head as belonging to the appendix. At the same time, a similar impulse goes out to the right sympathetic lumbar ganglion and stops there. This, at least, is my assumption. It is offered in explanation for the fact that when we have chronic irritation of the appendix there is also a disturbance of the skin in the Head zone for the appendix, and also a disturbance of the right sympathetic lumbar ganglion, which remains hypersensitive and tender on pressure.

Why should not this ganglion be hypersensitive in cases of acute appendicitis, as a rule? I assume that a certain length of time is required for the nagging appendix to excite the sympathetic lumbar ganglion. In cases of acute appendicitis of either one of the two common forms, the greater degree of sensitiveness is at McBurney's point, directly over the appendix. In cases of chronic appendicitis of any one of the four common kinds, the greatest degree of tenderness on pressure is at the point $1\frac{1}{2}$ inches to the right of the navel, close to the spinal column, and corresponding to the right sympathetic lumbar ganglion. The reason this ganglion is not hypersensitive alone, but only in company with its left neighbor in cases of pelvic disturbance, is that the crossed action of the sympathetic and autonomic nerve branches

between the pelvic ganglia and the lumbar ganglia causes irritative impulses to be shot simultaneously into the lumbar ganglia of the two sides.

In cases of chronic appendicitis, the second feature of diagnosis which does not belong to cases of acute appendicitis, and which does not belong to cases of pelvic disturbance, is persistent distention of the ascending colon with gas. Why should the ascending colon be distended with gas in cases of chronic appendicitis? We may assume that irritation from the nerve elements of a chronically inflamed appendix at first overstimulates the innervation of the muscularis of the ascending colon. This overstimulation, carried on for weeks or for months, eventually tires out the innervation of the ascending colon. When the innervation becomes wearied, the muscular coat of the ascending colon becomes relaxed and distended with gas, which it fails to press onward because of comparative lack of energy. This distention of the ascending colon with gas,

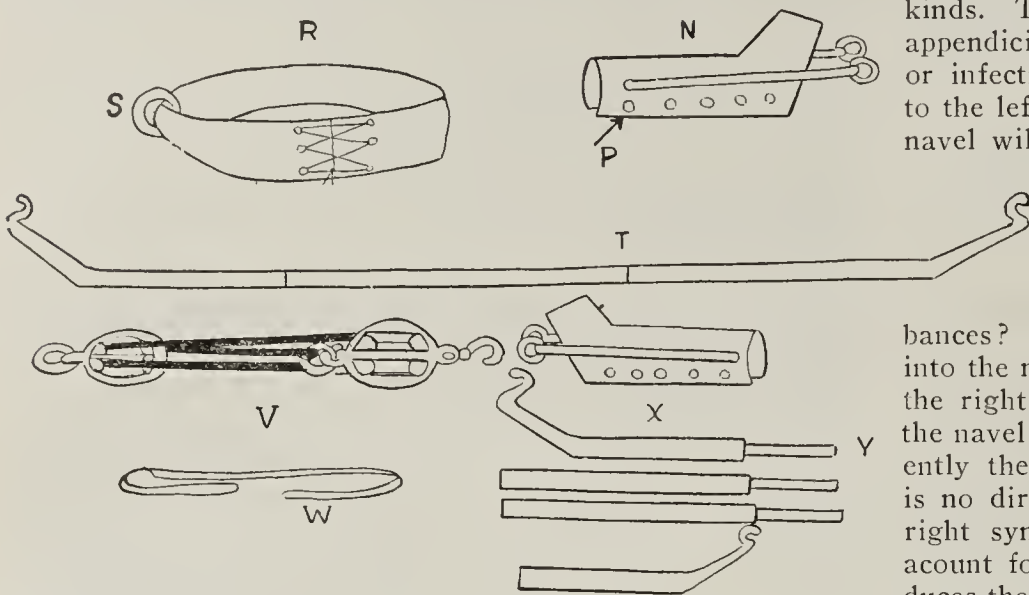


Fig. 7.—Details of apparatus: N, leather legging; P, loose rings for lacing; R, heavy canvas belt 4 inches broad, cross stitched with loose rings for lacing. The belt passes through an iron ring; S, iron ring; T, traction rod made from tubing; each section is 22 inches long, and there are four sections. Three iron rods 22 inches long are passed inside this tubing, and unites them into one long firm rod. X represents the tubing disjointed and the rods protruding; the rods may be removed for packing. V, double block pulley 4 inches each; W, webbing for ankle knot, as illustrated in Figures 2 and 3; X, traction rod T disjointed, showing how the rod Y may be removed from the tubing.

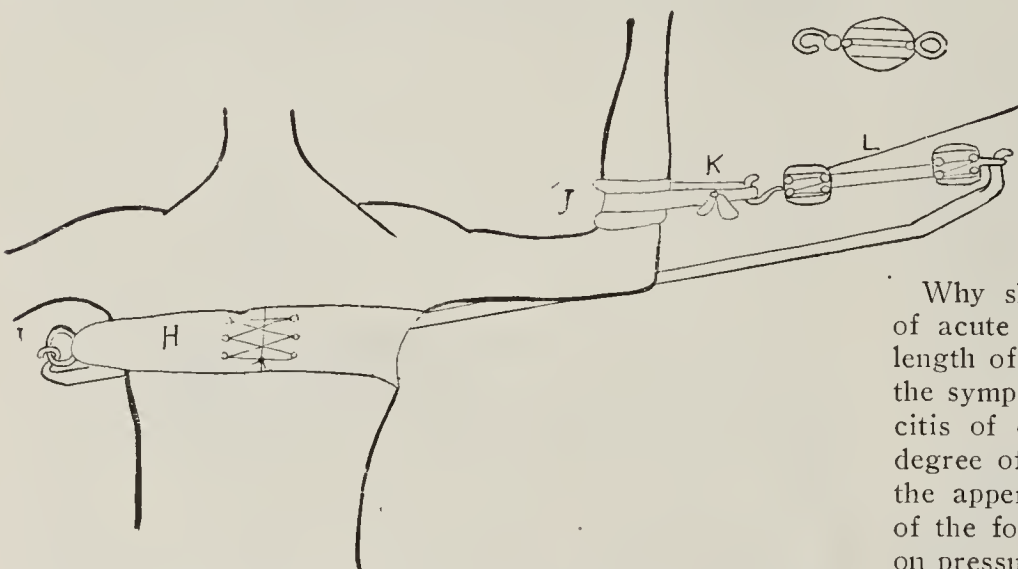


Fig. 8.—Traction for fractures of the shoulder, upper arm or elbow. If the surgeon prefers he may use the knot shown in Figure 3 applied to the wrist. The rod hooks into an iron ring at I; H, canvas belt passed through an iron ring at I; J, folded pillow case over which is passed a double army webbing K; K, army webbing hooked to pulley; L, two double block pulleys.

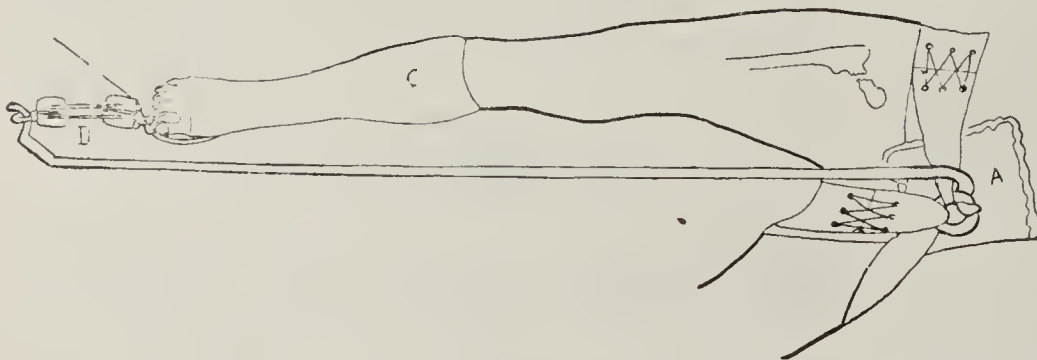


Fig. 9.—Apparatus adjusted for treatment of fractures of the femur high up. The canvas belt is applied to the other leg, and a second belt looped around the thigh portion of the first belt behind and brought around the flank double and passed through the iron ring, and then laced to itself. A piece of leather or heavy canvas is placed under the ring at A.

in reducing fractures and for open operations on fractures. Its size makes it especially serviceable for emergency use.

133 Newbury Street.

which belongs particularly to chronic appendicitis, I call the "cider barrel sign." If we percuss the left side of the abdomen in a case of chronic appendicitis, we shall obtain a normal resonance note suggesting percussion of the cider barrel in October. If we percuss the right side of the abdomen, we obtain a percussion note suggesting that of the cider barrel in January.

These two points, then, the "cider barrel sign" and the point of tenderness on pressure to the right of the navel, appear to be important in distinguishing between chronic appendicitis and pelvic disorders of the sort that interest the gynecologist.

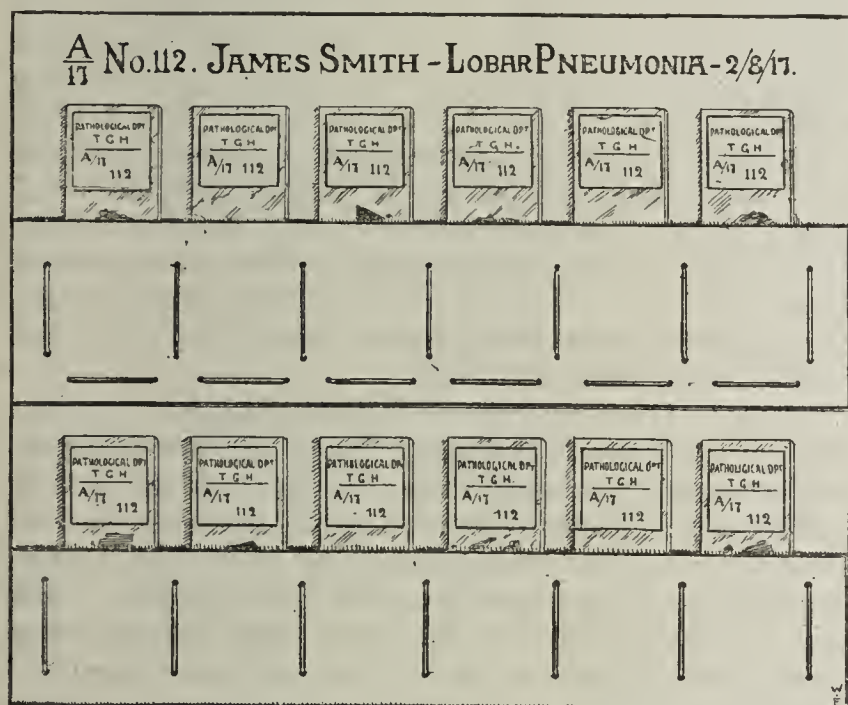
616 Madison Avenue.

A METHOD FOR FILING NECROPSY SECTIONS

W. L. ROBINSON, B.A., M.B., TORONTO

Department of Pathology, Toronto General Hospital

The ordinary methods of storing microscopic slides of necropsy sections in drawers or in boxes has always seemed to me not only an awkward method, but one which renders the sections very inaccessible. I wish, therefore, to submit the following means of adapting the ordinary filing cabinet



Adaptation of the ordinary filing cabinet to the filing of microscopic specimens of necropsy sections.

to the filing of microscopic specimens of necropsy sections in a convenient and readily accessible form.

Our filing cabinet takes a card $9\frac{1}{4}$ by $7\frac{1}{2}$ inches. One of the local publishing houses furnished us with folders of this size. The paper used is 140 pound tag manilla, cut to a size $9\frac{1}{4}$ inches square. One margin is then turned over for a distance of $1\frac{3}{4}$ inches, and wire staples eleven-sixteenths of an inch long put in so as to divide the folded strip into six equal compartments. In this way a folder which is $9\frac{1}{4}$ inches wide by $7\frac{1}{2}$ inches high is made. A strip of the same material $1\frac{3}{4}$ inches wide, and of the same length as the width of the folder, is stapled in position so that the lower border is $3\frac{3}{4}$ inches above the folded lower border of the folder. This strip not only has the seven staples which divide it off into equal compartments, but also a staple at the lower part of each compartment, thus making space for the filing of twelve sections, and leaving room at the top for the number, name, date, and also a description of the principal pathologic lesion that has been revealed by the necropsy. There is sufficient room on the back of the folder for writing the complete anatomic diagnosis.

These folders are filed away in rotation, and can be cross indexed according to name and pathologic lesion. A cabinet 22 inches deep will hold about 250 of these folders when filled with microscopic slides.

Military Medicine and Surgery

INDUSTRIAL POISONING IN AIRCRAFT MANUFACTURE

ALICE HAMILTON, M.D.

CHICAGO

In the latter part of 1914, Jungfer¹ reported a new industrial disease that had appeared during the preceding year in an aeroplane factory in Johannisthal and had affected four out of a force of eight men. These men were employed in painting and spraying a solution of cellulose acetate over the linen that covers the aeroplane. All of them developed a severe acute hepatitis, and one died. Later in another factory in the same place ten men were poisoned and one died. Grimm,² writing shortly after, was able to give details of fifteen cases of poisoning among aircraft employees engaged in such work. The solutions used were sent to the pharmacologic institute of the University of Berlin for analysis by Heffter and Joachimoglu,³ who reported that the toxic constituent was tetrachlorethane, of which some specimens contained as much as eighty-four in a hundred parts. They experimented on dogs, rubbing the solutions into the skin and also exposing the animals to the fumes. From the commercial mixtures and from pure tetrachlorethane they obtained the same results, namely, loss of weight, vomiting, presence of bile and blood in the urine, death with fatty degeneration of the liver, and hemorrhages into serous and mucous surfaces and in the heart muscle. In inhalation experiments narcosis came on, but was slower in appearance and less deep and lasting as the days went on, showing a gradually increasing tolerance on the part of the animals. The symptoms described above, however, put in their appearance and the course of the poisoning was the same, no matter how the compound was administered.

Tetrachlorethane had already been tested by Lehmann⁴ of Wurzburg, the authority on industrial gases and vapors. As always, his experiments were for the purpose of determining the minimum dangerous amount of the vapor in air, and he found that air containing no more than 1 or 2 mg. of tetrachlorethane to a liter could be breathed for a relatively long period—six or seven hours a day for eighteen days spaced over four weeks—with no more serious result than loss of weight and drowsiness. If the fumes were stronger, narcosis came on, and after repeated exposures, serious disturbances of metabolism. In fatal poisoning he found solution of red corpuscles, basophilia, fatty liver, the heart muscle yellowish and the kidneys congested. He found it the most poisonous of the chlorin derivatives of the hydrocarbons, four times as poisonous as chloroform and nine times as much so as tetrachlormethane (carbon tetrachlorid).

The fatty degeneration of the liver as found by these German experimenters is more marked than that produced by any known substance except phosphorus, and as in phosphorus poisoning, it is associated with a yellow, flabby heart muscle, and with acute degenerative

1. Jungfer: Zentralbl. f. Gewerbehyg., 1914, 2, 222.

2. Grimm, Heffter and Joachimoglu: Vrtljschr. f. gerichtl. Med., Series 3, 1914, 48, supplement, p. 192.

3. Heffter and Joachimoglu: Vrtljschr. f. gerichtl. Med., Series 3, 1914, 48, supplement.

4. Lehmann, K. B.: Arch. f. Hyg., 1911, 74.

changes in the kidney epithelium. It also resembles delayed chloroform poisoning with its hematogenous jaundice. Tetrachlorethane is seven times as hemolytic for mammalian blood as is chloroform.

POISONING ABROAD

The first case of tetrachlorethane poisoning reported from England was in October, 1914, when a man died of acute jaundice after working in an aeroplane factory in Hendon. He had worked eleven weeks when jaundice developed, and he died after three weeks' illness. The liver was shrunken and green. Legge, chief medical inspector of factories, went there to investigate, and found that the man had been applying to aeroplanes what is called in English and American factories "dope." On examining the other dopers, Legge found ten with evidence of inflammation of the liver. They had worked from three to sixteen weeks before they were taken sick. All had gastric symptoms and jaundice. The next three deaths from what was now called "dope poisoning" were in women, two girls under 20 and a woman over 30. By February, 1916, the Home Office had had reports of forty-three cases, with seven deaths, five in women. The amount of tetrachlorethane in the dopes varied, but British factory inspectors considered even 10 per cent. dangerous.

The dopes were subjected to analysis and animal tests by Wilcox,⁵ who also examined the organs of some of the victims of dope poisoning. His results were exactly the same as those of the Germans. Though the English dopes contained benzene, methyl alcohol and acetone as well as tetrachlorethane, Wilcox proved that the last was the cause of dope poisoning. He described, as the distinctive features of this form of hematogenous jaundice in man, a slow, insidious onset; long duration of the disease after the onset of jaundice, longer than in acute yellow atrophy of the liver; absence of marked fever, which distinguishes it from infectious jaundice, Weil's disease; and absence of the degree of anemia that would be found in arsenical jaundice. The jaundice is deeper than that of delayed chloroform poisoning.

The last paper on the subject of dope poisoning in Germany appeared early in 1915. Koelsch,⁶ a Landes-gewerbearzt of Bavaria, made a study of industrial poisoning from tetrachlorethane, and divided the cases into two classes: (a) those with pronounced gastrointestinal symptoms, nausea, vomiting, cramp-like pain, enlarged liver and jaundice; and (b) those with slight or no abdominal disturbance, but with various nervous symptoms, headache, paresthesias, tremors of the hands, disordered reflexes and slight paralyses. Two cases belonging to the first group had been diagnosed as lead colic, though there had been no exposure to lead. Other symptoms noted by Koelsch were increased craving for food coincident with loss of weight, and great drowsiness, persisting all of the working hours.

After this, reports from Germany ceased to come, and we have no way of knowing whether or not the advice of the factory inspectors was followed and tetrachlorethane dope forbidden. In England this has been virtually effected. Toxic jaundice from aeroplane dope was made a reportable disease in February, 1916, and brought under the workmen's compensation act. By August, 1916, the Home Office was able to state

that dopes free from tetrachlorethane were now obtainable and approved by the War Office and Admiralty. Letters from Sir Thomas Oliver and Dr. T. M. Legge, written in January of this year, assured me that tetrachlorethane dopes were no longer used in British aeroplane manufacture.

THE SITUATION IN THIS COUNTRY

That is the history of dope poisoning in the older countries. In our country, despite the fact that since the war our aeroplane manufacture has increased rapidly, no case of dope poisoning has come to public knowledge. The Bureau of Labor Statistics, knowing the serious trouble that England had experienced, and wishing if possible to forestall it here, asked me to make an investigation of our aeroplane works during the spring and summer of this year. At that time the output of these factories was largely training planes, not war planes. I visited eighteen factories, in the Middle West, Florida, New York State, New England and northern New Jersey. Everything was in a state of experiment and of rapid expansion. Many of the plants were small, temporary structures, and all the doping was done outdoors. Others had doping sheds, open to all the winds. Few were large enough to employ more than one man in doping, and even he would not spend all his time at the work. It was easy to see why, even with the dangerous tetrachlorethane dope, which was still in use in some plants and had been used in several more, no case of toxic jaundice had developed. The exposure had not been long enough or severe enough. Dopers are a shifting body of men. Of fifty-three men interviewed, more than half had worked less than three months.

All these features, however, were already changing. The new factories had doping rooms and were preparing for work on a large scale. It was evident that in the future many more dopers would be employed, and that they would work continuously and in an atmosphere full of dope fumes from the drying wings. The men in charge told me that they knew doping was attended with danger, but for the most part they did not know which were the dangerous compounds in the dope or which variety was the more dangerous. I felt convinced that with conditions as they were in some of the new factories, this winter would see several cases of dope poisoning if tetrachlorethane dopes were to be used; for instead of installing down-draft suction to remove the heavy fumes, several managers were trusting to window ventilation only.⁷

Though I did not find evidence of toxic jaundice among dopers, men who worked with tetrachlorethane dopes had felt the effects of the fumes somewhat. Drowsiness was oftenest complained of, most troublesome early in the morning, and passing off as the day wore on; worse after a holiday, as if the immunity acquired had been lost, and much worse in hot, heavy weather. Some men said they were even sleepier after leaving work than while in the fumes.

There were instances of men being actually overcome by the dope fumes, but these were under exceptional circumstances, such as very hot weather and an unusual rush of work; or the doping was carried on in a greenhouse with the sun beating on the glass roof; or the

5. Wilcox: *Lancet*, London, 1915, 1, 544.

6. Koelsch: *München. med. Wehnschr.*, 1915, 62, 1567.

7. An investigation of aeroplane factories in New York State was undertaken by the State Industrial Commission and entrusted to Drs. Lester Roos and Rosalie Bell. They found one man using tetrachlorethane who showed a slight jaundice, but whose symptoms were chiefly nervous: dizziness, sleepiness, and attacks like alcoholic intoxication.

man had lain on his back to dope the under side of a wing and had breathed the fumes that fell directly in his face. Two dopers were rather seriously "knocked out" when a pail of dope was spilled over the clothing of one, and the other had gone to his assistance and tried to drag him outdoors. Both lost consciousness, and the one with the soaked clothing had an alarming respiratory failure requiring artificial respiration for some minutes. Neither had any lasting effect from the accident. Nausea and headache usually follow such an attack of faintness, but no symptoms of abdominal disturbance of any seriousness were reported to me. Constipation was complained of only occasionally. Two men spoke of an increased craving for food at the same time that they were losing weight.

At the time I made my inquiry, between April and September, 1917, two kinds of dope were in use, cellulose acetate and cellulose nitrate. The former is relatively noninflammable, and is used on war planes. Its best solvent is tetrachlorethane, to which is usually added some acetone, benzene and alcohol. Cellulose nitrate is inflammable and must be covered with a noninflammable varnish; but even with this it is not fit to be used on war planes, though it is all right for planes used in training. The majority of the factories at that time were making training planes and doping with nitrate dope. A few used acetate dope with tetrachlorethane. Now we are beginning to make war planes, and the dope advocated by our Signal Corps, the dope that will probably be generally adopted for war planes, is made of cellulose acetate dissolved in acetone, alcohol and benzene, or the acetone may be replaced by a mixture of methyl alcohol, methyl acetate and acetone. This means that the dangerous tetrachlorethane is gradually disappearing from our airplane works, and that the solvents encountered by dopers from now on will be benzene, methyl alcohol, acetone and other ketones, amyl acetate, and perhaps amyl alcohol. All these are volatile substances, capable of setting up industrial poisoning because they can be absorbed through the respiratory tract as well as by the intestinal tract; but their toxicity differs greatly in degree.

Benzene is much the most toxic, but there is not more than 12 or 15 per cent. of benzene in most dope, and from that amount one would look not for severe acute poisoning, but rather for the lighter forms, as dizziness, headache and transient excitement like drunkenness, followed by depression and nausea—the range of symptoms which rubber workers describe under the term "naphtha jag," and which dopers also describe fairly frequently. Probably chronic benzene poisoning may begin to appear now, for there will be much longer exposure to the effects of the vapors than heretofore.

There is a decided prejudice against amyl acetate among workmen, and many of them told me that it was much more poisonous than tetrachlorethane. Physicians sometimes believe this, and think that a change for the better is made when the foreman gives up the disagreeable "banana oil" and substitutes acetate dope with tetrachlorethane. Amyl acetate does cause smarting of the eyes, and sometimes conjunctivitis, and there may be an irritating cough; but so far we have little evidence of its danger as an industrial poison. Koelsch⁸ went carefully into the question of amyl acetate poisoning among men using it in varnishes and

lacquers, and was convinced of its slight harmfulness. He then experimented on himself, vaporizing it and breathing the fumes. He had an inclination to cough, a feeling of heat in the head, and a slightly rapid pulse. Later he became dizzy, drowsy and confused and tired, with quick, deep respirations. He found it hard to climb the stairs after he had gone home.

Koelsch also tested amyl acetate on animals, and though the symptoms caused by it were transient, yet after a long exposure (237 and 340 days) the animals lost weight and died, with fatty liver, and edema of the lungs with areas of pneumonia. Lehmann's⁹ animals also reacted to large doses of the vapors, but showed no permanent lesions. He did not, however, expose them as long as Koelsch did his.

It would seem, then, that workers exposed to amyl acetate may suffer from smarting eyes, dry throat, obstinate cough, dizziness, drowsiness and weariness, and it is possible that long continued exposure may produce changes in organs, especially in the liver.

According to our present knowledge, acetone is harmless; but very little work has been done, and the matter is far from settled. Amyl alcohol (fusel oil), according to Salant,¹⁰ is seven times as toxic for frogs as ethyl alcohol, and four times as much so for rabbits. In human beings its effects are like those of ethyl alcohol; but it is more rapid, severer, and accompanied by a more decided fall of blood pressure.

Among these solvents for dope, there remains to be considered methyl alcohol. The toxicity of this compound is very much a matter of controversy. We know, from Reid Hunt's¹¹ experiments, that pure methyl alcohol produces all the characteristic symptoms of wood alcohol poisoning, and that they are not to be attributed to the impurities only; but we do not know what proportion of it is dangerous. Our denatured alcohol usually contains about 4 per cent., and it is assumed that this is well within the danger limits; but German denatured spirits contain only 2 per cent., and yet there has been so much complaint of sickness among workmen caused by denatured alcohol that, according to Goldschmidt,¹² petitions have been sent to both the Reichstag and the Bundesrath for an inquiry into its harmfulness. Apparently individual susceptibility to wood alcohol varies enormously. The serious action on the eye makes industrial poisoning from methyl alcohol specially to be dreaded.

SUMMARY

It seems that we need not dread the "toxic jaundice" that attracted so much attention in England and Germany, for we shall probably not use tetrachlorethane dope to any great extent. Our dopers will be exposed to the fumes of benzene, methyl alcohol and other alcohols, acetone (dimethyl ketone) and other ketones, and amyl acetate. Of these we know that the first two are industrial poisons of distinct danger; the others are less known and probably much less dangerous. We ought to insist, however, on abundant ventilation for doping rooms, as the English do, and it would be an excellent thing if we also followed this example in insisting on regular medical examination of dopers, for then we should be able to gather the much needed data concerning the less well known of these dope solvents.

Hull-House.

8. Koelsch: *Concordia*, 1912, 19, 246.

9. Lehmann: *Arch. f. Hyg.*, 1913, 78-79, 260.

10. Salant: *Proc. Soc. Exper. Biol. and Med.*, 1909-1910, 7, 134.

11. Hunt, Reid: *Bull. Johns Hopkins Hosp.*, 1902, 13, 137.

12. Goldschmidt: *Weyl's Handbuch der Hygiene*, 8.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

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Subscription price Five dollars per annum in advance

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SATURDAY, DECEMBER 15, 1917

THE VITAMIN HYPOTHESIS IN RELATION TO ALLEGED DEFICIENCY DISEASES

The "vitamin" hypothesis of Funk postulated the existence of a number of unidentified dietary essentials, each of which acts as a protective substance to the organism. Accordingly, the lack of one or another of these was believed to lead to the development of a specific syndrome; in one case it was beriberi, in another scurvy, in another pellagra. Even rickets and less clearly defined failures of nutrition were brought into the range of possible explanation. In this sense the expression "deficiency disease" has become popular; and the lack of some necessary though undemonstrated food factor became a satisfying though vague explanation that is readily accepted by the uncritical.

There seems to be no doubt at present of the actual existence of deficiency diseases in the original sense in which this expression was used, that is, a syndrome due to the absence of a specific as yet unidentified food factor. For beriberi this seems to be demonstrated; and the xerophthalmia that has been observed repeatedly in children forced to live on unsuitable rations appears to belong in a comparable category. We recently referred to the severe cases of necrosis of the cornea in Danish children that had been fed with nearly fat-free separator milk.¹ They responded to breast milk feeding, to whole milk mixtures or to administration of cod liver oil. The latter has been shown by Osborne and Mendel to contain a fat-soluble food hormone or vitamin similar to the dietary factor found in the fat of milk, if not identical with it. Hence it is probable, as McCollum and Simmonds² have likewise recently concluded, that these cases of xerophthalmia reported in Japan and Denmark in times of famine and unsuitable rationing should be looked

on as a "deficiency disease" not recognized in its true relation to diet. It is not, as most of the foreign authors believe, a "fat starvation" that produces the condition, but a lack of the unidentified dietary factor, fat-soluble A, which occurs in just those foodstuffs that they observed to possess curative properties.

McCollum and Simmonds have lately arrived at this general conclusion: There are two deficiency diseases in the sense in which Funk employed this term. One of these is polyneuritis, which Funk recognized. This is due to a lack of an adequate supply of the unidentified water-soluble B, which is abundant in all natural foodstuffs but is practically absent from purified starch, polished rice, sugars, and all fats of both animal and vegetable origin. The other they believe is the syndrome described above in which the most prominent features are emaciation and xerophthalmia. Scurvy, pellagra and rickets they believe can be accounted for by errors in the diet without assuming a protective substance for each of them.

There is evidence of a growing reaction against the acceptance of the vitamin deficiency hypothesis to account for all manner of disease syndromes. In the case of pellagra the theory of a possible infection factor continually reasserts itself.³ But particularly in the case of scurvy has the vitamin hypothesis encountered setbacks in recent critical investigations. McCollum has opposed this explanation of the etiology of the experimental scorbutus in the guinea-pig, the classic laboratory subject for experimentation in this field. And recently Hess,⁴ who has long and vigorously maintained that pasteurized milk brings about infantile scurvy in some cases unless an antiscorbutic food is included in the dietary,⁵ has ventured the statement that this is not a simple dietary disease. This point of view is developed somewhat as follows: In infantile scurvy the diet is at fault, says Hess, in allowing the intestinal bacteria to elaborate toxins. It is doubtful whether the toxin is always the same, and therefore whether, from a strictly etiologic standpoint, this disorder should be regarded as an entity. Infantile scurvy is an intestinal intoxication or an auto-intoxication due to the overgrowth of harmful bacteria in the intestine. It is the product of an unbalanced flora that is no longer controlled by a proper dietary.

Oliguria is a common symptom of scurvy. The mild therapeutic effect of citric acid may be ascribed, according to Hess, partly to its diuretic properties. Orange juice also was found to bring about marked diuresis. One of the striking and important symptoms of scurvy, Hess adds, is a susceptibility to infection (furunculosis, nasal diphtheria, "grip," etc.). Some

1. Bloch, C. E.: Carbohydrate Starvation in Infants, *Ugesk. f. Laeger*, 1917, **79**, 279; abstr., *THE JOURNAL A. M. A.*, May 12, 1917, p. 1444; Eye Diseases and Other Disturbances in Infants from Deficiency in Fat in the Food, *Ugesk. f. Laeger*, 1917, **79**, 349; abstr., May 19, 1917, p. 1516. Monrad, S.: Alimentary Gastro-Enteritis and Xerophthalmia in Infants, *Ugesk. f. Laeger*, 1917, **79**, 1177; abstr., Sept. 29, 1917, p. 1122. Rønne, H.: Carbohydrate Dyspepsia and Xerophthalmia, *Ugesk. f. Laeger*, 1917, **79**, 1488; abstr., Dec. 1, 1917, p. 1988.

2. McCollum, E. V., and Simmonds, N.: A Biological Analysis of Pellagra-Producing Diets, II, The Minimum Requirements of the Two Unidentified Dietary Factors for Maintenance as Contrasted with Growth, *Jour. Biol. Chem.*, 1917, **32**, 181.

3. Siler, J. F.; Garrison, P. E., and MacNeal, W. J.: The Relation of Pellagra to Location of Domicile in Inman Mills, Inman, S. C., *Arch. Int. Med.*, October, 1917, p. 521.

4. Hess, A. F.: Infantile Scurvy, V, A Study of Its Pathogenesis, *Am. Jour. Dis. Child.*, November, 1917, p. 337.

5. Hess, A. F.: Subacute and Latent Infantile Scurvy, *THE JOURNAL A. M. A.*, Jan. 27, 1917, p. 235.

hemorrhages are due to this secondary infection, and are to be regarded not as scorbutic, but rather as focal complications. Other hemorrhages are truly scorbutic. Scurvy, however, is essentially a disorder characterized by malnutrition and not by hemorrhage, taking months to develop and, from a clinical point of view, frequently latent or subacute.

Where is the much abused pasteurized milk left in this analysis? According to Hess, faulty diet is only one of several factors in the pathogenesis of infantile scurvy. Pasteurized milk, he states, was found to be a contributing cause if it was not fresh — if given from twenty-four to forty-eight hours after pasteurization. From this point of view, he argues, milk pasteurized in the city is preferable to milk pasteurized at the creamery, which reaches the consumer much longer after the heating process. Aging seems to play a greater part in the production of scurvy than heating, whether the milk was pasteurized or raised to the boiling point. It was found that even raw milk on aging loses its antiscorbutic properties.

One may well ask, in the light of what is now being written, whether scurvy is, after all, a distinct entity. Where vague dietary factors and equally indefinable bacterial perturbations in the alimentary tract vie with each other in the genesis of a syndrome, the open mind represents a safe attitude until more definite conclusions can be agreed on.

TRINITROTOLUENE (T. N. T.) POISONING AMONG MUNITION WORKERS

War is a grim teacher; and he must be unobservant, indeed, who fails to note the numerous facts of profound scientific importance which its concomitants and consequences have instilled into the mind. This is true in the domain of disease quite as well as in other fields in which science holds sway. For the physician, gaseous chlorin had only the remotest interest at the period when the war broke out. Today poisoning with the gases used like chlorin in warfare offers a serious problem to those entrusted with the management of "gassed" victims.

Not only the actual performances on the field of battle but also the diverse preparatory processes that make possible warfare of the ultramodern sort harbor hitherto unsuspected or underestimated menaces to human health. To take proper cognizance of them means not only to prolong life and alleviate suffering in hundreds of instances, but also to promote efficiency in preparation for the strife by suitable prophylactic or other sanitary measures. Munition workers have come to be a most important element in the struggle to win. Their health has been a source of solicitude in all of the countries concerned; and in the United States, where the difficulties to be encountered are somewhat more recent, we must try earnestly to profit

by the experience of those who entered the conflict earlier. Today the possible necessity of protective measures against exposure to lead, tetrachlorethane, nitrous fumes, trinitrotoluene, tetryl (tetranitromethylanilin), fulminate of mercury and certain lubricating and cooling fluids (petroleum products) used with metal products has emerged into distinct prominence.

Early in the war we called attention¹ to the serious and novel danger attending the use of tetrachlorethane as an ingredient of the varnish used to cover the wings of aeroplanes. At least seventy cases of jaundice with several deaths were reported in Great Britain before a substitute for this solvent was introduced into use. The history of the experience with the solvents or "dopes" used in aircraft manufacture has been related by Dr. Alice Hamilton² in this issue of *THE JOURNAL*. A new device calling for new modes of production under great stress has suddenly brought to light novel industrial dangers. Far more conspicuous is the problem of poisoning with trinitrotoluene — the T. N. T. of the army and navy vocabulary — which has likewise attained an enormous importance in munitions manufacture.

One commentator has remarked that trinitrotoluene shows itself a splendid antagonist in the resourcefulness of its attack and the variety of symptoms produced. A cardinal symptom is toxic jaundice, which may appear quite suddenly in munition workers or may show such premonitory symptoms as drowsiness, dizziness, depression and dark urine. Dermatitis due to the local action of the explosive sometimes occurs. A toxic gastritis is a far more important symptom. This gastric catarrh makes up part of the so-called minor illness attributable to trinitrotoluene. A discussion of this important subject before the Sections of Medicine, Pathology and Epidemiology of the Royal Society of Medicine in London³ brought out the fact that the other minor illnesses due to trinitrotoluene are probably thirty times more frequent than jaundice; and as many thousands of workers are employed in the handling of trinitrotoluene, the problems of its toxic effects are of the greatest importance in preventive medicine and the production of munitions for the successful prosecution of the war.

Since trinitrotoluene liberates fumes at a temperature as low as 32 C. (89.6 F.), it has been argued that the poison enters the body by inhalation of nitrous fumes, on the circumstantial evidence that the incidence of its toxic effects varies with the ventilation of the factories. When the circulation of air is defective, and fumes are given off by molten trinitrotoluene, the toxic effects become more frequent, whereas good ventila-

1. Tetrachlorethane, Current Comment, *THE JOURNAL A. M. A.*, Oct. 30, 1915, p. 1561.

2. Hamilton, Alice: Industrial Poisoning in Aircraft Manufacture, *THE JOURNAL A. M. A.*, this issue, p. 2037.

3. The Origin, Symptoms, Pathology, Treatment and Prophylaxis of Toxic Jaundice Observed in Munition Workers, Being a Discussion by the Sections of Medicine, Pathology and Epidemiology of the Royal Society of Medicine (January, 1917), London, Longmans, Green & Co.

tion is accompanied by freedom from illness. Moore's recent analytic and experimental investigations appear to prove that the skin is the main channel of absorption of trinitrotoluene, and he insists that inhalation of its fumes or of its dust does not play any part. There is some evidence that an oily condition of the hands, such as may result from handling silk bags saturated with petrolatum, favors absorption. Personal susceptibility has some influence in determining the incidence of symptoms, and whether they appear after a short or after a considerable period of work. This is well shown in the case of dermatitis. But the amount of the exposure, or in other words the dose of the poison, is the more important factor in producing the toxic effects.

Surgeon-General Rolleston³ has pointed out that the pathologic lesion of the liver found associated with the toxic jaundice of munitions workers is the same as that long familiar as acute yellow atrophy. The process is one of degeneration and necrosis of the liver cells, associated with infiltration and subsequent fibrosis resembling ordinary portal cirrhosis. The incidence of the disease can be overcome not by one precaution alone, but by the combination of several, of which alternation of employment, frequent periodic medical examination, ventilation, and clean working are the chief. Rolleston has thus summarized the prophylaxis of trinitrotoluene poisoning, of which cases are already being reported in this country:⁴ In the first place, the absorption of the poison should be prevented by minimizing the opportunities of contact between the skin and trinitrotoluene. Every care must be taken to avoid spilling of the powder on the tables, floors, and the outsides of the shells and bombs. The hands should be kept clean, and freed from adherent trinitrotoluene by a solvent, such as acetone. Similarly, the hair and the underclothing must be kept free from the powder. Periodic alternation of shifts, so as to reduce the exposure to the poison, and prompt removal when toxic symptoms threaten, are essential. Good ventilation, substantial meals, and exercise are important to maintain a good standard of health and to keep the bodily resistance high. The application of prophylactic measures of this order has already resulted most satisfactorily in the munition works of the British Admiralty, where thousands of employees are involved.

The manufacture of trinitrotoluene in this country is mainly confined to a few firms, so that effective supervision can be planned. The loading of shells, on the other hand, is likely to be carried on by any manufacturer possessing the requisite facilities, which are comparatively simple. In a paper on the safe handling of trinitrotoluene, read before the Section

on Industrial Hygiene of the American Public Health Service, Surgeon Schereschewsky of the U. S. Public Health Service pointed out that the number of workers involved in loading operations is likely to be much greater than that concerned in the manufacture of this substance. Besides this, he added, long contact with the production of other poisonous nitrated benzene products should have given manufacturers of trinitrotoluene the requisite experience to enable them to handle the manufacture of this substance with safety to the workers concerned. In addition to this, in the manufacture of trinitrotoluene, except at the final sieving and packing operations, the substance is handled either in closed containers or in a moist condition, under which circumstances the risk of poisoning is greatly reduced. In loading operations, on the other hand, there is constant opportunity for nearly every one connected with such work to become the subject of chronic poisoning through either the fumes or the dust of this substance. Valuable practical points have been outlined by Schereschewsky⁵ in a recent number of *Public Health Reports* which should be in the hands of every one interested.

CONDITIONS AFFECTING THE FORMATION OF RED BLOOD CORPUSCLES

The normal response of the organism to a loss of red blood corpuscles, such as occurs through hemorrhage, consists in an increased activity of the blood-forming cells of the red bone marrow. New erythrocytes are formed to replace those of which the circulation has been deprived. This corrective mechanism, if it may so be termed, is the wholesome device whereby a harmful diminution in oxygen-carrying capacity of blood is prevented and the necessary factors for proper tissue respiration are restored. Heretofore it has not always been easy to follow the course of a regeneration of red corpuscles or to investigate the process at the seat of their formation, for, as Starling⁶ has expressed it, in the confused medley of colorless cells which exist in the bone marrow and are precursors of all the varied corpuscles found in the blood, it is difficult to be certain of the identity of the colorless erythroblasts and to distinguish them from the smaller colorless cells engaged in the bone formation or in the production of leukocytes.

More recently a helpful new method of following the hematopoietic activities of the bone marrow has been devised by the study of the so-called reticulated corpuscles in the blood. When fresh, unfixed blood is treated with solutions of various dyes, such as brilliant cresyl blue, polychrome methylene blue or neutral red, a remarkable otherwise invisible structure is detectable. In suitable prepared specimens a granulo-

4. Martland, H. S.: Trinitrotoluene Poisoning, *THE JOURNAL A. M. A.*, March 17, 1917, p. 835. Hamilton, Alice: Industrial Poisons Encountered in the Manufacture of Explosives, *ibid.*, May 19, 1917, p. 1445; Trinitrotoluene Poisoning, *Med. and Surg.*, 1917, **1**, 761.

5. Schereschewsky, J. W.: Trinitrotoluol: Practical Points in Its Safe Handling, *Pub. Health Rep.*, 1917, **32**, 1919.

6. Starling, E. H.: *Human Physiology*, 1915, p. 834.

filamentous or reticulofilamentous substance appears in the form of coarse granular particles which are sometimes discrete, but more often occur in threads which are woven into skeins or wreaths of great complexity and fill a considerable portion of the cells. According to Vogel and McCurdy,⁷ in the blood of infants these reticulations are found in from 5 to 10 per cent. of the erythrocytes, and in normal adult blood in from 0.5 to 2 per cent. In severe anemias, however, their number is much increased, running as high as 18 or 20 per cent.; while in hemolytic jaundice, which is the condition par excellence for their prevalence, they may occur in still greater proportions. Vogel and McCurdy believe that the filamentous substance is not a preformed structure, but is a precipitation product of the stain. They regard it as an evidence of youth in the cells and not of degeneration. Vogel and McCurdy thus present the significance of the reticulated cells: In conditions in which a severe drain on the erythrocytes is being sustained by a well functioning bone marrow, large numbers of reticulated cells are found; whereas in aplastic cases they may be diminished almost to the point of absence; that is, in a manner somewhat comparable to the behavior of the erythroblasts, the reticulated cells afford a direct insight into the hematopoietic activities of the bone marrow. For clinical purposes they form a more convenient measure of this function than do the nucleated cells, as their percentage relations to the erythrocytes can be more easily and accurately determined, and their enumeration is to be urged as a part of the study of the blood in all cases of severe anemia.

By enumeration of the reticulated cells as well as by various older modes of investigation, the stimulating effect of loss of blood on the regeneration of blood cells has been put beyond question. Indeed, it appears that the bone marrow functions constantly in supplying new red corpuscles to replace those lost daily in the process of normal blood destruction. How shall we picture the functioning of the active marrow under conditions in which a need of erythrocytes is not imperative, that is, when there is a plethora of them? This is precisely the situation after the transfusion of blood.

Experiments have recently been conducted in the laboratories of the Rockefeller Institute for Medical Research by Robertson⁸ to determine whether a diminished activity of the bone marrow can be brought about in animals by plethora produced by repeated small transfusions of blood. Counts of the number of reticulated red cells in the circulating blood were made during the course of the experiments as an index to changes in the activity of the bone marrow. With the development of plethora, the number of

reticulated cells in the blood decreased. In the majority of the plethoric animals, this diminution was extreme, and in some instances, reticulated cells practically disappeared from the blood. A comparison of the red bone marrow of these animals with that of normal controls revealed a marked reduction in the content of reticulated cells. After a number of transfusions, there occurred in some of the plethoric rabbits a sudden and marked drop in hemoglobin. The hemoglobin continued to fall until a severe grade of anemia was reached. This was followed by a striking rise in color index. During regeneration the reticulated cells were enormously increased in number.

As Robertson notes, these facts taken together show that the bone marrow is markedly influenced by plethora. There is a very practical application of the findings to the management of certain cases in which transfusion is currently employed. It has been stated that greater judgment is needed in determining the amount of blood to be transfused. Thus Vogel and McCurdy believe it quite possible that too large an amount of transferred blood may be injurious in pernicious anemia, in which transfusion is a valuable form of palliative treatment. The experience of Robertson may account for the diminished bone marrow activity which sometimes occurs after transfusion. In such cases, he explains, there is a marked drop in the number of reticulated cells and other evidence of bone marrow depression; the patient shows no benefit from transfusion, or may grow rapidly worse. The cause of this depression is best explained on the basis that in severe instances of the disease, when exhaustion of the bone marrow is imminent, the stimulus of the anemia is only just sufficient to keep the marrow functioning. A sudden lowering of this stimulus is brought about by the introduction of a large quantity of blood into the circulation, and the result is a fall in the activity of the bone marrow. It follows from this that in pernicious anemia with a feebly reacting bone marrow as indicated by the number of reticulated red cells, small transfusions are preferable to large ones.

Sanitary Waste Disposal Systems for Unsewered Towns and Villages.—Public Health Bulletin 89 of the Public Health Service concerns a sanitary privy system for unsewered towns and villages, and gives details for the construction of sanitary privies which may be applied to existing buildings. A number of towns in various states, particularly in the South, not having sewerage systems, have adopted the sanitary privy system as described in the bulletin. Among them is Tuscaloosa, Ala., which passed an ordinance providing for the installation of this system and regulations for effectively carrying out this method of waste disposal. The ordinance in Tuscaloosa was backed by strong public sentiment and was rigidly enforced. Prior to the installation, there were 1,158 open, insanitary privies. As an indication of the effect of this sanitary measure, it is shown that typhoid fever was reduced from 190 cases and 17 deaths in 1915, the year before the sanitary work was done, to 14 cases with 1 death for 1916. Of the cases occurring in 1916, six gave histories showing that the infection was contracted outside of the city.

7. Vogel, A. M., and McCurdy, V. F.: Blood Transfusion and Regeneration in Pernicious Anemia, *Arch. Int. Med.*, December, 1913, p. 707.

8. Robertson, O. H.: The Effects of Experimental Plethora on Blood Production, *Jour. Exper. Med.*, 1917, **26**, 221.

Current Comment

THE SOURCE OF ENERGY IN THE BEATING HEART

It is now generally accepted that although muscular work can probably be performed at the expense of any of the foodstuffs or the three proximate classes of constituents of the body, carbohydrate is the immediate or most readily available source of muscular energy. The respiratory quotient, or ratio CO_2/O_2 , would be equal to unity if the entire requirement for energy were satisfied by the oxidation of carbohydrate; that is, the output of carbon dioxide formed would be exactly equal in volume to the oxygen required. As a matter of fact, Benedict and Cathcart¹ found in their extensive studies of muscular work that there is almost always a rise in the respiratory quotient during work. After the cessation of the exercise, the respiratory quotient sinks again. During a "century run" on a bicycle, the respiratory quotient remained at about 0.9 throughout the experiment, indicating that the body's glycogen was being used in goodly measure. An interesting confirmation, so to speak, has been furnished in a quite different manner by Snyder,² who has accurately measured the average amount of heat liberated per beat and gram of tissue by the ventricle of surviving hearts. He has calculated the quantity of glucose required to yield the measured calories, and finds it to be essentially equivalent to the amount demanded by the corresponding carbon dioxide production of the beating heart as well as to the amount found by Clark³ to disappear in contracting hearts. Therefore, Snyder argues, glucose or some carbohydrate of equal heat of combustion is the presumable source of the heat liberated by the beating heart.

PHYSICAL RECONSTRUCTION

In this country prior to the war there were thousands of physically handicapped men who through lack of training were unable to make a living. Unfortunately we have been as prodigal of human brain and brawn as of money and material, and in the years past we have made no systematic attempt at human salvage. The terrible ravages of this war in men and materials acutely emphasize the importance of the work of physical reconstruction and reeducation in its relation to world economy. The time has arrived when conservation has become acutely necessary, conservation not only of material but also of men, and not only of men but also of human energy. The time has passed when we can afford to discard as derelicts those whose capacities do not measure up to our standard of efficiency. Our allies unfortunately "had no precedents to guide" in the care of their injured soldiers. The lessons learned from the experience of all the warring nations are available. Though meager, as

compared with the complexity of the problem, these lessons point with precision to one necessity—military control. From every hand comes the advice to hold the soldier until he is prepared to return to work in civil life. Division of duties and authority has in the countries of our allies resulted in discontent and unsatisfactory conditions. This we can avoid because there is yet time for us to evolve a system that will place the responsibility of action where it rightly belongs. Reconstruction is both physical and mental. A large and important phase belongs in the domain of surgery; however, readjustment is not always accomplished by an operation; it is found equally as important that vocational training should be carried on in the hospitals, not only on account of its educational but also because of its therapeutic value. Occupation speeds recovery, idleness retards it. The problem, after all, is to determine the best means to give the man an opportunity, in spite of his disability, to earn a livelihood. The decision of this question should rest with the department of the government charged with the responsibility of the physical care of the soldiers, the department which opens the gate for his entrance into the Army, follows him down that dangerous path of duty, works to restore him when incapacitated, and studies under the most intimate associations his physical and mental abilities—the Medical Department of the Army.

MUSCULAR WORK AND THE BLOOD

At a time when millions of persons are applying their energies to a degree that the world has probably never known before, it is important to understand thoroughly the physiology of muscular exercise. It has long been known that changes occur in the blood as the result of exercise. Muscular work, whether moderate or severe, produces a rise of blood pressure and an acceleration of the pulse. There are alterations also in the composition of the blood. The number of red corpuscles is noticeably increased; and this result appears on first consideration as a most beneficent phenomenon whereby a greater oxygen-carrying capacity is imparted to the circulating fluid at a time when the demand for oxygen in tissue respiration is decidedly augmented. The explanation of this enrichment of the blood in red corpuscles as an incident of muscular exercise has not been uniform. Some authors¹ have explained their results on the basis that there are masses of corpuscles stored away in certain organs that may be liberated in time of need, while Lamson² believes that the number of corpuscles is altered by a splitting of old corpuscles or a production of new ones, as well as by storage in the liver. More recently, Scott³ of the University of Minnesota has come to the conclusion that the capillaries of special organs do not thus contain large numbers of corpuscles that may be liberated at any moment and pass into the general

1. Benedict, F. G., and Cathcart, E. P.: Muscular Work, Publications of the Carnegie Institution of Washington, 1914, No. 187.

2. Snyder, C. D.: On the Heat Liberated by the Beating Heart, *Am. Jour. Physiol.*, 1917, **44**, 421.

3. Clark, A. H.: *Jour. Exper. Med.*, 1916, **24**, 621.

1. Hawk, P. B.: *Am. Jour. Physiol.*, 1904, **10**, 384. Schneider and Havens: *Am. Jour. Physiol.*, 1915, **36**, 239, 380.

2. Lamson: *Jour. Pharmacol. and Exper. Therap.*, 1915, **7**, 169; 1916, **9**, 129.

3. Scott, F. H.: Factors Influencing the Interchange of Fluid Between Blood and Tissue Spaces, I, Blood Pressure, *Am. Jour. Physiol.*, 1917, **44**, 298; II, Muscular Activity, *ibid.*, 1917, **44**, 313.

circulation. He has compared the capillary blood of various organs with that in the larger blood vessels, and has always found them practically identical in hemoglobin content. Consequently, Scott argues, one may consider any alteration in the hemoglobin value or corpuscle mass found within a few minutes as due to the passage of fluid out of the blood to the tissues, or vice versa. Scott has demonstrated that the hemoglobin content of the blood is rapidly modified by any alteration in blood pressure, a rise of pressure leading to an increase of hemoglobin, and a fall to a decrease. These results can be explained only by the forcing of fluid by the increased pressure out of the blood tissue spaces, and the passage of fluid back from the tissue spaces to the blood when the pressure is lowered. In view of the fact that a rise in blood pressure invariably attends muscular work, the increment in corpuscles can thus be explained. Furthermore, there is an increase in the water content of muscle as a result of contraction, if the blood is circulating through it. Thus a passage of fluid from blood to muscles comes about, whereby the alterations in blood composition are further facilitated.

EXPERIMENTAL SCURVY—A HISTORICAL NOTE

The credit for demonstrating and describing the production, in animals, of a condition resembling scurvy in man is usually ascribed to Professor Holst and his co-workers in Christiania, Norway. In 1912, he published a report of his now classic experiments on the symptoms and pathologic lesions produced in guinea-pigs by means of a diet of cereal grains.¹ His observations have frequently been repeated, notably by Baumann and Howard, H. B. Lewis, Jackson and others in this country.² Hess³ has recently pointed out the little known fact that comparable findings of typical symptoms in guinea-pigs were reported much earlier by one of America's foremost comparative pathologists. In a bulletin on "Bacilli in Swine Disease," published by the Bureau of Animal Industry, 1895-1896, Theobald Smith says (p. 172): "When guinea-pigs are fed with cereals (it has been observed for some years in this laboratory), with bran and oats mixed, without any grass, clover or succulent vegetables, such as cabbage, a peculiar disease, chiefly recognizable by subcutaneous extravasation of blood, carries them off in from four to eight weeks." Thus another instance of keen scientific observation is added to the record of the discoverer of the transmission of infectious disease through the intermediation of insects, and the original observer of the fundamental phenomena of what is now termed anaphylaxis.

1. Holst, H., and Froelich, D.: *Ztschr. f. Hyg. u. Infektionskrankh.*, 1912, 72.

2. Baumann, Louis, and Howard, C. P.: *Am. Jour. Med. Sc.*, 1917, 153, 650. Jackson, Leila, and Moore, J. J.: *Jour. Infect. Dis.*, 1915, 19, 478. Jackson, Leila, and Moody, A. M.: *Ibid.*, 1916, 19, 511.

3. Hess, A. F.: *Infantile Scurvy, V, A Study of Its Pathogenesis*, *Am. Jour. Dis. Child*, November, 1917, p. 337.

Progress.—Progress is not an accident, not a thing within human control, but a beneficent necessity.—Herbert Spencer.

Medical Mobilization and the War

PHYSICIANS AND THE SELECTIVE SERVICE

THE JOURNAL has been flooded with inquiries as to whether a physician may apply for a commission in the Medical Reserve Corps after December 15. The questions arose from the general announcements in newspapers that, according to the Selective Service Regulations, no registrant might enlist voluntarily after that date. Section 151 of the new Regulations states:

"(c) Any registrant at any time, regardless of classification and order number, may be commissioned in the Army, Navy, or Marine Corps, or appointed an army field clerk, and thereafter, on presentation by the registrant to his Local Board of a certificate of his Commanding Officer stating that he has been so commissioned or appointed, such certificate shall be filed with the Questionnaire and the registrant shall be placed in Class V on the ground that he is in the military or naval service of the United States."

The effect of placing in Class V is to exempt from the draft. It is, of course, obvious that a physician who has received a commission in the Medical Reserve Corps is subject to the orders of the Surgeon-General and must accept active duty whenever he is ordered into service.

It is desirable from the standpoint of those physicians who are registered that they act promptly. If a physician is ordered into service by his draft board before receiving his commission, he must go to the cantonment with his quota and will be held there as a private until the commission and orders to active duty are received. In connection with the first call, many physicians were in this condition, and numerous letters have been received from physicians who were serving at privates' wages in the cantonments, awaiting action on applications for commissions made through the division commander of the Medical Department after the physicians arrived in camp. The same delay is likely to occur in the future, so it behooves those who desire commissions to act promptly. Application blanks and general information will be sent by THE JOURNAL on request, accompanied by a self-addressed stamped envelope.

DEPENDENCY

A great many physicians have written to THE JOURNAL asking whether the rules governing dependency would apply to physicians as well as to others registered under the Selective Service. According to the Selective Service Regulations, "it is not the intent of the law to deprive the dependents, whom the law and regulations are designed to protect, of a reasonably adequate support. No definite degree can be given to the meaning of the term 'reasonably adequate support' as used in the classification rules and schedule. The adjustment of these rules must be left to local boards." The local board must, of course, consider the physician in the same light as any other registered man. It cannot consider him as a commissioned officer until his application has been accepted and the commission has been issued to him.

AMERICAN RED CROSS IN FRANCE

The work of setting in motion the activities of the American Red Cross in France is described by Paul U. Kellogg in the *Survey*, Nov. 24, 1917. Paris is the center of the work, at which place the commissioner and a number of deputies arrived, June 12, 1917. This is a working organization to project among a friendly people the instruments through which the funds raised in the United States could be brought to bear wherever and in whatever ways they would count for the most. In January, 1918, or six months from the beginning, it is expected that about 1,000 persons will comprise the executive force. There is to be a string of warehouses along the front extending from Dunkirk to Dijon, with reserve warehouses back of them and in the devastated areas, floating warehouses in Belgium, ready for any advance in the lowlands, great storage centers in Paris, receiving houses at all ports of entry, and purchase and supply stations in Great Britain, Switzerland, France, Spain and Portugal, as well as in America. The distribution of hospital supplies has been coordinated in a single agency, reaching 3,617 hospitals in 1,356 towns. Plants for the manufacture of special medical supplies, bureaus for the exchange of surgical methods, and reserves to stand back of the medical department of the American Army are being built up by the military affairs department, which is also establishing a canteen system that eventually will reach 1,500,000 French soldiers every month.

The duties of the American Red Cross in France are set forth as follows: First, to serve the Army of the United States; second, to serve the sick and wounded of the allied armies, and third, to give such general assistance as it can to the French people.

FROM AN M. R. C. IN FRANCE

The following letter is from a major in the Medical Reserve Corps, U. S. Army, who has charge of one of the base hospitals in France. The letter was personal and not for publication, but some parts of it are so interesting that they are reproduced.

We are still in the same location "Somewhere in France," and continue to carry on in this large hospital with its continuously increasing amount of work. It is very gratifying to be able to report that our relationship with the good British medical officers and authorities continues to be most cordial, with surprisingly little friction.

We have now been here long enough to take stock of the attitude of the medical officers coming from civil life and of their adaptability to do military surgery. The very loyal support that the medical officers of this organization have given to us throughout our association has been extremely pleasing. One notices a striking contrast to the friction that sometimes one observes in organizations of a like character in civil life.

All of the officers are accepting the necessary military control and discipline, and are coordinating in an intelligent and most satisfactory manner. They all seem to be able to forget their individual desires and conveniences, and to make their own opinions subservient to the direction of the people in higher authority.

Judging from our experiences, I believe it can be said without fear of contradiction that the men in the Medical Reserve Corps are rendering a splendid service and showing a disposition to work in perfect harmony with the Army Medical Corps. Obviously, it is necessary to have the most perfect accord and cooperation, in order to secure the most adequate organization to carry on the medical and surgical work in this great conflict.

I feel that the attitude and adaptability of the Reserve Corps officers will make the correlation relatively simple. Each and every one of the men in this organization has learned the necessity of military rules and regulations very rapidly, and I am sure that our good commanding officer, Col. C. C. Collins, has nothing of which to complain in this direction. Possibly some of this is due to his thoughtful consideration and diplomatic method of dealing with the situation. Throughout the whole organization there seems to be a realizing sense that we have a hard job to do and that it must be done with cheerfulness and cooperation.

Naturally, it is every good American's desire to go behind his own lines when the occasion arises for this necessity. At present it would appear that this eventually will probably occur.

I wish it were permissible to tell you how many patients we have treated at this hospital during the month of October. I can assure you that the number was exceedingly large. The medical personnel of this organization is having an opportunity for a wide and unusual experience in war surgery, and is responding to it in a most satisfactory manner, showing better surgical judgment each day.

We have now been here nearly six months, and I think our experience justifies us in stating that there is very little in war surgery that is not covered by the general surgical principles as laid down in civil life. One of course has to deal with pathologic conditions a little more complicated, because of the more serious and virulent types of infection with which we are brought in contact. There is a certain psychology in war time, I think, which makes all men somewhat more radical; and this applies to the medical department as well as to other branches of the service. In this connection I find it is necessary to exercise a little control and restraining influence in the direction of conservatism regarding the saving of limbs and the preservation of tissues that are sometimes sacrificed by the too extensive excision of infected areas.

I think we are all agreed that the time that elapses between the infliction of the wound and the first adequate surgical treatment is an all-important factor. I should like to lay emphatic stress on this essential element of time in the treatment of the wounded, believing that in the organization of the surgical and medical work for the American Army this

should be one of the fundamental considerations; and to this end, men familiar with large transportation problems should be consulted in developing a system for rapidly conveying the wounded to a place where adequate surgical treatment can be instituted.

I am very much impressed with the French so-called "perpendicular" plan of organization. This means that the wounded man is under the direction of the same organization from the time he is wounded until he reaches the ultimate base in the center of the country. This permits a single and unified method of treatment throughout his illness and convalescence.

I am convinced that any method which does not allow for a cooperative control of the patient as he passes from one hospital to another will not give the best results.

THE JOURNALS continue to come through more promptly than any other mail we receive. The reason for this, I do not know.

NEWS OF THE CANTONMENTS

Thirty-First Division, Camp Wheeler, Macon, Ga.

MEASLES AND PNEUMONIA

The measles epidemic is practically over, less than 100 of these patients now being in the hospital. The number of new cases of pneumonia grows somewhat less, but is still uncomfortably high. The mortality rate has also increased to about 18 per cent. It is believed that many more Type I and II cases are being found than formerly. The precautions against pneumonia in the camp are now about the same as against any other infectious disease. They include compulsory airing and sunning of tents; use of spit boxes with sand wet with cresol; washing of all tent floors with cresol solution daily; prohibiting spitting except in spit boxes, and isolation of all convalescent patients. Heavy clothing and three blankets have been supplied in all cases. Major Zinsser is making a careful epidemiologic study of the disease. While the partial grouping of cases points to infection, there can be no doubt that poor physique and low vitality are important predisposing factors.

ONE HUNDRED AND SIXTH SANITARY TRAIN

It is believed that the One Hundred and Sixth Sanitary Train is more nearly ready to take the field than any other organization in the division.

Captain Cupper of the British infantry, detailed as instructor in bombing in the division, gave a most interesting talk to the officers of the Medical Corps at their meeting last Monday afternoon. The captain has promised to lecture to the noncommissioned officers of the train at an early date, giving them the value of his long experience at the front.

New sanitary measures have been instituted tending toward the stamping out of the pneumonia epidemic. Not more than five men are allowed in each tent. Tents are mopped out with cresol solution each morning. Two sputum boxes to each tent and sputum boxes in each company street containing cresol solution are required. Guards are maintained at all times to see that tent doors are open and that these sanitary measures are enforced.

The ill from the sanitary train are handled similarly to the ill of a regimental infirmary. Each field hospital handles the dispensary one month at a time. Field Hospital No. 121 was relieved by Field Hospital No. 122, December 1, and will care for the ill for a period of one month.

We still have hopes of enjoying some day a hot bath, when the intricate heating system is finally installed.

BASE HOSPITAL NOTES

The roentgen-ray department is having a series of unusually interesting cases.

Frames for field hospital tents have been made and installed, and board walks from the corridors and tents are being made.

Major Hans Zinsser of the Surgeon-General's Office is here doing special epidemiologic work with reference to pneumonia and meningitis. He is charting the camp and studying the situation from the standpoint of contact infection. He instituted a campaign against the careless disposal of sputum. Only five men are allowed to occupy each tent among the enlisted men, by direction of the Surgeon-General.

Lectures are delivered each night to the staff by one of the chiefs of service. These are proving both interesting and instructive. There is in process of evolution a recreation room for the use of the enlisted men.

Thirty-Fifth Division, Camp Doniphan, Fort Sill, Okla.

DISEASE INCIDENCE

Rain and colder weather materially increased the number of cases showing involvement of the respiratory tract, and "colds" are common. For the week ending November 30, the number of cases of pneumonia had increased to forty-nine. Quite a number of these cases are developing as a complication to measles, of which there are at present eighty-three cases in camp. There were five deaths during the week, four following pneumonia and one due to tuberculous meningitis. The necropsy in the cases of pneumonia following measles has quite uniformly shown the streptococcus. In all of these cases a marked fibropurulent pericarditis with effusion was found. Thus far, no new cases of cerebrospinal meningitis have developed, and the camp has only two of these cases to record at present. Prompt isolation of all contacts, and energetic treatment of these contacts with dichloramin-T in an oily medium, as furnished by the office of the Surgeon-General, appear to control the situation satisfactorily. The use of a plain oil spray seems to give equally good results, and has the advantage that it can be more easily applied, since it is less viscid than the oil to which dichloramin-T has been added. The oil spray is used every two hours in a de Vilbiss atomizer.

The transfer of patients into the new base hospital is now well under way. Practically all of the medical patients have already been transferred.

As soon as the operating rooms and the rooms for the specialists and the laboratories have been completed, the transfer of all patients from the post hospital, where they have until now been accommodated, will be made. It is expected that this will be effected during the ensuing week.

PERSONAL

Lieut. John A. Walker, M. R. C., of the base hospital, has been ordered to Oklahoma City, where he will be given a special course in orthopedic surgery.

Eightieth Division, Camp Lee, Petersburg, Va.

THE SANITARY TRAIN

Work in the sanitary train is progressing satisfactorily. The field hospital section is under the direction of Capt. Elliott B. Edie, M. R. C., and the ambulance section under the direction of Capt. Burr Ferguson, M. R. C. The regular course of instruction for medical officers and enlisted men is being carried on daily. The first hike was made, December 4, when the entire train marched to beyond Prince George Court House, where dinner was cooked on field ranges. Lieutenant-Colonel Rhoads, the division surgeon, visited the officers and men while at dinner and expressed himself as satisfied with the first practice march. There were several officers and men with sore feet, and Colonel Rhodes spoke to the officers and men on the care of the feet while on the march.

The sanitary train has an excellent football team, and has played a number of games with other organization teams at Camp Lee, and one outside game. Lieut. Joseph M. Barsky, M. R. C., Three Hundred and Twentieth Ambulance Company, and Lieut. James W. McPheeters, M. R. C., Three Hundred and Eighteenth Ambulance Company, play.

The Richmond Red Cross recently presented twelve standard ambulances and three motor trucks to the Three Hundred and Nineteenth Ambulance Company, and other equipment valued at \$40,000. This company was organized in Richmond, and is under the command of Capt. Charles Howard Lewis, M. R. C., of that city.

December 4, Lieut. O. W. Budd of the Three Hundred and Twentieth Infantry gave an illustrated talk to the officers of the sanitary train on ambulance work in France. Lieutenant Budd has served with the American Ambulance in France and gave the officers a number of practical pointers. Lieutenant Budd told the officers that it was necessary for the ambulances to have wooden sides instead of canvas, and that ambulances in France have been modified to allow stretchers to be easily pushed in instead of requiring the use of a hook to hold the upper tier of stretchers. The lecture was most practical, and was appreciated by all the medical officers.

THE WORK OF SPECIAL NEUROPSYCHIATRIC BOARDS

The neuropsychiatric board under the direction of Major James R. Moore, M. R. C., had 179 cases referred to it during the months of September, October and November. Among these were found 45 cases of nervous disease, 10 psycho-

neruroses, 22 cases of alcoholism, 6 drug addicts and 33 mentally deficient. Eighty-four men were discharged on account of disability.

TUBERCULOSIS

The tuberculosis board, under the direction of Capt. George D. Hamlen, M. R. C., has begun a complete examination of the entire command. The men of the Three Hundred and Fifth Engineers have all been examined, and the number of active tuberculosis cases found approximates 1 per cent. Prior to the work of the board, 108 white and forty-seven colored men were rejected for active tuberculosis.

ORTHOPEDIC WORK

Capt. James T. Rugh, M. R. C., reported, December 4, to instruct regimental surgeons on the care of the feet and the prevention of orthopedic defects. At the regular weekly clinical meeting held at the base hospital, December 6, Captain Rugh gave a most instructive lecture on the anatomy and mechanism of the foot and the treatment of minor defects. The lecture was much appreciated by all the medical officers present.

GENERAL HEALTH CONDITIONS

During the past five week there have been 338 cases of measles and 421 cases of mumps, the majority of the cases being confined to one regiment. As a result of these diseases, the noneffective rate during this period has gradually increased from 1.2 per cent. to 3.8 per cent. Except among the colored troops, the venereal disease rate has been low; but over 90 per cent. of all the cases occurred prior to enlistment.

PERSONAL

Lieut. William J. Robbins, M. R. C., was thrown by a bucking bronco, November 25, and sustained a fracture of the neck of the femur.

Lieut. Romanus A. LaGrinder, S. C., N. A., medical supply officer, has been promoted to captain and ordered to Newport News, Va. His place has been taken by Capt. Rush Cameron, S. C., N. A.

Capt. E. J. Tucker, S. C., N. A., has been at camp for two weeks to study the water supply and sewage disposal system.

Capt. Lauren Thomas, M. R. C., has been ordered to his home.

Major Linsly R. Williams, M. R. C., delivered the Harvey Lecture at the Academy of Medicine in New York, November 24. The subject of the lecture was "Medical Problems of the War."

Lieut. Benjamin C. Cliff, M. R. C., was married, December 2, at Richmond to Miss Earline Eugenia Hart.

Major Henry P. Carter, M. C., U. S. Army, divisional sanitary inspector, has been transferred to Camp Logan, Texas. Major Carter left Camp Lee, December 4, and will be much missed by the medical officers of the division.

Eighty-Fourth Division, Camp Zachary Taylor, Louisville, Ky.

Louisville has felt wintry blasts since the night of the 6th, when 17 inches of snow fell, burying the camp in a white blanket. Most of the building roofs have not been equal to the strain and but few have escaped leaks which have been very inconveniencing to say the least. The barracks have been kept warm by the large drum stoves by which they are heated, but the patients in the base hospital have in many wards suffered keenly from the cold. For some reason the steam pipes leading to the various units, not connected by corridors, are carried on stilts 8 or 10 feet in the air, and with no return line for water of condensation and zero weather, those buildings farthest away from the power plant, several city blocks, are practically without any heat.

Snow has drifted through cracks around the ventilators in barracks and canteens, and caused considerable damage when it melted. A stock of cigarettes in the canteen of the Three Hundred and Thirty-Fourth Infantry, worth several hundred dollars, was ruined.

Railroads and city cars refused to accept shipments of milk for the camp on account of the snow blockades, and Lieutenant Shaw, adjutant at the base hospital, had to requisition four Quartermaster Department four-mule teams to haul 40 gallons of milk from the city to the patients.

The failure of the city railway to clear away the snow from the tracks leading to the camp and necessary discontinuance of car service caused great inconvenience of the thousands of soldiers on leave during the afternoons of last

Saturday and Sunday. Jitney busses charged \$1 and \$2 for the trip from Louisville to the camp.

Four hundred picked men from various organizations have been transferred to the Aviation Camp at San Antonio, Texas.

Dr. Clarence H. Ketterer of Butler, Pa., has been detailed to Camp Zachary Taylor as a junior member of the physical examining board and medical member of the board, Aviation Section of the Signal Corps, and has reported to division surgeon Col. John H. Allen. From this detail it is believed that applicants for the officers' training school for aviators are to be examined here. Authority has been received to accept 200 applicants possessing certain qualifications as students in the Aviation Corps. Applicants for this service are more rigidly examined than for any other branch. A revolving chair has already been received and is placed in the head surgery section of the base hospital.

War Department orders have been issued prohibiting the publication of rosters of officers or men during the period of the present emergency.

Six hundred and sixty-two soldiers have been discharged by the special tuberculosis board, of which Captain Lichty of Cleveland is president. A little over half of the division has been examined by the board.

NEW SANITARY REGULATIONS

Major Poust, the division sanitary officer, as the result of recent inspections of the camp, has issued a new form of instructions to improve sanitary conditions at the cantonment. The bakers are required to manicure their nails carefully each day, and before they go on duty there will be an inspection of hands by commissioned officers.

In regard to sleeping arrangements in the barracks, the beds are to be stationed so that every other man will sleep with his feet opposite the head of the man alongside. This will allow a space of 5 feet between heads and greatly reduce the chances of the spread of respiratory diseases. A certain number of windows in every barrack are to be kept open during the night, and a commissioned officer will be required to make inspections of the barracks twice each night to see that the order is being enforced.

SCHOOL FOR HYGIENE AND SANITATION

The school for hygiene and sanitation has been established, the course begining December 3. A medical officer has been appointed commandant of the school. Unlike most of the divisional schools, only commissioned officers will be required to take the course. The instruction will consist of sanitation in garrison, camp, on the march and in campaign.

BASE HOSPITAL ACTIVITIES

There are 730 patients in the base hospital, between 450 and 500 being purely medical. New wards have been established, one for hookworm patients and one each for active and suspected tuberculosis patients. Specimens from each patient in the hospital have been examined for hookworm, and eighteen positive cases have been found. These men will be vigorously treated and reexamined before being discharged.

With the arrival of the last 35 per cent. of the draft, 42,000 men will be in the camp. The quarters are adequate to receive them, and there are plenty of clothes and food.

ILLNESS IN MEDICAL STAFF

One officer and one nurse were admitted to the hospital, December 2, with measles.

Eighty-Ninth Division, Camp Funston, Fort Riley, Kan.

Everything is running smoothly in the Eighty-Ninth Division. Transfers from one branch of the service to another have about been completed. This week the colored regiment of the division was taken over by the Ninety-Second Division. The total number of whites rejected to date is 615, colored 51, grand total 666. There are at present thirty-seven rejections pending final action. One hundred and thirty-seven of these rejections were for pulmonary tuberculosis. This list is not the list of the medical examiners alone, for many men have appeared for examination on their own behalf. Not long ago a general order was issued, granting each man the right of reexamination if he believed his case had not been given proper attention.

The detention camp, capacity 2,500 men, built half way between this camp and Fort Riley, is now in full operation. The need of such a camp in as large a command as this is apparent, when one learns that it cuts down the noneffective number by one third.

DISEASE CONDITIONS AMONG TROOPS
IN THE UNITED STATES

Extracts from Telegraphic Reports Received in the Office
of the Surgeon-General for the Week Ending
Nov. 30, 1917

- Total strength of troops in United States as reported.....1,051,424
Annual admission rate per 1000 (disease only)..... 1,423.6
Non-effective rate (all divisions) 37.4
- National Guard, strength (divisions in United States).... 400,115
Annual admission rate per 1000 all divisions (disease only) 1,448.6
Non-effective rate all divisions (all causes) 43.9
Divisions showing admission rate for disease higher than average:
Camps Bowie, Cody, Kearny, Wheeler, Doniphan, Shelby and Beauregard.
Divisions showing non-effective rate all causes higher than average:
Camps Bowie, Beauregard, Kearny, Shelby, Wheeler, Cody, MacArthur, and Sevier.
- National Army, strength (divisions in United States).....433,951
Admission rate per 1000 all divisions (disease only)..... 1,423
Non-effective rate all divisions (all camps)..... 32.5
- Venereal Disease:
Annual admission rate Regulars in United States 97.4
Annual admission rate National Guard (Divisions in U. S.) .. 100.7
Annual admission rate National Army (Divisions in U. S.) .. 104.3
- Number of Cases of Pneumonia 438
Highest number in any one division, Bowie (36th Div.)..... 166
Number of cases of meningitis 57
Highest number in any one division, Funston (89th Div.)... 12

6. NEW CASES OF SPECIAL DISEASES REPORTED DURING
THE WEEK ENDING NOV. 30, 1917

| Division | Pneumonia | Dysentery | Malaria | Venereal | Paratyphoid | Typhoid | Measles | Meningitis | Scarlet Fever | Strength of Command |
|---------------------|-----------|-----------|---------|----------|-------------|---------|---------|------------|---------------|---------------------|
| 27th, Wadsworth.. | 2 | ... | ... | 367 | ... | ... | ... | ... | ... | 31,725 |
| 28th, Hancock.... | ... | ... | ... | 36 | ... | 1 | ... | ... | ... | 28,671 |
| 29th, McClellan.... | 1 | ... | ... | 16 | ... | ... | 7 | 2 | 3 | 25,820 |
| 30th, Sevier..... | 68 | ... | ... | 12 | ... | ... | 344 | 3 | ... | 27,387 |
| 31st, Wheeler..... | 112 | ... | 2 | 26 | ... | ... | 103 | 2 | ... | 23,043 |
| 32d, MacArthur... | ... | ... | ... | 9 | ... | 5 | 83 | ... | ... | 26,791 |
| 33d, Logan..... | 17 | 1 | 2 | 87 | ... | ... | 9 | ... | ... | 32,883 |
| 34th, Cody..... | 5 | ... | ... | 15 | ... | ... | 254 | 1 | ... | 25,633 |
| 35th, Doniphan.... | 31 | ... | ... | 55 | ... | ... | 121 | 1 | 5 | 25,601 |
| 36th, Bowie..... | 166 | ... | 1 | 38 | ... | ... | 454 | 8 | ... | 25,566 |
| 37th, Sheridan.... | 3 | ... | ... | 10 | ... | ... | 68 | 3 | 1 | 24,167 |
| 38th, Shelby..... | 12 | ... | ... | 26 | ... | ... | 352 | 6 | ... | 28,823 |
| 39th, Beauregard.. | 16 | ... | 9 | 9 | ... | ... | 319 | 3 | ... | 23,214 |
| 40th, Kearny..... | 3 | ... | ... | 20 | ... | ... | 124 | 1 | ... | 24,440 |
| 41st, Mills..... | 11 | ... | ... | 49 | ... | ... | 61 | ... | 4 | 26,333 |
| 76th, Devens..... | ... | ... | ... | 23 | ... | ... | 5 | ... | ... | 27,794 |
| 77th, Upton..... | 2 | ... | ... | 23 | ... | ... | 5 | ... | ... | 24,646 |
| 78th, Dix..... | 3 | 1 | ... | 105 | 1 | ... | ... | ... | 1 | 20,311 |
| 79th, Meade..... | 5 | ... | ... | 3 | ... | ... | 27 | ... | ... | 32,864 |
| 80th, Lee..... | 10 | 1 | 1 | 244 | ... | ... | 101 | 2 | 2 | 35,141 |
| 81st, Jackson.... | 16 | 1 | ... | 106 | ... | ... | 145 | 7 | ... | 17,227 |
| 82d, Gordon..... | ... | ... | ... | 61 | ... | ... | 82 | ... | ... | 34,100 |
| 83d, Sherman.... | 5 | ... | ... | 22 | ... | ... | 6 | 1 | 2 | 32,803 |
| 84th, Taylor.... | 1 | ... | ... | 20 | ... | ... | 116 | ... | ... | 23,818 |
| 85th, Custer..... | ... | ... | ... | 7 | ... | ... | 32 | ... | 1 | 26,421 |
| 86th, Grant..... | 3 | ... | ... | 8 | ... | ... | 5 | ... | ... | 32,492 |
| 87th, Pike..... | 38 | 1 | 44 | 39 | ... | ... | 236 | ... | 66 | 25,326 |
| 88th, Dodge..... | 13 | ... | ... | 33 | ... | ... | 20 | ... | 4 | 18,211 |
| 89th, Funston.... | 10 | ... | ... | 14 | ... | ... | 189 | 12 | ... | 25,603 |
| 90th, Travis..... | 27 | ... | 1 | 150 | ... | ... | ... | ... | ... | 30,076 |
| 91st, Lewis..... | 14 | 1 | 2 | 33 | ... | ... | 61 | 5 | 4 | 37,105 |

7. ANNUAL RATE PER THOUSAND FOR SPECIAL DISEASES

| | Regulars, U. S. Army, in U. S. only, 1916 | Regulars in U. S., Week Ending Nov. 30, 1917 | National Guard, All Camps, Week Ending Nov. 30, 1917 | National Army, All Camps, Week Ending Nov. 30, 1917 | American Expedi- tionary Forces, Week Ending Nov. 30, 1917 |
|--------------------|--|---|---|--|---|
| Pneumonia..... | 2.59 | 9.3 | 36.5 | 17.6 | 14.2 |
| Dysentery..... | 3.97 | 0.0 | 0.1 | 0.5 | 0.4 |
| Malaria..... | 12.52 | 0.2 | 1.8 | 5.7 | 0.0 |
| Venereal..... | 91.00 | 97.4 | 100.7 | 104.3 | 75.8 |
| Paratyphoid..... | 0.31 | 0.0 | 0.0 | 0.1 | 0.0 |
| Typhoid..... | 0.21 | 0.2 | 0.7 | 0.0 | 0.0 |
| Measles..... | 20.29 | 24.0 | 299.5 | 123.4 | 60.3 |
| Meningitis..... | 0.29 | 0.2 | 3.8 | 3.2 | 3.8 |
| Scarlet fever..... | 0.59 | 5.0 | 1.6 | 9.5 | 3.0 |

Dec. 7, 1917

- National Guard, strength (divisions in United States).....399,262
Annual admission rate per 1,000 (all divisions, disease only) 1,847.5
Non-effective rate (all divisions, all causes) 45.8
Divisions showing admission rate for disease higher than average:
Camps Bowie, Cody, Kearny, Wheeler and Doniphan.

Divisions showing non-effective rate higher than average: Camps Bowie, Beauregard, Kearny, Shelby, Wheeler, Cody, MacArthur and Sevier.

National Army, strength (divisions in United States)437,414

Annual admission rate per 1,000 (all divisions, disease only) 1,774.8

Non-effective rate (all divisions, all causes) 36

Divisions showing admission rate for disease higher than average: Camps Travis, Funston, Jackson, Pike, Dodge, Dix and Zachary Taylor.

Divisions showing non-effective rate all causes higher than average: Camps Funston, Travis, Pike, Jackson, Zachary Taylor, Dodge, Lewis and Lee.

Veneral Disease:

Annual admission rate National Guard (divisions in U. S.)... 77.1

Annual admission rate National Army (divisions in U. S.) ... 80.1

National Guard Divisions having rate above average: Camps Hancock, Bowie, Logan, Doniphan and A. L. Mills.

National Army Divisions having rate above average: Camps Upton, Lee, Gordon, Jackson, Dodge and Dix.

Number of cases of pneumonia 845

Highest number in any one division (36th Division) 464

Number of cases of meningitis 77

Highest number in any one division (81st Division) 16

6. NEW CASES OF SPECIAL DISEASES REPORTED DURING THE WEEK ENDING DEC. 7, 1917

| Division | Pneumonia | Dysentery | Malaria | Veneral | Paratyphoid | Typhoid | Measles | Meningitis | Scarlet fever | Strength of Command |
|---------------------|-----------|-----------|---------|---------|-------------|---------|---------|------------|---------------|---------------------|
| 27th, Wadsworth.. | 3 | ... | ... | 22 | ... | ... | 19 | ... | ... | 31,665 |
| 28th, Hancock.... | 1 | ... | ... | 45 | ... | 1 | 1 | ... | ... | 28,575 |
| 29th, McClellan.... | 5 | ... | ... | 11 | ... | ... | 22 | ... | ... | 26,879 |
| 30th, Sevier..... | 3 | ... | 1 | 33 | ... | 1 | 184 | 1 | ... | 27,327 |
| 31st, Wheeler..... | 76 | 1 | 2 | 34 | ... | ... | 106 | 3 | ... | 23,355 |
| 32d, MacArthur.. | 2 | ... | ... | 22 | ... | 9 | 153 | ... | ... | 26,578 |
| 33d, Logan..... | 11 | ... | 1 | 32 | ... | ... | 33 | ... | ... | 33,630 |
| 34th, Cody..... | 17 | ... | ... | 10 | ... | ... | 341 | ... | ... | 23,521 |
| 35th, Doniphan... | 21 | ... | 1 | 58 | ... | ... | 285 | 2 | 2 | 25,601 |
| 36th, Bowie..... | 464 | ... | ... | 154 | ... | 2 | 844 | 15 | ... | 25,336 |
| 37th, Sheridan.... | 6 | ... | ... | 16 | ... | 6 | 56 | ... | 4 | 24,348 |
| 38th, Shelby..... | 30 | ... | 1 | 31 | ... | ... | 239 | 6 | ... | 27,233 |
| 39th, Beauregard.. | 5 | ... | 2 | 6 | ... | ... | 148 | 6 | ... | 23,196 |
| 40th, Kearny..... | 13 | ... | ... | 6 | ... | ... | 279 | 7 | ... | 24,354 |
| 41st, A. L. Mills.. | 18 | ... | ... | 62 | ... | ... | 116 | 1 | 1 | 25,564 |
| 76th, Devens..... | ... | ... | 1 | 34 | ... | ... | 13 | ... | ... | 27,752 |
| 77th, Upton..... | 2 | ... | ... | 40 | ... | ... | 18 | ... | ... | 25,287 |
| 78th, Dix..... | ... | ... | 1 | 109 | ... | 2 | 2 | ... | ... | 20,859 |
| 79th, Meade..... | 4 | ... | ... | 8 | ... | ... | 52 | ... | ... | 33,737 |
| 80th, Lee..... | 13 | ... | ... | 87 | ... | ... | 169 | 1 | 1 | 35,172 |
| 81st, Jackson.... | 41 | ... | ... | 98 | ... | ... | 138 | 16 | ... | 13,440 |
| 82d, Gordon..... | 5 | ... | ... | 64 | ... | ... | 164 | ... | ... | 33,352 |
| 83d, Sherman.... | 7 | ... | ... | 46 | ... | ... | 11 | ... | 2 | 32,573 |
| 84th, Taylor..... | 5 | ... | 1 | 12 | ... | ... | 140 | ... | ... | 23,327 |
| 85th, Custer..... | 1 | ... | ... | 23 | ... | ... | 19 | ... | ... | 24,893 |
| 86th, Grant..... | 2 | ... | ... | 9 | ... | ... | 6 | ... | ... | 22,768 |
| 87th, Pike..... | 30 | 2 | 6 | 21 | ... | ... | 337 | 4 | 71 | 29,542 |
| 88th, Dodge..... | 6 | ... | ... | 31 | ... | ... | 79 | ... | 3 | 15,659 |
| 89th, Funston.... | 8 | ... | ... | 17 | ... | 1 | 221 | 9 | 2 | 27,346 |
| 90th, Travis..... | 41 | ... | 1 | 41 | ... | ... | ... | ... | ... | 29,672 |
| 91st, Lewis..... | 5 | ... | ... | 35 | ... | ... | ... | 5 | 3 | 37,035 |

ORDERS TO OFFICERS OF THE MEDICAL CORPS

To Buffalo, N. Y., and Grand Rapids, Mich., to inspect properties offered as sites for hospitals, and on completion to his proper station, Major EDGAR KING.

To Baltimore, to command U. S. Army General Health Hospital No. 7, now being organized at Roland Park, that place, Lieut. GEORGE C. DUNHAM.

To Fort Riley, and report in person to the commandant, M. O. T. C., that post, for duty as commanding officer of evacuation hospital to be organized at that place, Lieut.-Col. HORACE D. BLOOMBARGH.

To Camp Jackson, Columbia, S. C., and to Asheville, N. C., to inspect Kenilworth Hotel, at that place, in regard to its suitability for hospital purposes, Col. HENRY C. FISHER.

To Erie, Pa., to conduct investigations on the efficiency of sterilizing apparatus and disinfectors at that place, and on completion to his proper station, Lieut.-Col. EDWARD B. VEDDER, Washington, D. C.

To report in person to the Surgeon-General of the Army, for duty in connection with the organization of a General Hospital at Lakewood, N. J., Col. JOSEPH H. FORD.

To Camp Bowie, Fort Worth, Texas, to investigate and report on the disease conditions at that camp, and return to his proper station, Col. WILLIAM F. LEWIS.

To Linda Vista, Calif., and report in person to the commanding general, Fortieth Division, Camp Kearny, that place, for duty as commanding officer of the base hospital at that camp, Lieut.-Col. FRED W. PALMER.

To Louisville, Ky., and report in person to the commanding general, Eighty-Fourth Division, Camp Taylor, that place, for duty as commanding officer of the base hospital, Lieut.-Col. WILL L. PYLES.

To Philadelphia, Pa., and New York, N. Y., to inspect moving picture films and anatomic specimens for the Army Medical Museum, Washington, and return to his proper station, Col. WILLIAM O. OWEN.

ORDERS TO OFFICERS OF THE MEDICAL RESERVE CORPS

Alabama

To Camp Greenleaf, Fort Oglethorpe, for instruction, Lieuts. WILLIAM L. WAITES, Akron; JESSE A. GOODE, Albertville; JAMES A. CAMPBELL, Atmore; JOHN P. JONES, Camden; WILLIAM E. KIMBROUGH, Jr., Chatom, Washington County; HOSEA F. DOWNS, Clanton; KOSSUTH R. CAMMACK, Evergreen; CLAUDE G. GODARD, Fairhope; MAC McLENDON, Fort Mitchell; JOHN R. MORGAN, Heflin; SAMUEL S. GAILLARD, Perdue Hill; JULIUS O. BELUE, Rogersville; ALFRED C. SMITH, Shawmut; GILBERT A. RHODES, Troy; JOHN C. GODBOLD, Whatley.

To Camp Sevier, Greenville, S. C., from Fort Oglethorpe, for temporary duty in the base hospital, Lieut. HENRY P. HANNA, Birmingham.

Arizona

To Camp Kearny, Linda Vista, Calif., base hospital, Capt. LEON JACOBS, Yuma.

To Fort Riley, Kan., Lieut. GEORGE W. PURCELL, Tucson.

Arkansas

To Camp Lewis, American Lake, Wash., Lieut. PAUL E. JOHNSON, Holly Grove.

To Fort Riley, Kan., Lieuts. BERT C. HINER, Evansville; JOHN H. BAKER, Peach Orchard.

To St. Louis, Mo., School of Neurologic and Plastic Surgery, Lieut. MILES E. FOSTER, Fort Smith; to Washington University, from Fort Oglethorpe, Lieut. JOSEPHUS J. SHERRILL, Warren; and from Fort Riley, Lieut. WALLACE D. ROSE, Little Rock.

California

To Camp Greenleaf, Fort Oglethorpe, Ga., for instruction, from the Army Medical School, Lieut. CHARLES C. DICKINSON, McCloud.

To Camp Lewis, American Lake, Wash., Lieut. RUSSEL R. BURT, South Pasadena.

To Fort Riley, Kan., Lieuts. JOHN C. IRWIN, Los Angeles, and CORNELIUS T. DEVINE, Oakland.

Colorado

To Camp Funston, Fort Riley, Kan., from duty as a private at the same camp, Lieut. EUGENE H. BROWN.

To Camp Lee, Petersburg, Va., as member of board for tuberculosis examination, from Camp Sheridan, Capt. ALEXIUS M. FORSTER, Colorado Springs, Colo.

To Camp Sheridan, Montgomery, Ala., Base Hospital, Capt. HENRY W. HOAGLAND, Colorado Springs.

To Fort Riley, Kan., for instruction, Lieut. ARCHIBALD J. CHISHOLM, Antonio.

To Fort Leavenworth, Kan., for duty, from Fort Riley, Lieut. EDWIN D. BURKHARD, Delagua.

To Fort Riley, Kan., for instruction, Lieut. AUGUSTINE S. CECCHINE, Denver, Colo.

To the inactive list on account of being physically disqualified for active service, Lieut. FOREST C. KRACAW, Oak Creek, Colo.

Connecticut

To Army Medical School, for instruction in orthopedic surgery, from Fort Oglethorpe, Ga., Capt. JAMES L. MORIARTY, Waterbury.

To Camp Devens, Ayer, Mass., Base Hospital, Lieut. HAROLD L. BURR, Middletown.

To Camp Lewis, American Lake, Wash., from Fort Oglethorpe, Ga., Lieut. WALTER S. LAY, Hamden.

To St. Louis, Mo., Washington University, for instruction, from Fort Riley, Capt. ROBERT J. LYNCH, Bridgeport.

To Walter Reed General Hospital, Takoma Park, for instruction in tuberculosis examinations, Lieut. ELLIOTT H. METCALF, Rockville.

District of Columbia

To Philadelphia, Pa., for instruction in orthopedic surgery, Lieut. MARTIN H. SPELLMAN, Washington.

Florida

To Camp Lee, Petersburg, Va., from Camp Shelby, as a member of board for tuberculosis examinations, Lieut. JULIAN E. GAMMON, Jacksonville.

To Camp Wheeler, Macon, Ga., Lieut. WILLIS H. WATSON, Lakeland.

To Fort Monroe, Va., from Tenafly, N. J., Lieut. WILLIAM G. McKAY, Jacksonville.

To Fort Oglethorpe, Ga., Lieut. GROVER C. HARDIE, Fort Pierce.

To St. Louis, Washington University, for instruction, from Fort Oglethorpe, Capt. FRANCIS A. G. MURRAY, Lake City, Fla.

Georgia

To Fort Oglethorpe, Ga., for instruction, Capt. SIDNEY WALKER, Dublin; Lieuts. WILLIAM A. GIBSON, Jr., Agricola; GEORGE C. BROOKS, Alpharetta; MOSES B. COPELOFF, Atlanta; SIGE EHRLICH, Bainbridge; CLEVELAND W. FINDLEY, Broxton; YOUNG C. LOTT, Ceilla; CHAPMAN Q. DYKES, Cochran; LUCIUS K. PATTERSON, Cuthbert; JOSEPH A. McGARITY, Draketown; OVID H. CHEEK, Dublin; ISAAC J. PARKERSON, Eastman; HAROLD R. LIPSCOMB, East Point; JOHN W. McELROY, Fitzgerald; ROLAND L. BROOKS, Geneva; LEE B. MATHEWS, Haw.

kinsville; CHALMERS HINTON, Lawrenceville; WILLIAM H. POWELL, Lumber City; LINTON C. McAFEE, Macon; WILLIAM T. FREEMAN, Matthews; JAMES K. PETTIT, Milledgeville; HENRY F. LYON, Mystic; ROBERT E. McCLURE, Norcross; JOHN W. DURDEN, Oak Park; ROY A. HILL, Pelham; ALBERT F. BRAUNER, Smyrna; HERBERT B. KENNEDY, Statenboro; VIRGIL W. OSBORNE, Stone Mountain; JAMES J. CRUMBLEY, Sylvester; LEMUEL J. JOHNS, Tallapoosa; CARL W. LUPE, Vienna; GEORGE W. KELLY, Washington; FRANCIS C. NESBIT, Waycross; JAMES D. DE LAMAR, West Point.

To Pittsburgh, Pa., for instruction in military roentgenology, from Chickamauga Park, Lieut. JAMES T. GALLOWAY, Atlanta.

Idaho

To Fort Riley, Kan., for instruction, Lieut. ROY E. MASON, Mackey.

To St. Louis, Mo., Washington University, for instruction, from Fort Riley, Capt. ERWIN W. KLEINMAN, Hailey.

Illinois

To Camp Cody, Deming, N. M., Base Hospital, from Fort Riley, Lieut. GUSTAVE A. FLORETH, Mt. Olive.

To Camp Custer, Battle Creek, Mich., from University of Pennsylvania, for temporary duty, Lieut. WILLIAM McMICKEN HANCHETT, Chicago.

To Camp Dodge, Des Moines, Iowa, Base Hospital, from University of Pennsylvania, Lieut. ERWIN R. SCHMIDT, Chicago.

To Camp Gordon, Atlanta, Ga., Base Hospital, from Fort Oglethorpe, Lieut. HERBERT L. WILLIAMS, Bartonville.

To Camp Grant, Rockford, Ill., as president of the board to examine troops for tuberculosis, Major CLARENCE L. WHEATON, Chicago.

To Camp Lewis, American Lake, Wash., from Fort Oglethorpe, Lieuts. FRANKLIN J. CORPER and SAMUEL B. LYONS, Chicago; FRANKLIN A. MARTIN, Tower Hill; from Fort Riley, CHARLES J. HIGINBOTHAM, Streator.

To Camp Meade, Annapolis Junction, Md., from Army Medical School, Lieut. GUY V. FORNEY, Walnut.

To Camp Mills, Garden City, L. I., N. Y., Forty-First Division, from Fort Sheridan, Lieut. LOUIS RUDOLPH, Chicago.

To Camp Sherman, Chillicothe, Ohio, as a member of board of tuberculosis examiners, from Camp Shelby, Capt. RUSSELL ADKINS, Chicago; for duty, from Fort Sheridan, Ill., Lieut. CHARLES D. ELDRED, Chicago.

To Chicago, Ill., and on completion, to Fort Riley, for instruction, Lieut. JOHN C. ROGERS, Chicago. To enlist the enlisted personnel of Base Hospital No. 14, Lieut. HAROLD E. JONES, Chicago.

To Fort Oglethorpe, Ga., for instruction, Lieut. THOMAS A. WAYLAND, Dallas City.

To Fort Riley, for temporary duty in the base hospital, Capt. THOMAS L. DAGG, Chicago. For instruction, Capt. CLARENCE W. GEYER, Aurora; FRANK A. PALMER, Morris; HUGH L. MARSHALL, Stronghurst; Lieuts. GEORGE F. RENDLEMAN, Anna; WALTER S. MIX, Beardstown; EDWARD F. FOX, ROBERT T. GAY, HOMER S. WARREN, Chicago; PAUL R. COPELAND, Crcal Springs; ERNEST C. WHITE, Springfield; HARRY W. KINNE, West Chicago; from Camp Taylor, ELLIOT C. DU MARS, Peoria.

To Rockefeller Institute, for instruction, and on completion to his proper station, Major ALLEN B. KANAVEL, Chicago.

To St. Louis, Mo., School of Neurologic and Plastic Surgery, Capt. FRANK C. SIBLEY, Carmi.

To home from Camp Bowie, and honorably discharged on account of being physically disqualified for active service, Lieut. AUGUST C. ARMBRUSTER, Collinsville.

To home from Fort Riley and the inactive list, Lieut. LESLIE A. KUHN, Chicago.

Indiana

To Camp Dix, Wrightstown, N. J., Seventy-Eighth Division, for duty, from Fort Benjamin Harrison, Lieut. KARL C. EBERLY, Fort Wayne.

To Camp Fremont, Palo Alto, Calif., Base Hospital, from Fort Oglethorpe, Lieut. JOHN E. KELLY, National Military Home, Ind.

To Camp Kearny, Linda Vista, Calif., for duty, from Fort Oglethorpe, Lieut. EPHRAIM M. FOLSOM, Evansville.

To Camp Pike, Little Rock, Ark., Base Hospital, Lieut. HARRY BOYD-SNEE, South Bend.

To Fort Bliss, Texas, for temporary duty, from Washington University, St. Louis, Mo., Capt. GEORGE B. BREEDLOVE, Martinsville.

To Fort Oglethorpe, Ga., for instruction, Lieut. HENRY W. IRWIN, Indianapolis.

To Fort Riley, Kan., for instruction, Lieut. IRA E. BOWMAN, Odon.

To Montgomery, Ala., Aviation Mobilization Camp, for duty, from Fort Oglethorpe, Lieut. JULES L. BIERACH, Salem.

To New York City, Cornell Medical College, for instruction in military roentgenology, Lieut. CHARLES S. WOODS, Indianapolis.

Iowa

To Fort Riley, for instruction, Capt. WILLIAM M. WILDMAN, Fort Dodge; Lieuts. FRANK H. CAFFEY, Bradgate; ROLLIN S. FILLMORE, Corinth; ABRAHAM G. FLEISCHMAN and GEORGE S. GILPIN, Des Moines; JOHN F. SCHWERTLEY, Earling; LONNIE A. COFFIN, Farmington; EDWARD M. THIERS, Granville; WALTER A. W. KRESENSKY, Greeley; WILLIAM W. WEBER, Hartford; MILLARD F. SMITH, Little Rock; MERL L. PINDELL,

Macksburg; ERNEST D. COOK, Maquokata; JOSEPH C. BAR-RAGY, Mason City; JACOB J. SYBENGA, Pella; ALVIN H. HENDRICKSON, Sioux City; EDWIN E. WUTTKE, Sumner; FRANCIS S. COREY, Williams.

To Rockefeller Institute, for instruction, and on completion to Camp Wadsworth, Spartanburg, S. C., Lieut. MEREDITH B. MURRAY, Macedonia.

To his home and honorably discharged on account of being physically disqualified for active service, from Fort Riley, Capt. WILLIAM S. NORTON, Muscatine.

Kansas

To Camp Cody, Deming, N. M., Base Hospital, from Fort Riley, Lieuts. FREDERICK S. HAWES, Russell; WILLIAM G. BURTON, Wichita.

To Camp Devens, Ayer, Mass., Base Hospital, from Fort Riley, Lieut. EDWARD X. LINK, Junction City.

To Camp Meade, Annapolis Junction, Md., for instruction, Lieut. FREDERICK E. WRIGHTMAN, Sebetha.

To Camp Sherman, Chillicothe, Ohio, Base Hospital, from Fort Riley, Lieut. EARL L. VERMILLION, Tescott.

To Fort Riley, for instruction, Lieuts. CLAUDE F. HAYES, Arlington; WILLIAM K. FAST, Atchinson; OSCAR N. LIGHTNER, Benton; HERBERT H. PRICE, Coffeyville; LEO E. HAUGHEY and ROSS E. WEAVER, Concordia; JOHN H. HANSEN, Elkhart; EUGENE M. ADKINS, Galatia; NORMAN B. FALL, Gouda Springs; DAN M. FORBES and MAYRO O. HEDGE, Kansas City; CHARLES W. MATLOCK, Marion; HENRY H. HAERLE, Niles; JAMES A. HOCKADAY, Pratt; WINSTON G. RAMSEY, Protection; WALTER O. QUIRING, Shawnee; OSCAR L. ERICKSON, Topeka, and WILSON K. HOBART, Topeka.

Kentucky

To Camp Devens, Ayer, Mass., Base Hospital, from Fort Riley, Lieut. ISAAC J. HOOVER, Owensboro.

To Camp Lewis, American Lake, Wash., for duty, from Fort Oglethorpe, Capt. CHARLES B. KOBERT, Lebanon.

To Camp Sherman, Chillicothe, Ohio, Base Hospital, from Fort Riley, Lieut. LUTHER BACH, Jackson.

To Fort Oglethorpe for instruction, Capt. PORTER V. BALLOU, Rowena; Lieuts. EVAN G. GALBRAITH, Brooksville; HARRY P. HONAKER, Horse Cave; FREDERICK A. HOYER, Paducah.

To Fort Riley for duty, from Camp Taylor, Capt. PHILLIP H. STEWART, Paducah; for instruction, Capt. WILLIAM S. LITTLE, Owensboro.

To Fort Sill, Oklahoma, Base Hospital, for temporary duty, from Fort Oglethorpe, Lieut. HARRY L. PELLE, Louisville.

To Hoboken, N. J., for duty, from Camp Dix, Capt. JOHN L. PHYTHIAN, Newport.

Louisiana

To Camp Lewis, American Lake, Wash., for duty, from Fort Oglethorpe, Capt. JAMES C. BURDETT, Pelican; Lieut. IRENAEUS N. TUCKER, New Orleans.

To Fort Oglethorpe, Ga., for instruction in tuberculosis examination, Lieuts. PAUL B. LANDRY, Fort Allen; CORNELIUS P. MUNDAY, Shreveport.

To Fort Riley for instruction, Lieut. WILLIAM O. CALLAWAY, New Orleans.

Honorably discharged on account of being physically disqualified for active service, Lieut. ALLEN G. ZEAGLER, Olla.

Maryland

To Camp Taylor, Louisville, in base hospital, from Fort Des Moines, Major FRANK MARTIN, Baltimore.

To Fort Oglethorpe for instruction, Capt. RASTUS R. NORRIS, Crisfield; Lieuts. VERNON S. WILKINSON, Aberdeen; HANNES K. PELTEKIAN, and JOHN H. TRABAND, Jr., Baltimore.

To Fort Sam Houston, Texas, for temporary duty at Camp Stanley, Leon Springs, Texas, from Fort Oglethorpe, Lieut. LEO F. STEINDLER, Baltimore.

To Philadelphia, for taking moving pictures for instruction purposes, and upon completion to his proper station, Major ROBERT T. TAYLOR, Baltimore.

To Rockefeller Institute for instruction, Lieut. ROBERT S. CUNNINGHAM, Baltimore.

To St. Louis, Washington University, for instruction, from Fort Oglethorpe, Lieut. WILLIAM H. SMITH, Jr., Hagerstown.

Maine

To Camp Shelby, Hattiesburg, Miss., for temporary duty examining the command, from St. Elizabeth's Hospital, Washington, D. C., Capt. FRANK E. LESLIE, Andover.

To Fort Oglethorpe, for instruction, Lieut. JOHN G. POTTER, Houlton.

Massachusetts

To Camp Dix, Wrightstown, N. J., for duty, Capt. RALPH A. WARDEN, Boston.

To Camp Doniphan, Fort Sill, Okla., for temporary duty in the base hospital, from Fort Benjamin Harrison, Lieut. NEWTON S. STERN, Boston.

To Camp Greene, Charlotte, N. C., in the base hospital, from Neurological Institute, Lieut. ALFRED P. CHRONQUEST, Hathorne.

To Fort Oglethorpe for instruction, Lieuts. JEROME J. McCAFFREY, Attleboro; EDWIN C. GILBERT, Indian Orchard; WILLIAM V.

KANE, Lynn; JAMES H. MURPHY, Palmer; WILLIAM T. McMAHON, Pittsfield.

To *Hoboken, N. J.*, for duty, from Camp Merritt, Lieut. CLARENCE L. CHANDLER, Townsend.

To *New York, N. Y.*, Neurological Institute for intensive training in brain surgery, from Camp Sevier, Lieut. HENRY R. VIETS, Boston.

To his home and honorably discharged on account of being physically disqualified for active service, from Camp Devens, Capt. CHARLES O. KEPLER, Boston.

Michigan

To *Camp Cody*, Deming, N. H., Thirty-Fourth Division, in the base hospital, from Camp Sherman, Capt. GRIFFITH A. THOMAS, Detroit.

To *Camp Lee*, Petersburg, Va., for duty in the base hospital, Lieut. CHARLES R. MUELLER, Detroit.

To *Camp Lewis*, American Lake, Wash., for duty, from Fort Riley, Lieut. JOHN F. DOUDNA, Lake City.

To *Camp Sheridan*, Montgomery, Ala., for duty, from St. Elizabeth's Hospital, Lieut. JAMES A. BELYEA, Detroit.

To *Camp Sherman*, Chillicothe, O., base hospital, from Camp Grant, Capt. CAREY P. McCORD, Detroit.

To *Detroit, Mich.*, as a medical member of Examining Board and Recruiting Officer, Lieut. FRANK L. RYERSON, Port Huron.

To *Fort Logan H. Roots, Ark.*, for duty, from Fort Sill, Okla., Major FRANK SUGGS, Detroit.

To *Fort Riley* for instruction, Capt. HENRY S. COLE, Whitehall; Lieuts. FRANK W. BROWN, Bay City; FREDERICK L. MORSE, Lake Odessa.

To *New York City*, Bellevue Hospital, for instruction on fractures and upon completion to New York City, for instruction in orthopedic surgery and upon completion to his home and the inactive list of the M. R. C., Lieut. JOHN T. HODGEN, Grand Rapids.

To *Rockefeller Institute* for instruction, and on completion to *Camp Upton*, L. I., N. Y., for temporary duty in the base hospital, Lieut. WILLIS L. DIXON, Benton Harbor.

Minnesota

To *Camp Dodge*, Des Moines, Iowa, for duty, from Minneapolis, Lieut. JAMES M. NORTHINGTON, Minneapolis.

To *Camp Lewis*, American Lake, Wash., for duty, from Fort Riley, Capt. JACOB F. AVERY, Minneapolis; Lieut. FRED B. COLEMAN, St. Paul.

To *Camp Sherman*, Chillicothe, O., base hospital, from Fort Riley, Lieut. ADOLPH F. DeTUNCA, Preston.

To *Fort Riley*, for instruction, Capt. ROBERT P. PEARSALL, Aurora; RUDOLPH H. WALD, Hastings; Lieuts. JOHN A. SAARI, Eveleth; URSUS V. PORTMANN, Jackson; Lieut. ALBERT M. LARSON, St. Paul.

To *Milwaukee, Wis.*, Light Horse Squadron Armory, from Fort Riley, Lieut. WILLIAM J. EGAN, Rochester.

To *St. Louis, Mo.*, Washington University for instruction, from Fort Riley, Lieut. LYNN J. WALKER, Wycoff.

To *Washington, D. C.*, for duty, Major WILLIAM H. MAYO, Rochester.

Mississippi

To *Camp Devens*, Ayer, Mass., base hospital, from Fort Riley, Lieut. ELI E. FARMER, Dockery.

To *Camp Lewis*, American Lake, Wash., for duty, from Fort Riley, Lieut. FORNEY K. HOLLIS, Galtman.

To *Fort Oglethorpe, Ga.*, for instruction, Lieut. WILLIAM L. ERVIN, Columbus.

To *Fort Riley, Kan.*, base hospital, from Medical Officers Training Camp, Fort Riley, Lieut. ERNEST L. POSEY, Magee.

To his home and honorably discharged on account of being physically disqualified for active service, from United States Army General Hospital No. 1, Lieut. JOSEPH S. GATLIN, Laurel.

Missouri

To *Camp Lee*, Petersburg, Va., as member of board for examination for tuberculosis, from Camp Shelby, Lieut. ELBERT BAKER, St. Louis.

To *Camp MacArthur*, Waco, Texas, base hospital, from Fort Riley, Kan., Capt. EDWARD H. CLARK, Kansas City.

To *Fort Riley, Kan.*, for instruction, Capt. LUTHER O. NICKELL, Macon; HUGH McCULLOCH, St. Louis; Lieuts. WALTER E. KOPPENBRINK, Alma; JOHN A. CORN, Amorest; GROVER C. JOHNSON, Belle; WALTER L. BRANDON, Borseley; CHARLES F. LYLE, Brownville; MITCHELL H. SIEBY, Charleston; FLOYD H. MAPLES, Clever; CARTER A. PROCTOR, Doniphan; CHARLES S. UNDERHILL, Franklin; FRANK A. ELDERS, Hematite; GEORGE F. COOPER, Kansas City; Lieuts. CHARLES F. DAVIS, HARRY W. DUGAY, FOREST F. FOSTER, ABRAHAM SALZBERG, JOHN H. WHITTAKER, Kansas City; RALPH E. MURRELL, Kirkwood; OTTO E. SCHOENFELD, Lathrop; FLOYD B. RICKETTS, Leslie; ROY J. OWENS, Millspring; ROY E. MYERS, Newtonia; ARCHIBALD R. STONE, Palmyra; CLARENCE J. LAWS, Princeton; ROBERT S. WILLIAMS, St. Clair; CHARLES E. MANESS, Stella; WILLIAM C. BRADLEY, HOWARD C. BRASHEARS, JAMES T. COOK, JAMES C. DONAHUE, ROY C. DRIPPS, ROLAND N. HOLCOMBE, SYDNEY S. LEVIN, EUGENE D. McCARTY, WALTER J. MELLIES, JOSEPH C. PADEN, FRED S. PERRINGS, MADISON

J. PULLIAM, HERMAN RAMMING, JAMES C. RELINGTON, GEORGE L. RILEY, LOUIS W. SCHREIBER, RAYMOND B. T. SWEANY, JAMES C. THOMPSON, LEON V. URBANOWSKI, WILLIAM B. YORK, St. Louis; PAUL W. WIPPERMAN, Truesdale.

To *Rockefeller Institute*, New York City, for instruction and on completion to *Camp Greene*, base hospital, Lieut. JOHN L. REID, Kansas City; on completion to *Camp Hancock*, for temporary duty, Lieut. HARRY W. KING, Kansas City.

To *St. Louis, Mo.*, School of Neurological and Plastic Surgery, for instruction, Capt. FRANK J. TAINTER, St. Charles; from Jefferson Barracks, IRA R. CLARK, St. Louis; from Fort Riley, Lieuts. CLAUDE J. HUNT, Kansas City; OWEN P. McPIERSON, Kansas City.

To his home and honorably discharged on account of being physically disqualified for active service, from Camp Funston, Lieut. JOSEPH A. BEEBE, Kansas City.

Montana

To *Camp Lewis*, American Lake, Wash., for duty, Lieut. CLYDE W. JUMP, Bozeman.

To *Fort Riley*, for instruction, Lieut. THOMAS M. MORROW, Medicine Lake.

To *Camp Devens*, Ayer, Mass., base hospital, from Fort Riley, Lieut. CHARLES B. EDWARDS, Overton.

Nebraska

To *Camp Shelby*, Hattiesburg, Miss., for temporary duty examining the command, from Phipps Clinic, Baltimore, Lieut. PAUL A. ROYAL, Lincoln.

To *Fort Riley, Kan.*, for instruction, Capt. GLYNDEN A. YOUNG, Penca; Lieuts. MARTIN R. BROMAN, Axtell; CARROLL D. EVANS, Jr., Columbus; JAMES N. EVANS, Columbus; LESLIE B. CRUMRINE, Lincoln; CLINTON Q. DODD, Newport; AUGUSTUS C. BARRY, JOHN C. DAVIS, JR., JACOB M. ERMAN, Omaha; WESLEY C. BECKER, Papillion.

To *Hoboken, N. J.*, for duty from Cornell Medical College, WILLIAM H. MICK, Omaha.

To *Omaha, Nebr.*, to enlist the enlisted personnel of base hospital No. 49, Capt. JOHN S. POTTS, Lieut. ABRAHAM GREENBERG, Omaha.

Nevada

To *Camp Lewis*, American Lake, Wash., for duty, from Fort Riley, Lieut. HERBERT A. ABBOTT, Reno.

New Jersey

To *Camp Lewis*, American Lake, Wash., for duty, from Fort Oglethorpe, Lieuts. ROBERT R. REED, Morristown; ABRAM B. ABRAMOWITZ, Newark.

To *Camp Merritt*, Tenafly, N. J., for duty in the base hospital, Capt. MICHAEL S. GRANELLI, Hoboken.

To *Fort Oglethorpe, Ga.*, for instruction Capt. ALFRED G. SHEPPARD, Bridgeton; Lieuts. FRANCIS W. PIKE, Hoboken; FRANK J. RONAYNE, Orange.

To *Picatinny Arsenal*, Dover, N. J., for duty, from Fort Oglethorpe, Lieut. ERNEST A. L. DICKINSON, Trenton.

New Mexico

To *Fort Riley*, for instruction, Lieut. JAMES A. STEEL, Las Cruces.

New York

To *Boston, Mass.*, for duty as medical member of Examining Board No. 1, from Plattsburg Barracks, Capt. WILLIAM W. LAING, Brooklyn.

To *Camp Beauregard*, Alexandria, La., Thirty-Ninth Division, in the base hospital, Lieut. JOSEPH E. CONNERY, New York.

To *Camp Custer*, Battle Creek, Mich., base hospital, Capt. LYNN S. BEALS, Buffalo.

To *Camp Doniphan*, Fort Sill, Okla., base hospital, from Fort Oglethorpe, Lieut. CARL KAPLAN, Brooklyn.

To *Camp Greene*, Charlotte, N. C., to examine the command for nervous and mental diseases, from Camp Greene, Lieut. ROBERT F. GAYLE, JR., New York City.

To *Camp Lewis*, American Lake, Wash., for duty, from Fort Oglethorpe, Lieut. ARTHUR WEIL, Brooklyn.

To *Camp Mills*, Garden City, L. I., N. Y., base hospital, Capt. FRED M. MEADER, New York City.

To *Camp Taylor*, Louisville, Ky., for duty, from Fort Porter, N. Y., Major JUNIUS H. McHENRY, New York City.

To *Camp Upton*, L. I., N. Y., base hospital, Capt. MAX EINHORN, New York City.

To *Fort Caswell*, N. C., for duty, Capt. SPENCER FRANKLIN, New York.

To *Fort Leavenworth, Kan.*, for duty in Dept. Laboratory, from Fort Riley, Lieut. DAVID M. KAPLAN, New York City.

To *Fort Oglethorpe, Ga.*, for instruction, Major HARRY J. LIPES, Albany; Capt. WILLIAM B. REID, Rome; Lieuts. CARSON C. FAULKNER, Arena, Del. Co., N. Y., JAY L. TOUCHTONE, Blackwell's Island; WILLIAM M. ENNIS, ISIDORE D. HASKELL, ALLEN G. T. HIPPE, Brooklyn; JOHN H. WATSON, JOSEPH L. WOZNIAK, Buffalo; NELSON R. FRASIER, Glen Falls; ANTHONY LACOVARA, SAMUEL PALEG; THOMAS J. RYAN, HENDRIK VAN TENKEN STAM, New York City; FREDERICK B. BOND, Prattsburg; JASON H. CONGER, Utica.

To *Fort Riley, Kan.*, for duty, from Army Medical School, Lieut. JAMES C. BARKER, New York City; from Fort Oglethorpe, Lieut. CHARLES G. DARLINGTON, New York City; for duty with Evacuation Hospital No. 7, Lieut. RANSLEY J. MILLER, New York City;

for temporary duty, and upon completion of this duty to his home and the inactive list, Lieut. FREDERICK L. GATON, New York City.

To *Fort Sill, Okla.*, for duty, Lieut. EDWIN S. INGERSOLL, Rochester.

To *New York City*, American Social Hygiene Association for special duties in connection with venereal diseases, Capt. ALEC N. THOMSON, Brooklyn; to *Neurological Institute*, for instruction, from Fort Niagara, Capt. EDWIN G. ZABRISKIE, New York; to *Rockefeller Institute*, for instruction and on completion to Camp Hancock, base hospital, Lieuts. LEON E. DE YOE, New York City; on completion to Fort Oglethorpe, CHARLES JENNINGS, Elmira; on completion to Walter Reed General Hospital, Lieut. MICHAEL M. SCHULTZ, Astoria.

To *St. Louis*, Washington University, for instruction, from Fort Oglethorpe, Capt. HARRY R. STONE, New York City; from Camp MacArthur, Lieut. MAX BERNSTEIN, New York City.

To *Walter Reed General Hospital*, Takoma Park, D. C., for temporary duty, Capt. CALVIN M. KESSLER, New York City; for instruction in tuberculosis examination, Lieut. CHESTER F. DURYEA, Brooklyn.

To *Washington, D. C.*, American Red Cross for duty, from Camp Mills, Major JOSEPH COLLINS, New York City.

To *Williamsbridge, N. Y.*, United States Army General Hospital No. 1, for duty, from Allentown, Pa., Capt. CONDE DES. PALLEN, New York.

To *his home* and the inactive list from the office of the Surgeon-General, Major SIGMUND POLLITZER, New York City.

To *his home* and honorably discharged on account of being physically disqualified for active service, from Army Medical School, Lieut. HUBERT E. CHAUVIN, Brentwood.

North Carolina

To *Camp Lewis*, American Lake, Wash., for duty, from Fort Oglethorpe, Lieut. LELAND C. McINTOSH, Henderson.

To *Camp Travis*, Fort Sam Houston, Tex., from Fort Oglethorpe, Lieut. WILLIAM E. WISHERT, Charlotte.

To *Fort Oglethorpe, Ga.*, for duty with Evacuation Hospital No. 5, Lieut. BEVERLY N. JONES, Walnut Cove; for instruction, Lieut. EDWARD J. WILLIAMS, Wingate.

To *Hoboken, N. J.*, for duty, from Camp Greene, Lieut. SAMUEL H. LYLE, Franklin; from Camp Greenleaf, Lieut. JOHN B. BULLARD, Stedman; from Camp Mills, Lieut. WILLIAM H. SCRUGGS, Asheville.

To *his home* and honorably discharged on account of being physically disqualified for active service, from Camp Funston, Lieut. WILLIAM J. H. BOOHER, Oxford; from Fort Oglethorpe, Lieut. JAMES A. DIMMETTE, Walburg.

North Dakota

To *Camp Lewis*, American Lake, Wash., for duty, from Fort Riley, Lieut. JOSEPH H. PLANT, Montpelier.

To *Fort Riley, Kan.*, for instruction, Capt. NICHOLAS J. SHIELDS, Walpeton.

To *St. Louis, Mo.*, Washington University, for instruction, from Fort Riley, Lieut. WALTER L. BARBOUR, Deering.

Ohio

To *Camp Sevier*, Greenville, S. C., base hospital, from Camp Taylor, Capt. ELMER A. KLEIN, Norwood.

To *Camp Shelby*, Hattiesburg, Miss., base hospital, Lieut. CARL MULKY, Warrensville.

To *Fort Oglethorpe, Ga.*, for instruction, Lieuts. JESSE GRIM, Akron; WILBUR G. CARLISLE, Bucyrus; JULIAN H. BUFF, Cincinnati; JOSEPH M. DUNN, JOHN D. KESSLER, Columbus; ALLEN G. CROW, Jacksontown; JOHN A. FILAK, Lakewood; EDGAR W. HILL, JR., Marietta; GEORGE A. HAVEMANN, New Bremen; CHARLES J. ROACH, Zanesville; for duty with Evacuation Hospital No. 3, Lieut. MATTHIAS A. WAGNER, Lima.

To *Fort Riley*, for instruction, Lieut. ALBERT F. SARVER, Greenville.

To *Fort Sill, Okla.*, for duty as director of the Gas Defense Dept. from Infantry School of Arms, Major ROBERT CONARD, Blanchester.

To *his home* and the inactive list of the Medical Reserve Corps, from Fort Oglethorpe, Lieut. ISAAC P. SEILER, Piketon.

Oklahoma

To *Camp Cody*, Deming, N. M., base hospital, from Fort Riley, Lieuts. CHARLES W. ALEXANDER, Temple; WILLIAM J. OMER, Thomas.

To *Camp Lewis*, American Lake, Wash., for duty, from Fort Oglethorpe, Lieut. SAMUEL T. CAMPBELL, Anadarko.

To *Camp Sherman*, Chillicothe, O., base hospital, from Fort Riley, Lieut. ORANGE R. WELBORN, Kingston.

To *Fort Riley, Kan.*, for instruction, Lieuts. WILLIAM STOUT, Enid; WILLIAM W. BRODIE, Tulsa.

To *Oklahoma City, Okla.*, for instruction in orthopedic surgery, from Camp Doniphan, Lieut. JOHN A. WALKER, Shawnee; from Fort Brown, Capt. LEONARD S. WILLOUR, Alester.

To *Rockefeller Institute*, for instruction and on completion to Camp Devens, Lieut. ROBERT L. WESTOVER, Okmulgee.

Oregon

To *Camp Lewis*, American Lake, Wash., for temporary duty examining the command for mental and nervous diseases, from Camp Lewis, Lieut. DICK R. ROSS, Salem.

To *Fort Riley, Kan.*, for instruction, Lieuts. EDWIN E. STRAW, Marshfield; IVAN E. BELLINGER, Sweet Home.

To *Portland, Ore.*, to examine applicants for appointment in the Medical Reserve Corps, Capt. RALPH A. FENTON, Portland; to complete the enlistment of the enlisted personnel of Base Hospital No. 46, Lieut. EDWARD F. ZIEGELMAN, Portland; for duty, Lieut. KARL P. MORAN, Portland.

Pennsylvania

To *Camp Cody*, Deming, N. M., for duty, Lieut. HORACE PHILIPS, Philadelphia.

To *Camp Dix*, Wrightstown, N. J., base hospital, from Camp Greenleaf, Capt. CLARENCE F. M. LEIDY, Philadelphia.

To *Camp Greene*, Charlotte, N. C., for duty, from Army Medical School, Lieut. JOHN J. MOORE, Pottsville.

To *Camp Lee*, Petersburg, Va., for duty in the base hospital, Lieut. JOSEPH F. O'NEILL, Philadelphia.

To *Camp Lewis*, American Lake, Wash., for duty, from Fort Oglethorpe, Lieuts. JOSEPH A. PESSOLANO, Philadelphia; ALFRED L. RHOADS, Scranton.

To *Camp Pike*, Little Rock, Ark., base hospital, from Fort Oglethorpe, Capt. SAMUEL I. EBER, Pittsburgh; Lieut. CHARLES E. HAYS, Johnstown.

To *Camp Sevier*, Greenville, S. C., for the purpose of examining the command in his specialty, from Psychopathic Hospital, Ann Arbor, Mich., Lieut. ERWIN H. ERNEY, Philadelphia.

To *Camp Sherman*, Montgomery, Ala., for duty, from St. Elizabeth's Hospital, Lieuts. EMORY L. DRAVO, Warren; from Fort Riley, CHARLES G. MOORE, Pittsburgh.

To *Fort Oglethorpe, Ga.*, for instruction, Lieuts. CHARLES B. YOST, Bloomsberg; CLARENCE E. KING, Brick Church; WILLIAM C. BROWNE, Burnside; FRANK R. NOTHNAGEL, Chester; HARRY J. STOCKBERGER, Claridge; ARTHUR D. COWDRICK, Clearfield; J. MERLE EVERWINE, Clymer; WALTER M. BORTZ, Greensburg; CLAUDE W. McKEE, Greensburg; PETER E. EAGAN, Hazelton; JAMES F. TIMBLE, Jeannette; FRANK G. SCHARMANN, Johnstown; GARNETT P. MORISON, Latrobe; JOSEPH H. WYATT, Mahanoy City; JAMES J. O'CONNOR, Mildred; JOSEPH W. POST, Millersburg; FRANK H. GARDNER, Montrose; WILLIAM E. ANDREW, Penn Argyl; GERSHON GINSBURG, CARL F. KOENIG, WILLIAM C. KOSSLER, JOHN J. NEAL, JOHN R. QUAY, Philadelphia; CHARLES E. PEACH, Pine Grove; ABRAHAM FINKELPEARL, FREDERICK V. LICHTENFELS, WALTER A. MONNICH, MICHAEL M. WOLFE, Pittsburgh; ALFRED M. BERGSTEIN, Pottsville; CHARLES C. RYAN, Republic; JOHN F. PARK, South Bethlehem; PAUL G. L. HOCH, Tarentum; STACY H. RINEHARDT, Washington; BURGESS A. GIBSON, Washingtonville; CLARENCE H. KETTERER, Butler.

To *Hoboken, N. J.*, for duty, from Camp Dix, Lieut. SAMUEL H. BOYD, Philadelphia; from Camp Greenleaf, Lieut. MOES T. KNAPPENBERGER, Pittsburgh.

To *New York City*, Neurological Institute, for intensive training in brain surgery, from Camp Beauregard, Capt. WILLIAM C. HEISEY, McKeesport.

To *Oklahoma, Okla.*, for instruction in orthopedic surgery, from Chickamanga Park, Ga., Capt. CARSON COOVER, Harrisburg.

To *Philadelphia*, for duty with Base Hospital No. 30, from Jefferson Hospital, Capt. FRANCIS F. BORZELL, Philadelphia; to *Evans Dental Institute*, for instruction, and on completion to Camp Devens, Capt. CARLTON N. RUSSELL, Philadelphia.

To *St. Louis, Mo.*, Washington University, for instruction, from Fort Oglethorpe, Lieut. ROBERT E. STRASSER, Reading.

To *Walter Reed General Hospital*, Takoma Park, D. C., to exhibit films showing the technic of dichloramin-T, and on completion of this duty to return to his proper station, Capt. WILLIAM H. FURNESS, Wallingford; Lieut. WALTER E. LEE, Philadelphia; for temporary duty from Evans Dental Institute, Lieut. ARTHUR T. HENRICI, Pittsburgh.

To *his home* and the inactive list, from Camp Greenleaf, Lieut. WILLIAM V. COYLE, Philadelphia; from Northwestern University, Lieut. SAMUEL McCLARY, 3d, Philadelphia.

South Carolina

To *Fort Oglethorpe, Ga.*, for instruction, Major THOMAS R. MARSHALL, Columbia; Capt. MORGAN P. MOORER, Georgetown; Lieut. WILLIAM S. BURGESS, Sumter.

To *Fort Riley, Kan.*, for duty with Evacuation Hospital No. 7, Lieut. HARRY E. JENKINS, Port Royal.

To *Rockefeller Institute*, for instruction, and on completion to Camp McClellan, Lieut. WALKER H. ROWE, Greenville.

South Dakota

To *Fort Riley, Kan.*, for instruction, Lieut. HERSCHEL G. HARRIS, Wilmot.

Tennessee

To *Camp Lewis*, American Lake, Wash., for duty, Lieut. JAMES S. SKAGGS, Maynardville.

To *Camp Sevier*, Greenville, S. C., base hospital, from Fort Oglethorpe, Lieut. EUGENE M. ORR, Nashville.

To *Fort Oglethorpe*, for instruction, Lieuts. ELISHA FARROW, Bells; THOMAS C. CHAPMAN, Brownsville; JOSEPH H. CHANCE, Cedar Hill; JAMES L. JOHNSON, Chattanooga; WALTER A. BELL, Cloverdale; BENJAMIN B. WRIGHT, Covington; EMMETT E. BYRD, Jonesboro; HIRAM A. LAWS, JR., Lynchburg; FRED O. STONE, Maynardville; EDWIN C. GILLESPIE, Memphis; GROVER C. ENGLISH, Mount Pleasant; AAREIEL E. GOODLEE, Murfrees-

boro; JAMES L. BRYAN, JAMES D. LESTER, Nashville; WILLIAM E. McGAHA, Newport; IRA O. PARK, Union City; DANIEL C. HAGGARD, Unionville; SWAN BURRUS, Woodland Mills; for duty with Evacuation Hospital No. 4, JAMES D. L. McPHEETERS, Chattanooga; for duty with Evacuation Hospital No. 6, LEONARD A. CROSBY, Memphis.

To Fort Riley, Kan., for instruction, Lieut. CALVIN G. STRICKLIN, Clarendon.

To Rockefeller Institute, for instruction, and on completion to Camp Gordon, Atlanta, Ga., for temporary duty in the base hospital, Lieut. GROVER C. CONYERS, Gates.

To St. Louis, Washington University, for instruction, from Fort Oglethorpe, Capt. JAMES BREW, JR., Nashville.

Texas

To Camp Travis, Fort Sam Houston, for duty, from Camp Travis, Lieut. HENRY H. LOOS, Palacios.

To Fort Oglethorpe, Ga., for instruction, Lieut. BENJAMIN F. LARGENT, McKinney.

To Fort Riley, Kan., for instruction, Lieuts. ARCHER B. WORSHAM, Brasher; ROBERT E. FORESTER, Burleson; HARRY H. HENDRICKS, Dallas; MELVIN L. HUTCHISON, Dallas; OSCAR C. WEST, El Paso; LYLE J. LOGUE, Houston; JESSE G. JENKINS, Hubbard; JOSEPH J. ROBERTSON, Kingsville; MOULDON SMITH, Roby; JAMES P. McNULTY, San Angelo; WILBUR CARTER, Sherman; HUBERT FERRELL, Tyler; THOMAS V. JENNINGS, Winters, Runnels County.

To Fort Sam Houston, Texas, for temporary duty, from Fort Oglethorpe, Lieut. ELMORE B. GILBERT, Gorman.

To Fort Sill, Okla., as assistant to the director of the Gas Defense Department from Western Department, Lieut. ARTHUR W. C. BERGFELD, Sequin.

To Fort Worden, Wash., for duty, from Fort Oglethorpe, Lieut. EDWARD J. BURNS, Carrizo.

To New York, Neurological Institute, for intensive training in brain surgery, Lieut. WILLIAM W. SHORTAL, Dallas.

To Oklahoma, Okla., for instruction in orthopedic surgery, from Camp MacArthur, Lieut. MARION BROWN, Mexia.

To St. Louis, Washington University, for instruction, from Fort Bliss, Capt. CHARLES M. AYES, Houston; Lieut. JOHN C. THOMAS, Taylor.

Utah

To Salt Lake City, Aviation Section, Signal Corps, for duty, Lieut. ROBERT R. HAMPTON, Salt Lake City.

To St. Louis, Washington University, for instruction, from Fort Riley, Lieut. CLARENCE A. NYVALL, Salt Lake City.

Vermont

To Fort Oglethorpe, Ga., for instruction, Lieut. LEWIS F. MCCARTHY, Essex.

Virginia

To Army Medical School, for instruction in orthopedic surgery, from Fort Oglethorpe, Lieut. FREDERICK P. SUTHERLAND, Richmond.

To Camp Devens, Ayer, Mass., base hospital, from Fort Riley, Lieut. IRA THOMAS, Aldie.

To Camp McClellan, Anniston, Ala., base hospital, from Fort Oglethorpe, Lieut. LESLIE T. RUSMISSELLE, Lovettsville.

To Camp Mills, Garden City, L. I., base hospital, from Fort Riley, Lieut. THOMAS MILLER, Fincastle.

Washington

To Camp Kearny, Linda Vista, Calif., base hospital, from Camp Kearny, Lieut. PEARL C. WEST, Seattle.

To Fort Riley, for instruction, Capt. EDMUND S. WEST, North Yakima; Lieuts. ALVIA G. NACE, South Tacoma; JO BENNETT BLAIR, Vancouver.

West Virginia

To Fort Oglethorpe, Ga., for instruction, Lieuts. MILTON D. FLANARY, Charleston; GEORGE P. MCCOY, Franklin; HOWARD M. BATSON, Handley; ESLEY T. LAKE, Nuss; WALTER S. LINK, Parkersburg; CHARLES L. MOORE, Upper Tract; COLIN R. WEIRICH, Wellsburg; MILTON E. JONES, Welch.

Wisconsin

To Camp Cody, Deming, N. M., base hospital, from Fort Riley, Capt. JOHN S. FOAT, Ripon.

To Camp Lewis, American Lake, Wash., for duty, from Fort Oglethorpe, Lieut. CLAUDE I. WHEATLEY, Milwaukee.

To Fort Riley, Kan., base hospital, from Fort Leavenworth, Capt. MILTON W. HALL, Mondovi; from Fort Riley, Lieut. CHARLES A. YATES, Bangor; for instruction, Lieut. GEORGE I. BADEAUZ, Spooner.

To Milwaukee, Light Horse Squadron Armory, from Fort Riley, Major OTHO A. FIEDLER, Sheboygan; Lieuts. JEFFERY J. BROOK, ULRICH SENN, Milwaukee.

To Rockefeller Institute, for instruction in laboratory work, from Camp Travis, Lieut. RALPH R. GILCHRIST, Milwaukee.

To his home and honorably discharged on account of being physically disqualified for active service, Lieut. ARTHUR C. DANA, Fond du Lac.

To his home and honorably discharged, from Camp Doniphan, Lieut. HARRY E. MacLAUGHLIN, Waupaca.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

New Hospital.—Dr. Frank P. Van Denbergh, Greeley, has opened a Red Cross Hospital in that city with accommodation for twenty patients.

Base Hospital Accepted.—The medical personnel of Base Hospital No. 29, which has been formally accepted by the War Department, includes Major John W. Ames, Denver, director of the unit; Major Edward F. Dean, Denver, chief of the surgical service; Major Gerald B. Webb, Colorado Springs, chief of the medical service; Capt. Lewis H. McKinnie, Colorado Springs; Cuthbert Powell, Denver; Clarence B. Ingraham, Jr., Denver; Oliver Lyons, Denver; Cyrus L. Pershing, Denver; William W. Williams, Denver; John R. Espey, Trinidad, and C. W. Poley, Denver, and Lieuts. L. Marshall Van Meter, Robert G. Packard, Lawrence K. Lunt, W. M. Barre, William C. Finnoff, Amos L. Beagler, Ranulph Hudson, Harold G. Macomber, Arthur W. Stahl, Leonard G. Crosby and Wilson Cuthbert, all of Denver.

GEORGIA

County Physicians Organize.—The physicians of Chattooga County met at Summerville, November 2, and organized the Chattooga County Society, with an initial membership of fifteen. Dr. Benjamin F. Shamblin, Lyerly, was elected president; Dr. Willard B. Medlin, Summerville, vice president, and Dr. H. D. Brown, Lyerly, secretary-treasurer.

Health Proclamation.—The October issue of the *Health Bulletin* of the Georgia State Board of Health contains on its first page a proclamation by the governor on the subject of health, in which he advocates a return to the simpler and saner habits of life, and urges that all persons aid the constituted authorities by giving active cooperation to the state board of health in its effort to conserve the health of the people.

Personal.—Dr. Robert W. Todd, LaGrange, has been elected health commissioner for Tift County, succeeding Dr. D. C. Whittle, resigned to enter military service.—Dr. Andrew L. West, Athens, has become a member of the medical staff of the Macon Hospital, succeeding Dr. Francis Y. Herrington, Atlanta, resigned to enter military service.—Dr. Edward M. Green, clinical director of the Georgia State Sanatorium, Milledgeville, has resigned to accept the position of superintendent of the Pennsylvania State Hospital for the Insane, Harrisburg.—Dr. William A. Ellison, Milledgeville, physician to the State Reformatory, and health commissioner of Baldwin County, has resigned to enter the United States Public Health Service, and has been succeeded as health commissioner by Dr. George L. Chapman and as physician to the State Reformatory by Dr. Guy D. Compton.—Dr. Charles Wardell Stiles, U. S. P. H. S., Washington, D. C., has reported for duty to the Twenty-Eighth Division, Augusta, to take charge of the health situation in the zone contiguous to Camp Hancock.

ILLINOIS

In Memory of Gochnaur.—Memorial services were held in the First Presbyterian Church, Freeport, November 25, under the joint auspices of the church and Masonic fraternity in memory of Lieut. Orlando M. Gochnaur, M. R. C., who was killed in action while attached to the British Expeditionary Forces in France. A popular subscription has been appointed in Freeport for the erection of a monument for Dr. Gochnaur.

Personal.—Dr. Gustav F. Ruediger, director of the Hygienic Institute for La Salle, Peru and Oglesby, has resigned to become director of the State Hygienic Laboratory at the University of Nevada, Reno.—Lieut. Wallace A. Belsey, Belvidere, medical director with the British Forces, is reported to have been wounded.—Dr. Vera V. Norton, for four years resident physician of the Edward Sanatorium, Naperville, has been appointed one of the superintendents of the Cincinnati Tuberculosis Sanatorium.

Legal Opinions Concerning Sanatorium Tax Levies.—The attorney-general of Illinois has given an opinion to the State

Department of Public Health to the effect that under the Illinois sanatorium law counties which have made tax levies for sanatorium purposes, and which need the money now to proceed with their plans, may lawfully anticipate the 1918 spring tax collections with warrants drawn for immediate use. It has also been held, however, that counties which made their sanatorium levies in September cannot at any later meeting during the year increase the levy. Another holding is that where counties have made levies for sanatorium purposes, but have not sufficient funds to build a county sanatorium, such counties may pay out of the sanatorium fund the expenses of persons sent to sanatoriums in other counties of the state, but not outside the state.

Chicago

Fire at Medical Supply Depot.—A fire, presumably of accidental origin, destroyed the new warehouse of the medical supply depot at Fortieth and Federal streets, with a loss of about \$100,000.

Women Physicians Entertain.—Sixty medical women of Chicago were guests of the Medical Women's Club of Chicago and the After Dinner Club at the College Club, December 12. A dinner and entertainment made up the program.

Dinner to Colonel Raymond.—A complimentary dinner was given by Major Daniel A. K. Steele, president of the Illinois Division, M. R. C. U. S. Army, in honor of Col. Henry I. Raymond, department surgeon, Central Department, December 12, at the Hotel La Salle.

Proceedings of the Institute of Medicine.—Volume I of the *Proceedings of the Institute of Medicine of Chicago*, a book of 168 pages, covering the year 1916-1917, has just appeared. It covers seven meetings and contains fourteen papers with discussions, and the obituaries and portraits of Dr. Henry B. Favill and Theodore B. Sachs. The roster of members lists 202.

Reporting Venereal Diseases.—The city ordinance of June 29, 1917, requires the reporting of venereal diseases to the board of health. In order to carry out the provisions of the ordinance the health department has prepared and mailed to all physicians within the city a postal card blank on which to report cases, a blank form of letter from one physician to another, to inform the latter that a patient treated by him has consulted the former, a form letter to report to the department of health that a patient has not reported to the physician and that ten days have passed since the time agreed on, and a pamphlet concerning venereal diseases for distribution to patients.

KANSAS

Typhoid Fever.—It is reported that there are 300 cases of typhoid fever in Eldorado, and that antityphoid inoculation has been given to 2,000 of the inhabitants.

Personal.—Dr. William S. Lindsay, Topeka, has qualified as medical examiner for the first district appeal board, succeeding Dr. Samuel J. Crumbine, secretary of the state board of health.—Dr. Albert C. Johnson, Kingman, coronor of Kingman County, has been appointed county physician, succeeding the late Dr. Newton C. Davis, Kingman.

IOWA

Personal.—Dr. Alexis N. Warren, Sioux City, sustained painful injuries, November 20, when his motor car was run into by another automobile. Dr. Warren is under treatment in the Samaritan Hospital.—County Physician Frank O. Burke of Scott County has resigned.

Hospital Opened.—The informal opening of the Iowa Congregational Hospital, Des Moines, took place, November 23. The hospital has just been completed at a cost of nearly \$10,000. The date of the formal opening of the hospital is not yet fixed.

MASSACHUSETTS

Advisory Committee Appointed.—A committee of five physicians, consisting of Drs. Albert Evans, Boston, chairman; Dr. John T. Williams, Boston, secretary; Dr. Frank G. Wheatley, North Abington; Arthur A. Howard, Boston, and Dr. Harry Linenthal, Boston, has been appointed to cooperate with the industries in the work of protecting workers of the state against ill health, loss of time, accidents, sickness and death. One of the duties of this committee will be to see that the laws for protecting the health of workers are enforced in the state.

Personal.—Dr. Harry J. Hagerty has been appointed substitute ambulance surgeon in the Worcester police department, succeeding Dr. Robert J. Northridge, who has been made ambulance surgeon, vice Dr. Joseph A. Smith, resigned to enter military service.—Dr. Willard B. Howes, assistant superintendent of the Rutland State Sanatorium, has resigned to become school medical supervisor for the community health service at Framingham, and has been succeeded by Leon A. Alley, Boston.—Dr. Hiram L. Horsman, Worcester, has been appointed acting superintendent of the Grafton State Hospital, succeeding Dr. James V. May, Worcester, resigned to accept the position of superintendent of the Boston State Hospital.

Merger of Harvard and Technology School Forbidden.—The supreme court of Massachusetts has decided that Harvard University has no right to support the merger of the Lawrence Scientific School with the Massachusetts Institute of Technology from the Gordon McKay bequest, an arrangement which was put into effect some time ago, and under which Harvard abolished the Lawrence Scientific School. The decision is on the petition of Harvard to have the court ratify the agreement between the two institutions. In the opinion, written by Judge DeCourcy, it is said that Mr. McKay intended that not only the investment of the endowment fund, but the education which his endowment was to make possible, should be under the control and direction of the university, its government and administration. He selected as a trustee to carry out his purpose a great educational institution, one whose ability adequately to carry out his plans he was familiar with, and with whose historic name he desired to associate his own in perpetual memory. Harvard will now have to reestablish a school of applied science under its own administration.

MINNESOTA

Smallpox.—There were said to be forty-eight cases of smallpox in St. Paul, November 28.

Personal.—Dr. Carl J. Holman, Mankato, who suffered a fracture of three ribs and an injury of the lung in an automobile accident, recently, is reported to be doing well.

Medical Board Appointed.—Dr. Archibald MacLaren, St. Paul, has been appointed chairman, and Dr. Arthur S. Hamilton, Minneapolis, secretary of the Minnesota state committee on the organization and supervision of state medical advisory draft boards, and other members of the committee are Drs. William H. Magie, Duluth, Dr. John H. Adair, Owatonna, and Alfred E. Spalding, Luverne.

Social Hygiene Commission Appointed.—Governor Bernquist has appointed the following physicians as members of the bureau for disease control of the Minnesota Social Hygiene Commission: Drs. Richard O. Beard, Elexions T. Bell, Albert J. Shesley, William A. Jones and Leonard G. Rowntree, Minneapolis; Drs. Henry M. Bracken and Charles D. Freeman, St. Paul; Dr. Edward L. Tuohy, Duluth, and Dr. Charles H. Mayo, Rochester, and as a committee on education, Drs. Henry W. Cook and Samuel E. Sweitzer, Minneapolis.

MONTANA

Personal.—Dr. Ellis A. Johnston has resigned as city physician of Helena.—Dr. Sidney A. Cooney has been appointed a member of the board of health of Helena.

The Mineral County Leper.—The United States Public Health Service has notified the state health board that no federal action can be taken in the case of Senator O. J. Willett of Mineral County, who is suffering from leprosy. Senator Willett will be isolated in his own county at a location approved by the state board of health.

Scarlet Fever and Smallpox.—Scarlet fever is reported to be epidemic in Billings.—There are said to have been 102 cases of scarlet fever reported to the board of health of Helena since May 1. Of these, thirty-four patients are now under quarantine. The apex of the epidemic was in the middle of October, when there were sixty patients under quarantine.—Smallpox is reported to be prevalent in Corvallis, where more than forty patients are under treatment.—The threatened epidemic of smallpox in Livingston is under control. There are now nine patients under quarantine and two suspected cases are under surveillance.

NEBRASKA

New Hospitals.—Mrs. William Glover, Aurora, has made an offer to the city council to turn over her home to the city

for a hospital, on condition that it shall be made fireproof, shall be open to all citizens on equal terms, and subject to her approval. The house contains eleven rooms, is heated by hot water, and lighted by electricity.—The Glasgow General Hospital, Hastings, is now open and ready to receive patients.

Personal.—Charles R. Robel, manager of the Lord Lister Hospital, Omaha, was killed by the overturning of his automobile near Oakland, Iowa, November 30.—Dr. William S. Yager, Nebraska City, has been appointed physician for the School for the Blind, Nebraska City, succeeding Dr. Claude Watson, deceased.—Dr. Arthur C. Stokes, Omaha, has been appointed, by the Omaha Red Cross Chapter, director of the hospital unit which has recently been organized by the Surgeon-General.—Dr. Lawrence B. Pillsbury, assistant superintendent of the Lincoln State Hospital, has been appointed superintendent of that institution, succeeding Dr. Benjamin F. Williams.

NEW JERSEY

Personal.—Dr. Francis B. Husted, Salem, was painfully injured by the overturning of his car, November 20.—Dr. John R. Stevenson, Haddonfield, who sustained serious injuries in a fall, recently, is reported to be improving.

Physicians Win Suits.—In the case of Henry Pendl, who brought suit against Dr. Halvor L. Harley, Pleasantville, for \$10,000 for the death of his son, claiming negligence on the part of the physician, the jury, November 21, returned a verdict in favor of Dr. Harley.—The jury in the case of Capt. William J. Condon, M. R. C., U. S. Army, New Brunswick, charged with the murder of John V. Piper, a Rutgers College student, returned a verdict of not guilty, October 27.

NEW YORK

State Association Meeting.—The Medical Society of the State of New York announces that its annual meeting will be held in Albany in the week beginning May 20, 1918.

Lobar Pneumonia Reportable.—According to the *Bulletin* published by the Buffalo Health Department, November 24, lobar pneumonia is declared a reportable disease, requiring quarantine.

Rockaway Physicians Organize.—The physicians of Rockaway have organized the Medical Association of Rockaway Beach, and elected the following officers: president, Dr. Frank P. Hatfield, and secretary, Dr. Abraham Goldberg.

Medical Staff for Home Defense Corps.—The following medical staff has been appointed by the Erie County Home Defense Committee: Major Earl P. Lothrop, and Capts. Almon H. Cooke, Frank B. Rasbach and Lawrence Hendee, all of Buffalo.

Personal.—Dr. Jason Parker has resigned as superintendent of the Jones General Hospital, Jamestown.—Lawrence S. Hill, physical director of the Albany public schools, has been elected president of the New York Association of Medical Inspectors and physical directors.—Dr. Walter M. Clark has succeeded Dr. Joseph N. B. Garlick as health officer of Schenectady.—Dr. Charles V. Patchin, who has been seriously ill at his home in Dansville, is reported to be improving.

Pneumonia Unusually Prevalent.—Dr. Hermann M. Biggs, state health commissioner, has issued a statement in which he predicts a high rate from pneumonia this winter. His prediction is based on the record of recent winters. In October there were 282 more deaths from this cause than in September, and 171 more than the average for October in the last five years. The importance of recognizing that pneumonia is a communicable disease and of acting in accordance with this fact is urged, and also that it is essential in guarding children against this disease that they be kept in the best state of nutrition and comfort. Figures published by the department, December 4, show that for the first week in December this year there were 249 cases reported as against 184 for the corresponding week of 1916 and 165 for the corresponding week of 1915. According to the city records the death rate from pneumonia is low among Germans, Russians and Hungarians; it is three and one-half times as high among Italian children as among children of German mothers, three times as high as among children of Russian, Austro-Hungarian or Irish mothers, and a little more than double that of American mothers. Attention is called to fatigue, chilling, overcrowding and the use of alcoholic beverages as factors favoring the development of the disease. The statistics show that the mortality from pneumonia among drinking men is twice what it is among abstainers.

New York City

Personal.—Dr. J. Ramsay Hunt has been appointed consulting neuropathologist to the Craig Colony for Epileptics, Sonyea, N. Y.—Dr. William H. Maxwell, superintendent of schools in Brooklyn, who has been seriously ill in Flushing Hospital, is reported to be convalescent.

New Day Camp for Tuberculosis.—Under the auspices of the Society for the Prevention and Relief of Tuberculosis, the Boat Committee formally opened a new day camp for the care of tuberculous patients, the "Manhattan," at the foot of East Ninetieth Street, December 6. Addresses were made by Health Commissioner Dr. Haven Emerson, Dr. Hermann M. Biggs, health commissioner of the state of New York, and Dr. Louis I. Harris.

Order Hospitals at Munition Works.—The subcommittee on industrial diseases, poisons and explosives of the Council on National Defense met at the Hotel McAlpin in New York, December 1, when it formulated recommendations for presentation to the Council on National Defense. The recommendations provide that all munition plants shall establish hospitals for the care of their employees, and restaurants in which the workers may eat under sanitary conditions. It is also recommended that the work in the plants be so regulated that the workers do not come in direct contact with nitro and amido compounds.

New York Academy of Medicine Elects.—The stated meeting of the New York Academy of Medicine, December 6, was the occasion of the annual election. The term of office of the president, Dr. Walter B. James, does not expire until Jan. 1, 1919. The officers elected were: vice president, Dr. John A. Hartwell; corresponding secretary, Dr. D. Bryson Delavan; treasurer, Dr. Seth M. Milliken; trustee, Dr. L. Emmett Holt; member of Committee on Admission, Dr. Godfrey R. Pisek, and member of Committee on Library, Dr. Herbert S. Carter.

OHIO

Insurance Committee Appointed.—The Ohio State Medical Association has appointed the following committee to cooperate with the State Health and Old Age Commission: Drs. Walter H. Snyder, Toledo; Otto P. Geier, Cincinnati, and Gilbert E. Robbins, Chillicothe.

Personal.—Dr. H. Wadsworth Dornan, Ashtabula, is reported to be seriously ill in St. Petersburg, Fla.—Dr. Oscar H. Sellenings, Columbus, now on duty with the American Red Cross in France, has begun a study of the milk situation in that country.—Dr. Harry E. Cover, Bantam, was thrown from his buggy in a runaway accident, November 19, fracturing his leg below the knee.—Dr. John C. Darby, Cleveland, recently suffered a slight cerebral hemorrhage, and is confined to the house.

Club Takes Action on Medical Corps.—The Exchange Club of Toledo at a recent meeting adopted resolutions, introduced by Dr. Charles M. Harpster, Toledo, urging its senators and congressmen to support the bill to be introduced in the coming session of Congress, which provides that the medical officers of the Army shall have the same rank that prevails in the Medical Corps of the Navy; that out of 10,000 medical officers in active service there shall be twenty-five major-generals, twenty-five brigadier-generals, 400 colonels, 800 lieutenant-colonels, 2,350 majors, 3,200 captains, and 3,200 first lieutenants; that medical officers shall be equal in rank and authority with officers of the line, and that these provisions shall apply both to the regular service and the Medical Reserve Corps.

PENNSYLVANIA

Health Insurance Commission.—Governor Brumbaugh, October 16, announced the appointment of a commission to study health insurance and report to the next legislature. The members are Hon. William Flinn, Pittsburgh; William Draper Lewis, Philadelphia, and Dr. John B. McAlister, Harrisburg.

Mütter Lecture.—The Mütter Lecture on surgical pathology for 1917 was delivered in Thomson Hall of the College of Physicians, December 14, by Dr. Chevalier Jackson, Philadelphia, on "Observation of the Pathology of Foreign Bodies in the Air and Food Passages, Based on the Observation of 628 Cases." The lecture was illustrated by specimens, lantern slides, roentgenograms and color drawings.

Personal.—Dr. James D. Kiefer, Mount Carmel, is ill with gastric ulcer.—Dr. Fulton R. Stotler, has resigned after twenty-eight years of service as a director of the Wilkinsburg Board of Education.—Dr. Samuel G. Dixon, who has been ill at the University Hospital, Philadelphia, for three months, left the institution, November 27, greatly improved in health.

—Dr. John L. Sagerson, Johnstown, who was injured in an automobile accident recently and was under treatment in the Mercy Hospital, is reported to be convalescent.—Dr. Carlton H. Davidson, New Salem, who is serving on the western front in France, was gassed by a German shell and was partially blinded for one week.

Smallpox.—During the last week in November there were sixty cases of smallpox in twelve counties in Pennsylvania.

—The number of cases at Blue Ball, Lancaster County, increased in two days from eleven to twenty-one cases. The state health commissioner has issued the following warning regarding smallpox: "The state should realize it now has a patriotic duty to perform in stamping out smallpox. Our agents throughout the state are competent and active men but they can do little if the public fails to do its part. The present smallpox epidemic in Clearfield County and surrounding neighborhood is directly due to the fact that a case of smallpox which came into the state from Ohio was secreted and the knowledge of it kept from the health authorities."

—The quarantine on the Pennsylvania Railroad Construction at Gallitzin, where nearly 100 men have been held for two months, was lifted, November 23.

Philadelphia

Hospital Campaign.—On the first of its ten-day campaign to raise \$50,000, St. Timothy's Hospital obtained \$30,538, over 60 per cent. of the amount desired.

Result of State Examination for Optometrists.—Under the new state optometry law the examination recently held at the Central High School showed that several hundred would fail to get licenses. A number of the applicants could neither read nor write English.

Personal.—Dr. Frank C. Hammond, Philadelphia, has been appointed a member of the board of health to serve during the absence in France of Dr. Alexander C. Abbott.—Dr. William W. Keen has declined the renomination of president of the American Philosophical Society, after serving ten years in that capacity.—Major Arthur C. Christie, M. R. C., Surgeon-General's Office, Washington, D. C., and Dr. George M. MacKee, New York, addressed the joint meeting of the Philadelphia County Medical Society and Philadelphia Roentgen-Ray Society at the College of Physicians Building, December 12.—Dr. Edward E. Montgomery addressed the Atlantic County Medical Society at the stated monthly meeting, held at the Chalfonte Hotel, Atlantic City, December 14.

SOUTH DAKOTA

New Hospital.—The new Methodist Episcopal Hospital at Mitchell was dedicated, December 9. The building has cost about \$100,000, and will accommodate more than 100 patients.

Personal.—Dr. Arthur J. Jackson, Lead, has been appointed a member of the State Board of Health and Medical Examiners, succeeding Dr. Felix E. Ashcroft, Deadwood, term expired.

New District Society Officers.—The Seventh District Medical Society held its annual meeting and banquet in Sioux Falls, December 3, and elected Dr. Joseph G. Parsons, Sioux Falls, president; Dr. George W. Bliss, Valley Springs, vice president, and Dr. Goldie E. Zimmerman, Sioux Falls, secretary.

VIRGINIA

Personal.—Dr. Edward W. Rawls, Churchland, has succeeded Dr. Sherwood Dix, Port Norfolk, as a member of the Norfolk County Board of Health.

Medical College Admits Women.—A report states that the faculty of the Medical College of Virginia of Richmond at a recent meeting voted to admit women students.

CANADA

Military Hospitals Under Army Medical Corps.—Final arrangements have been completed whereby the Canadian Military Hospitals Commission is handing over to the Canadian Army Medical Corps the care of all wounded and sick soldiers in Canada.

Hospital News.—A new military hospital is to be built in High Park, Toronto, where there are available 25 acres of land. It is to be constructed on the plan of the Ontario Military Hospital at Orpington, England. Accommodation will be provided for 1,000 beds, and buildings of four or five stories will be built in connection with an administration building. The hospital will cost about \$300,000, and two months will be required to get the buildings in condition for the reception of patients.

Personal.—Capt. George Ewart Wilson, Toronto, who was with the University of Toronto Base Hospital at Saloniki, and lately in England, has returned to Toronto.—Col. Frederick W. Marlow, formerly A. D. M. S., Toronto Military District, has been ordered by the Militia Department of Canada to Halifax, where he will be engaged in caring for the injured in the recent disaster which has swept over that city.—So far as yet announced, Dr. Murdoch Chisholm, one of the leading physicians of Halifax, is the only physician of the city whose name is included in the list of those who lost their lives in the Halifax disaster.—Dr. Charles J. C. O. Hastings, M. O. H., Toronto, despatched three nurses immediately to help at Halifax, and another twenty-five nurses will leave in a day or two.

GENERAL

Once More a Warning.—THE JOURNAL has repeatedly warned its readers of a subscription swindle worked on physicians and others. The individual presents himself as a contestant for a prize in the form of a scholarship to be awarded by an educational association to the one obtaining the most subscriptions in a certain length of time. It is worked under different names; we have called attention to it as the National Educational Association, Cornell Educational Association, The United Students' Aid Society. The latest is the Advance Society of the University of Illinois, with a military angle. The solicitors, two well-dressed young men, represent themselves to be contestants for a scholarship in an Army school. May we again suggest that those who would avoid being swindled should avoid paying money to traveling men whom they do not personally know?

Peroral Endoscopists Organize.—November 1, the Clinical Association of Peroral Endoscopists was organized in Philadelphia. The objects of the society are "The study of diseases and accidents occurring in the respiratory and upper digestive tracts, of borderline conditions and their treatment, medical and surgical, by direct inspection." The association also aims to impress on the internist and general practitioner the value of bronchoscopy and esophagoscopy as diagnostic methods of precision, to make possible the accurate ocular study in the living subject of the pathologic condition of the esophagus and lungs. The officers of the association are as follows: president, Dr. Chevalier Jackson, Philadelphia; vice president, Dr. Hubert Arrowsmith, Brooklyn; secretary-treasurer, Dr. Henry L. Lynah, New York, and members of the executive committee, Drs. Wolff Freudenthal, New York, and Samuel Iglauer, Cincinnati.

FOREIGN

The Milk and Coal Card Plague.—The *Nederlandsch Tijdschrift* relates that an Amsterdam physician, complaining of the plague of certificates he is called on to fill out, states that eighty-nine requests for a milk certificate reached him in one mail. Each required investigation as to the reasons why the extra milk should be granted the applicant. He gave one man with stomach disease a certificate entitling him to sick benefit, and the man presented it to the coal control bureau and obtained 2 tons of coal on the strength of it—the first time that anthracite was deemed a stomachic.

Federation of Foundling Asylums in Italy.—A national gathering of the officials of the *brefotrofi*, the foundlings' asylums, of Italy was held recently at Rome. Steps were taken for a federation of these institutions throughout the country. Among the measures voted was an appeal to the government to extend to adopted children under 12 the financial aid now given to the other dependents of soldiers. The question of care of syphilitic infants, advisability of colonies for them and prophylaxis of infection of others were among the subjects discussed, as also the necessity for more effectual measures for research as to the paternity.

The Leipziger Verband.—According to the *Nederlandsch Tijdschrift*, the Leipziger Verband recently convened for the first time since the war began. Of the officials and representatives of the organization, seventy-four have perished. There are now 25,800 members. Hartmann is still the president, and he urged physicians to make every effort to get the sickness insurance societies to found diagnostic laboratories. The Verband voted to establish an old age pension bureau, also to sustain in every way the dispensaries that have been opened for diagnosis and advice, especially for venereal diseases, without giving treatment. The meeting also went on record as opposing the idea of the practice of medicine becoming a state department, saying that the medical profession is best practiced when the physician can advise the sick man as a free and independent consultant.

PARIS LETTER

PARIS, Nov. 15, 1917.

The War

TREATMENT OF INFECTED WOUNDS WITH JAVEL WATER

At a recent meeting of the Académie des sciences, Dr. Cazin, formerly chief of the surgical clinic at the Hôtel Dieu, and Mlle. Krongold presented an interesting communication on this subject. They are of the opinion that the use of diluted Javel water in the treatment of infected wounds has been wrongly condemned as being irritating. As a matter of fact, Javel water, in sufficient dilution, is not irritating at all. Daufresne used a very strong solution, but Cazin uses a 15 per thousand solution, which does not have any deleterious effect on human skin, even when in contact with it for twenty-four hours. Histologic examination showed that skin so treated was absolutely normal. On the other hand, skin similarly treated for twenty-four hours with Dakin's solution, the hypochlorite solution of Daufresne, or a solution of Javel water containing the same amount of sodium hypochlorite as Daufresne's solution shows, on microscopic examination, complete destruction of the epidermis and of the papillary layer as well as maceration and partial disintegration of the underlying subdermal fascia. Cazin and Krongold having confirmed Daufresne's findings with the use of a 50 cg. per cent. hypochlorite solution, used a solution containing 15 gm. of Javel water to the liter of water, that is, 0.042 gm. per cent. of sodium hypochlorite, or twelve times less than either Dakin's or Daufresne's solution. They have treated with their solution, at the Messimy hospital, 510 cases of infected wounds, including 155 compound fractures, 286 deep wounds of the soft parts, usually with extensive lesions, 44 amputations made in the fighting zone and suppurating after operation, and 25 cases of severe multiple wounds of the soft parts. Of these 510 patients, only three died, one from tetanus, and one from a severe icterus; two amputations were made because of extension of the lesion, not because of sepsis; 507 patients, all with severe cases, were cured. The 15 per thousand solution of Javel water has a greater bactericidal power than Dakin's solution and is less irritating, the caustic properties of the latter being due to its greater sodium hypochlorite content.

FRENCH BASE HOSPITALS IN RUSSIA

As stated in a previous letter, three military medical-surgical units were sent to Russia to be utilized by our allies in three sections of the country as hospital centers. M. Justin Godart, undersecretary of state for the army medical department, has been informed that after having overcome great difficulties, these units are now in full operation. After three months of methodical preparation, hospitals have been opened in Ourmiah, Tiflis and Kiev. Automobile ambulances have been sent to the front, and are giving very good service under the direction of Medical Inspector Cresson.

A MILK CARD FOR CHILDREN AND THE SICK

Following a conference between the prefect of the Seine and the dairy association, held to provide measures to insure a sufficient milk supply for infants and the sick, it was decided to issue a milk card for their benefit. According to the measures adopted, families having children less than 3 years of age, or sick members who are restricted to a milk diet, will register with some milkman of their choice, and he will give them a special card to be detached from a stub book of cards. This card the recipients must have endorsed by the mayor of their arrondissement after having established their right to such a card. The signature of the physician who gave the medical certificate must be verified by the milk dealer or the mayor. The card issued to the sick is valid for only three months, but may be renewed, if necessary.

ESTABLISHMENT OF A CENTRAL FOOD BUREAU

The food commissioner has established a central bureau or office at which he may be consulted and from which information will be disseminated on the proper methods to be adopted to facilitate the supplying of cooperative municipal organizations or associations and of purveyors of foods of prime necessity. The bureau will combat especially the high prices in large towns, and strive to balance demand and supply. The bureau will supervise the distribution of supplies, both domestic and foreign, according to the needs of the people.

The "Maison d'Amérique" (America Building)

M. Lopez Lomba, the consul general of Uruguay at Paris, recently informed the Geographical Society that certain individuals have agreed to his project for creating a Pan-Atlantic Union, having for its object the founding of a "Maison d'Amérique" in Paris and of "Maisons de France" in the principal cities of the western hemisphere. The "Maison d'Amérique" will be the center for the development of commercial, financial, intellectual and social relations between American countries and between these and western Europe. The scheme includes a general information and propaganda bureau, an industrial exhibit, an American library and museum, a tourist bureau, a society, a journal, an American University, a home for students, a section for welfare work and social defense, courts, lectures, expositions, congresses, etc. M. Lomba is convinced that he will receive the support of interested states and particularly of the Pan-American Union. The meeting adopted a resolution approving this project as outlined.

LONDON LETTER

LONDON, Nov. 13, 1917.

The War

NEW FOOD RATIONS

Sir Arthur Yapp, director of food economy, has announced a new scale of voluntary rations, which are as follows:

| | Weekly Ration | |
|---|---------------|-----|
| | Lb. | Oz. |
| Bread: | | |
| Men on heavy industrial work or on agricultural work.... | 8 | 0 |
| Men on ordinary industrial or other manual work..... | 7 | 0 |
| Men unoccupied or on sedentary work..... | 4 | 8 |
| Women on heavy industrial work or on agricultural work.. | 5 | 0 |
| Women on ordinary industrial work or in domestic service. | 4 | 0 |
| Women unoccupied or on sedentary work | 3 | 8 |
| Other Foods (for all adults): | | |
| Cereals other than bread | | 12 |
| Meat | 2 | 0 |
| Butter, margarin, lard, oils and fats | | 10 |
| Sugar | | 8 |
| Children: | | |
| Children to receive "reasonable" rations, no definite scale being laid down. | | |
| The scale laid down by Lord Devonport, the previous food controller, last winter was: | | |
| Bread | 4 | |
| (or flour for bread making) | 3 | |
| Meat | 2 | 8 |
| Sugar | | 12* |
| *Afterward reduced to 8 ounces. | | |

The new scale differs in several respects from the old one. The former food controller confined himself to rationing bread, meat and sugar, whereas Sir Arthur Yapp adds (1) all cereals other than bread, and (2) butter, margarin, lard, oils and fats. While Lord Devonport recognized the wide differences between reasonable food requirements of, say, men employed in hard manual work, men engaged in sedentary occupations, women similarly employed, and children of various ages, his scale was based on a flat rate for each individual, without discrimination as to sex, occupation or age.

The "bread" rations include all flour, whether used for bread or for cooking. Flour may be taken instead of bread at the rate of three-fourths pounds of flour for every pound of bread. The "other cereal" rations include oatmeal, rice, tapioca, sago, barley meal, corn flour, maize meal, dried peas, beans and lentils, and all cereal products except bread and flour. The weight given is the weight of the dry article as bought. If the full bread ration is not used, the amount saved can be taken in other cereals at the rate of three-fourths pounds of cereals for every pound of bread saved. The "meat" rations include the average amount of bone, which may be taken as one quarter of the weight of the actual meat. Any parts of meat (such as rump steak, bacon or suet) which are bought without bone must count for one quarter more than their actual weight. On the other hand, any bone in excess of a quarter of the actual meat bought may be deducted. Poultry and rabbits may be counted at half their actual weight. The meat rations include suet.

A MINISTRY OF HEALTH

Speaking on this subject at the Royal Institute of Public Health, Mr. A. L. Fisher, the minister of education, said that the time now seemed to have come to consider whether all the agencies existing in the country should be combined into a more effective and economical system for promoting public health. A child came into the world under theegis of the Central Midwives Board. A month or two later he received the care, if he received any at all, of a voluntary association, which might or might not be subsidized by the

Board of Education or by the Local Government Board. About the age of 3 the child might proceed to an elementary school, and from 3 to 14 might receive his education there. During that period he was under the medical supervision of the school medical service, which in turn was controlled by the local education authorities and the Board of Education. From 14 to 16 the child did not seem to be under any special public health control. At 16 the child passed under the control of the Insurance Commission. Children who were engaged in manufactures were medically supervised by the Factory Department of the Home Office, unless they happened to be engaged in the manufacture of munitions, in which case they passed under the control of the minister of munitions, if they were not disabled by the war, in which case they were the prey of the Local Pensions Committee. Of course, if the child happened to be mentally defective, he passed under another system of control. If he had the misfortune to be a pauper he became the object of the solicitude of the Poor Law authorities. Thus the child might pass under a very large number of possible public health authorities.

Major Astor also read a paper. He referred to the administrative chaos which resulted from the responsibility for health and welfare being divided between seven central bodies, and many conflicting and overlapping local ones. The first thing required was a central department, and the second was the disentangling and straightening out of the spheres and functions of the 1,800 sanitary authorities of the 630 boards of guardians, of the 238 local insurance committees, of the 318 local education authorities, and of the 320 new pensions committees. Before the war he presided over an informal committee consisting partly of members of Parliament, and partly of practical medical administrators. They investigated alternative schemes of reconstruction. At first they favored the creation of a new ministry, but soon they became convinced that it would be easier, quicker and probably more effective at the start to build on an existing department. The committee next examined the machinery then in existence, and decided that of the various ministries only two needed to be seriously considered as possible nuclei for a health ministry—the Insurance Commission and the Local Government Board. At first the committee inclined to the Insurance Commission as the department on which to build, but was driven to the conclusion that at its inception, at all events, the Local Government Board should be the center to which the services connected with prevention, treatment and inspection should be gradually transferred from the numerous departments now responsible for their provision. If they were to carry out Lord Rhondda's ideal and save 1,000—or even 500—baby lives per week, they must have a health minister, and not three ministers, or even two ministers.

THE PREMIER'S TRIBUTE TO THE ARMY MEDICAL SERVICE

In proposing in Parliament a vote of thanks to the British armies at the conclusion of three years of war, Mr. Lloyd George paid a tribute to the medical service, which he said had never shown greater courage, knowledge and experience. Great consultants had given up princely incomes and volunteered for this service. Wounds had been cured which before the war were regarded as fatal. As an illustration of the services rendered in saving life, he mentioned that in the South African War 50,000 men had died of typhoid. In France, out of our gigantic army, during the whole three years of the war only 3,000 had fallen victims to this disease. The medical profession had suffered. Hundreds had been killed and many more hundreds wounded. Thanks were also due to the women, our trained and untrained nurses, whose tenderness for the wounded had earned thanks from the lips of hundreds of thousands of poor men whose lives had been saved and who had been spared much suffering through their tender ministrations. They had not escaped perils. Many had been killed by shell fire. Many of them had been drowned in hospital ships, sunk with the sign of the cross on them.

In the House of Lords, Earl Curzon proposed a similar motion. He said that when war broke out the Royal Army Medical Corps had 3,168 officers and 16,330 men of other ranks. There were at the present time nearly 14,000 officers and 125,000 of other ranks. The health of the army had been better than that of the civilian population at home. He also mentioned the work of the nurses, not only in the hospitals behind the line, but also in the casualty clearing stations only just behind the front. Seven had been drowned by submarine action, and several others had been killed by enemy bombs on hospitals. The name of one had been rendered immortal by her martyrdom.

Marriages

FRANK WYMAN LAMB, M.D., Akiak, Alaska, physician in charge of the Government Hospital, U. S. Bureau of Education, to Miss Rose May Wynne of Norton, Kan., at Akiak, October 13.

LIEUT. FREDERICK CHRISTOPHER, M. R. C., U. S. Army, Mobile Surgical Unit, to Miss Madeline Smith, both of Chicago, December 1.

GEORGE EDMUND DEARDEN DESAULNIERS, M.D., Montreal, Que., to LUCY JANE O'CONNELL, M.D., of Lewiston, Me., November 23.

ASST. SURG. FREDERICK TALMADGE LAU, U. S. N. R. F., Detroit, to Miss Amy Carleton Lefe of New York City, December 4.

PAUL BUTLER JENKINS, M.D., New York City, to Miss Alma Louise Wells of Binghamton, N. Y., November 19.

WALTER LEE BOSWELL, M.D., Macon, Tenn., to Miss Blarnee La Vleet Crawford of Rossville, Tenn., October 29.

FRANCIS E. DRUMHELLER, M.D., to Miss Ella Kirkpatrick, both of Sunbury, Pa., in Philadelphia, recently.

ALEXANDER EMMETT TURMAN, M.D., to Mrs. Ruby Thomas Storrs, both of Richmond, Va., December 5.

FRANK KINGSLEY DUTTON, M.D., to Miss Huldah Carlson, both of Springfield, Mass., December 1.

FRED MILLER DRENNAN, M.D., Chicago, to Miss Esther Olive Clay of Quincy, Ohio, recently.

Deaths

Oscar M. Leiser, M.D., New York City; College of Physicians and Surgeons in the City of New York, 1896; assistant director of the Bureau of Health of New York; died suddenly, December 11. He was a Fellow of the American Medical Association and of the New York Academy of Medicine. Dr. Leiser was a powerful propagandist against charlatanry and fraud, and had been attached to the bureau since its organization. He had acted as the medical expert of the health department in trials of cases against quacks and medical fakers for several years, and not a case in which he had testified was decided by the courts against the department. Dr. Leiser was hated and feared by all the "patent medicine" fakers, for he was outspoken and fearless in his denunciation of their methods. In his connection with the department of health, which had continued for nearly twenty years, he had served in practically every medical branch of the department. Dr. Leiser was a man of charming personality, able and devoted.

Samuel Parker Cottrell, M.D., Newport, R. I.; Jefferson Medical College, 1882; aged 57; a member of the Rhode Island Medical Society; for several years assistant surgeon in the Massachusetts Women's Hospital, Boston; lecturer in Tufts Medical College, Boston; professor of children's diseases in the St. Paul Medical College, and later chief surgeon of the Boston Emergency Hospital; surgeon of volunteers during the war with Spain; a member of the Newport Board of Health; died in Providence, R. I., December 1.

Charles Willard Howard, M.D., Shoreham, Vt.; University of Vermont, Burlington, 1874; aged 72; formerly a Fellow of the American Medical Association; a member and once vice president of the Vermont State Medical Society, and president of the Addison County Medical Society; for fourteen years superintendent of schools; for three years a member of the county board of education, and since 1881 town clerk; in 1908 representative in the legislature from the town of Shoreham; died at his home, December 1.

William Wayne Owens, M.D., Savannah, Ga.; University of Virginia, Charlottesville, 1885; aged 54; a Fellow of the American Medical Association; a member of the Society of Southern Railway Surgeons; major and surgeon of the First Cavalry, Ga. N. G.; a member of the staff of the Savannah Hospital; a member of the state board of health; local surgeon of the Southern Railway; at one time a member of the city council of Savannah; died suddenly in a store in Savannah, November 23.

David Adams Spear, M.D., Burlington, N. J.; University of Virginia, Charlottesville, 1897; aged 39; a member of the

Medical Society of Virginia, and a specialist on diseases of the eye, ear, nose and throat; who formerly conducted a sanatorium at Albuquerque, N. M.; while driving his automobile over a grade crossing between Burlington and Florence, November 25, was struck by a freight train, and died from his injuries while being conveyed to the Riverside Hospital.

Samuel E. Lewis, M.D., Washington, D. C.; Medical College of Virginia, Richmond, 1864; aged 79; a Fellow of the American Medical Association; first vice president and later president of the Association of Naval Officers of the Army and Navy of the Confederacy; assistant surgeon in the Confederate Service, and in command of the Chimborazo Hospital, Richmond, Va., during the Civil War; from 1868 to 1884 a pharmacist; died in his apartment, November 17.

Samuel S. Boots, M.D., Greenfield, Ind.; Eclectic Medical Institute, Cincinnati, 1870; aged 68; for ten years a member and for two years president of the Indiana State Board of Health; president of the Greenfield Banking Company; for twelve years a member of the faculty of the Indiana Eclectic Medical College, Indianapolis; formerly editor and publisher of the *Indianapolis Medical Investigator* and *Greenfield Herald*; died at his home, November 30, from pneumonia.

Ami Jacques Magnin, M.D., Paris, France; Bellevue Hospital Medical College, 1881; Faculté de Médecine de Paris, 1886; aged 59; formerly secretary of the surgical section of the New York Academy of Medicine; and a member of the staff of the French Hospital, Bellevue Hospital, and Vanderbilt Clinic, New York City; chief surgeon of the American Hospital, Neuilly, near Paris; an officer of the Legion of Honor; died suddenly at his home, November 25.

Zephaniah Kerr Wiley, M.D., Baltimore; College of Physicians and Surgeons, Baltimore, 1875; aged 74; a Confederate veteran; lecturer in anatomy in Baltimore Medical College, and one of the founders; later professor of anatomy, professor of obstetrics and dean of Baltimore University; who was thrown from a street car while making a professional call about a month ago; died from his injuries in the Biedler-Sellman Sanatorium, Baltimore, November 25.

Samuel A. Johnson, M.D., Springfield, Mo.; Kentucky School of Medicine, Louisville, 1889; aged 54; a Fellow of the American Medical Association; superintendent of the Johnson Sanitarium, Springfield; formerly assistant superintendent of State Hospital No. 3, Nevada; was attacked with an axe by an epileptic patient in the yard of the hospital, November 24, sustaining injuries from which he died on the following day.

John Jacob Ott, M.D., Pleasant Valley, Pa.; University of Pennsylvania, Philadelphia, 1874; aged 66; a member of the Medical Society of the State of Pennsylvania; also a pharmacist; vice president and director of the C. and E. Railroad; director of the Quakertown Trust Company; and one of the originators and directors of the Globe Mutual Life Stock Insurance Company; died at his home, November 22.

Albert H. Steinbrecher, M.D., Detroit; Detroit Medical College, 1881; aged 59; a Fellow of the American Medical Association; professor of practice of medicine and clinical medicine in the Detroit College of Medicine and Surgery; a member of the staff of St. Mary's Hospital and the Women's Hospital and Infant Home, Detroit; died at his home in Arden Park, Detroit, November 25, from heart disease.

Roland C. Shear, M.D., Mount Gilead, Ohio; Starling Medical College, Columbus, Ohio, 1891; aged 50; a member of the Ohio State Medical Association; a specialist in diseases of the eye, ear, nose and throat; for two terms coroner of Morrow County, and later deputy probate judge and probate judge; died in a hospital in Cleveland, November 26, two days after an operation for appendicitis.

John Taylor Jones, M.D., Grass Valley, Calif.; Cooper Medical College, San Francisco, 1898; aged 42; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of California; died at his home, November 19, from spinal injuries sustained in a dive in a swimming tank about ten years before.

Charles Orvis Goulding, M.D., Pittsburgh; Bellevue Hospital Medical College, 1887; aged 58; a Fellow of the American Medical Association, and a charter member of the Pittsburgh Academy of Medicine; associate professor of clinical medicine in the University of Pittsburgh; died at his home, November 27, from pneumonia.

Frederick Page Ransom, M.D., Pittsburgh; Jefferson Medical College, 1904; aged 37; formerly a Fellow of the American

Medical Association; a member of the Medical Society of the State of Pennsylvania; assistant on the surgical staff of the Allegheny General Hospital; died at his home in Pittsburgh, November 19.

John William Baker, M.D., Granite City, Ill.; St. Louis University, 1911; aged 31; formerly a Fellow of the American Medical Association; a member of the Illinois State Medical Society; while driving his automobile over a grade crossing at Madison, Ill., November 30, was struck by a Wabash passenger train, and died two hours later at St. Elizabeth's Hospital, Granite City.

William Henry Keim, M.D., Philadelphia; Hahnemann Medical College, Philadelphia, 1871; aged 74; president and executive officer of St. Luke's Homeopathic Hospital, Philadelphia; and once president of the State Homeopathic Medical Society; demonstrator of surgery in his alma mater; died at his home, November 23.

Lieut. Sigmund Deutsch, M. R. C., U. S. Army, New York City; College of Physicians and Surgeons in the City of New York, 1892; aged 41; a Fellow of the American Medical Association; visiting physician to the German Hospital and Vanderbilt Clinic; died at his home, November 29, from cerebral hemorrhage.

Edward William Karrmann, M.D., Cheshire, Conn.; New York University, New York City, 1891; aged 65; a Fellow of the American Medical Association; acting assistant surgeon, U. S. Army in 1889; while driving over a grade crossing in Cheshire, November 28, was struck by a trolley car and instantly killed.

Olaf T. Melde, M.D., Spokane, Wash.; Physio-Medical College of Indiana, Indianapolis, 1890; aged 48; formerly a member of the Washington State Medical Association; who had been taking a postgraduate course at the Chicago Eye and Ear Hospital; died suddenly in that institution, November 19, from heart disease.

Capt. Augustin de Yterbide Green, M. R. C., U. S. Army, Prosser, Wash.; Georgetown University, Washington, D. C., 1901; aged 42; a Fellow of the American Medical Association; on duty at Camp Lewis, American Lake, Wash.; died in the cantonment base hospital, Camp Lewis, November 25, from pneumonia.

Frank Loring Sargeant, M.D., Victoria, Texas; College of Physicians and Surgeons, Chicago, 1900; aged 45; formerly a Fellow of the American Medical Association; a member of the State Medical Association of Texas; a specialist on diseases of the eye, ear, nose and throat; died at his home, November 11.

Jules F. Vallé, M.D., St. Louis; Washington University, St. Louis, 1885; aged 58; a Fellow of the American Medical Association; a member of the staff of St. Luke's Hospital; physician to the Missouri School for the Blind, St. Louis; a director of several iron companies; died at his home, November 24.

Rudolph F. Schaefer, M.D., Oklahoma City; Washington University, St. Louis, 1892; aged 51; formerly a member of the Oklahoma State Medical Association, and professor of obstetrics and diseases of women in Epworth College, Oklahoma City; died at his home, November 9, from diabetes.

James Mills, M.D., Janesville, Wis.; Northwestern University Medical School, 1883; aged 65; formerly a Fellow of the American Medical Association; a specialist on diseases of the eye, ear, nose and throat; jumped from a bridge in Janesville, into Rock River, November 18, and was drowned.

Abram Leander Sherick, M.D., Ashland, Ohio; Bellevue Hospital Medical College, 1880; aged 61; formerly a Fellow of the American Medical Association; a member of the Ohio State Medical Association; a specialist in surgery; died at his home, November 18, from disease of the stomach.

Francis Anderson Lyman, M.D., Waimea, Kauai, T. H.; Rush Medical College, 1889; aged 54; a Fellow of the American Medical Association; for nine years superintendent of the Wisconsin State Hospital, Madison; since 1913 a practitioner of Hawaii; died at his home, November 4.

Claire W. Murphy, M.D., Los Angeles; University of California, Los Angeles, 1891; aged 47; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of California; instructor in anatomy in his alma mater; died at his home, November 24.

Jonathan Milton Wyland, M.D., Moline, Ill.; State University of Iowa, Iowa City, 1886; aged 59; president of the Moline Foundry Company, who had been ill for two years with spinal

disease, due to an accident; died at his home, November 29, four weeks after a surgical operation.

Joseph Lorenzo Brunet, M.D., New Orleans; Tulane University, New Orleans, 1898; aged 61; for many years a practitioner of Covington, La., formerly a member of the Louisiana State Medical Association; died at his home, November 19, from heart disease.

Waldo Fitch Sawyer, M.D., Vineland, N. J.; Jefferson Medical College, 1890; aged 52; a member of the Medical Society of New Jersey; once mayor, and for one term coroner of Cumberland County; died at his home, November 17, from pneumonia.

Hans Kudlich, M.D., Hoboken, N. J.; University of Zurich, Switzerland, 1853; aged 94; one of the last survivors of the Revolution of 1848; who retired from practice thirty years ago; died at his home, November 10, from acute bronchitis.

Thomas McKaig Wall, M.D., Osceola, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1867; aged 73; formerly a member of the Iowa State Medical Society; a veteran of the Civil War; died at his home, November 18.

Silas Pinckney Holbrook, M.D., East Douglas, Mass.; University of Pennsylvania, Philadelphia, 1862; aged 80; a member and councillor of the Massachusetts Medical Society; died in Farnumsville, Mass., October 2.

Joseph Mark Malatesta, M.D., Philadelphia; Jefferson Medical College, 1886; aged 58; also a graduate in pharmacy; for a time instructor in dermatology in his alma mater; died at his home, November 22, from disease of the kidney.

William T. Griffis, M.D., Fountain City, Ind.; Eclectic Medical Institute, Cincinnati, 1871; aged 70; formerly a member of the Indiana State Medical Association; died at his home, about November 20.

John D. Kaple, M.D., Ogdensburg, N. Y.; Cleveland University of Medicine and Surgery, 1896; formerly a member of the Medical Society of the State of New York; died at his home, November 17.

William Alexander Armstrong, M.D., Philadelphia; Philadelphia University of Medicine and Surgery, 1861; aged 77; died at the home of his son in Philadelphia, November 22, from heart disease.

Albert A. Norris, M.D., Philadelphia; Hahnemann Medical College, Philadelphia, 1887; aged 63; for nineteen years chief clerk at the Philadelphia Mint; died at his home, November 24, from nephritis.

Joseph H. H. Reser, M.D., Conway, Mo.; Ensworth Medical College, St. Joseph, Mo., 1893; aged 67; a member of the Missouri State Medical Association; died at his home, November 8.

William H. Cole, M.D., Kewanee, Ill.; Long Island College Hospital, Brooklyn, 1873; aged 79; a member of the Illinois State Medical Society; died at his home, November 29.

George A. Bachman, M.D., Rochester, N. Y.; New York Homeopathic Medical College, New York City, 1892; aged 49; died at his home, November 21, from heart disease.

Samuel Andrew O'Neal, M.D., Henderson, Ky.; Meharry Medical College, Nashville, Tenn., 1888; aged 55; a colored practitioner; died, November 21, from influenza.

James McQuillen, M.D., Superior, Wis.; McGill University, Montreal, 1874; aged 67; a Fellow of the American Medical Association; died at his home, November 19.

William Robert Yuill, M.D., Yale, Mich.; Bellevue Hospital Medical College, 1877; aged 73; died at his home, November 17, from heart disease.

Daniel Grant Rowley, M.D., Culmerville, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1891; aged 59; died at his home, November 20.

Joseph M. Gerhart, M.D., Philadelphia; Hahnemann Medical College, Philadelphia, 1868; aged 71; died at his home, November 20, from pneumonia.

Howard A. Underwood, M.D., York Springs, Pa.; Hahnemann Medical College, Philadelphia, 1873; aged 74; died at his home, November 17.

Elbridge A. Herriman, M.D., Chicago; Victoria College, Toronto, Ont., 1860; aged 83; died at the home of his son in Chicago, November 28.

Moses Knapp, M.D., Gwynedd, Pa.; Philadelphia College of Medicine and Surgery, 1854; aged 77; died at his home, about November 18.

Thomas Wilson Johnston, Kingston, Mo. (license, Missouri, 1883); aged 84; a practitioner since 1863; died at his home, November 11.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

STRANDGARD'S T. B. MEDICINE

Exploiting the Tuberculous Canadian Soldier

The resident physician of a Canadian sanatorium devoted exclusively to the scientific treatment of tuberculosis writes:

"The enclosed leaflet and letter from the Dr. Strandgard's Medicine Co. of Toronto, Can., is being sent in a plain envelope, marked 'personal' to a number of returned Canadian officers who are patients in this institution. If you have any information regarding this 'cure' or the company, your Canadian readers would appreciate its publication in *THE JOURNAL*."

The letter enclosed was on the stationery of the "Dr. Strandgard's Medicine Co." It was addressed to a man suffering from tuberculosis—a man who had been stricken with this disease while in the service of his country. The "patent medicine" concern states in its letter:

"Our T. B. medicine is a specific for the complaint of which we have been informed you are suffering . . ."

This cruel falsehood is followed up by the statement that the stuff is a "high-class scientific preparation endorsed by physicians" which, previous to being put on the market, was "used with wonderful success in private practice." Further:

"Dr. Strandgard has been awarded gold medals at four international exhibitions in Europe for his medicines."

Just what was the nature of these exhibitions, we do not know; possibly they were the same sort of international "expositions" that were exposed in *THE JOURNAL* about three years ago whose "gold medals" meant no more than that the exploiter has paid a specified sum as a guaranty that he would receive an "award." The letter to the consumptive continues:

"Of course, one bottle will not improve your health owing to the nature of your case, but after three bottles you will derive considerable benefit and will continue to take it until you feel you are restored to normal health. Kindly write us informing us of your permission to forward three bottles. We are agreeable to send them on condition that you do not pay for them unless you are satisfied with the progress you have made . . ."

This appeal is typical of "consumption cure" humbugs. Throughout the entire advertising matter the claim is made by inference that the remedy will cure consumption. None knows better than the trader in a fake consumption cure how easy it is to persuade the consumptive during the first few weeks of any new and mysterious "treatment" that he has been benefited. Time and again it has been shown that such concerns run no risk in offering to send limited amounts of their nostrums to the victims on a basis of "no pay unless satisfied."

The booklet sent by the Strandgard concern states that the preparation was originated by one "Chevalier Dr. Jean F. Strandgard, K. V. V. P." Some prospective purchasers are obtained by offering a free bottle of the nostrum to any one who will furnish "fifteen (15) names and addresses of persons genuinely suffering either from Consumption—Tuberculosis, Asthma, Bronchitis, Catarrh, Weak Lungs, Pleurisy, Pneumonia, Coughs, Colds, or any disease of the respiratory organs." No information is given regarding its composition, although a pretense is made of doing so by stating that it is:

" . . . from Nature's Garden being made from pure Essences, Infusions, Extracts and healing medicinal virtues of rare barks, roots and herbs."

It contains alcohol—also typical of the fake "consumption cure"—and the usual excuse is offered that this drug is not

1. Reprinted, with addition, in the pamphlet, "Some Quasi-Medical Institutions," published by the American Medical Association; price 10 cents.

present "in any larger quantity than is absolutely necessary" to dissolve one of the alleged constituents. It is to be taken six times a day in two-dram doses. The sixteen ounce bottle thus lasts about ten and one-half days. This means that the three bottles which they offer to send without payment in advance would last the victim about one month. Every physician who has treated consumptives knows that such patients after taking any nostrum—especially one containing alcohol or bitters—for three or four weeks under the glamour of the claims common to quackery, insist that they are "feeling better."

The booklet contains several testimonials; most of them from laymen. Not one of the testimonials declares that the stuff has cured a case of pulmonary tuberculosis or even that it is of value in such cases. Most of them refer to its alleged use in asthma and bronchitis. One is from an alleged sufferer from spinal tuberculosis who claims to have been benefited, although not cured. Two of the testimonials purport to be from medical men—A. H. Paget, M.D., and P. B. Wood, M.D.—both of whom, the booklet claims, are "Members of the College of Physicians and Surgeons of Ontario." While neither of these physicians' testimonials declare that the stuff is a cure or even a treatment for consumption, the evident intent of the booklet is to make the consumptive so believe. Whether the giving of these testimonials indicates a failure to recognize professional responsibility or a mere lack of common sense, we do not know; the solution of such questions may safely be left to the organization to which these men are said to belong.

A fake "consumption cure" is vicious enough under any circumstances. Every physician who has treated consumptives knows how difficult it is to persuade the sufferer that his chance for recovery rests not on medicine but on hygienic and dietetic measures. It is a human failing to believe that every disease may be cured by taking something out of a bottle, and the consumptive is particularly susceptible to the wiles of the "patent medicine" faker. But, if under normal conditions and exploited to civilian consumptives the "consumption cure" business is a cruel deceit, what shall be said of the concerns which seek as victims those men who have acquired tuberculosis in the service of their country? The human carrion that robs the wounded on the field of battle at least takes his life in his hands in so doing; not so the "consumption cure" quack who plies his trade on the invalided soldier.

Anthrax.—This disease, as shown by the Public Health Bulletin of Massachusetts for October, has become increasingly prevalent in the state since the beginning of the war. The cases varied between six and eleven for the years 1908 to and including 1915, when they reached the latter figure. In 1916 the number was thirty-one and for the first nine months of 1917 the number was thirty-nine. The increase has been coincident with the increased shipment of hides from foreign countries whose status with regard to the incidence of anthrax is not well known, the demand for leather having forced manufacturers to seek new sources of supply. In 1917, six of the thirty-nine reported cases were fatal. There was one case of pulmonary anthrax; the remainder were external. The pulmonary case and thirty-four of the others resulted from the handling of hides, three from the handling of hair and one from handling wool. Accurate diagnosis depends on the bacterial findings. It is said that English investigators have reported cases of anthrax simulating cerebrospinal meningitis, the diagnosis not being established until the anthrax bacilli were demonstrated in the spinal fluid. The United States Bureau of Animal Industry recommends for the prevention of infection that hides be immersed for not less than forty-eight hours in a 1:1,000 solution of mercuric chlorid, or for a like period in a 10 per cent. salt solution containing not less than 2 per cent. of hydrochloric acid. The British Local Government Board directs that in the steam disinfection of hair, cases or bales should be opened and the bundles removed and most of the strings cut unless the temperature inside the steam apparatus is maintained at 230 F. for half an hour.

Correspondence

THE CARREL-DAKIN TREATMENT

A Reply to Dr. Bevan by Dr. Joseph C. Bloodgood

To the Editor:—I cannot agree with my friend and colleague, Dr. Arthur Dean Bevan, but I am rather inclined to the view that his open letter to Dr. Welch (*THE JOURNAL*, Nov. 17, 1917, p. 1727) will do good. A fair controversy leads to the crystallization of the opposing opinions, and often hastens the proper solution of the problem.

I cannot agree with Dr. Bevan that Carrel's method is against the views of surgical pathology and wound repair. I confess, I am somewhat confused myself as to what the real surgical pathology of wound repair is.

Bevan speaks of surgical pathology resting on the work of such men as Lister, Paget, Billroth, Fenger and Senn. Senn's chief work was in the surgical pathology of tumors, and his experimental work chiefly in intestinal suture, fracture of the neck of the femur, and pancreatitis. Fenger's pathologic work began at the necropsy table and continued as that of an operating surgeon interested in the pathology of the diseases that he attempted to cure by operation. Neither was particularly interested in wound repair and wound infection, and, as most of us today, had little or no experience with wounds of the character seen in this war. Billroth, perhaps the greatest of all surgical pathologists, missed a great opportunity in his military experience to establish the noninterference methods in the old type of perforating bullet wound.

As I read Lister, I am impressed with the conclusion that his observations and results very strongly suggest the great value of an antiseptic. In all of Lister's experience he was never confronted with wound problems such as confront us in this war. Schede's work on blood clot in osteomyelitis is evidence that an antiseptic can sterilize a wound. In conversation, Dr. Halsted, professor of surgery at Johns Hopkins University, fully agreed with me as to the statements I am now making. I know of no surgeon of his time in America who has devoted more attention to the problems of wound healing and the treatment of infected wounds than has Halsted. His early contributions to the treatment of joint infections prove this. Halsted looks on Carrel's work as most scientific and as the greatest contribution to wound treatment in this war.

Dr. Bevan is of the opinion that it was a serious mistake for the government Medical Service to adopt the Carrel treatment and to force "a complicated, time-consuming, expensive plan" on our Medical Service. I cannot agree with Dr. Bevan. In the first place, I do not know that the Surgeon-General has "adopted" the Carrel method. After rereading Carrel's book a number of times, with frequent visits to his experimental hospital in New York, and after using his method, I am of the opinion that the Surgeon-General has given the surgeons of this country the best opportunity as yet ever offered them for the study of wound repair and wound treatment by ordering officers of the Medical Corps to take a course of instruction in the Rockefeller War Hospital; the courses given in Philadelphia will also be of inestimable value.

As Piper of Philadelphia said after his experience in the hospitals in France: *war surgery is ward surgery.*

In peace surgery the chief work of the operator and his assistants consists of the preliminary examination of the patient and the skilled surgical technic and anesthesia during operation. There are few open and infected wounds to treat, and as a rule the senior surgeon pays little attention to them, and the junior surgeons have much to learn.

In industries there has been a tremendous improvement in the surgical departments, and with this the same improvement in the healing of the wounds. Industrial surgeons of experience, such as Sherman of Pittsburgh and Noland of Birmingham, express the opinion that the Carrel method has led to improvements in their results.

I cannot agree with Dr. Bevan that *one morning* spent at the Carrel Institute gives sufficient opportunity to judge the value of the method, and I see no impropriety for Dr. Hart-

well to consult during the operation with a French army officer as to some of the details in starting the Carrel method.

Nor can I agree with Dr. Bevan in regard to his conclusion on Carrel's book. Carrel had an excellent team, and attacked the problem in a most scientific and broad way. He employed controls.

When Carrel started his investigation, the majority of military surgeons were by no means satisfied with any of their methods, or with their results. The excision of the wound in the stage of contamination, or the thorough cleansing of the wound in the stage of infection and its wide opening were methods already employed when Carrel started. His contributions to the open wound treatment are: a most effective instillation tube; the adjustment of the tube or tubes so that every portion of the surface of the wound in every nook and corner is continuously bathed in an antiseptic solution that is most potent in its effect on the bacteria and least injurious to the granulation tissue and to the power of the cells and fluid against the bacteria themselves. Carrel, apparently, was the first to prove with bacteriologic control that an open wound could be practically sterilized and then closed.

In the huge wounds of this war, there seems no question that the sooner they are closed the better. The opponents of the Carrel method do not question the scientific precision of his technic, or his results; they claim, however, that his technic can be followed out successfully only in a stationary hospital with a large personnel, and that it is expensive in time and material. In addition, they claim that the technic is difficult; that his solution requires an expert to prepare it, and that it must be guarded, or its effective strength may be lost.

Carrel's method and results have been the chief stimulants to investigation by others for a method that will be equally good, but simpler and less expensive. The investigators who are advocating dichloramin-T take this ground.

In reading the contributions and studying the motion pictures presented by Captain Furnes and Lieutenant Lee, one is impressed by the fact that their investigation has led to a marvelous improvement in the technic of treating the ordinary accidental or industrial wound; and they have accomplished this with economy of time and material. But up to the present time I am unable to agree with them that the methods with dichloramin-T accomplish the same result in the huge open wounds which often contain necrotic tissue, and it is chiefly for this group of wounds that Carrel developed his technic.

I am not claiming that Carrel's method will be the ultimate solution of the problem, but I do claim that up to the present time it is the one great contribution to wound treatment, and that the ultimate treatment will be due to, and based on, Carrel's clinical and scientific research; and every surgeon who expects to treat wounds in this war should have special training in all the laboratory and clinical details of the Carrel method.

JOSEPH COLT BLOODGOOD, M.D., Baltimore.

A Reply by Dr. A. T. McCormack

To the Editor:—In THE JOURNAL, Nov. 17, 1917, appears a letter by Dr. Arthur Dean Bevan in regard to the Carrel-Dakin treatment. This letter is based on such a complete misconception of Dr. Carrel's work and motives, and is so untimely and ill considered that one who does not know and admire Dr. Bevan, as I do, might wonder whence the source of his inspiration in attempting, in an academic discussion, to throw confusion into the Medical Department of our Army in regard to such an important scientific question. I respectfully submit that no man, however distinguished himself, is the final judge on scientific matters, and that especially if he be in a position of great responsibility, conferred upon him by the profession, he has no right to give publicity to a personal letter which lends the weight of his authority to a destructive criticism without a semblance of investigation or knowledge of a conscientious scientific investigator and his associates, and a method of management of infected war wounds, which, in the hands of those skilled in its application, has demonstrated its value. His misconception of Dr. Carrel's technic and purposes is the only thing made plain in this letter.

In all the real scientific principles involved, wherein Dr. Bevan correctly interprets the findings of scientific clinical

surgeons the world over, his conclusions had already been as well stated by Dr. Carrel in recording the results of his investigations.

Over and over again, Dr. Carrel emphasizes and reemphasizes the problems of surgical pathology, and exhibits a profound critical, scientific knowledge of them. Over and over again, he states that Dakin's solution and the Carrel technic are modifications in method, and in no way change the principles underlying modern surgery. Over and over again, he states that some other antiseptic applied by another modification of technic may eventually be found more practical than the one which bears his name; but he insists, and so will every one who really knows his work and who is interested in a proper conclusion of this matter, that whatever the technic, whatever the antiseptic proposed, its value shall be judged by exact, modern, scientific methods and not by the *ipse dixit* of some scientific clinical surgeon or surgeons, simply because he or they are willing, without a claim to personal knowledge or a pretense of scientific investigation, in the emergency of a great war where so much is at stake, to base the condemnation of a scientific method on a mere analysis of a little *précis* or manual which plainly states that its chief purpose is to refresh the memory of those who have participated in the course of study of the treatment under one who has had it demonstrated to him until he has mastered it.

If one were so unjust to Dr. Bevan as to characterize this publication of a personal letter based, as he says, on letters from Joe this, and Fred that, and one operation done by Josh somebody else, and the hurried and superficial reading of a book whose whole purpose and character he so evidently misconceives, he would not do justice to so charming a man.

The Carrel-Dakin treatment is not advanced as a miracle or cure-all, nor is it expected that it will take the place of all other methods in the treatment of wounds and injuries. It is above all not expected that it shall be utilized by that class of scientific clinical surgeons who base their opinions on the internal evidence of books, rather than on knowledge of and experience in a method that can be seen with the eyes of the trained observer and correctly verified with the microscope and in the chemical laboratory. Boric acid, aluminum acetate, Dakin's solution, Labarraque's solution, brilliant green, iodine, phenol, chloramin-T and dichloramin-T, hydrogen peroxid, normal salt solution, sterile water, mercuric chlorid and many other antiseptics, of varying dilutions and value, have been so thoroughly tried out and the results of their applications so fully charted, by exactly the same painstaking methods, and by a scientific staff and allied investigators, that the surprise of his life awaits any scientific clinical surgeon who bases his confidence in the future of surgical development on the history of the science, rather than on the scientific practice of the art.

All surgeons agree that the vast majority of war wounds are infected. This fact has been proved in every war hospital in Europe, and, before that, was known to every man who has rightly read the history of war. After the mechanical cleansing, which is entirely surgical, based on the well known principles of surgical pathology and which Dr. Carrel would evaluate not at 90 per cent., but as the *sine qua non* of success with any method of antiseptic treatment of wounds, he insists that the next step is sterilization of the wound. This does not mean *apparent* sterilization, but *surgical* sterilization under bacteriologic control. Each day or two days, smears are made from various parts of the wound, and the bacteria present are stained and counted. If streptococci, staphylococci and bacilli are absent, one must find not more than one other microbe to five or ten fields before the wound is surgically sterile. If this degree of sterility is secured before the twelfth day, there is rarely cicatricial tissue about its edges, the skin is not adherent, and the wound may be closed with adhesive plaster or sutures, as is most desirable. After the twelfth day, it is necessary to dissect away the cicatrices about the edge of the wound, and it is the better practice only to insert the sutures, continuing the application of the antiseptic for a few days, to be sure that sterility is maintained before they are tied. Sur-

gical pathology would, of course, dictate that in the presence of edema there would be no wound closure.

Dr. Carrel states that the conditions requisite for action of any antiseptic are contact, proper concentration of solution and a sufficient time. He states it so frequently that the most superficial observer should know that he believes he has proved that the wound must be so prepared by the practical application of the principles of modern scientific surgical pathology that the antiseptic being tested must come in contact with the tissue itself, and that all necrotic tissues and foreign bodies must have been removed and hemostasis be perfect.

In the Carrel technic, the Dakin solution is brought into contact with all parts of the wound through the insertion of rubber tubes of certain dimensions, having perforations of exact sizes at certain intervals, so that the desired concentration of solution will reach every part of the wound every two hours. This contact of the antiseptic in this exact concentration of solution shall be continued for the time necessary to bring about asepsis. Dr. Carrel states, always, that this is no new treatment. It is well known that Chassagny discovered the action of chloramins long ago, but the *systematization is, however, new*, and it is perfectly evident to the most casual reader that it is as new to many of our most distinguished scientific clinical surgeons as to the thousands of wounded soldiers who have been restored to the front by its application, where other methods left them languishing in the hospitals or resulted in loss of limbs or life.

But Dr. Carrel has gone much farther in his search for a definite means of expressing the value of an antiseptic. He has found from extensive study of the actual wounds themselves, working with others to whom he gives most of the credit, that there are definite laws of cicatrization. A surgically sterile wound, carefully measured, and its area determined by a planimeter, at four day intervals, will cicatrize at a rate which is capable of expression in a mathematical curve, and may be demonstrated by a mathematical formula. Practically, each surgically sterile wound is measured, its area plotted, and this is repeated and recorded every four days. With these and certain other factors known, the normal curve of cicatrization of that particular wound is calculated. Afterward, repeated measurements at four day intervals show how much the treatment applied by the surgeon *delays* cicatrization. Dr. Carrel states definitely and repeatedly that *no known treatment hastens cicatrization*, but that surgical sterility is an essential prerequisite to the normal rate of cicatrization.

This method of mathematical control of cicatrization is applied not only to wounds in general but to each particular wound, so that the scientific surgeon, properly advised by a practical bacteriologist, is able to know when normal cicatrization has been delayed either by the *laissez faire* policy of some scientific clinical surgeon leaving behind necrotic tissues to be cared for or foreign bodies to become encapsulated or by any other condition demanding surgical interference.

I am not attempting to give any further details than are necessary to show that the Carrel-Dakin method of treatment of war wounds is based on scientific data, against which the fiat of any one cannot and should not prevail. Repeated contact with Dr. Carrel leads us to recognize in him a degree of scientific precision and personal modesty that would prevent his replying in kind to such a letter.

Exactly such a misconstruction of Lister's work as is attempted in the Bevan letter has ever since kept many surgeons from getting the benefit from antiseptics that Lister did, while other practical men, refusing to be misled, have continued to secure Lister's results by the real application of Lister's methods, disregarding his necessarily faulty lines of reasoning in regard to them.

Dr. Bevan, by this attack without study or practical knowledge of his subject, is but repeating history. Semmelweis, Jenner, McDowell, Crawford Long—every man who has advanced the practical art of medicine, has had some one of the priests-of-the-vested-right-in-knowledge to condemn him and his methods and results in unmeasured terms, and our profession has rarely recognized during their lifetime its

best promoters except by the contumely and condemnation of the self-righteous.

It is important for the profession to understand that its final verdict on Dr. Carrel's definite method of the treatment of infected war wounds by the use of Dakin's solution is likely to be more influenced by erroneous comment from three sources than by the merits or demerits of the method itself. These are likely to come, first, from those who condemn academically without either investigation or knowledge; secondly, from those who accept the suggested treatment because it is novel and new without knowledge or investigation, and who, without understanding the reason, change or modify the technic so that it becomes wholly inadequate; and, thirdly, from those who honestly think they have investigated the Carrel-Dakin technic when really they have studied the work of some one of the second class. It is a serious question whether such a method, requiring what seems to one first seeing it a somewhat complicated technic is not more in danger of being misjudged from the statements of its ill advised and frequently overenthusiastic advocates, than of its ill informed and reactionary opponents.

ARTHUR T. McCORMACK, M.D., Bowling Green, Ky.

FUND FOR BELGIAN AND FRENCH PHYSICIANS

To the Editor:—In order to further the subscriptions to the fund being collected by Dr. W. W. Keen of Philadelphia for transmission to our Belgian and French colleagues to help them in reestablishing themselves in their homes and offices, I should be very glad if you could find space for the enclosed letter from Dr. Triboulet of Paris. Dr. Triboulet is a distinguished physician of the Hôpital Trousseau, and was in this country at the time of the International Congress on Tuberculosis in 1908.

HENRY BARTON JACOBS, M.D., Baltimore.

Dear Dr. Barton Jacobs:—After three years of the most frightful cataclysm, France is always up. She has saved herself and the civilized world; at which cost you may think of it by the narrations you may read; they are nothing compared with the reality. Some of the oldest and richest provinces (in soil, industry, and art) are now a desert. Today, tomorrow and days after tomorrow we must use all our energy and money in building again and in helping those who are in awful distress. Among the latter are the medical faculties, and I hesitate no more to send you and the U. S. confrères the most earnest appeal. If indiscretion is not too great, will you allow me to ask you to be an intermediary for this international medical problem: to give our spoiled confrères the necessary means to come back and live in their devastated homes. The French medical associations will collect nearly a million francs by corporations, private funds. In our northern invaded departments (Oise, Somme, Pas de Calais, Aisne, Nord, Marne, Ardennes, Meuse et Meurthe et Moselle), there are 2,000 doctors. From these 2,000 confrères, 1,000, at least, will want material help to begin again their professional life, and we think five thousand francs—5,000 Fs.—the necessary sum of money for each one. The million we possess is every day lessened by the necessity of immediate help to the expelled medical families, when repatriated day after day, or week after week.

I hesitated a long while before writing this: U. S. A. did do, and will do so much for France, that one is quite ashamed to ask again. But proudness is unreasonable in such questions, and I make myself very humble for the sake of the confraternal misfortunes. A sort of incitement came a few days ago when the Uruguay confrères sent us spontaneously 35,000 francs in a cheque.

My family gave three "poilus" to dear France; one, aviator, one artillery officer; both wounded and cured, and started again; the third in Engineers Corps, a young 18½ fellow.

Magnin's son is a brave little one; he is in the Saloniki Army in the medical staff. French, and I am sure U. S. youth is full with ardor and confidence. "On les aura" is the common expression. Don't judge our people in books or in newspapers; one must see him at work; that is splendid. In a near future, you will come and see that, and you will find here an old man very, very happy to see you at the well deserved peace-hour. Long live the sister republics!

HENRI TRIBOULET,
25, Avenue d'Antin, Paris.

Medical Education and State Boards of
Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 8. Chairman, Dr. S. W. Welch, Montgomery.

COLORADO: Denver, Jan. 8. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Jan. 8. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

HAWAII: Honolulu, Jan. 10-13. Sec., Dr. G. A. Batten, Box 375, Honolulu.

INDIANA: Indianapolis, Jan. 8-10. Sec., Dr. Wm. T. Gott, 84 State House, Indianapolis.

MINNESOTA: St. Paul, Jan. 2-4. Sec., Dr. Thomas McDavitt, 741 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, Dec. 17-19. Sec., Dr. George H. Jones, 206 Washington St., Jefferson City.

NATIONAL BOARD OF MEDICAL EXAMINERS: New York City, Jan. 9-17. Sec., Dr. J. S. Rodman, 310 Real Estate Bldg., Broad and Chestnut Sts., Philadelphia.

NEW MEXICO: Sante Fe, Jan. 14. Sec., Dr. R. K. McClanahan, East Las Vegas.

NEW YORK: Albany, Buffalo, New York City and Syracuse, Jan. 29-Feb. 1. Sec., Dr. W. J. Denno, Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 1. Sec., Dr. G. M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, Jan. 8-9. Sec., Dr. J. J. Williams, Weatherford.

OREGON: Portland, Jan. 1. Sec., Dr. Herbert S. Nichols, Portland.

PENNSYLVANIA: Philadelphia, Jan. 8-10. Sec., Nathan C. Schaeffer, State Capitol, Harrisburg.

RHODE ISLAND: Providence, Jan. 3. Sec., Dr. B. U. Richards, State House, Providence.

SOUTH DAKOTA: Pierre, Jan. 8. Sec., Dr. P. B. Jenkins, Waubay.

UTAH: Salt Lake City, Jan. 7-8. Cor. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

WASHINGTON: Spokane, Jan. 1. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

WISCONSIN: Madison, Jan. 14. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

Connecticut July Examination

Dr. Edwin C. M. Hall, secretary of the Connecticut Homeopathic Medical Examining Board, reports the written examination held at New Haven, July 10, 1917. The examination covered 7 subjects and included 70 questions. An average of 75 per cent. was required to pass. Four candidates were examined, all of whom passed. Two candidates were licenised through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|--|------------------------------|------------|--------------------------------|
| New York Homeopathic Medical College and Flower Hospital | (1916) | | 87.2; (1917) 76.5, 80.1, 83.4. |
| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
| Boston University | (1912) | | Mass. |
| New York Homeopathic Medical College and Hospital | (1904) | | New York |

West Virginia July Examination

Dr. S. L. Jepson, health commissioner of the West Virginia Public Health Council, reports the oral, practical and written examination held at Charleston, July 10, 1917. The examination covered 10 subjects and included 100 questions. An average of 80 per cent. was required to pass. Of the 38 candidates examined, 31, including 3 osteopaths, passed, and 7 failed. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|------------|-------------|
| Georgetown University | (1910) | | 80.2 |
| Chicago College of Medicine and Surgery | (1917) | | 89.3 |
| Loyola University | (1915) 85.8; (1916) | | 86.6 |
| Kentucky School of Medicine | (1898) | | 84.8 |
| University of Louisville | (1913) 85.8; (1917) | | 88.8 |
| Maryland Medical College | (1904) | | 89.2 |
| University of Maryland | (1917) 80.3, 81.5, 81.7, 83, 84.9, 89.4. | | |
| Eclectic Medical College | (1917) | | 90.6 |
| Ohio State University | (1917) | | 89.8, 91.5 |
| Medical College of Virginia | (1915) 81.5; (1916) 82.1; (1917) | | 81.3 |
| | 81.9, 82.5, 83.9, 86.5, 86.8, 87.2, 88.5. | | |
| McGill University | (1917) | | 84.8 |
| College | FAILED | Year Grad. | Per Cent. |
| Chicago College of Medicine and Surgery | (1917) | | 76.9 |
| Loyola University | (1916) | | 77.3 |
| University of Louisville | (1909) | | 77.4 |
| Maryland Medical College | (1911) | | 77.1 |
| University of Maryland | (1917) | | 76.8, 84.3* |
| Medical College of Virginia | (1917) | | 73.4 |

* The board reports that although this candidate passed the examination creditably, he was refused a license because of evidence that he had been illegally practicing in the state for twelve months, and because of his moral character.

Book Notices

THE ELEMENTS OF THE SCIENCE OF NUTRITION. By Graham Lusk, Ph.D., Sc.D., F.R.S., Professor of Physiology at Cornell University Medical College, New York City. Third Edition. Cloth. Price, \$4.50 net. Pp. 640, with 28 illustrations. Philadelphia: W. B. Saunders Company, 1917.

Lusk was a pupil of Voit and the Munich school of metabolism. He returned to America with the spirit and principles of thought which made that school great, continuing here to perform productive experimental work. He has trained a corps of younger men along similar lines, and by this book has greatly helped the spread throughout the country of a sound knowledge of the elements of the science of nutrition. The issue of the present war will depend in a large degree on the ability of nations to solve problems of alimentation, to apply and develop further such facts and principles as form the subject matter of this book. It is fortunate that we have a body of men trained in these lines to apply and teach the facts of metabolism and discover new ones as needs arise. The fact that we have them has been due in no small measure to the influence of this author and this book. The value of the latest edition is increased especially by its authoritative presentation of much newer data won by E. F. Du Bois, J. R. Murlin and other men more or less directly affiliated with the writer. At the present time, perhaps, interest will center in the chapter on a normal diet, the new chapter on food economics, with special reference to the war, the chapter touching the nutritive value of various materials used as foods, that on food requirements during the period of growth, and on the revised food tables. The sections dealing with the metabolism taken as a whole, particularly as revealed by the respiration calorimeter, show, as in previous editions, the hand of the master. They outshine in excellence those parts of the book that deal with the mechanisms of chemical reactions within the body.

In the preface the author states that he has no intention of again revising this book, because in another decade the development of scientific knowledge will probably permit the formulation of the subject from the standpoint of physical chemistry. It is to be hoped that progress may be sufficiently rapid to fulfil this interesting forecast. In the meantime the present volume must be regarded as a notable achievement which should be made available in every laboratory, diet kitchen and home in this country.

THE PRINCIPLES OF ACIDOSIS AND CLINICAL METHODS FOR ITS STUDY. By Andrew Watson Sellards, Associate in Harvard Medical School, Department of Tropical Medicine. Cloth. Price, \$1. Pp. 117, with 1 illustration. Cambridge: Harvard University Press, 1917.

Under normal conditions, the ingestion of 5 grams of sodium bicarbonate is followed promptly by a change in the reaction of the urine from acid to alkaline as tested by litmus. In the nephritis of Asiatic cholera and in certain other forms of nephritis not due to cholera, Sellards has noted an increase of the tolerance for bicarbonate, that is to say, massive doses of this salt may be required to make the urine alkaline to litmus. He interprets this phenomenon as due to nephritic acidosis rather than to nonexcretion of the base; and, departing from these experiments, Sellards advocates determining the tolerance of the body for sodium bicarbonate as the most delicate and practical clinical method of diagnosing acidosis. One may thus detect deficiencies of from 20 to 30 gm. in the bicarbonate reserve of the body. The author claims priority over Henderson and Palmer in the use of this method.

The book has an introductory chapter on the development of the modern conception of acidosis, and some elementary facts concerning acids and bases. A current view of the mechanism by which the reaction of the blood is kept constant and by which the body maintains its equilibrium of acids and bases is briefly stated. There is a definition of acidosis in agreement with L. J. Henderson, D. D. Van Slyke and others, and of the principles underlying its clinical diagnosis, together with the pros and cons of several methods of estimating acidosis. The writer strongly endorses an appropriate use of alkali in the treatment of certain acute types of nephritis, thus recalling the views of M. H. Fischer,

although Sellards denounces the use of hypertonic sodium chlorid.

A bibliography contains references to seventy-one contributions on the subject of acidosis prior to 1917. The book serves the purpose of bringing together in convenient form what every physician should know about acidosis. It is marred slightly by its use of an obsolete chemical nomenclature, such as oxy in place of hydroxy butyric acid.

THE SENSE OF SIGHT. By Frank Nicholas Spindler, Professor of Psychology and Education, State Normal School, Stevens Point, Wis. Cloth. Price, \$1.25 net. Pp. 156, with 25 illustrations. New York: Moffat, Yard & Co., 1917.

In endeavoring to convey what the sense of sight means to us, the author has given a sketchy description of the anatomy, physiology and physics of the eye; of the predominant influence of vision in the acquisition of knowledge of external things, and of its part in the development of mentality and the emotions. He says, and has attempted to show by experiments made according to a method which he lays down, that about 60 per cent. of persons are visual minded as distinguished from auditory or motor minded; that is, they acquire knowledge by seeing things or reading about them rather than by hearing or doing them. This is not wholly a desirable state of affairs, but is fostered by modern modes and habits of life and the constant flood of newspapers, magazines and books, which every one reads for himself, thus permitting to fall into disuse the arts of listening, of conversation, of writing, and, be it said, of thinking. He makes a plea for the extension of coordinate education of eye and ear and hand, as taught by Pestalozzi, Froebel and Montessori. The visual type of mind is quicker to learn, but is apt to be more superficial. Few noted scientists or scholars are of the visual type; but artists, architects and designers are apt to be. It is highly desirable to cultivate the acquisition of knowledge through the sense of sight and to take proper care of its organ, but it is important also to develop all the other senses, to give a rounded, complete intellectual background for what the eye visualizes.

Medicolegal

Privileged Knowledge and Roentgenograms—Right to Select Physicians

(*Stapleton vs. Chicago B. & O. R. Co. (Neb.)*, 162 N. W. R. 644)

The Supreme Court of Nebraska holds, in this personal injury case, that when a party submits to an examination, or inspection, by a physician, for the purpose of learning the state of his health or the physical condition of any part of his anatomy, the knowledge thus acquired by the physician is privileged, and, under Section 7898 of the Revised Statutes of Nebraska of 1913, the physician is not permitted to testify to the condition he found, over objection based on the statute. And when a plaintiff has permitted a physician to make a roentgenogram of his injured foot for the purpose of ascertaining the extent and character of his injuries, the roentgenogram so made is not admissible in evidence over objection of the plaintiff based on the statute.

The court says that the statute cannot be given a strained construction, but must be taken in its plain and ordinary sense. When it says that a physician shall not be allowed to give testimony or to disclose confidential communications properly intrusted to him in his professional capacity, and necessary and proper to enable him to discharge the functions of his office, it means to exclude the disclosure of any information that comes to such physician by reason of the professional capacity in which he acts. It does not matter whether the patient seeks a prescription for a disordered stomach or a roentgenogram of an injured foot. Nor does the statute make any distinction between a regularly retained physician of a railroad company, who is paid for his services by the railroad company, and a physician paid by the patient. And the same rule which would exclude the oral testimony of the physician would exclude the roentgenogram of the

plaintiff's foot. Its introduction in evidence would be a disclosure of a confidential communication.

The defendant complained because on cross-examination it was not permitted to inquire whether the plaintiff had submitted himself for examination to specialists for the purpose of qualifying them as witnesses, and that he did not intend to produce these witnesses on the trial. This line of examination was not pertinent to anything developed in the examination in chief of the witness. He had the right to select his own physicians and his own witnesses. If counsel for the defendant disbelieved the testimony of the physician who testified as to the character and extent of the plaintiff's injuries, he might have procured the testimony of men eminent as physicians and surgeons by application to the court for the appointment of a commission to make an examination of the person of the plaintiff.

Authority to Treat Employee Beyond Thirty-Day Period

(*In re Carpenter's Estate (Mich.)*, 162 N. W. R. 963)

The Appellate Court of Indiana, Division No. 1, says that the industrial board of the state certified to it the question of law as to whether a physician who treated an injured employee eighty-seven days from the date of the injury was entitled to have his claim for \$171 for the last fifty-seven days' treatment approved as against the employer, under substantially the following statement of facts: The employee by an accident arising out of and in the course of his employment sustained severe third degree burns over his face, head, chest and hands. His employer had actual personal knowledge of the injury at the time it occurred, and employed the physician to treat the injuries, saying to him: "Take this man to the hospital, give him close attention, and do the best you can for him." The employer did not, at that time, or at any other time, expressly say to the physician that he should discontinue his treatment at the expiration of the first thirty days from the date of the injury, or that he should continue his treatment after the expiration of thirty days, but on frequent occasions, both before and after the expiration of the thirty days, inquired of the physician as to the condition of the employee and what progress he was making toward recovery. At the expiration of thirty days, the condition of the employee was such as to make continued treatment absolutely necessary. As a result of the treatment, the employee recovered with practically no scar tissue and without serious disfigurement. The employer admitted that the physician's bill of \$171 for the treatment for the last fifty-seven days was reasonable and a proper charge under Section 26 of the Indiana workmen's compensation act, but he denied liability therefor.

The court thinks that the language used by the employer immediately following the injury, in directing the physician to treat the injured employee, standing alone, would warrant the inference that the treatment should continue so long as necessary to effect a cure or give the injured person every possible chance to be cured. Such statements of the employer, considered in connection with the character of the injury, the employer's knowledge thereof, and of the continued treatment by the physician beyond the thirty-day period, and his apparent solicitude about the treatment and the patient, were at least sufficient to warrant the proper tribunal in inferring the fact that the employer duly authorized the physician to continue the treatment for the full period for which he asked an allowance.

However, unless this court can say that the foregoing is the only inference that may reasonably be drawn from the facts stated, it is not warranted in going further than to decide as a question of law that such inference may or may not reasonably be drawn from the facts as stated. The determination of questions of fact by the board is conclusive, and in view of this rule the court deems it proper to leave the finding of the ultimate fact to the board, with the further statement that if, in the judgment of the board, the services of the physician beyond the first thirty-day period were authorized by the employer, the question of law propounded by the board should be and is answered in the affirmative; otherwise, in the negative.

Society Proceedings

American Association of Anatomists, Minneapolis, Dec. 27-29.
American Physiological Society, Minneapolis, Dec. 27-29.
Porto Rico Medical Association, San Juan, Dec. 22-23.
Society of American Bacteriologists, Washington, D. C., Dec. 27-29.
Western Surgical Association, Omaha, Dec. 14-15.

SOUTHERN MEDICAL ASSOCIATION

Eleventh Annual Meeting, held at Memphis, Tenn., Nov. 12-15, 1917

The President, DR. DUNCAN EVE, Nashville, in the Chair

Tumors of the Urinary Bladder

DRS. EDWARD S. JUDD and S. W. HARRINGTON, Rochester, Minn.: From a therapeutic standpoint, bladder tumors may be classified as those satisfactorily treated by endovesical methods and those requiring open operations. The benign papilloma will usually respond to fulguration. Multiple papillomas, or individuals not tolerant to this kind of treatment, are better treated by open operation. All our bladder tumor cases are examined cystoscopically at definite intervals following operation to detect a recurrence. In the past few years we have found fourteen recurrences that were amenable to fulguration. In case the benign tumor does not respond readily to fulguration, it should be removed by an operation. They may be malignant. All definitely malignant papillomas, either of the papillary type of carcinoma or of the type infiltrating the bladder wall, are best treated by open operation at once. All large benign tumors, such as myomas, fibromas and angiomas, should be removed by suprapubic operation.

The operative procedure for tumor of the bladder consists of excision of the tumor and resection of the portion of bladder wall from which the tumor arises. A simple excision of the tumor is permissible only in the case of a papillary tumor on a pedicle. Even with this form of tumor, it is better to excise a portion of the adjoining bladder tissue. This means invasion of the prevesical space; but with modern technic, it adds little, if anything, to the operative risk. If the resection is not extensive, the remaining opening can be closed, and drainage established through the bladder. If a large segment of bladder is removed, it is better to drain the space for several days. The drain can be brought out through the bladder or along the side of the bladder. If the prevesical tissues are exposed, drainage is essential.

Hypertrophic Pyloric Stenosis in Infancy

DR. WILLIAM D. HAGGARD, Nashville, Tenn.: Pyloric stenosis presents a picture so characteristic and clear cut that diagnosis should not fail. The symptoms may appear within a few days of birth, or be delayed until the second and rarely the third month. Vomiting is the first symptom usually noted. A previously healthy, normal, usually robust, breast fed boy begins to vomit abruptly in the third or fourth week without apparent cause. To the persistent, explosive, forcible vomiting are added symptoms of faulty nutrition, constipation, oliguria and steady loss of weight. Visible gastric peristalsis is a constant symptom. The wave passes from left to right, and may be elicited after food has been taken. Palpation a little to the right and above the umbilicus often reveals a tumor about the size and shape of a small green olive. The tumor is most distinct in the more severe cases, in patients with thin, retracted abdominal walls. It is variable in its position, and may be out of reach under the liver. If every patient with hypertrophic pyloric stenosis was operated on as soon as the diagnosis is made, the mortality might be reduced 10 or 15 per cent. Failure to seek prompt surgical relief is too often fatal. Even though the baby may apparently be holding its own under medical treatment, it may suddenly, and without apparent cause, become progressively worse and die in a short time.

Treatment of Acute Diffuse Peritonitis

DR. H. A. GAMBLE, Memphis, Tenn.: The abdomen is opened under general anesthesia, the primary lesion is removed or repaired, split rubber drainage tubes with gauze

wicks are introduced into Morrison's pouch, the pelvis, and wherever else indicated, and the work is completed as expeditiously as possible. Free drainage is maintained, elimination promoted, the strength of the patient sustained, and complications are guarded against. The patient is put in the sitting posture, and 500 c.c. of physiologic sodium chlorid solution are injected subcutaneously. This is repeated from every four to six hours. Plain warm water is started also at once by Murphy's method of proctoclysis. Dressings are changed frequently, from every one to two hours, for the first twenty-four hours. The most important complications to be guarded against, in the order of their frequency, are acute dilatation of the stomach, secondary abscesses, intestinal obstruction, and phlebitis.

Latent Manifestations of Syphilis in and About Joints

DR. EDWARD S. HATCH, New Orleans: Joint syphilis is much more common than is generally supposed. In the roentgen findings and in the luetin reaction we have nearly positive diagnostic aids. A roentgenogram, a Wassermann test and a luetin reaction should be made in all suspected cases, and then, if there is doubt, the therapeutic test should be applied.

Use of Radium in Nonmalignant Uterine Hemorrhage

DRS. C. JEFF MILLER and E. L. KING, New Orleans: The nonmalignant conditions of the uterus causing menorrhagia or metrorrhagia may be thus grouped: 1. Cases in which there is little or no demonstrable pathologic change in the uterine wall, no history of infection, and in which the uterus is apparently normal in size and position, with normal adnexa. In such cases, the bleeding is, in all probability, due to some disturbance of the internal secretions, especially of the thyroid or of the ovary. This condition is often encountered in young girls about puberty. 2. The menopause. 3. Chronic metritis. 4. Hypertrophy or hyperplasia of the endometrium, especially when so marked as to be adenomatous or polypoid in character. 5. Fibroids, adenomas or adenomyomas of the uterus. 6. Chronic endometritis, especially after incomplete abortion. 7. Passive congestion of the uterus, as in retroflexion or prolapse. In the first three groups, radium may be used to the exclusion of surgery; in the fourth and fifth, some cases are suitable for radium and others require operation; while in the sixth and seventh groups, operation is indicated.

We have treated ten cases classified under the first two groups. In all of them the bleeding had persisted for years and had resisted every form of treatment. Nine of the patients were given intra-uterine radium treatments, the average dose being about 1,000 milligram-hours. In only one patient did the treatment fail to relieve the condition. Only one patient suffered from severe menopausal symptoms, although in several of them the symptoms were present in a mild degree.

Eighteen cases fall in the third and fourth groups. The patients ranged in age from 30 to 55, and most of them had suffered from bleeding for several years—as a rule, menorrhagia first, and later metrorrhagia as well. In every case, radium treatment was followed by amenorrhea; in two patients there was a recurrence of the bleeding about one year later, the flow being approximately normal. The others are still relieved. Six patients suffered from marked menopausal symptoms; five others were similarly affected, but the symptoms were mild and transient. The patients suffering most from the artificial menopause were nearly all between 40 and 51; this coincides with our experience after hysterectomy. In three women, aged 35, 45 and 51, the condition was relieved by corpus luteum extract. Eight patients suffered from leukorrhea for two or three months after the treatment. In those cases in which subsequent pelvic examinations were made, marked reduction in the size of the uterus was found, and the tenderness, as a rule, disappeared. The dosage in these cases was from 500 to 1,000 milligram-hours.

Rôle of Syphilis in Surgery

DR. GEORGE GELLHORN, St. Louis: I have seen extensive suppurations of the abdominal incision resist all possible treatments for weeks, but turn into clean and vigorously

granulating wounds when antisyphilitic treatment was instituted. I have in my care a woman with tertiary syphilis in whom several surgeons have unsuccessfully attempted to repair a third degree laceration of the perineum. I subjected this patient to energetic antisyphilitic treatment with the view of softening the cicatricial tissues about the vulva, and of forestalling disturbances of wound healing. In the course of this treatment, which included several injections of salvarsan, a laparotomy for pus tubes became necessary, and the patient went through this operation without the slightest complication.

(To be continued)

KENTUCKY STATE MEDICAL ASSOCIATION

Sixty-Seventh Annual Meeting, held at Louisville, Nov. 6-9, 1917

The President, DR. P. H. STEWART, in the Chair

A Plea for Better Diagnosis.

DR. R. M. RANKIN, Covington: Standing in the foreground among the means for accomplishing the purpose of this plea is the grouping of physicians in institutions and in office buildings in cities and towns. Success presupposes a leader, with competent workers properly equipped. The superior diagnostician working alone is superior, perhaps in greatest measure, by reason of his doing as well as he may the work performed by specialists comprising the group. Specialists in particular fields probably succeed in making diagnoses by reason of special knowledge of the symptomatology pertaining to that field and by special effort to elicit the symptomatology. Better equipment oftener used would add materially to the efficiency of all of us.

DISCUSSION

DR. W. A. JENKINS, Louisville: It is a good sign to see the universal interest that is being manifested in the making of proper diagnoses. Even the laity, after hearing addresses before civic audiences, health boards, and other bodies of a similar character, are now recognizing the importance, the necessity and the desirability of accurate diagnoses. It is only by education and careful training in all modern methods that accurate diagnoses can be made.

DR. BERNARD ASMAN, Louisville: It is not unusual to see a patient suffering from advanced cancer who has been treated and is still being treated for some simple ailment presumably the cause of the trouble.

The Precancerous State and the Increase of Cancer

DR. A. H. BARKLEY, Lexington: When patients present themselves because of a condition that is suspicious of beginning cancer, or one that is likely to become so ultimately, they should be examined thoroughly and conscientiously, and the benefit of any doubt should be given the patient. By means of lectures the public should be taught the great benefit to be derived from periodic examinations from head to foot. In cancer, as in other diseases, attention to diet, exercise and proper hygienic surroundings is of distinct value.

Precancerous Lesions

DR. IRVIN ABELL, Louisville: Notwithstanding the possibility of underlying general factors, cancer may, for all practical purposes, be regarded as local in its beginning. Prominent among the predisposing factors for which one should be on guard are: general lowered nutrition; chronic irritation and inflammation; repeated acute trauma; cicatricial tissue, such as lupus and other scars, and burns, benign tumors, warts, moles, nevi, etc.; also the fact that changes occurring in the character of such tumors and tissues, as well as the occurrence of any abnormal discharge from any part of the body, especially if blood stained, are to be regarded as suspicious. Some occupations, notably working in pitch, tar, paraffin, anilin or soot, and with roentgen rays, if not safeguarded, are conducive to the production of cancer, presumably on account of the chronic irritation or inflammation caused. The finding of any abnormal condition about the body should be taken as an indication for competent professional and not personal attention.

DISCUSSION

DR. J. GARLAND SHERRILL, Louisville: It should be the duty of the physician to educate his patient to keep away from sources of local irritation. Whatever the relationship between an injury to the tissues and the development of cancer, it is our duty to urge these patients to take care of this irritation or injury, in order that they may not develop malignant disease later.

Diagnosis of Gallbladder Disease

DR. A. W. NICKELL, Louisville: We are principally interested in two types of this disease, cholecystitis and cholelithiasis. Gallbladder disease is second in importance only to appendical inflammations. In the operations for gallbladder disease, there was sufficient pathologic justification for removal of the appendix in 69 per cent. of MacCarty's cases, and in 68.2 per cent. of Smithies' cases. While the gallbladder is the seat of stones in the majority of cases, inflammation of a noncalculous origin may occur. In 1,000 cases reviewed by Smithies, there were 434 cases of acute and chronic cholecystitis in which neither gallstones, "sand" nor malignancy was demonstrable. Out of this number of 434 acute and chronic cases, 228 were of the acute catarrhal type. Stones complicated in 51 per cent., and "sand" in 8 per cent. Cholecystitis will occur in old persons with the former state of health fairly good after indiscretion in diet. Symptoms similar to gallstones may be caused by pancreatic calculi; but these cases are so rare that they scarcely enter into the diagnosis. Floating kidney may simulate gallstones. The most difficult cases to diagnose are those in which the gallbladder, stomach and bowel are bound together by adhesions by either numerous attacks of gallbladder inflammation or ulcer. There is, then, a commingling of gastric and hepatic symptoms with hyperchlorhydria. We may have to differentiate the crises of locomotor ataxia. A good rule in all cases of supposed gallstone colic is to test the knee jerk, station and pupils. The Wassermann test is of value here.

Skin Lesions Due to Focal Infection and Septicemia

DR. M. L. RAVITCH, Louisville: Most cases fall under three heads. First is the type in which the lesion is confined so closely to the tissues near the focus of infection as to suggest very strongly infection along lymphatic channels or by contiguity of adjacent structures. The lesions are usually considerably elevated, more or less irregular in outline, fairly well defined, and nearly always distinctly red or pink, instead of purple or bluish as seen in other types. The second class includes lesions caused by hematogenous infection from one or more foci of infection. Instead of being confined to the locality of the focus, the lesions may appear in quite distant tissues; there may be recurrent crops well generalized, or fairly persistent patches in one or two areas. There seems a certain amount of predilection for the head, neck and upper chest when the focus is above the trunk; the abdomen is more apt to show the lesions in appendical or renal abscess. The third class is the most dangerous. Here we are dealing with a septicemia, sometimes quite mild, sometimes very virulent. In addition to the skin lesions, there is nearly always discoverable an arthritis, endocarditis, septic nephritis, or endometritis. Frequently the onset of the septicemia manifests itself by the appearance of scattered hemorrhagic elevated nodules in the skin, sometimes confined to one locality of the body, but more usually appearing on the face, abdomen, thighs and ankles, if not all over the body. Within a week the infection of the skin has reached its height, and it usually begins to ameliorate somewhat after that, although fresh lesions may appear from time to time. The importance of recognizing these lesions cannot be overestimated. They are not only frequently the first symptoms of a virulent endocarditis, but often they lead to the detection and removal of a hitherto unsuspected, but very dangerous, focus of infection, in mouth, throat, ear, sinus or elsewhere. It should be the routine with physicians, whenever a case of erythematous lesions or purpuric patches comes under observation, to make a thorough examination for such infectious foci.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

November, CLIV, No. 5

- 1 *Comparative Value of Wassermann, Colloidal Gold and Other Spinal Fluid Tests; Study of Two Hundred and Three Cases. E. M. Hammes, St. Paul, Minn.—p. 625.
- 2 *Causation of Edema in Chronic Parenchymatous Nephritis; Method for Its Alleviation. A. A. Epstein, New York.—p. 638.
- 3 Complement Fixation Test in Diagnosis of Tuberculosis; Study of One Hundred and Thirty-Five Cases. G. W. McCaskey, Fort Wayne, Ind.—p. 648.
- 4 Case of Scleroderma of Skin. A. S. Robinson, Cleveland.—p. 657.
- 5 Cure of Prolapse of Uterus. J. A. McGlinn, Philadelphia.—p. 673.
- 6 Gastric Polyposis; Report of Cases. J. M. T. Finney and J. Friedenwald, Baltimore.—p. 683.
- 7 Etiology and Treatment of Hemorrhagic Diseases. S. H. Hurwitz, San Francisco.—p. 689.
- 8 *Colon Bacillus Pyelitis Considered with Reference to Cases in Boy Subjects; Case Reports. G. W. Graves, New York.—p. 707.
- 9 *Studies of Cerebrospinal Fluid in Acute Anterior Poliomyelitis. J. A. Kolmer, A. E. Freese, T. Matsunami and B. M. Meine, Philadelphia.—p. 720.
- 10 Posttransfusion Reactions; Review of Two Hundred and Eighty Transfusions Performed in Wards of Presbyterian Hospital, New York. H. E. Meleney, W. W. Stearns, S. T. Fortune and R. M. Ferry, New York.—p. 733.
- 11 Meningitis Sympathica; Report of Cases. I. Strauss, New York.—p. 748.

1. **Wassermann and Spinal Fluid Tests.**—This paper comprises the study of 203 cases: 43 paresis, 34 tabes, 27 cerebrospinal syphilis, 4 congenital syphilis, 11 meningitis, 3 tetanus and 81 other nonsyphilitic organic and functional conditions. The characteristic paretic curve of the colloidal gold reaction was found in 42 cases out of 43 spinal fluids examined. Four cases gave a negative Wassermann in the blood; all showed a marked positive globulin test; all but 5 had a lymphocytosis of over ten cells per cubic millimeter. Of the three atypical reactions, 1 occurred in a very early case, 1 was probably due to an old and infected spinal fluid, and 1 was made after vigorous intraspinal therapy.

In the miscellaneous group (76 cases) all findings were practically normal. The Wassermann in the spinal fluid in all cases was negative. One blood gave a positive Wassermann, the cell count was normal except in 2 cases of meningismus, in 1 brain tumor and in 1 spinal cord tumor; the globulin test was negative in all but 1. The colloidal gold test showed nothing definite except occasionally a slight decolorization in the lower dilutions. In 3 cases of multiple sclerosis all findings were negative, but in 1 case the colloidal gold test showed a typical paretic curve with a negative Wassermann test.

The effects of antisyphilitic treatment on these tests have been variable. In the main the syphilitic cases have been treated with salvarsan, intravenously and intraspinally (Swift and Ellis method), combined with mercury. In all cases there has been a gradual reduction of the cell count to normal. In the majority of cases the globulin test has become normal while in some it remained slightly positive. In 21 cases of paresis, treated thoroughly, all but 2 gave a negative blood Wassermann. However, in the spinal fluid it persisted positive in every case. Out of 22 cases of tabes treated, 16, or 73 per cent., gave a negative Wassermann both in the blood and spinal fluid. In only five instances of all antisyphilitic cases treated did the author notice any change in the colloidal gold curve, and in only 1 case did the curve become normal. Hammes concludes that no spinal fluid test (except the presence of bacteria) is specific. Every test is simply that much cooperative evidence and should be combined with the history of the case and the clinical findings.

2. **Causation of Edema in Chronic Nephritis.**—The problem in the treatment of edema in chronic parenchymatous nephritis is to relieve the condition and prevent its recurrence. The mere removal of effusion fluid by paracentesis and puncture, if feasible, may relieve it partly, but does not, as a rule,

prevent a reaccumulation. The indications are: (1) to increase the protein content of the blood and thus help it regain its normal osmotic power, and (2) to remove or cause the reabsorption by the tissues of the excessive lipoids. The restoration of the protein content may be accomplished by two methods: (1) Massive infusion or transfusion of healthy blood accompanied by the removal of equal quantities of blood from the patient. The latter procedure is necessary to accommodate the introduction of additional blood so as not to embarrass the circulation. It also serves to remove some of the excessive lipoids. (2) Most important is the proper administration of a high protein and fat poor diet. The employment of transfusion is undoubtedly helpful and affords a good start in the treatment, but is not always feasible for obvious reasons. Chief reliance must therefore be placed on adequate dietetic measures. These consist in the administration of large quantities of properly selected proteins with a minimum of carbohydrates and the exclusion of fats. The fluid allowed is restricted to the quantity present in the food, plus that which is necessary for the comfort of the individual patient, amounting usually to from 1,200 to 1,500 c.c. The amount of salt allowed is the quantity sufficient to make the food palatable.

8. **Colon Bacillus Pyelitis.**—Pyelitis in boys, although far more infrequent than in females, Graves says, is, from the standpoint of the individual case, possibly even more important. In the male subject the possibility of extension of infection through the lumen of the urethra may be excluded, and in the treatment of all cases the intestine is to be recognized and dealt with as the potential source of the disease. The possibility of the occurrence of unusual and severe systemic manifestations in well developed pyelitis should be better appreciated. The best routine treatment for pyelitis in children is the administration of sufficient alkali to render the urine alkaline and maintain this reaction. If hexamethylenamin is employed the formaldehyd excretion should be watched and the urine should be examined frequently, with a view of forestalling injurious effects on the kidney parenchyma. In all obstinate cases autogenous vaccine should receive a thorough trial.

9. **Cerebrospinal Fluid in Poliomyelitis.**—In the recent epidemic of poliomyelitis in Philadelphia the examination of cerebrospinal fluids made by the authors yielded the following results: The majority of the fluids were water clear or but faintly opalescent when viewed against a black background; but 1 or 2 per cent. of blood free fluids presented distinct turbidity. Xanthochromia and excessive fibrin formation were not found; about 10 per cent. of the fluids presented a small fibrin coagulum after standing several hours. Of the fluids, 77 per cent. from all stages showed an increase of total cells; in 80 per cent. of these the counts were not above 100 cells per cubic millimeter of fluid. An increase of the total cells was found in the preparalytic stage, and this increase was present in 95 per cent. of cases for at least three weeks after the onset of paralysis, after which the number of cells gradually decreased. In over 96 per cent. of fluids from cases after the onset of paralysis the small lymphocyte variety of cells predominated. Polymorphonuclear cells predominated in less than 1 per cent. of fluids, and in over 88 per cent. constituted less than 25 per cent. of the cells present. An increase of protein was found in from 32 to 42 per cent. of fluids, and different tests for protein yielded varying results.

During the acute stages of poliomyelitis the fluids from 40 to 50 per cent. of cases yielded a colloidal gold reaction of the syphilitic and meningitic zone types. All yielded negative Wassermann reactions. The potassium permanganate reduction test yielded positive reactions of indexes over 2.3, with the spinal fluids of 41 per cent. of cases examined from the second to twenty-first days after the onset of paralysis; a high reduction index indicates an increase of protein in the fluid, and may aid, therefore, in the diagnosis of acute poliomyelitis. Every fluid was found to contain sufficient glucose to reduce Fehling's solution in some degree; partial reduction of the amount of glucose was suspected with a number of

fluids on the basis of a qualitative test. Increased permeability of the meninges was indicated by the presence of natural antishoop hemolysin in the fluids of 66 per cent. of cases in the acute stages and both the hemolysin and a hemolytic complement in 30 per cent. Both of these substances were absent in the fluids of control persons. Substances inhibiting saponin hemolysis were not found in the fluids of cases two to twenty-one days after the onset of paralysis.

Boston Medical and Surgical Journal

November 15, CLXXVII, No. 20

- 12 *Study of Operative Treatment of Osteoarthritis of Hip Joint. M. Ozarki, Japan.—p. 679.
- 13 *Treatment of Myelocytic Leukemia by Radium. H. Z. Giffin, Rochester, Minn.—p. 686.
- 14 Lymphocytosis; Clinical Study from Group "Diagnosis. J. M. Read, San Francisco.—p. 691.
- 15 Vegetative Nervous System from Clinical Viewpoint. M. S. Woodbury, Clifton Springs.—p. 695.
- 16 Health Insurance and Medical Profession—from Financial and Administrative Point of View. R. M. Bradley, Boston.—p. 698.
- 17 Goiter Surgery; Report of Twenty-Eight Cases Operated, with One Death. G. Torrance, Birmingham, Ala.—p. 700.
- 18 Meningeal Syndrome and Other Sources of Error in Pyelitis. II. W. Dana, Boston.—p. 702.

12. Operative Treatment of Osteoarthritis of Hip Joint.—Ozarki is of the opinion that in monarticular, nontuberculous cases it is always possible to relieve the disability of the leg by an arthrodesis, which can be repeated, if necessary. In polyarticular cases, if both hips are involved, the motion in one of the hips must be restored by some such operation as decapitation of the head of the femur. In cases of tuberculosis definite relief cannot be expected to the same degree as in osteoarthritis, but the operation has produced no bad effect on the general or local condition, and has given marked benefit in the majority of the cases. Arthrodesis has appeared to be especially beneficial in cases which have arrived at a stage of disability where the patient is demanding a more serviceable leg. The leg will be stronger and less troublesome after the operation, and hence arthrodesis is the operation of choice in cases in which only one hip is involved. If an operation is required to restore motion in a joint, careful judgment must be used. In one case in which the osteoarthritic affection was supposed to have subsided, it was thought that motion could be restored to the joint by a total excision of the head of the femur. If partial excision were the method chosen, it would be necessary to apply some protection against bony and capsular adhesions, and for this purpose the best material is furnished by free flaps of the deep fascia of the thigh, according to Dr. M. Sumita of Fukuoka, Japan, who in the year 1915 reported over eighty excellent results of various joints. This method will be successful if the refreshed bone surfaces are free from pathologic processes.

13. Treatment of Myelocytic Leukemia by Radium.—Thirty consecutive cases of myelocytic leukemia were treated at the Mayo Clinic by means of the surface application of radium clement over the enlarged spleen. A certain degree of general improvement, together with reduction of the size of the spleen and of the leukocytic count, occurred in every instance, even in the most advanced and toxic cases. Marked temporary improvement occurred in twenty-six patients, and a remarkable improvement in thirteen. Hemorrhage ceased as a rule after one or two series of exposures. In two instances, hemorrhage occurred after radium exposures when it had not occurred previous to treatment. In these instances the hemorrhage seemed to be the result of overexposure; an anemia also developed; both the hemorrhage and the anemia were successfully combated by means of transfusion. In twenty-five patients there was definite improvement of the anemia concomitant with the improvement of the general condition. The reduction of the number of leukocytes was due chiefly to not only an absolute but also a striking relative fall in the myelocytes; there was a striking fall in the absolute count of polynuclears, while their relative percentage remained approximately the same. There was also a marked fall in the absolute count of small lymphocytes. Surface exposures of radium over the spleen of myelocytic leukemia usually

effect a very rapid reduction of the size of the spleen, a fall of the leukocyte count, improvement in the general condition and together with transfusion, constitute at present the most effective temporary measure in the treatment of the disease.

Canadian Medical Association Journal, Toronto

November, VII, No. 11

- 19 Technic of Nerve Suture. S. A. Smith.—p. 974.
- 20 Suppurative Conditions in Lower Respiratory Tract. Medical Aspects. A. McPhedran, Toronto.—p. 992.
- 21 Id. Surgical Aspects. E. M. von Eberts, Montreal.—p. 1000.
- 22 Id. Roentgenologic Aspects. W. A. Wilkins, Montreal.—p. 1005.

Indiana State Medical Association Journal, Fort Wayne

November, X, No. 11

- 23 *Abdominal Wounds in War. J. R. Eastman, Indianapolis.—p. 417.
- 24 *Pretended Blindness and Deafness and Their Detection. G. F. Keiper, Lafayette.—p. 422.
- 25 Wassermann Reaction. Necessity for Clearer Understanding of Its Significance and Fallacies. B. W. Rhamy, Fort Wayne.—p. 427.

23 and 24. Abstracted in THE JOURNAL, Nov. 3, 1917, p. 1560.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

November, X, No. 5

- 26 *Attempts to Produce Substance with Thyroid-Like Activity by Artificial Iodization of Proteins. J. M. Rogoff and D. Marine, Cleveland.—p. 321.
- 27 *Influence of Ergotoxin on Body Temperature. T. S. Githens, New York.—p. 327.
- 28 *Pharmacologic Studies of Ipecac Alkaloids and Some Synthetic Derivatives of Cephaelin. Studies on Protozoocidal and Bactericidal Action. A. L. Walters, W. F. Baker and E. W. Koch, Indianapolis.—p. 341.
- 29 *Changes in Rhythmicity, Irritability and Tone in Purged Intestine. W. C. Alvarez and F. B. Taylor, San Francisco.—p. 365.
- 30 Comparative Activity of Local Anesthetics. Paralysis of Motor Nerve Fibers. T. Sollmann, Cleveland.—p. 379.

26. Artificial Iodization of Proteins.—Employing the method described by Kurajeff, Rogoff and Marine have artificially iodized whole ox serum, ox serum globulin (obtained by half saturation of the serum with ammonium sulphate), ox serum albumin (obtained by saturating the filtrate of the globulin with ammonium sulphate), Merk's egg albumin and egg white (obtained from fresh eggs). It was found that artificially iodized blood serum (ox) causes acceleration of metamorphosis when fed to tadpoles, resembling that shown by thyroid, but not so marked nor so rapid. It is possible to show by crude process of separation that the globulin fraction of the serum contains most of the substance with which the iodine combines to give the activity of tadpoles. Alkaline hydrolysis of iodized proteins apparently destroys their activity, therein differing from thyroid. This suggests that the thyroid adds something to the iodine complex in the blood to complete the stable iodine containing thyroid hormone.

27. Influence of Ergotoxin on Body Temperature.—The facts reported by Githens seem to show that in many species ergotoxin exerts a specific influence on the heat-regulating center, disturbing the relation between heat production and heat dissipation. In cats and in rabbits this induces a rise of body temperature; in rats, mice and pigeons it causes a fall.

28. Protozoocidal and Bactericidal Action.—Emetin hydrochlorid in solution of 1:1,000 when acting on water amebas for one hour, or in solution of 1:5,000 acting for three hours, destroyed many of these organisms but was not uniformly amebicidal. Emetin hydrochlorid in solution of 1:200,000 in contact with cultures of amebas for one hour, four hours, or seven hours destroyed many amebas, but transplants from these cultures to fresh agar plates showed a retarded or delayed growth of amebas, owing probably to the development of encysted or resistant forms. Emetin hydrochlorid in solutions as strong as 1:100 are not rapidly destructive to the *Endameba buccalis*, in some cases not killing it in one hour. The propyl and iso-amyl ethers of cephaelin are stronger than emetin as amebicides but their action on water amebas or the *Endameba buccalis* cannot be used satisfactorily as a comparative measure of this action. Methylating

cephaelin to form emetin is known to increase the endamebicidal action as well as the protozoocidal action toward paramacia and the substitution of the methyl group by ethyl, propyl, butyl, iso-amyl or allyl further intensifies this action. The propyl, butyl and iso-amyl ethers of cephaelin possess much stronger protozoocidal properties than the methyl ether (emetin). Cephaelin iso-amyl ether phosphate was the most effective alkaloid of this group in killing paramacia, being fifteen to twenty times as active as emetin phosphate. Tested on *Staphylococcus aureus* in the manner described, cephaelin propyl ether phosphate is germicidal in solutions of 1:222, and cephaelin iso-amyl ether phosphate in solutions of 1:4,120. Both of these derivatives are much stronger than emetin in germicidal action.

29. **Changes in Purged Intestine.**—The well purged rabbit is likely to be apathetic and to look sick. Its bowel is full of gas and fluid, and the mesenteric circulation is disturbed. Excised segments beat poorly and irregularly in Locke's solution, and they fatigue quickly. They respond poorly to drugs. Some parts of the bowel are abnormally irritable while others fail to respond at all to powerful stimuli. This unevenness in the gradient of muscular forces must interfere with the steady progress of food through the intestine; and probably favors the production of colic and gas pains. The conclusion drawn by Alvarez and Taylor is that it is not wise to purge shortly before an operation in which the bowel must stand the insults of drying, handling, cutting and sewing.

Journal of Urology, Baltimore

October, I, No. 5

- 31 *Control of Symptoms of Diabetes Insipidus by Subcutaneous Injections of Extracts of Hypophysis Cerebri (Pars Posterior and Pars Intermedia.) L. F. Barker and H. O. Mosenthal, Baltimore.—p. 449.
- 32 *Effect of Thyroid Medication on Basal Metabolism, Renal Function and Nitrogen Balance in Chronic Nephritis and in Hypothyroidism. B. D. Bowen and W. M. Boothby, Boston.—p. 469.
- 33 Comparative Study of Rate of Excretion of Nitrogenous Waste Products to Their Blood Concentration in Experimental Uranium Nephritis. C. K. Watanabe, New York.—p. 485.
- 34 New Universal Urethroscope with New Diagnostic and Therapeutic Fields of Application. L. Buerger, New York.—p. 495.

31. **Control of Diabetes Insipidus.**—Thus far, comparatively few cases treated by the injection of posterior lobe extract have been reported. The treatment of the patient, detailed by Barker and Mosenthal yielded results that did not differ appreciably from those reported by other authors who have injected posterior lobe extracts. The facts given may, therefore, be considered as confirming previous observations. The response of the kidneys to numerous injections was constant throughout. The most favorable effect was obtained when two or more injections of not less than 1 c.c. each, were given during the course of the day. This patient was made perfectly comfortable, and apparently the efficacy of the extract did not diminish over a period of four weeks' trial in the hospital nor after about one month's continuation of the therapy at home. The patient having once experienced the relief afforded by the injections refused to do without them. Tethelin and epinephrin do not seem to be of any value in the treatment of diabetes insipidus.

32. **Effect of Thyroid Medication on Basal Metabolism.**—The effects of thyroid treatment, as measured by clinical, renal function and metabolic studies, are reported by Bowen and Boothby in two cases of myxedema, complicated by symptoms of chronic nephritis, and in three cases of chronic nephritis in which there was no evidence of thyroid insufficiency. In the first group thyroid medication produced a marked improvement in the clinical and metabolic conditions together with some improvement in the renal function. In the nephritic cases, however, no improvement occurred from its use, and indeed in two cases decidedly injurious effects were produced. The authors state that although thyroid medication has been recommended as a means of satisfactorily treating cases of nephritis, is not indicated unless there is an associated condition of myxedema. The degree of thyroid insufficiency and the effect of treatment thereon can best be gaged by the determination of the basal metabolism.

Kansas Medical Society Journal, Topeka

November, XVII, No. 11

- 35 Mastoiditis with Intracranial Complications. E. N. Robertson, Concordia.—p. 293.
- 36 Cholecystectomy. H. L. Charles, Atchison.—p. 296.
- 37 Some Observations on Gallstones. W. J. Aldrich, Independence.—p. 298.
- 38 Intercostal Neuralgia. J. J. Harrington, Osawatomie.—p. 299.

Medical Record, New York

November 24, XCII, No. 21

- 39 Should Certain Tuberculous Patients Work? M. Fishberg, New York.—p. 881.
- 40 Treatment of Cancer at Anus. C. J. Drueck, Chicago.—p. 887.
- 41 Some Reasons Why Hospitals for Insane Are Overcrowded. W. M. Kenna, Mount Vernon.—p. 890.
- 42 Pellagra; Its Etiology, Symptomatology and Treatment. J. F. Yarbrough, Columbia, Ala.—p. 892.
- 43 Hyperthyroidism. M. F. Morris, Jr., Chelsea, Mass.—p. 895.
- 44 Vomiting of Pregnancy. W. J. Caesar, Richmond, Calif.—p. 897.

Nebraska State Medical Journal, Norfolk

November, II, No. 11

- 45 New Appreciation of Mastoid Operations. J. J. Hompes, Lincoln.—p. 477.
- 46 Effect of Sinus Disease on Eye. F. F. Teal, Lincoln.—p. 479.
- 47 Conservation of Vision and Hearing. E. C. Hayman, Lincoln.—p. 481.
- 48 Puerperal Sepsis. I. C. Munger, Cozad.—p. 483.
- 49 Deficiencies in Young. J. M. Aikin, Omaha.—p. 488.
- 50 Early Diagnosis of Breast Cancer. C. H. Waters, Omaha.—p. 490.
- 51 Ludwig's Angina. E. R. Hirsch, Superior.—p. 492.
- 52 Cystoscopic Findings and Pyelography. C. Emerson, Lincoln.—p. 498.
- 53 Artificial Feeding of Infants. C. R. Spicer, Hastings.—p. 500.
- 54 Use of Lactic Bacilli Milk. H. M. McClanahan, Omaha.—p. 503.
- 55 Dento-Alveolar Abscess with Sinus Through Cheek. A. F. Tyler, Omaha.—p. 505.
- 56 Resection of Colon for Epilepsy. H. W. Wightman, Omaha.—p. 505.

New York Medical Journal

November 24, CVI, No. 21

- 57 Tuberculosis Treated by Tuberculin. R. C. Newton, Montclair, N. J.—p. 965.
- 58 Diagnosis of Pulmonary Tuberculosis in Children Issued by National Association for Study and Prevention of Tuberculosis. M. Fishberg, New York.—p. 967.
- 59 Prophylaxis in Syphilis of Central Nervous System. I. Rosen, New York.—p. 970.
- 60 Study of Drug Action. T. J. Mays, Philadelphia.—p. 973.
- 61 Urinary Antiseptics. A. K. Detwiler, Omaha.—p. 976.
- 62 State Examinations and Treatment for Eye Disease in Schoolchildren. A. Rovinsky, New York.—p. 978.
- 63 Colored Photomicrographic Slides of Sections. E. A. Hunger, Rochester.—p. 983.

New York State Journal of Medicine

November, XVII, No. 11

- 64 How Can We Safeguard Child against Mental Disease? J. Taft, New York.—p. 481.
- 65 Psychology vs. Psychiatry in Diagnosing Feeble-mindedness. W. B. Cornell, New York.—p. 485.
- 66 Mentality and Intelligence Tests. J. L. Herrick, Albany.—p. 486.
- 67 Various Phases of Feeble-mindedness and Stigmata of Degeneration. Physical Types, etc. C. Bernstein, Rome.—p. 490.
- 68 Assistance of Roentgen Ray in Diagnosis of Pulmonary Tuberculosis. F. H. Heise and H. L. Sampson, Trudeau.—p. 499.
- 69 Serum Diagnosis of Tuberculosis. H. R. Miller, New York.—p. 501.
- 70 Bacteriology of Paratyphoid Fever. C. Krumwiede, Jr., New York.—p. 503.
- 71 Laboratory Service in Epidemic of Paratyphoid Fever among Troops. A. B. Wadsworth, Albany.—p. 506.
- 72 Cases of Fractures of Neck of Femur in Children. H. L. Taylor, New York.—p. 508.
- 73 Bronchoscopy and Esophagoscopy. J. W. Murphy, Cincinnati.—p. 513.

Pennsylvania Medical Journal, Athens

November, XXI, No. 2

- 74 Factors of Safety in Abdominal Hysterectomy. D. Guthrie, Sayre.—p. 65.
- 75 Surgical Treatment of Prostate. E. S. Judd, Rochester, Minn.—p. 72.
- 76 Principles of Pathology of Prostate. W. C. MacCarty, Rochester, Minn.—p. 76.
- 77 Selection of Cases for Prostatectomy. J. B. Deaver, Philadelphia.—p. 78.
- 78 Remote Symptoms of Prostatitis and Spermatocystitis. T. Baker, Pittsburgh.—p. 82.

- 79 Poliomyelitis. Study of 1916 Epidemic in Philadelphia. T. H. Weisenburg and S. S. Leopold, Philadelphia.—p. 86.
80 Id. Early Recognition; Value and Technic of Spinal Puncture. J. F. Sinclair, Philadelphia.—p. 92.
81 Alcoholism; Some Complications and Their Treatment. J. C. Doane, Philadelphia.—p. 96.
82 Treatment of Pneumonia in Early Life. H. T. Price, Pittsburgh.—p. 99.
83 Oral Sepsis. S. B. Luckie, Chester.—p. 103.
84 *Analysis of Nine Hundred and Ninety-Eight Consecutive Complete Blood Counts. F. B. Utley, Pittsburgh.—p. 106.

84. Analysis of Blood Counts.—In the 998 blood counts made by Utley the polymorphonuclear leukocytes were increased over the accepted normal percentage of 70 in 179 smears. This increase was found in patients suffering from infections, acute or pyogenic. They were diminished under 65 per cent. in twenty smears without an abnormal increase in any other group of cells with which they might be classed. This diminution occurred in asthenic conditions, or in those patients who are regarded to have an abnormally low resistance. Of the 998 differentials made, there were eighty-eight which had an absolute eosinophilia or over 250 eosinophils per cubic millimeter. In fifty-one, or in 57.9 per cent. of the cases, eosinophilia did not assist in the diagnosis in the light of present knowledge. There was an eosinophilia in twelve cases of intestinal putrefaction, indicating a correlation of the chemotactic action of intestinal parasites and of intestinal putrefaction. Basophils in excess of 1 per cent. were present in twenty-six cases. The presence of basophilia was not of much help in diagnosis. In general, it was present in asthenic conditions. Myelocytes were present in fifteen cases. Twelve were patients suffering from pernicious anemia, one a patient suffering from angina pectoris, and two were patients whose condition was not diagnosed. Differentials showing lymphocytes in excess of 30 per cent. were regarded as showing a lymphocytosis. Practically all the cases fall within the prescribed list except those which could not be classified. There were 166 smears in which the large mononuclears were 5 per cent. or over.

The cases of syphilis, the various cachexias, malignant endocarditis, influenza, measles and Hodgkin's disease or twenty-three cases in all out of the 166 may be regarded as being in the usual group, leaving 143 cases or 86.2 per cent. of the cases ungrouped. In other words, in 86.2 per cent. of the cases the presence of large mononuclears in excess of normal can not be explained in the light of present knowledge. The asthenic group totals sixty-four cases, or 38.5 per cent. There were twenty-nine smears which showed so-called transitionals in excess of 5 per cent. There were 272 normal counts, and these coincided with the clinical picture in each instance, except in a few cases of pernicious anemia and influenza where the differential might have been expected to be different. Adding to the 272 normal counts which were of no definite help in diagnosis, the undiagnosed cases in each group or 104, there were 376 counts out of the 998 made which had no direct bearing on the diagnosis, prognosis and treatment of the patient. Deducting from each group the number which had no classification in that group according to the light of our present knowledge, or 210, and adding these to the 376, there were 586 counts made which offered no direct assistance in the diagnosis, prognosis and treatment of patients. Of the remaining 412 counts the way to a diagnosis was pointed out in six of seven cases of intestinal parasites and in seventeen cases of pernicious anemia, or twenty-three in all. In the remaining 389 cases the blood count was helpful in diagnosis.

Psychiatric Bulletin, Utica, N. Y.

July, II, No. 3

- 85 War Neuroses. J. T. MacCurdy, New York.—p. 243.
86 Treatment of Mental and Nervous Diseases in United States Army. T. W. Salmon.—p. 355.
87 Mental Disorders Incident to War. A. Hoch, New York.—p. 377.

Washington Medical Annals, D. C.

November, XVI, No. 6

- 88 Epidemic Cerebrospinal Meningitis; Report of Sixteen Cases. F. Lecch and J. W. Lindsay, Washington, D. C.—p. 307.

Wisconsin Medical Journal, Milwaukee

November, XVI, No. 6

- 89 Acidosis from Physiologic Chemical Viewpoint. C. J. Farmer, Milwaukee.—p. 187.
90 Tuberculosis and Draft Examinations. O. Lotz, Milwaukee.—p. 197.
91 Classification of Chronic High Blood Pressure Cases. L. M. Warfield, Milwaukee.—p. 200.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Disease, London

July-September, XIV, Nos. 163-165

- 1 Hypertrophic Stenosis in Infants; Analysis of One Hundred and Fourteen Cases. L. E. Holt.—p. 161.
2 Acquired Syphilis in Infants, with Remarks on Crèches. G. Pernet.—p. 168.
3 Treatment of Enlarged Cervical Lymph-Nodes in Children. C. G. Cumston.—p. 172.
4 Cerebral Degeneration and Epileptiform Fits, with Amaurosis, in Only Child. F. P. Weber.—p. 176.
5 Case of Lipodystrophia Progressiva in Male. F. P. Weber.—p. 179.
6 Congenital Word Blindness and Letter Blindness—Congenital Alexia, with Agraphia without Aphasia. F. P. Weber.—p. 183.
7 *Case of Congenital Defect of Duodenum, in which Bile was Found Both Above and Below the Absent Portion. E. A. Cockayne.—p. 188.
8 Fatal Case of Pelvic Cellulitis in Child. F. C. Pybus.—p. 192.
9 Acute Delirium in Lobar Pneumonia in Child. J. P. Parkinson.—p. 193.

7. Congenital Defect of Duodenum.—Cockayne's case occurred in a male child born at full term. There was no history of any similar condition in the family and the mother was in good health during her pregnancy. At the confinement it was noticed by the medical attendant that the liquor amnii was excessive in quantity and bright green in color. The child vomited liquid, which resembled the bile-stained liquor amnii, on the second day, and passed meconium of normal appearance. Slight jaundice was noticed on the third day. Vomiting continued at intervals, the vomit being invariably watery and green, but no more meconium was passed. The general condition became gradually worse until death took place on the fifth day. At the necropsy it was seen that the child was well nourished and without any external malformation. The skin was slightly icteric. On opening the abdomen the stomach was found to be greatly dilated and the first part of the duodenum to end blindly, being greatly distended and globular in outline. The pylorus was visible and palpable as a thickened constriction between these two organs. Some fluid stained with the bile was present in the stomach and distended first part of the duodenum. The bile-duct opened directly into the narrow commencement of the lower part of the duodenum, but the pancreatic duct entered the posterior aspect of the blind sac formed by the upper part of the duodenum. There was no connection except by peritoneum between the upper and lower portions of the duodenum; the missing part of the viscus was not even represented by a thin cord. The liver, gallbladder, cystic duct, hepatic duct, and common bile-duct were normal, and the gallbladder contained a considerable amount of bile. The most interesting feature of the case and one which made a correct diagnosis almost impossible, was the fact that a large quantity of bile-stained fluid was vomited, although the bile-duct opened into the lower part of the duodenum, and there was complete lack of continuity between it and the upper part.

Edinburgh Medical Journal

November, XIX, No. 5

- 10 *Lathyrism. R. Stockman.—p. 277.
11 *Lathyrism in Man. R. Stockman.—p. 297.
12 Case of Syringomyelia. D. M. Greig.—p. 308.

10. Lathyrism.—The results of many experiments on such animals, as the monkey, rabbit, pigeon, duck, pig and sheep made by Stockman showed that both the large peas (grown on dry wheat lands) and the small peas (grown on wet rice lands) of *Lathyrus sativae* are poisonous, but different samples

of peas vary greatly in toxicity. The poisonous substance is an alkaloid. Certain species of animals are very much more susceptible than others. Individual susceptibility varies greatly in the same species. With ordinary samples of the peas and in susceptible animals feeding has to be carried on for some time before toxic symptoms develop. Occasionally, however, the peas seem to be more poisonous and capable of causing more acute poisoning. In monkeys and in other susceptible lower animals prolonged feeding seems to cause a greater or lesser degree of paralysis of the peripheral nerves, along with other symptoms due apparently to an action on the central nervous system. A single large dose of the alkaloid paralyzes the terminations of motor nerves, but other parts of the nervous system are also affected. Histologic examination of the muscle and nervous system in poisoned monkeys showed no structural changes.

11. Lathyrism in Man.—Lathyrism in man is a chronic nervous disease due to the habitual use as food of the peas of certain species of *Lathyrus* (vetchlings); it occurs endemically and epidemically. The symptoms appear only after the peas have been eaten for some time, the length of time varying according to the quantity consumed and the amount of poisonous alkaloid present. Individual susceptibility also appears to have a considerable influence as only certain persons in communities and families suffer, even when all are apparently equally exposed. A striking feature in every epidemic has been the large number of men affected as compared with women, generally estimated as ten or twelve to one. Two explanations of this have been given, the one, that men habitually eat more than women, the other, that men are more exposed to cold and wet and fatigue, conditions which seem to accentuate the action of the poison.

The patient first complains of cramps in the calves of his legs, and if he then stops eating the grain he may recover almost entirely, or only a little stiffness of his legs may remain. He is able to walk about without the aid of a stick, but an up-and-down movement of his shoulders may be noticed when he is walking. His toes may drag slightly on the ground. If he continues eating peas he may experience a somewhat sudden onset of paralysis. If he still eats peas he will lose control over the bladder and rectal sphincters. A very small number of patients are unable to stand even with the aid of sticks. The knee jerk is increased in all cases, sometimes more on one side than on the other, and the foot clonus is increased only in the severe cases. The muscles in the back of the leg are rigid. The muscles were found, as a rule, to be well nourished. Bed-sores were never seen. The paralysis of the sphincters passes off in a few weeks; sexual power is diminished or lost, but it may return. Sensory symptoms precede the paralysis, chiefly cramps, a feeling of tightness in the leg tendons, tingling, pins and needles and weakness at the waist. The gait is characteristic.

In the mild case the patient has to raise his body high before the toes will leave the ground, and the up-and-down movement of the shoulders is the chief symptom noticed. In the more severe cases the patients use one or two sticks, and these sticks are always long. One stick is put forward and then the upper part of the body sways forward; the body becomes erect before the other stick is put forward. The dragging of the toes is the most marked symptom. The inner side of the nail of the great toe is worn away, and in bad cases the upper surface of the outer toes may be rubbed. There is nearly always a tendency to cross legged progression. No satisfactory examination of the spinal cord and peripheral nerves has ever been made. Treatment is generally said to be futile if the disease is fully developed.

Indian Journal of Medical Research, Calcutta

July, V, No. 1

- 13 Preparation of Vaccines on Large Scale. J. Cunningham, H. C. Brown and K. R. K. Iyengar.—p. 1.
- 14 Susceptibility of Indian Milch Cattle to Tuberculosis. W. G. Liston and M. B. Soparkar.—p. 19.
- 15 Wassermann Reaction as Explained by Major Nesfield. W. D. Sutherland.—p. 72.
- 16 Bacteriologic Studies of Cholera-Like Vibrios Isolated from Stools of Cholera Cases in Calcutta. Morphologic and Cultural Investigations. E. D. W. Greig.—p. 81.

- 17 Id. Feeding Experiments. E. D. W. Greig.—p. 89.
- 18 Dysentery in Jails of Eastern Bengal. J. Cunningham and H. H. King.—p. 96.
- 19 *Transmission of Plague by Bedbugs. J. W. Cornwall and T. K. Menon.—p. 137.
- 20 Studies in Flies. Classification of Genus *Musca* and Description of Indian Species. P. R. Awati.—p. 160.
- 21 Trematode Parasite of Anopheline Mosquitos. J. A. Sinton.—p. 192.
- 22 Anopheline Mosquitoes of Kohat District. J. A. Sinton.—p. 195.
- 23 *Ankylostoma Duodenale* as Parasite of *Felis Tigris*. C. Lane.—p. 210.
- 24 **Trichomastix* (n. sp.) Parasitic in Human Intestine. G. C. Chatterjee.—p. 217.
- 25 *Trichophyton Viannai* n. sp. Infecting Agent in Case of Dermatomyecosis. F. de Mello.—p. 222.
- 26 Effect of Intravenous Injections of Antimonium Tartaratum on Malarial Parasites. E. D. W. Greig.—p. 234.
- 27 Amebic Dysentery Carrier in India and Mesopotamia. W. MacAdam and R. Keelan.—p. 239.

19. Transmission of Plague by Bedbugs.—Cornwall and Menon point out that bugs which have fed on a case of septicemia plague must unquestionably be regarded as ambulant cultures of plague whose rupture will set free virulent plague bacilli. A large proportion of the bugs infected with a given strain of *B. pestis* succumbed in a few days, the time of survival having some relation to the dose of bacilli. If bugs died the final results were indistinguishable whether the initial dose were large or small. The majority of the survivors had entirely overcome their infection and contained no viable bacilli. Some common nonpathogenic bacteria are as fatal to bugs as the most pathogenic. Bugs with a bacterial infection generally refuse to feed for a long time. A sterile refeed, if the infection has not been entirely overcome, may lead to a fatal recrudescence. *B. pestis* can survive in the stomach of a bug, which has had one or more sterile feeds after the original infected feed, for at least thirty-eight days. *B. pestis*, recovered by culture from the stomach of an infected bug, retains its virulence for guinea-pigs. Peculiar protozoon-like involution or developmental forms of *B. pestis* may be seen in preparations from the stomachs of infected bugs. All attempts to obtain a growth of *B. pestis* by allowing infected bugs to feed on a sterile fluid through a rabbit skin membrane failed. All attempts to transmit plague to guinea-pigs by means of the bites of infected bugs failed. *B. pestis* sometimes finds its way from the stomach of a bug into the hemic cavity and thus produces a true septicemia. Infected bugs may die from toxemia before the occurrence of septicemia. *B. pestis* may be recovered by cultivation of the proboscis of a bug in broth within an hour of its infected feed. The presumption is that bacilli which have been stranded in the sucking tube multiply in the culture medium. Pressure on the body of a fed bug will not force the contents of its stomach out along its sucking tube. After an infected feed the proportion of bugs which can be expected to feed within a few hours on a normal animal and at the same time to have bacilli stranded in their sucking tubes is not likely to exceed 2 per cent.

24. Parasite in Human Intestine.—A flagellate was found by Chatterjee in the stool of a dysentery patient. No amebas were found in the stool. The patient suffered from intestinal complaints for a week and obtained relief by administration of castor oil emulsion. A cover-glass preparation made from the stool showed under the high power a large number of actively moving flagellates. Their appearance differed from the flagellates which are ordinarily found here, namely *Lambia*, *Pentatrichomonas* or *Macrostoma*. Some of the flagellates were circular in shape. The flagellate resembles a *Trichomonas* but absence of an undulating membrane, a well marked axostyle and a tail prove that it is not a *Trichomonas*. It has some resemblance to *Copromastix prowazeki* of Aragao which has four flagella, but in the latter all the flagella are directed forward, whereas in the parasite under consideration one flagellum is directed backward. It has the structure of *Trichomastix* as defined by Parisi (three anterior flagella and one recurrent flagellum not adherent to the body to form an undulating membrane). As a *Trichomastix* inhabiting the human intestine has not hitherto been described, Chatterjee feels justified in describing it as a new species *Trichomastix hominis*.

Lancet, London

November 10, II, No. 4915

- 28 Causes of Disease. E. S. Reynolds.—p. 703.
29 *Later History of Cases of Gunshot Wounds of Chest, with Retained Missiles. R. D. Rudolf.—p. 709.
30 *Abnormal Median and Ulnar Nerve Supply in Hand. W. Harris.—p. 710.
31 *Cerebrospinal Fever; Mode of Invasion by Meningococcus. C. Worster-Drought and A. M. Kennedy.—p. 711.
32 *Action of Spinal Fluid in Stimulating Growth of Meningococcus. C. Shearer.—p. 714.
33 Removal of Shrapnel from Subclavian Artery. H. C. Donald.—p. 715.
34 Case of Complete Obliteration of Ulnar Artery by Suppuration. J. M. Barlet.—p. 715.
35 Digestibility of Bread Made from Two Parts of Wheat and One Part of Oats, Barley, Maize or Rice. E. I. Spriggs and A. B. Weir.—p. 724.

29. **Gunshot Wounds of Chest.**—An analysis made by Rudolf of fifty cases shows that evidence is lacking that small fragments of shell and shrapnel and likewise rifle bullets and shrapnel balls retained in the lung commonly give rise to any serious trouble. The mortality of gunshot wounds of the chest in patients that have survived the early days of their invalidism and been sent to England with retained missiles in the chest is practically nil if these foreign bodies be left alone. Hence, when it has not been considered necessary by the surgeons at the front to operate immediately, it should not be done later on, unless, indeed, some very definite indication, such as an abscess, exists.

30. **Abnormal Nerve Supply in Hand.**—Harris has seen four cases of abnormal nerve supply to the hand, two of the sensory distribution and two motor. In two cases the first and second dorsal interossei were quite unaffected in severe ulnar nerve lesions from gunshot wounds, indicating their supply to be from the median nerve in these cases, while the other two cases illustrated an abnormally large sensory supply by the ulnar to the inner two and a half fingers instead of the usual one and a half.

31. **Cerebrospinal Fever.**—Observation of a number of cases has convinced Worster-Drought and Kennedy that the mode of entry of the meningococcus is via the blood stream. In the ordinary type of case the coccus is carried to the meninges by the blood within a few hours without definitely infecting the blood itself. In some cases, however, blood infection (septicemia) occurs, for instance, in fulminating cases prior to the involvement of the meninges; the septicemia then frequently overshadows the meningitis. In rare cases the organism may remain, infecting the blood alone for a considerable time, before finally reaching the meninges, or the patient may die of such septicemia before meningitis can occur. In other instances the meningococcus infecting the blood may also invade structures other than the meninges, for instance, the cardiac valves. Catarrhal conditions predispose to meningococcal infection, but the meningococcus does not necessarily produce nasopharyngeal catarrh.

32. **Action of Spinal Fluid on Meningococcus.**—The main outcome of Shearer's experiments is to show that there is present in normal spinal fluid some substance that greatly increases the rate of growth of the meningococcus on an artificial culture medium. They demonstrate that this power, in the case of human spinal fluid is relatively greater than that shown by blood or nasal secretion; that volume for volume, spinal fluid brings about a much thicker growth of the meningococcus than do the same volumes of blood or nasal secretion.

Annales de Médecine, Paris

July-August, IV, No. 4, pp. 377-472

- 36 *Disordered Action of the Heart and Military Service. H. Vaquez and E. Donzelot.—p. 377.
37 Paratyphoid Fevers. G. Etienne.—p. 391.
38 Tumor of the Cerebellopontine Angle with Paroxysmal Syncopal Bradycardia. J. A. Sicard and H. Roger.—p. 418.
39 *Remote Sequels of Pleural Effusions. M. Péhu and M. Daguet.—p. 428.
40 *The Proteolytic Power of Normal Polynuclear Leukocytes. N. Fiessinger and R. Clogne.—p. 445.
41 Hemiplegia from Concussion of the Spinal Cord. G. Roussy and J. Lhermitte.—p. 458.

36. **Testing the Heart.**—Vaquez and Donzelot refer to tests for military service, emphasizing that the usual tests do not take into account all of the four main factors in the acceleration of the pulse after a test running or stair-climbing exercise. The irritation of the accelerating nervous system, the reduction in the peripheral resistance, the hampering of the diastole and hence the incomplete filling of the ventricles, cooperate with the hampering of the systole to modify the pulse, but only the difficulty with the systole is directly connected with the force exerted by the myocardium itself. In their examination of hundreds of men in the last few months they were impressed by the extreme variety of the tracings in different persons and at different times in the same person. Also with the frequent contradiction between the tracings which seemed to give most favorable testimony and the unmistakable grave clinical symptoms in certain cases. It seemed impossible to determine any definite relations between the different types of tracings and curves and the functional capacity of the heart. They discuss each type of curve in turn, their conclusions being that the only way to estimate the reserve force of the heart and hence its functional value is to make a careful clinical examination in each case, completed by sphygmomanometry and radioscopy. The men with well compensated mitral or aortic incompetency can be passed for merely the auxiliary service (light duty); as also those with pericarditis with merely localized adhesions. All other forms of cardiac or aortic lesions justify exemption. With functional cardio-pulmonary trouble, the right heart intact, light duty only. In regard to arrhythmia, they state that breathing arrhythmia is not pathologic. With extrasystolic arrhythmia, young men should be passed for full military service with progressive exercise, but older men should be passed only for the auxiliary service or should be exempted, according to the size of the heart. With paroxysmal tachycardia without valvular lesion, the men should be given a rest in a hospital at the front with convalescence leave. With tachycardia in general, the man should be kept in bed for three or four days and then reexamined from time to time. If the tachycardia subsides under repose, progressive exercises are then in order.

39. **Sequels of Pleural Effusions.**—From clinical and radioscopic study of 152 cases of traumatic and spontaneous disease of the pleura, Péhu and Daguet state that months and years afterward there was extensive adhesion of the sheets of the pleura, over extensive areas, only in the cases of pleurisy of tuberculous origin. In all the other cases the adhesions were slight or transient as a rule, including the cases with simple hemothorax after a war wound. Extensive hemothorax persisting after several punctures is liable to produce symphysis between the sheets of the pleura, the same as hemothorax of the dura, as it undergoes organization. Radioscopy reveals the extent of the symphysis and its influence on respiration.

40. **Proteolytic Power of the Leukocytes.**—The proteolytic power of the leukocytes in pus has been well studied, but Fiessinger and Clogne here report what they think is the first extensive research of the kind on the normal polynuclear leukocytes in the blood stream. They found that these leukocytes secrete a protease that has the same action as the protease of the pus leukocytes, an action resembling that of trypsin. The findings are tabulated in detail. They isolated the leukocytes for the purpose by hemolyzing with diluted alcohol and centrifuging.

Archives Médicales Belges, Paris

May, LXX, No. 5, pp. 385-480

- 42 *Rigidity of Abdominal Wall with War Wounds. C. Willems.—p. 385.
43 *Mental Derangement in Soldiers. H. Hoven.—p. 395.
44 *Local Medication in Treatment of Diphtheria Bacilli Carriers. J. Roskam.—p. 406.
45 Direct Shell Shock of the Nearest Eye. G. Leplat.—p. 412.
46 Present Status of Treatment of Fractures. Stassen and J. Voncken.—p. 416.

42. **Rigidity of the Abdominal Wall with War Wounds.**—Willems expatiates on the importance of determining the presence and degree of rigidity of the abdominal wall in

case of wounds anywhere on the trunk. Even with wounds on the limbs near the trunk, we may overlook important information if we neglect to determine the condition of the abdominal walls. The rigidity may be partial, localized, or there may not be absolute rigidity. With much hemorrhage in the abdomen, the rigidity is general and pronounced; with hemorrhage in the thorax there is also a certain amount of rigidity even when the diaphragm is intact, as also with retroperitoneal lumbar hemorrhage with or without injury of the kidney. The peritoneum is not inflamed, but it is pushed out of its normal place by the accumulation of blood forcing down the diaphragm or in the lumbar region, hence the muscle over it contracts but not so taut as with peritonitis.

When the peritonitis reaches the stage of sepsis, the abdominal wall relaxes. This is liable to be misleading when the patient with a lesion of some hollow viscus is not seen until the rigidity at first has subsided into the stage of relaxation. In some persons the wall is less board-like than in others, and the rigidity is much less pronounced with simple hemorrhage than with perforation of one of the viscera. Small intraperitoneal hemorrhages do not induce rigidity until considerable blood has accumulated, and then only the muscle wall in this region contracts. With a war wound in the liver, there is no rigidity as the blood flows a little at a time. It settles in the right flank; and when enough has accumulated there is rigidity, but only in the right flank. The wound in the liver may be small and heal spontaneously, but the "wooden abdomen" always calls for a laparotomy. With a rapidly developing hemothorax, that side of the abdominal wall stiffens, especially the upper part, and the assumption that the projectile has entered the abdomen seems justified. But by waiting a little, keeping the man quiet, we find the rigidity less pronounced by the next day and all gone in a few days. This unilateral rigidity of the abdomen has led to many unnecessary and futile laparotomies. With a wound of the kidney, the rigidity is likewise unilateral, and some part of the wall on the other side can always be found normal. If the hematuria is not menacing, repose may be all that is needed; otherwise the kidney should be removed from the rear. The abdomen should not be opened for unilateral rigidity. The kidney often is wounded with the peritoneum still intact. With wounds in the pelvis region alone, the rigidity is localized in the vicinity and subsides in a few hours. The partial, localized rigidity only renders more significant the necessity for a prompt laparotomy when the whole abdominal wall is rigid. As Willems expresses it, *grande défense* calls for intervention, and *petite défense* for abstention.

43. **War Psychoses.**—Hoven's conclusion from 300 cases are that the psychoses encountered in the men at the front are the same old types known during the days of peace.

44. **Local Treatment of Diphtheria Bacilli Carriers.**—Roskam reports that local treatment of the throat with iodine and other antiseptics did not clear the throat of bacilli by any means as effectually as when they were treated by insufflation of pulverized antitoxin. With the latter the carrier period was shortened by 33 per cent. in the convalescents from diphtheria and by 59 per cent. in the healthy carriers. The antiseptic group included 53 convalescents and 28 healthy carriers; the antiserum powder group 49 convalescents and 65 healthy carriers. In this last group all but 4 of the convalescents lost their bacilli on an average before the twenty-second day; all but two of the carriers before the nineteenth day.

Journal de Médecine de Bordeaux

October, LXXXVIII, No. 11, pp. 219-236

47 *Reeducation of Disabled Soldiers. Le Dantec.—p. 219.

48 *Pneumonia in Prison Camp. H. Mallié.—p. 224.

49 Syphilophobia after Infection as a Danger for Society. W. Dubreuilh.—p. 228.

50 The Oscillometer as Guide in Venesection. A. Guérin.—p. 230.

47. **Autoreeducation of Disabled Soldiers.**—Le Dantec has noticed that the men overcome their disability with exceptional ease when the training combines simultaneously both active and passive movements. For example, with total

hysterical paralysis of the arm, he takes up one finger, stretches it at the word "One" and flexes it at "Two," repeating this five or six times, the patient exerting his will at the same time to the utmost to extend or flex the finger at the word of command. He does the exercise first on the sound hand, the volitional and the passive movement exactly synchronous, until he gradually reduces the passive force to zero. In the same way, on the disabled hand, after five or six repetitions, there can generally be seen a suggestion of volitional movement in the finger. Each finger and finally the hand and the arm are thus exercised separately. The thumb and big toe usually regain spontaneous movement first with this "conjugated bipolar training," as he calls it. Neither the will alone nor the passive movement alone can accomplish this rearousing of function, but the cumulative action of the two combined is proving very successful in his service. He first softens the tissues by soaking in tepid water and massages with greased or soaped hands. Progress is hastened when the man is taught to do the passive movements himself with the sound hand. This gives a zest to the exercises as volitional control is regained, and the man keeps himself busy repeating these auto-exercises. In his service the men sit at a long, covered table and rest the bare arm on it. They stand when the shoulder is being exercised, and sit with bare legs when the paralysis to be combated is in the leg. As soon as spontaneous movements are possible, the men can be allowed to go home, continuing their exercises at home, returning every three weeks to report progress.

48. **Pneumonia in Prison Camp.**—Mallié relates that in the Alten-Grabow prison camp (Prussia) in the course of eleven months there were 244 cases of frank pneumonia with ten deaths among 1,200 French and Belgian prisoners of war, and 116 cases with eleven deaths among an equal number of Russian prisoners. In describing these experiences with pneumonia in the debilitated war prisoners, he emphasizes that pneumonia damages the pleura much more than is generally recognized, thus predisposing it to invasion by the tubercle bacillus. Courses of tonics and respiratory exercises should always follow pneumonia.

Paris Médical

October 20, VII, No. 42, pp. 305-336

51 *Ambard's Urea Constant in Surgery. F. Legueu and H. Chabanier.—p. 305.

52 *Deceptive Decrease in Uremia. J. Castaigne.—p. 308.

53 Glycosuria in the Wounded. F. Rathery.—p. 312.

54 Nongonorrheal Urethritis plus Epididymitis. L. Ramond.—p. 317.

55 Sphincter Disturbance in Connection with Injury of Lumbar-Sacral Region. F. Cathelin.—p. 319.

56 Surgical Importance of Ureter Anomalies. E. Papin.—p. 323.

57 War Nephritis and Albuminuria. Boulanger.—p. 327.

58 Essential Incontinence of Urine. Uteau, Schwab and J. Raton.—p. 328.

59 Secondary Aseptic Hematuria. E. Roucayrol and L. Bovier.—p. 332.

51. **The Urea Constant in Surgery.**—Legueu and Chabanier reiterate that the unfavorable outcome of many an operative intervention might have been foreseen if more attention had been paid to the functional capacity of the kidneys before attempting it. Aside from acute postoperative nephritis—which we have no means of foreseeing—we are able to determine the urea-secretory constant and maximal concentration, and thus obtain insight into conditions that warn of impending postoperative uremia. The danger from this, they explain, depends on the postoperative oliguria. Where the oliguria is not intense and does not keep up long, the uremia does not reach a menacing degree. Ambard's constant is a reliable index, they say, of the functional value of the kidneys from the surgeon's standpoint. It reveals the reserve functional power of these organs, and the surgeon is thus able to compare it with the task he is about to inflict on them, weighing along with it the general condition and degree of infection. It may warn to postpone the intervention until the patient is better able to stand it, or to operate under regional rather than general anesthesia.

52. **Deceptive Subsidence of Uremia.**—Castaigne calls attention to the misleading findings in chronic nephritis with a tendency to uremia when hydremia develops. The blood find-

ings suggest that the urea content of the blood is approaching normal once more, but this is deceptive. The change is due to more water in the blood diluting the urea, while the absolute amount in the circulating blood is the same or higher. In one of several cases reported, the hydremia was the result of a long course of mineral waters. In another, the hydremia followed return to salt in the food after restrictions on account of retention of nitrogen and sodium chloride. The man of 34 died in coma in three months. The urea content of the blood was only 0.5 gm., but the reds numbered only 2,600,000, testifying to the hydremia which masked the uremia.

Presse Médicale, Paris

October 8, XXV, No. 56, pp. 577-588

- 60 *Bone Growth From Bone Flap in Skull. J. A. Sicard, C. Dambrin and H. Roger.—p. 577.
 - 61 Syndrome from Tumor in Third Ventricle. A. Salmon (Florence).—p. 578.
 - 62 Auscultation of the Pulse. J. Cottet.—p. 579.
 - 63 Bone Fistulas after War Wounds. Haller.—p. 581.
 - 64 Adjustable Clamp for Fractured Bone. A. Chalier.—p. 585.
- October 11, No. 57, pp. 589-596
- 65 The Bread Question. R. Legendre.—p. 589.
 - 66 *The Laws on Industrial Accidents and War Wounds. L. Imbert.—p. 591.
 - 67 Technic for Operations on the Calf. H. de Gaulejac.—p. 595.

60. **Bone Flap for Skull Defect.**—Sicard and his co-workers report forty-two cases in which they implanted a plate of bone from a skull to close a gap in the skull. The inner surface of the sheet of bone is scraped down to the diploic tissue and is fenestrated. It is then fitted over the gap like a watch glass, between the periosteum and the bone all around the gap. In three cases the plate had to be removed, and it was found that it had stimulated bone production until the gap was well on the way to being permanently closed by a new formation of bone. The findings show that the new growth is the work of the periosteum taking up from the dead bone the material it needs. This exaggerated osteogenetic power conferred on the periosteum testifies to the superiority of a bone flap over metal or other material for the purpose, to say nothing of the perfect tolerance and inexpensiveness of this technic.

66. **Pensions for Effects of Industrial Accidents and War Wounds.**—Imbert discusses the perplexing questions liable to arise when an industrial accident affects a man already damaged by a war wound, or vice versa.

Revue de Médecine, Paris

XXXV, No. 5-6, pp. 281-406

- 68 *Fat in Chest Wall as Sign of Disease Below. L. Landouzy.—p. 285.
- 69 *Rôle of the Pancreas in Glycolysis. R. Lépine.—p. 289.
- 70 Traumatic Neuroses after War Wounds. J. Ferrand.—p. 293. Commenced in No. 4, p. 239.
- 71 Diagnosis of Sciatica. L. Lortat-Jacob.—p. 314.
- 72 Delirium of Revindication and Hysteria. R. Benon.—p. 331.
- 73 The Skin Diseases of War. H. Gougerot.—p. 342. To be continued.

68. **The Adipose Tissue in the Chest as Aid in Diagnosis.**—In this last article from Landouzy's pen, he calls attention to the extra fat in the chest wall liable to be encountered over an old or active pleural or pulmonary lesion. He takes up a fold in the skin as if to apply a seton. The thickness of this fold compared with a symmetrical fold may prove instructive, as the adipose tissue is thicker over the diseased portion. The innervation of the adipose tissue here does not function normally, and the fat does not get oxidized properly. Not being normally oxidized, the fat accumulates. In the cases cited the fold was 13, 18 or 19 mm. thick over the apical lesion in the pectoral region while it measured only 10 mm. on the sound side. In a man of 46, four years after an attack of pleurisy, the chest seemed symmetrical but the calipers showed the fold to be 22 mm. thick over the site of the old pleurisy and only 16 mm. on the other side. In a young man ten weeks after the onset of pleurisy, the overlying fold measured 19 mm. to 10 mm. on the other side.

69. **Pancreatic Diabetes.**—Lépine protests against incriminating the pancreas alone in glycolysis. Certain others of

the glands with an internal secretion are unmistakably involved likewise in the glycolysis process.

Correspondenz-Blatt für Schweizer Aerzte, Basel

October 20, XLVII, No. 42, pp. 1393-1424

- 74 *Indirect Trauma as a Factor in Aneurysms of the Basal Arteries of the Brain. E. Hedinger.—p. 1393.
- 75 *Errors in Deductions from Presence of Lactic Acid in the Stomach. A. Rodella.—p. 1398.
- 76 *Concussion and Shell Shock Psychoses. L. Binswanger.—p. 1401.

74. **Trauma and Aneurysms of Basal Arteries.**—Hedinger reports a case similar to that published by Saathoff in which indirect trauma induced rupture and aneurysm in the basal artery of the brain without a trace of inflammatory processes in the vessel wall. His patient was a woman of 47 who had fallen down a flight of steps four years before and had since complained of pains in the back of the neck and head in addition to her preexisting tendency to migraine. She died suddenly and necropsy revealed aneurysm of the vertebral artery with no signs of inflammation. The vertebral and basilar arteries seem to be unusually predisposed to aneurysms. In Hedinger's experience, the Wassermann reaction was always positive in the cases that came to necropsy, the ages between 25 and 40. There is much to sustain the assumption that even slight trauma, such as the forcible stretching of the spine, might damage slightly the posterior cerebral arteries and thus afford a favorable field for colonization by the pale spirochetes.

75. **Lactic Acid in the Stomach.**—Rodella states that the Uffelmann reaction is not specific for lactic acid, but is a group reaction for the group containing citric acid, tartaric, oxalic and succinic acid besides lactic acid. Lactic acid may be found in the stomach content without lactic acid bacilli, and vice versa. He relates further that native albumin, blood or serum, is an indispensable condition for abundant lactic acid fermentation. If there is ulceration or blood in the stomach, there will be profuse production of lactic acid even when the stomach is being emptied normally, provided there is little or no hydrochloric acid present. Time must be given for the fermentation; the findings in less than three quarters or a full hour are misleading. Microscopic discovery of lactic acid bacilli is much more reliable than determination of lactic acid alone.

76. **Concussion Psychoses.**—Binswanger analyzes some of the cases of shell shock psychoses in disabled soldiers interned in Switzerland. In the small group studied all the men had had wounds of the frontal lobe. Some required two operations, and they developed psychoses of a different type after each.

Riforma Medica, Naples

October 20, XXXIII, No. 42, pp. 993-1012

- 77 *Pathogenesis of Paralysis or Contracture after War Wounds. A. Salmon.—p. 993.
- 78 Introduction of Antimony into Treatment of Internal Leishmaniasis. R. Jemma.—p. 1007.

77. **Pathogenesis of Paralysis and Contracture.**—Salmon reviews the recent publications of neurologists in this field, and insists on the importance of prolonged immobilization in perpetuating the tendency to paralysis and contracture. He does not admit, however, that this alone is responsible for them. It cannot explain the special vasomotor instability nor the lively reactions on the part of the nerve centers. This vasomotor instability in the region of traumatic neuroses of the hysteria type is too often overlooked. Among the examples cited is the case of a soldier who has had hysteric tremor in the right leg since a war wound. The tremor comes on every time the leg is examined and it becomes actual clonus at the slightest bending of the foot. Along with this there is pronounced dermatographism and the skin grows as red as in measles, all coming on and subsiding with the tremor in the leg. The direct connection between the vasomotor phenomena and the hysteric is thus plainly evident. There are many cases on record of simulation of paresis or contracture in which hysteria intervened and rendered it permanent. As he remarks, "the hysteric simulate with the complicity of their organism, and they are left victims of their intent to deceive." Psychotherapy alone is ineffectual

unless supplemented by massage, passive and active exercises, etc. The great obstacle to recovery is the apathy or direct disinclination for recovery. Moral suasion may rouse the men to help themselves get well, threat of punishment, or loss of pension if the physician's efforts are not seconded. With such psychic and physical revulsion excellent results may be obtained. The main point is to begin treatment early and vigorously and not allow immobilization to be kept up too long.

Cronica Medica, Lima

September, XXXIV, No. 651, pp. 311-354

- 79 *Trypanosoma Duttoni in Lima Mice. R. E. Ribeyro and J. L. Raffo.—p. 313.
- 80 *Hyperchlorhydria of Biliary Origin. A. Robles.—p. 316.
- 81 Case of Blue Disease. E. Odrizola.—p. 320.
- 82 Protozoa in Human Pathology. J. Arce.—p. 324.
- 83 Present Status of Leishmaniosis. E. Escmel.—p. 334. To be continued.

79. **Trypanosomes at Lima.**—Ribeyro and Raffo report that they found the *Trypanosoma duttoni* in three mice out of a hundred examined. The infected mice came from different houses.

80. **Hyperchlorhydria from Biliary Trouble.**—Robles agrees with Pauchet's recent statement that, on an average, of every ten persons with gastric disturbance, in nine the dyspepsia is of reflex origin, the actual source of the trouble being located outside of the stomach. He reports some typical cases in which everything seemed to indicate stenosis of the pylorus or cancer of the stomach until the whole set of symptoms subsided under medical or surgical treatment of a liver abscess or gallstones, or sluggish liver functioning. In one case nothing could be found at first to explain the gastric pains and other symptoms of hyperchlorhydria from which the woman had suffered for four years. Finally palpation was done as she stood erect. This revealed a tender point in the biliary apparatus which could not be palpated when she reclined. Under treatment to stimulate the production and flow of bile, complete recovery soon followed. Unless bile is being normally secreted and passed along, the pancreatic juice does not get the stimulus which insures its passing into the stomach after a meal. This leaves the gastric secretion in its full strength, not neutralized as normally by the strongly alkaline pancreatic juice. The normal interplay between these three secretions is thus interrupted, and the hydrochloric acid in the stomach exerts an abnormal corroding action. This explanation fits a certain proportion of cases of hyperchlorhydria, and the biliary apparatus should be definitely excluded before incriminating other factors.

Prensa Medica Argentina, Buenos Aires

September 20, IV, No. 11, pp. 133-144

- 84 Bothriocephalus Found in Jaguar and Wildcat. S. E. Parodi and V. Widakowich.—p. 139.
- 85 *Tuberculous Process in Submaxillary Gland. J. C. Landaburu.—p. 140.
- 86 Action of Curare on the Myocardium of Different Species of Frogs. J. Guglielmetti.—p. 141.
- September 30, No. 12, pp. 145-160
- 87 *Normal Beef Serum in Treatment of Anthrax in Man. J. Penna, J. B. Cuenca and R. Kraus.—p. 147. Continuation.
- 88 *Action of Animal Charcoal on Extracts of Organs. B. A. Houssay.—p. 151.

85. **Tuberculous Process in Submaxillary Gland.**—Landaburu knows of only two cases on record of what he calls bacillary submaxillaritis, but two have been encountered in Vigas' service among 22,000 patients. He gives the microscopic findings in a case in a girl of 14. No tubercle bacilli were found in the giant cells of the tumor after its removal, but the findings otherwise were typical.

87. **Normal Beef Serum in Treatment of Anthrax.**—In this third communication on this subject, Kraus and his co-workers give illustrated descriptions of some of the seventy-eight cases of their latest series of cases of anthrax subsiding under the subcutaneous injection of from 10 to 50 c.c. of normal beef serum.

88. **Adsorption by Animal Charcoal of Active Principles of Organ Extracts.**—Houssay relates that the active principles

of pituitary extracts, epinephrin, etc., are adsorbed by animal charcoal and cannot be recovered from it with cold or hot water or glycerin. Scorpion and snake venom are adsorbed in the same way, and talcum, kaolin, etc., display similar absorbing properties.

Revista de la Asociacion Medica, Argentina

September, XXVII, No. 154, pp. 225-406

- 89 *Graft of Epiphysis of the Humerus. G. B. Arana.—p. 225.
- 90 *Injections of Boiling Water into the Thyroid. A. Ceballos and G. Bacigalupo.—p. 236.
- 91 *Perforation of the Uterus. C. R. Cirio and D. Leiva.—p. 249.
- 92 History of Public Hygiene in Argentina. E. R. Coni.—p. 268. Continuation.
- 93 The Mineral Springs of Argentina. E. H. Ducloux and P. Belou.—p. 331.
- 94 *Synovial Cysts. R. Finochietto.—p. 364.
- 95 *Normal Beef Serum in Treatment of Anthrax. J. Lignières.—p. 370.
- 96 *American Leishmaniosis. H. Quintana and J. B. Etcheverry.—p. 382.

89. **Grafted Epiphysis of the Humerus.**—Arana's patient was a young man who had fractured the surgical neck of the humerus in a fall from a horse. The extremity of the humerus was taken out and wrapped in gauze during the surgical clearing out of the region. The epiphysis was then restored to place, the lower stump fitting into the lower end of the ingrafted epiphysis. The bed for the lower stump was hollowed out as the epiphysis lay on the table. It was then fitted on the exposed and projecting shaft, and the whole was reduced and the capsule sutured. Roentgenograms taken at intervals since show production of new tissue in a most satisfactory manner. The young man has the practically free use of his arm; only abduction is limited, and this is constantly growing better.

90. **Boiling Water Injections in Local Treatment of Exophthalmic Goiter.**—Six cases of exophthalmic goiter are reported in which the women, from 18 to 52 years old, were treated by systematic injections of boiling water into the goiter according to Porter's technic. Each one was materially improved, the symptoms becoming much attenuated or disappearing altogether. The earning capacity in each was restored, and none of the symptoms have returned during the months to date. The writers do not venture to speak of a complete cure, but they declare that at least with this simple means it is possible to induce material improvement. Some of their patients were given this boiling water treatment to prepare them for thyroidectomy, but the improvement was such that further intervention did not seem necessary. The microscopic findings are given in one case in which part of the gland was excised later. They show that the boiling water had accomplished its purpose, inducing sclerosis and proliferation of connective tissue with destruction of the glandular tissue. Some of the patients were given up to thirty injections.

91. **Perforation of the Uterus.**—Cirio and Leiva analyze five cases, showing the especially susceptible regions of the uterus and the indications for treatment. In one of their cases the perforation was not suspected until the fluid with which the uterus was being rinsed failed to return. In this and similar cases they proceeded at once to posterior colpotomy which permitted evacuation of blood and other fluids and ample drainage. When there is suspicion of injury of the intestine or omentum, a laparotomy is indispensable. Their patients all promptly recovered except in the one case of perforation from criminal auto-abortion.

94. **Synovial Cysts.**—Finochietto relates that recurrence of synovial or parasynovial cysts is disappointingly frequent whatever technic has been used in treating them, and he attributes it to the technic generally used, namely, ligation of the assumed pedicle of the cyst. In reality these cysts do not have a pedicle. The secreting inner surface of the cyst can be removed, with all its prolongations and extensions, in one piece if done with care. What is supposed to be the pedicle is merely adhesions which can be cut or broken without injury to the subjacent tissues. Puncture alone may be sufficient to cure in certain cases. In order to liquefy the contents, he injects 0.5 c.c. of solution of potassium hydroxid when the contents cannot be aspirated readily. He then

aspirates the contents with a broad needle; then injects more of the solution and aspirates anew, until finally convinced he has cleared out the cyst completely. The caustic solution must be introduced very cautiously so that none gets into the tissues around. He uses two needles, introduced on opposite sides of the cyst, the finer needle for the caustic solution, the coarse needle for the evacuation. When this aspiration alone does not cure the cyst, he injects some caustic to destroy the secreting lining, and has found very useful for this purpose a mixture recommended for hemorrhoids, namely, 8 gm. phenol; 4 gm. sodium biborate; 2 gm. salicylic acid, and 30 gm. sterilized glycerin. The first injection should not be more than 0.5 c.c. to see how the tissues stand it. Extirpation of the cyst is the last resort when all these measures fail.

95. Normal Beef Serum in Treatment of Anthrax.—Lignières has been unable to confirm the assertions of Kraus and Penna in regard to the curative action of normal beef serum in treatment of anthrax. He reports extensive experiments, all apparently proving his contention that the others have been misled in their statements as to its efficacy. One of his arguments is the prevalence of natural anthrax in cattle; if their serum possessed any natural defensive properties it would seem as if their serum would protect them against the disease. He asserts that if normal beef serum had a therapeutic action in Kraus' experiments and clinical experiences, a prepared immune serum would have been correspondingly more effectual.

96. American Leishmaniosis.—Quintana and Etcheverry state that two years ago they encountered a peculiar ulcerating affection of the shoulder in a man. It was revealed by the microscope to be the work of Leishman bodies. A few months ago in the Tucuman district the first case of leishmaniosis was diagnosed. Since then a number of cases have been differentiated. They give illustrated descriptions of ten cases, and expatiate on the prompt and effectual action of antimony and potassium tartrate in treatment. The primary lesion is always said to be some small irritation, such as might well have been caused by the bite of an insect, as it is always on exposed portions of the skin. They emphasize the points which distinguish the leishmania from syphilitic lesions with which it might easily be confused, especially as it is not always possible to find the Leishman bodies in the lesions at the time of examination.

Revista de Medicina y Cirugia, Havana

October, XXII, No. 19, pp. 505-532

97 *Pyelonephritis of Pregnancy. L. F. R. Molina.—p. 505.

97. Pyelonephritis of Pregnancy.—Molina credits to Rayer of Paris, 1841, the first description of the pathologic relations of pyelitis with the enlarging uterus. Albarran advocated catheterization of the ureters and rinsing out the kidney pelvis when conditions did not right themselves at once after delivery. Widal and Achard in 1912 cultivated from the blood the same germ found in the urine. Molina has found in several cases that the women had had similar attacks in former pregnancies. The colon bacillus is generally responsible for them, some obstruction in the intestine rendering the walls temporarily permeable for the colon bacillus. The pyelonephritis of parturients is usually traceable to the streptococcus or staphylococcus. In the first of the five cases reported, the high fever, severe pain in the right lumbar region, spreading forward, and the vomiting, nearly all completely subsided after catheterization of the right ureter. Nearly three weeks later the same symptoms returned as severe as before, and this time it proved impossible to introduce the catheter and a twin miscarriage soon followed. The ureter had evidently been compressed by the gravid uterus. This assumption of compression of the ureter is confirmed by a case related in which the woman supposed herself at the sixth month of her fourth pregnancy when the symptoms of left pyelonephritis developed suddenly with anuria. Catheterization of the ureter arrested the symptoms but they returned in a few days, yielding anew to the catheter. At the third recurrence, catheterization was impossible. The assumption of a pregnancy was disproved and a laparotomy disclosed a sarcoma in the broad ligament.

This nonpregnancy case was the only one of the five reported in which the disturbance was on the left side. The case shows further that a tumor can induce pyelonephritis from mere compression of the ureter without involving it in the growth. The other three cases were in parturients and all were clinically cured at once by catheterization of the ureter, leaving the catheter in place for one or twenty-four hours. He mentions that urine is not found in the ureter in these cases of assumed compression. The catheter has to enter the kidney pelvis before it reaches urine; this seems to sustain Marion's theory that the ureter yields and slides aside before the enlarging uterus or tumor and its direct compression is not possible. Molina compares further the clinical pictures of puerperal fever and of pyelonephritis. With the latter the temperature generally runs up suddenly quite high with morning remissions and there may be chills, but the general condition keeps good except for the symptoms from habitual constipation and the constant albuminuria.

Semana Medica, Buenos Aires

September 13, XXIV, No. 37, pp. 303-328

98 *Helminthiasis in Buenos Aires. S. E. Parodi and V. Widakowich.—p. 303.

99 The Public Hospitals, etc., of Buenos Aires. E. R. Coni.—p. 309. Continuation.

100 *Identification of Novocain. J. A. Sanchez.—p. 319.

101 Chronic Occlusion of the Intestines by Adhesions from Hernia. H. De-Cusatis and E. de Grossi.—p. 321.

102 Relations between Radium and Phosphorus. V. F. de Courmelles.—p. 323.

98. Helminthiasis at Buenos Aires.—Parodi and Widakowich report that among 300 hospital patients, 74 per cent. of the children and over 54 per cent. of the adults were found harboring helminths. There was more than one variety in over 28 per cent. of the children and over 14 per cent. of the adults. No symptoms from them were apparent in most of the cases, but it is evident that neglect to examine for helminths is responsible for the difficulty in clearing up the diagnosis in many cases.

100. Tests for Novocain.—Sanchez is professor of analytic chemistry at the University of Buenos Aires. He describes a number of means to identify novocain, and to estimate the purity of a specimen. He determines the latter by dropping a 0.2 per cent. solution of the novocain into a solution of 0.8 gm. bromin in 1,000 c.c. water. When pure, the novocain solution decolors a certain volume of the bromin solution.

Russkii Vrach, Petrograd

June 17, XVI, No. 21-24, pp. 409-432

103 *Special Form of Milk Powder in Infant Feeding. N. R. Blumenau and O. M. Petipa.—p. 409.

104 *Pituitary Extract in Treatment of Incontinence of Urine. N. A. Mikhailoff.—p. 417.

105 Civilization and Medicine in Ancient Assyria and Babylon. P. V. Modestoff.—p. 418. Conclusion.

106 The Ferments in Typhoid. A. S. Solovtsov.—p. 423. Conclusion.

107 Morbidity in Army in Tarnopol District. V. R. Russat.—p. 425. To be continued.

108 Experiences with Skull Wounds at Evacuation Hospital. V. P. Diedoff.—p. 429. To be continued.

103. "Albumin Phosphate" in Infant Feeding.—This is the name given by Danilevsky in 1901 to the precipitate thrown down when milk whey is treated with ammonia. It takes about a gallon of fresh pure milk to make 40 gm. of the "albumin phosphate."

104. Pituitary Extract in Treatment of Incontinence of Urine.—Mikhailoff reports nineteen cases of nocturnal incontinence in children and adults in which prompt benefit followed treatment with pituitary extract in some form. This seems to have an elective contracting influence on unstriated muscle fibers and, as the bladder sphincter is composed of unstriated muscle fibers, a favorable influence on incontinence of urine might be anticipated from its action. The success surpassed his highest anticipations. All the patients were relieved of their incontinence, including ten children who had no other known anomaly, a few young men who had incontinence both day and night, and five or six men of 38 to 42 with exclusively nocturnal incontinence. One man of 28 had been unable to retain his urine at night since the age of 16.

Nothing decidedly pathologic could be discovered in the urogenital organs. After four weekly injections of the pituitary extract he was able to retain his urine at night. The patients have been under observation for three or four months and there has been no recurrence of the incontinence to date in any of them. Mikhailoff does not wait for more extensive experience but hastens to call attention to this harmless and effectual means of relieving young and old from nocturnal incontinence. Time alone will show whether the results will be permanent.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

September 15, 11, No. 11, pp. 927-1022

- 109 The Importance of Experiments on Living Animals for the Progress of Science. (Voor en tegen proeven op levende dieren. IV.) G. van Rijnberk.—p. 927.
- 110 *The Diagnostic Tuberculin Reaction. R. P. van de Kastele.—p. 948.
- 111 *Simple versus Combined Drugs. W. S. van Leeuwen.—p. 957.
- 112 *Diagnosis and Treatment of Epidemic Cerebrospinal Meningitis. F. J. Hagen.—p. 963.
- 113 Lack of Compensating Pause in Ventricle Beat of Frog Heart. S. de Boer.—p. 971.
- 114 *Recovery of Two Children from Meningococcus Meningitis. A. Schoondermark.—p. 976.

110. **Tuberculin Reaction in Diagnosis and Treatment.**—Van de Kastele presents arguments to show that as the skin plays a very active part in the diagnosis of tuberculosis, it probably aids proportionately in the treatment of tuberculosis when the tuberculin is given intradermally. He points to the rarity of serious forms of tuberculosis in children with tuberculous lesions of the skin. The skin foci seem to immunize the child against severe general infection. Wichmann has reported a case in which pulmonary and laryngeal tuberculous lesions subsided and the patient recovered after lupus developed, consecutive to a tracheotomy. It is possible that from the local focus which we make with our injection of tuberculin, antibodies are generated and thrown out into the circulation. The absorption from this focus of toxic substances which might injure the primary tuberculous focus is probably prevented by their destruction at the point where they are produced.

111. **Mixing of Drugs.**—Van Leeuwen writes from the Pharmacology Institute at Utrecht to protest against recent publications by Bürgi and others to the effect that the potential energy of certain drugs can be enhanced by combining them. Practical experience to date has not confirmed their theoretical premises, he says.

112. **Epidemic Meningitis.**—Hagen relates that lumbar puncture gave positive findings long before there was a tendency to stiffness of the neck in the cases in his service. Whenever it appeared the patient had been sick for some time. Even when the cerebrospinal fluid is found sterile, the petechiae in the skin suggested the correct diagnosis. Even more characteristic are lead colored spots between the petechiae or alone. These in his experience always heralded meningococcus infection even when there were no signs of meningitis or the spinal fluid was sterile. They are too large for hemorrhagic petechiae. The meningococcus was found in the blood in one case with sterile spinal puncture fluid. The trouble begins with sepsis, and only later does the infection settle on the meninges. He does not hesitate to start serotherapy at once when a man evidently acutely sick develops these lead blue spots even although the lumbar puncture fluid is still sterile. In treatment he draws from 30 to 50 c.c. of spinal fluid and injects 20 c.c. of the antiserum the first three or four days. In one case he repeated the injection the same day. In case the turbid fluid does not flow freely, he makes the injection subcutaneously. Six of the men succumbed. In two of them pus was found in the right frontal sinus besides the purulent meningitis.

114. **Meningococcus Meningitis.**—The ages were 2 years and 4 months in Schoondermark's two cases in children. Meningococci were found in the lumbar puncture fluid and the antiserum was pushed, seven intraspinal injections being given, about 6 or 8 c.c. at a time. No benefit was apparent for some days, but then the children recuperated and recovered completely with no sequelae.

Hospitalstidende, Copenhagen

September 26, LX, No. 39, pp. 933-972

- 115 *Carbon Dioxid Snow in Treatment of Xeroderma Pigmentosum. S. Lomholt.—p. 933.

115. **Carbon Dioxid Snow in Treatment of Pigmented Xeroderma.**—The illustrations before and after show marked benefit from the treatment with carbon dioxid snow in the case of the young woman reported by Lomholt. The reaction to the freezing was so intense that the application could be for only ten seconds at a time. The new skin that formed under it was nearly or entirely free from pigmentation, the change more pronounced, he says, than is apparent in the illustrations.

Ugeskrift for Læger, Copenhagen

September 20, LXXIX, No. 38, pp. 1565-1606

- 116 *Colon Bacillus Otitis. R. Lund.—p. 1565.
- September 27, No. 39, pp. 1607-1644*
- 117 Intraspinal Salvarsan Therapy. C. With.—p. 1607.
- October 4, No. 40, pp. 1645-1670*
- 118 *Scarlet Fever and Milk. A. Djørup.—p. 1645.

116. **Colon Bacillus Otitis.**—Lund states that at the clinic for ear and throat disease at Copenhagen during the last ten years 569 simple mastoid operations were done, and in 372 with the middle ear operation beside. Bacteriologic examination in 306 cases showed the colon bacillus in 12, dubious in 5 additional cases. In 2 of the 12 cases there was merely mastoid suppuration, but in the 10 others there were serious complications, mostly intracranial and multiple. The 7 cases with thrombophlebitis showed infarcts in the lung in 3 and gangrene in 2, while there was one instance each of metastatic pyothorax, pleural empyema, pneumonia, pericarditis and peritonitis. There was a mastoid abscess only in 5 of the total 12 cases, but an epidural abscess was found in 9. Diffuse purulent meningitis was encountered in 5 of the 12 cases and colon bacilli were found in the fluid in one case on lumbar puncture. The colon bacillus infection seemed to occur only as a sequence to old chronic otitis media. The mortality in the 12 cases was about 60 per cent.

118. **Scarlet Fever and Milk.**—Djørup analyzes a recent epidemic of scarlet fever at Copenhagen. One day reports of cases began to come in from all over the town, and the same day it was established that all these families took milk from one milk company. Three of the employees developed scarlet fever that same day. A fourth employee had been taken to the hospital five days before, and now had scarlet fever. This seemed to be the human source, and as he had not been near the milk distributing plant for so many days, there seemed no necessity for closing it. The children's milk was ordered to be pasteurized. But the next day there were forty-five new admissions for scarlet fever, and in five days there were 236 cases notified, and 200 of the patients had taken milk from this one milk company. It was also ascertained that the supposed "human source" had entered the hospital for treatment of a burn, and that the scarlet fever had not developed until the day that the epidemic had "exploded."

The human source was finally found in one of the two dairy farms supplying the company, an immigrant girl who did part of the milking having been sick with scarlet fever for ten days when the epidemic exploded. She had kept at work throughout. This dairy farm had been telephoned to at the first. If the question asked had been "Is there any one at the farm with hives or other eruptions?" the answer would have been in the affirmative. The scarlet fever had not been recognized, no physician having been called in. The milk from this dairy farm was returned and every one on the place was examined by a physician at night and before being allowed to go to work in the morning. In the course of two and a half weeks four persons on the farm were found to have sore throat and they were at once excluded; two of them proved to be coming down with scarlet fever. The epidemic died out the fifth day after milk from this dairy farm had been excluded from the market, the extinction of the epidemic occurring almost as abruptly as the onset. The milk distributing company paid the expense of the investigation. Diarrhea was the first sign of trouble in many of those affected but nephritis was rare. The glands in the neck became enlarged in some, and several children died.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 25

CHICAGO, ILLINOIS

DECEMBER 22, 1917

EXSTROPHY OF THE BLADDER AND ITS TREATMENT*

CHARLES H. MAYO, M.D.

ROCHESTER, MINN.

Exstrophy of the bladder is a rare congenital malformation; it is reported by Neudörfer¹ as occurring once in 50,000 births. The anomaly is probably occasioned by variations of the salts in the amniotic fluid surrounding the embryo. It is one of the most serious of malformations, as approximately one half of those suffering from it die during the first ten years of life, and the great majority are dead before they are 40. The condition is very distressing from the tenderness and the difficulty of protecting the protruding bladder, the constantly dribbling urine requiring much absorptive dressing or an equally foul smelling receptacle which leads such persons to shun society. Associated defects are epispadias in the male, an absence of the anterior pubic bone in all cases, and an apparent absence of the umbilicus, which becomes the upper margin of the mucocutaneous juncture, the urachus being absent. In the case of a child of 5 in whom exstrophy was the result of assault, it was asserted that the pubic bone later disappeared, causing the condition to resemble congenital exstrophy.² The lack of the pubic arch makes the pelvis apparently wider, and the sacro-iliac joints become fixed early. In the female, procreation is possible. Winslow³ has reported the condition in a woman who had given birth to four children (Fig. 1).

The various measures for improving the condition are plastic skin covering or closure of the bladder mucosa. This method was highly developed by Roux⁴ in 1852 and has been variously modified since by Thiersch,⁵ Nélaton,⁶ Wood⁷ and others. The great defect by the plastic closure methods came from the necessity of using hair-growing skin, which later accumulates lime deposit and adds to the foulness of the uncontrolled bladder. Passavant⁸ aided the closure

by compressing the half formed pubic arches, and Koch,⁹ König¹⁰ and others made subcutaneous section of the bony arches. Trendelenburg¹¹ added to this method the partial separation of the sacro-iliac joint to more nearly approximate the pubic arches over the bladder. The septic uncontrolled pouches formed by these operations made it possible to wear some sort of drainage apparatus in which a portion of the urine could be accumulated, but the danger of diseased kidneys from ascending infection was actually increased. Additional methods of treatment were devised by Subbotin¹² and Lerda,¹³ who, before closing the bladder, tunneled a space between the sphincter ani and the rectal mucosa and drew through it a folded strip of bladder wall as a tube, the anal sphincter closing the new urethra as well as the anus. The operative mortality in these cases was 25 per cent., and the bladder still remained a septic sac.

Another method for the relief of the deformity was to construct other closed cavities to serve as a bladder. Gersuny¹⁴ separated a loop of bowel, and after establishing the continuity of the alimentary canal, brought the lower end of the loop through a tunnel opening within the anal sphincter as in the Subbotin method, the ureters being inserted into the upper end of the loop, which also developed a septic tank. The operation of Makkas¹⁵ developed a bladder from the cecum. The ileum was divided at the ileocecal valve, which was closed on the cecal side, the ascending colon divided and both ends closed, and the ileum joined end to side in the upper segment of the ascending colon. The appendix was brought through the abdominal wall as an appendicostomy, the new bladder being emptied at regular intervals by a catheter passed through the appendix. This operation was performed in 1910. I saw his patient two years afterward. At that time the ureters were enormously dilated from the cecum to the kidneys, and the new bladder was septic. The cloaca of birds was looked on as a solution of the problem. The ureters were joined to the sigmoid or rectosigmoid, and the rectum was utilized as both a fecal and a urinary receptacle. The high mortality of this method showed a necessity for improvement in technic, but the control was good. To

* From the Mayo Clinic.

* Presented before the Tri-State Medical Society, Dubuque, Iowa, Sept. 6, 1917.

1. Neudörfer, quoted by Boogher, J.: Exstrophy of the Bladder, *Urol. and Cutan. Rev.*, 1916, **20**, 376-377.

2. Packard, H.: Eversion of Bladder as a Late Sequel of Mutilation Caused by Rape in Early Childhood, *Ann. Surg.*, 1914, **59**, 555-557.

3. Winslow, R.: Report of a Case of Exstrophy of the Bladder Operated on Nearly Thirty Years Ago, with Subsequent History, *Surg., Gynec. and Obst.*, 1916, **22**, 350-352.

4. Roux, J.: Exstrophie de la vessie, *Union méd.*, 1853, **7**, 449, 453.

5. Thiersch: *Verhandl. d. deutsch. f. Chir.*, 1882, **11**, 89; *Zentralbl. f. Chir.*, 1876, p. 504, quoted by Connell (Note 26).

6. Nélaton: *Gaz. hebdom. de méd.*, 1854, p. 1.

7. Wood, J.: Exstrophy of the Bladder, *Brit. Med. Jour.*, 1880, **1**, 278.

8. Passavant, G.: Die Blasen-Harnröhrennaht mit Vereinigung der Schambeinspalte bei angeborener Blasenspalte mit Epispadie, *Arch. f. klin. Chir.*, 1887, **34**, 463-500; 1890, **60**, 1.

9. Koch, C. F. A.: Eine modifizierte Trendelenburg'sche Blasen-spaltoperation, *Zentralbl. f. Chir.*, 1897, **36**, 953-956.

10. König: *Verhandl. d. deutsch. Gesellsch. f. Chir.*, 1896, **1**, 77.

11. Trendelenburg, F.: Zur Operation der Ectopia Vesicae, *Zentralbl. f. Chir.*, 1885, pp. 857-886; *Ann. d. mal. d. org. gén.-urin.*, 1903, p. 782.

12. Subbotin, M.: Neues Verfahren zur Bildung der Harnblase und Harnröhre mit einem Sphincter aus dem Mastdarm bei Exstrophia vesicae, Epispadie hohen Grades und Urininkontinenz, *Zentralbl. f. Chir.*, 1901, **28**, 1257-1260.

13. Lerda, G.: Contribution au traitement de l'exstrophie de la vessie, *Jour. de chir.*, 1913, **10**, 549-562.

14. Gersuny: *Wien. klin. Wchnschr.*, 1898, No. 43, quoted by Connell (Note 26).

15. Makkas, M.: Zur Behandlung der Blasenktopie: Umwandlung des ausgeschalteten Coecum zur Blase und der Appendix zur Urethra, *Zentralbl. f. Chir.*, 1910, **37**, 1073-1076.

avoid ascending infection and dilatation of the ureters the sigmoid was divided, the proximal sigmoid joined end to side into the rectosigmoid, and the ureters inserted into the upper end of the distal sigmoid. While the feces did not flow over the ends of the ureters directly, the gas, fluids and bacteria could not

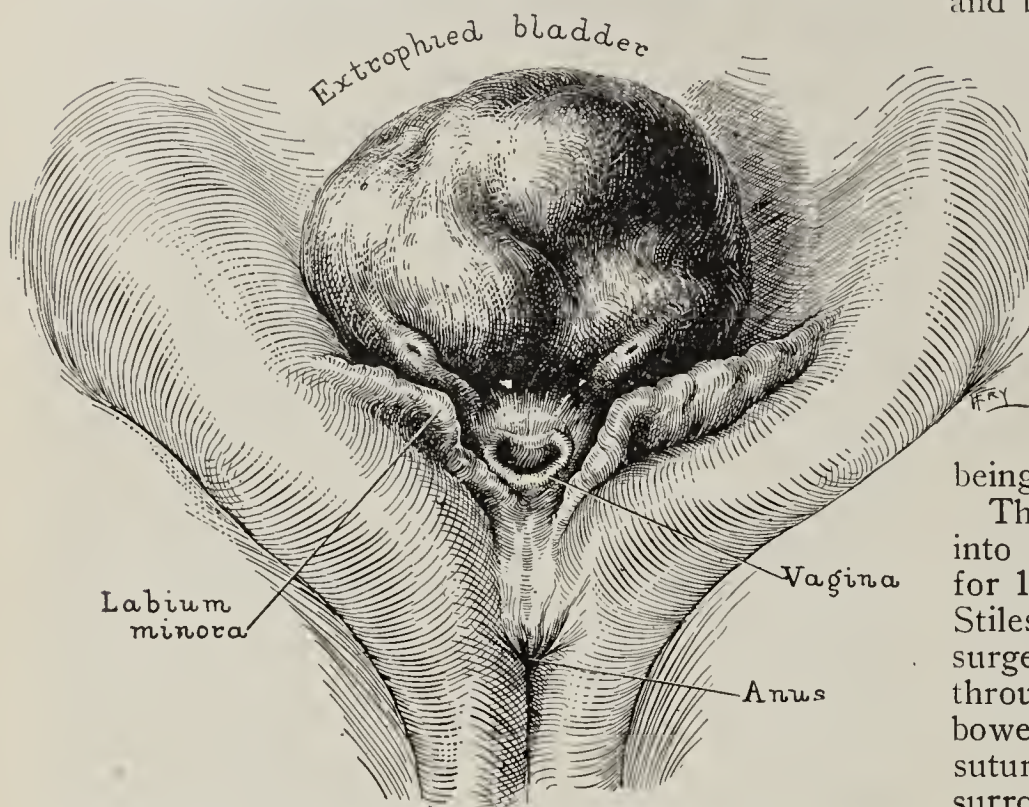


Fig. 1.—Exstrophy of bladder in the female; exposed mucosa with ureteral openings.

be prevented from causing infection, and there was but little improvement in the mortality. Other methods were to insert the right ureter into the appendix and the left into the sigmoid, but with these also there was ascending infection of the kidneys.

The next modification was to preserve the small openings of the ureters as they passed through the walls of the bladder, in the belief that this mechanism was Nature's safeguard against infection. The Maydl¹⁶ operation, developed in 1892, removed the base of the bladder with the ureters attached and inserted the reversed segment into an incision in the anterior wall of the rectum. The operation is performed extraperitoneally and has been done transperitoneally. In the male it is not difficult, but in the female it is complicated.

By this method Russian surgeons report a mortality of 32 per cent., Orlow¹⁷ a mortality of 17 per cent. in sixty-one cases, and Drucbert¹⁸ a mortality of 27 per cent. in eighty-one cases within fifteen days of the operation. We operated on three patients by this method, and two died. Moynihan¹⁹ uses a larger area of the bladder in the Maydl operation, thus greatly increasing the rectal capacity. Sherman's²⁰ work with Peters' modification, based on the belief that the protection is in the small orifice of the ureter, was to dissect the ureter out of the bladder, retaining the mucus-covered ends intact, and to transplant them into the rectum.

It is true that Nature's method of emptying a duct is always by indirection; thus the salivary ducts, the common duct of the liver and the ureters pass through the muscularis and continue for a distance between the mucous membrane and the firmer outer wall of the cavity. Pressure from within compresses the ducts, and blocks against dilatation and ascending infection.

The fact seemingly was not recognized that the mechanical principle of the passage of the ureter through the wall of the bladder and its mucosa could not be retained after the loss of its innervation. The surgical principle of such duct entrances is recognized in the Witzel²¹ operation of gastrostomy and enterostomy, in which leakage is prevented by the tunnel made by folding the wall of the stomach or bowel over the tube for 1¼ inches. The Stamm-Kader²² method accomplishes the same thing by a series of purse strings, a funnel entrance being made into the viscus.

The secret of successfully anastomosing the ureter into the bowel is to tubularize the ureteral entrance for 1¼ inches. There are two methods of doing this. Stiles²³ followed the plan of the Russian and Polish surgeons of passing the ureter into the intestine through a small opening, and depressing it into the bowel, which is folded over it, the folds being held by suture; the mechanism then consists of the ureter surrounded by the whole thickness of the wall of the intestine—the Witzel method. Coffey's²⁴ modification was first developed for the treatment of obstruction of the common duct of the liver by uniting it with the duodenum, and has proved most efficient for ureteral transplantation. It does not narrow the lumen of the intestine, and is carried out as follows: The peritoneum and muscularis are incised longitudinally for from 1¼ to 1½ inches down to the mucous membrane but not through it. The incision is best made in the firmer longitudinal bands of the wall of the sigmoid.

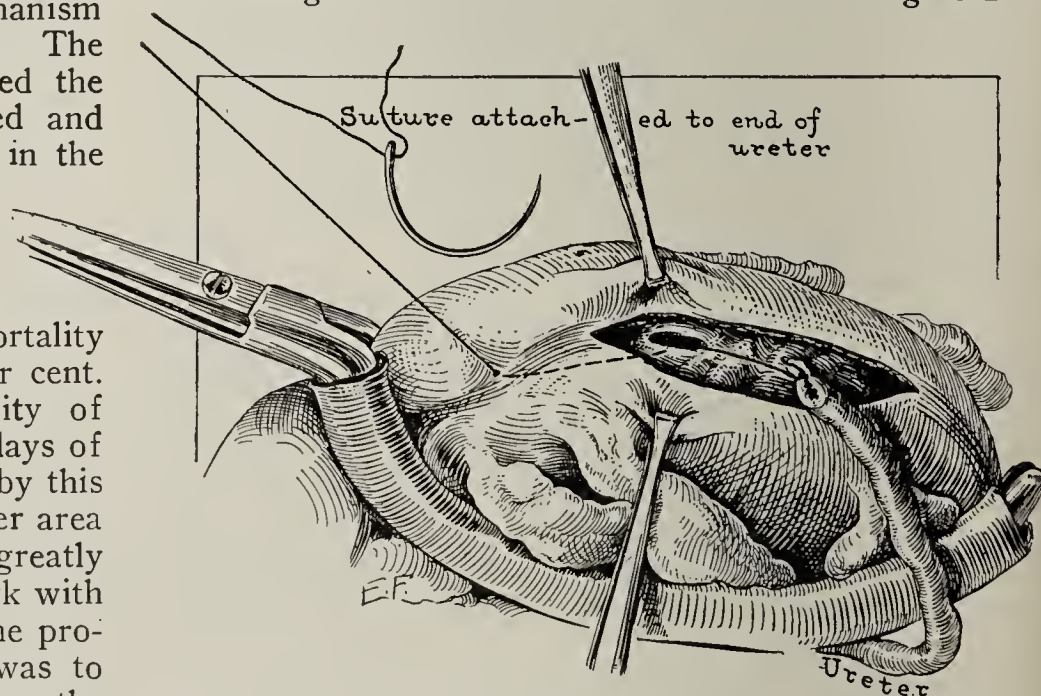


Fig. 2.—Ureter ready to be drawn through incision, into lumen of bowel.

The ureter is exposed by an incision in the peritoneum in the posterior pelvic wall, and is isolated to within

16. Maydl, K.: Ueber die Radikaltherapie der Blasenektomie, Wien. med. Wchnschr., 1894, **44**, 25-29; 1896, **46**, 28-31.

17. Orlow, L.: Traitement opératoire de l'exstrophie de la vessie; transplantation des uretères par le procédé de Maydl, Rev. de gynéc. et chir. abd., 1903, **7**, 795, 852.

18. Drucbert, J.: Les résultats éloignés de l'opération de Maydl dans l'exstrophie vésicale, L'écho méd. du nord, 1904, pp. 481-484.

19. Moynihan, B. G. A.: Extroversion of the Bladder: Relief by Transplantation of the Bladder into the Rectum, Ann. Surg., 1906, **43**, 237-240.

20. Sherman, H. M.: Exstrophy of the Bladder Successfully Treated by Peter's Method, THE JOURNAL A. M. A., Sept. 23, 1905, pp. 890-892.

21. Witzel, O.: Zur Technik der Magen fistelanlegung, Zentralbl. f. Chir., 1891, **18**, 601-604.

22. Stamm, M.: Gastrostomy; A New Method, Tr. Ohio Med. Soc., 1894, **49**, 164-168; Med. News, 1894, **65**, 324-326. Kader, B.: Zur Technik der Gastrostomie, Zentralbl. f. Chir., 1896, **23**, 665-670.

23. Stiles, H. J.: Epispadiasis in the Female and Its Surgical Treatment, Surg., Gynec. and Obst., 1911, **13**, 127-140.

24. Coffey, R. C.: Physiologic Implantation of the Severed Ureter or Common Bile Duct into the Intestine, THE JOURNAL A. M. A., Feb. 11, 1911, pp. 397-403.

1 or $1\frac{1}{2}$ inches of the bladder, where it is divided and the distal end ligated. From $2\frac{1}{2}$ to 3 inches of the ureter are separated, the posterior peritoneal incision is closed by suture to the point where it emerges, the lower end of the ureter is split for one-fourth inch, a curved needle with chromic catgut is passed through the end, the catgut is tied, and the short end of the thread is cut.

The mucous membrane in the lower end of the incision in the wall of the intestine is now perforated into its lumen. In preparing for this and to prevent contamination of the wound, a large curved rubber-covered clamp is used to hold the bowel in position, and the union is made within the curve of the clamp. The curved needle on the catgut attached to the end of the ureter is passed into the lumen of the bowel through the small opening and out of the wall of the bowel one-half inch below it. Drawing the chromic catgut suture pulls the end of the ureter into the lumen of the bowel. The needle is then passed once through the peritoneum and muscularis in order that the catgut may be tied to hold the ureter fixed within the wall of the intestine. The sides of the incision in the outer wall of the bowel are closed over the ureter, the needle including its outer tissue in two or three sutures. A second row of peritoneal sutures is placed over this, extending down over the tied knot of the fixation suture which holds the ureter in place (Figs. 2 and 3). This gives the ureter a natural duct entrance. The slightest pressure from within closes the duct, but not sufficiently to prevent the delivery of urine by the automatic and intermittent waves of contraction occurring about six to eight times a minute during the period of activity.

The abdominal incision for the work is a low lateral pelvic incision, and is best made on the right side first. As the sigmoid naturally passes to the left, it can always be reached; while if the incision is made on the left side first, the slack bowel may have entirely disappeared from the attachments of the former operations. The intestine is held by a few sutures to the posterior peritoneum so as to cover the ureteral entrance. It is best to do but one side at the first operation, as the urine is absorbed from the large bowel like a Murphy drip. Tolerance is soon acquired, however, and the slight uremic mental apathy disappears in a week. The second ureter may be transplanted with no trouble in from one to two weeks after the first operation. A small tube may be kept in the rectum for the first few days unless it adds to the discomfort. Usually at once or at least within a few days the urine will be passed at moderately frequent intervals.

The right half of the colon is the absorbing side of the intestine. Little work is done by the lymphatics, nearly all absorption being by osmosis, and the fluids are taken by the portal circulation to the liver. It is not good judgment to use the right side of the colon for an anastomosis. Experimental work recently reported,²⁵ in which it was hoped that by utilizing a natural duct entrance into the intestine ascending infection could be avoided, showed that one ureter could be

passed through the duct of Santorini, and the absorption of the urine from one kidney would not give marked symptoms, though when the second ureter was inserted the animals died from uremia. This was also shown in Connell's²⁶ experiments, in which the small intestine was used. Therefore we must keep to the large bowel and preferably to its lower end. Transplanting the ureters is advisable in the few cases in which extensive destruction of the base of the bladder and urethra have occurred following childbirth.

Children should be old enough to be able to attend to their own needs, that is, from $3\frac{1}{2}$ to 5 years of age. In early life, also, there may be defects in the innervation of the rectum; and if prolapse of the rectum accompanies the exstrophy, this condition must be overcome by time, or by operation before the cloacal condition is instituted. After the age of 40 it is probable that ureteral anastomosis with the skin in the back is best from the standpoint of low mortality and future length of life. In this position receptacles can be readily adjusted for the collection of urine. The report of the cases mentioned below reveals the impor-

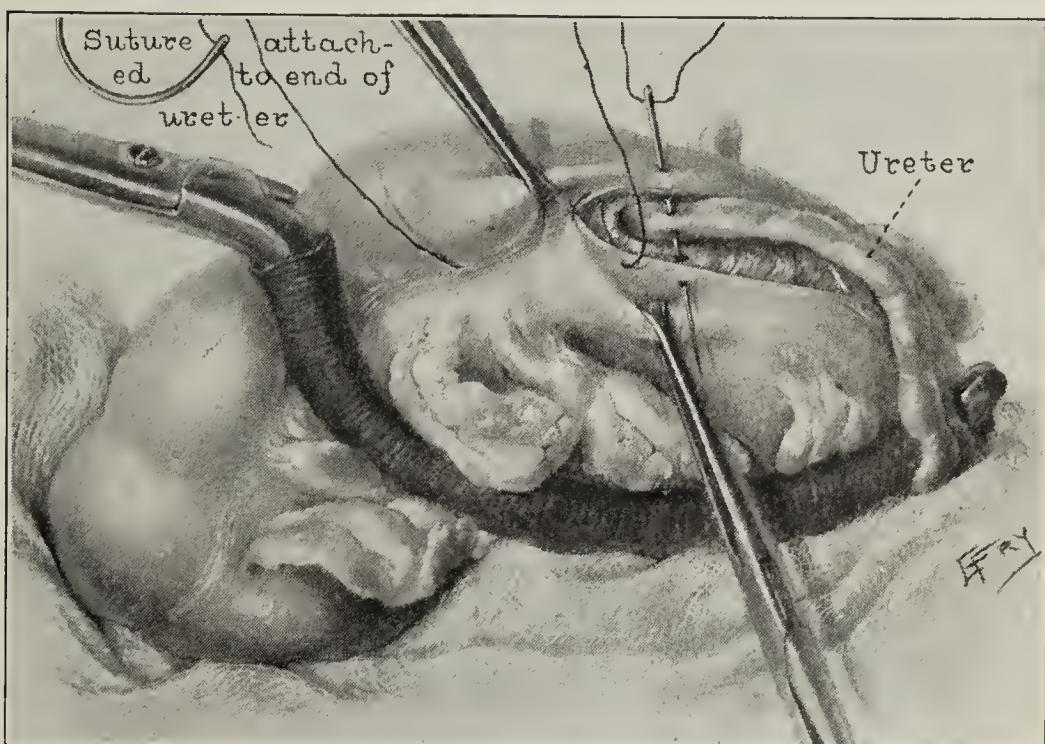


Fig. 3.—Infolded ureter in large bowel similar to gastrostomy.

tant fact that after operation these children were able to go to school and receive an education, which was impossible in their former state. The older ones are all working. One young woman has taken a three-year course in nurse's training, and a year ago passed through an attack of erysipelas without bad results.

Since 1896 we have seen thirty-seven patients with exstrophy of the bladder. Fifteen of these were not operated on at the time of their examination, some were too young to be operated on, and the others expected to return for operation. Six patients were operated on by the plastic method. One died six months later (traumatic exstrophy at childbirth; the child weighed $12\frac{1}{2}$ pounds). The plastic operations did not afford control of the urine. Three patients were operated on by the Maydl-Moynihan method, and two died in the hospital, of uremia. Thirteen were successfully operated on by the transplantation method, with one operative death. One died from pneumonia a few weeks after leaving the clinic. One died three years after operation from pulmonary tuberculosis, and one three years after operation from typhoid fever.

25. Baird, J. S.; Scott, R. L., and Spencer, R. D.: Studies on the Transplantation of the Ureters into the Intestines, *Surg., Gynec., and Obst.*, 1917, **24**, 482-484.

26. Connell, F. G.: Exstrophy of the Bladder, *THE JOURNAL A. M. A.*, March 9, 1901, pp. 637-668.

NEUROTIZATION OF PARALYZED MUSCLE BY MUSCLE GRAFTING

A LABORATORY AND CLINICAL STUDY *

JOHN JOSEPH NUTT, M.D.

NEW YORK

This study was undertaken for the purpose of determining whether function could be returned to a muscle paralyzed by poliomyelitis, through the growth into it of nerves from a neighboring sound muscle. This neurotization I proposed to accomplish, not by implanting a sound nerve directly into the body of the paralyzed muscle, but by splitting the sheaths of both the normal and the paralyzed muscles, scarifying the fibers so as to remove all obstruction offered by the sarcolemma to the growth and extension of nerves, and then suturing the open surfaces of the two muscles together.

It has been my experience in one or two instances that after the transplantation of the biceps to do the work of the paralyzed quadriceps, there has followed some return of power to the paralyzed muscle. This may have been the result of unintentional muscle grafting.

In a personal communication, Sayre has informed me that in 1898, after an operation for paralysis in which all the anterior muscles of the foot were affected, with the exception of the extensor longus pollicis, he had a result which could not have been due entirely to the operation unless he unknowingly did more than he had planned. He performed the Parrish opera-

annular ligament, and, through the incision, he had made a careful examination of all the other muscles. Much to his surprise, power returned to the extensor communis digitorum. It is possible that he destroyed the intermuscular septum and the sarcolemma sufficiently to permit a muscle grafting.

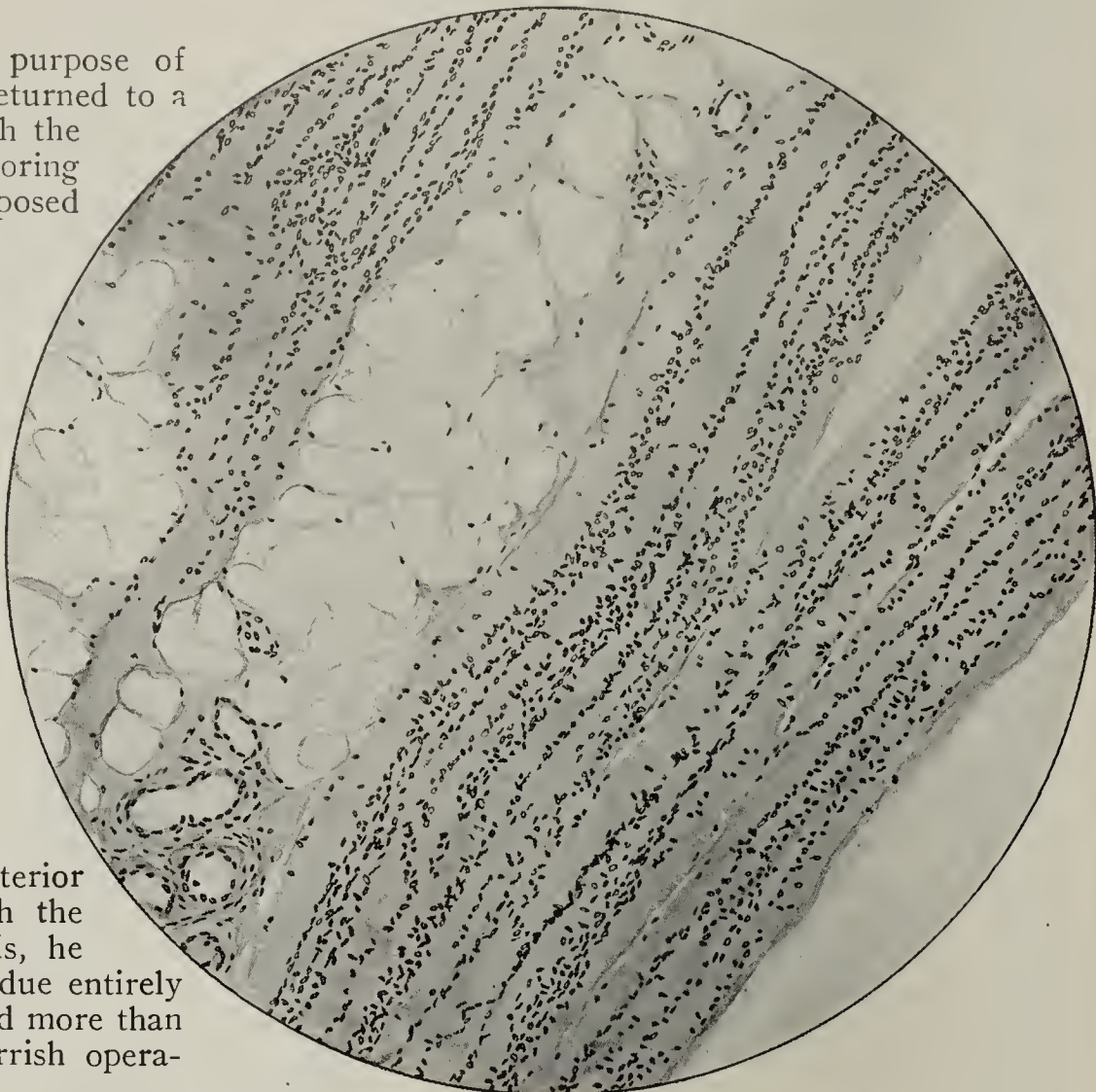


Fig. 2.—Muscle paralyzed by poliomyelitis. The great number of nuclei show that an unsuccessful attempt at regeneration has been made. Striations are absent; fibers are shrunken, and fat is deposited between them.



Fig. 1.—Muscle paralyzed by poliomyelitis. Fibers shrunken as in atrophy from disuse.

In June, 1905, Gersuny² grafted the deltoid to the trapezius for a shoulder paralysis. The patient was a young man and the cause of the condition is in doubt. After three months there was a slight return of movement. During the following months, improvement continued until in November the arm could be used normally except for the fact that it was still weaker than the other arm.

In February, 1907, von Hacker³ operated for paralysis of the shoulder which followed an operation for tuberculous glands of the neck. His muscle grafting was at least partially successful, as the patient could lift the arm to the horizontal five months later.

The neurotization of paralyzed muscle by nerve implantation has been done by several surgeons. Heineke⁴ has reported successful experiments, and Erlacher⁵ has not only reported successes but claimed that hyperneurotization is possible. Steindler⁶ of Iowa City has been successful in neurotizing paralyzed muscle by the implantation of sound nerves, but he does not believe it possible to hyperneurotize a muscle.

2. Gersuny: *Wien. klin. Wchnschr.*, 1906, **19**, 263.

3. Von Hacker: *Mitt. d. Ver. d. Aerzte in Steiermark*, 1908, **45**, 58.

4. Heineke: *Zentralbl. f. Chir.*, 1914, **41**, 465; *Arch. f. klin. Chir.*, 1914, **105**, 517-523.

5. Erlacher: *Ztschr. f. orthop. Chir.*, 1914, **34**, 561; *Zentralbl. f. Chir.*, 1914, **41**, 625; *Am. Jour. Orthop. Surg.*, 1914-1915, **13**, 22.

6. Steindler: *Am. Jour. Orthop. Surg.*, 1914-1915, **13**, 33; *ibid.*, 1916, **14**, 707.

* Read before the Society of Alumni of Bellevue Hospital, Oct. 3, 1917.

1. Parrish, B. S.: A New Operation for Paralytic Talipes Valgus and the Annunciation of a New Surgical Principle, *New York Med. Jour.*, 1892, **56**, 402.

tion¹: a fusion of the tendons of the tibialis anticus and the extensor longus pollicis, operating above the

Elsberg⁷ has determined a remarkable fact, namely, that if an artificially paralyzed muscle is implanted with its original nerve and also another motor nerve, reestablishment of function takes place through the original nerve and not through the foreign nerve. On the other hand, if the original nerve were not implanted, the foreign nerve would take up the work. He agrees with Steindler that hyperneurotization is impossible. He also found that eight weeks of paralysis produced the characteristics of atrophy, and that eight weeks after nerve implantation, normal appearance was regained and good contraction established. He reports several successful neurotizations, in which he transplanted a portion of the sound muscle with the nerve. Gerster and Cunningham⁸ report successes with nerve implantation.

By experimenting on dogs, I have sought to inform myself regarding paralytic changes in muscles and also the changes which take place as a result of muscle grafting. This part of the work has been carried on in the Department of Experimental Surgery of the New York University and Bellevue Hospital Medical College. The histologic studies have been made by Dr. Alexander Fraser of the pathologic department.

The anterior tibial and the sciatic nerves were selected for section in the work on dogs. After an interval following the former operation and varying from two to six weeks, the paralyzed tibialis anticus muscle was grafted to the normal peroneus. After resection of a portion of the sciatic, the vastus externus was grafted to the paralyzed biceps.

Figure 1 shows atrophy in a specimen taken from a case of poliomyelitis. The same characteristics would be present in an atrophy from disuse. If there is

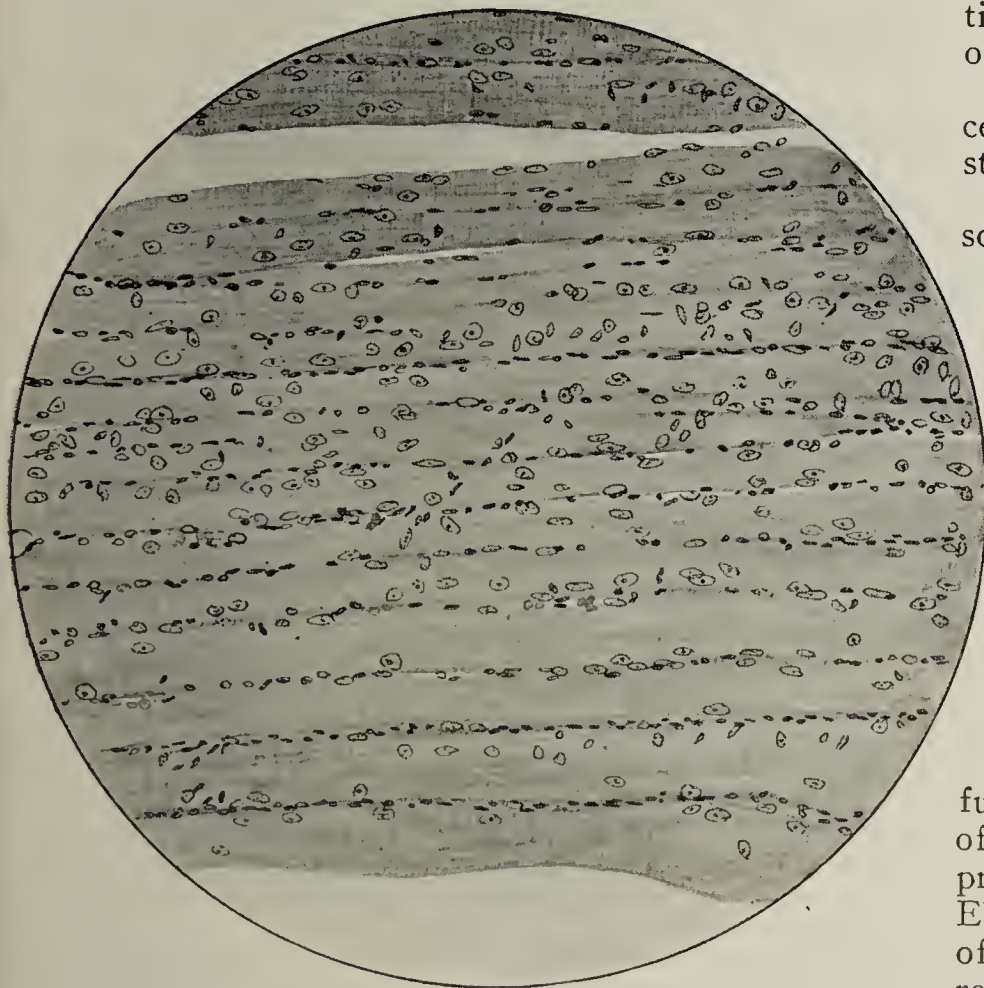


Fig. 3.—A successful attempt at regeneration in a dog. Fibers are compact, and striations may be seen.

absolute separation of a muscle from all nerve supply, a condition seldom obtained and perhaps impossible to obtain except in the case of the external rectus of

the eye, the fibers undergo fatty degeneration. In atrophy from poliomyelitis, however, the muscle fibers are shrunken, and the nuclei increased, and there is no evidence of fatty degeneration.

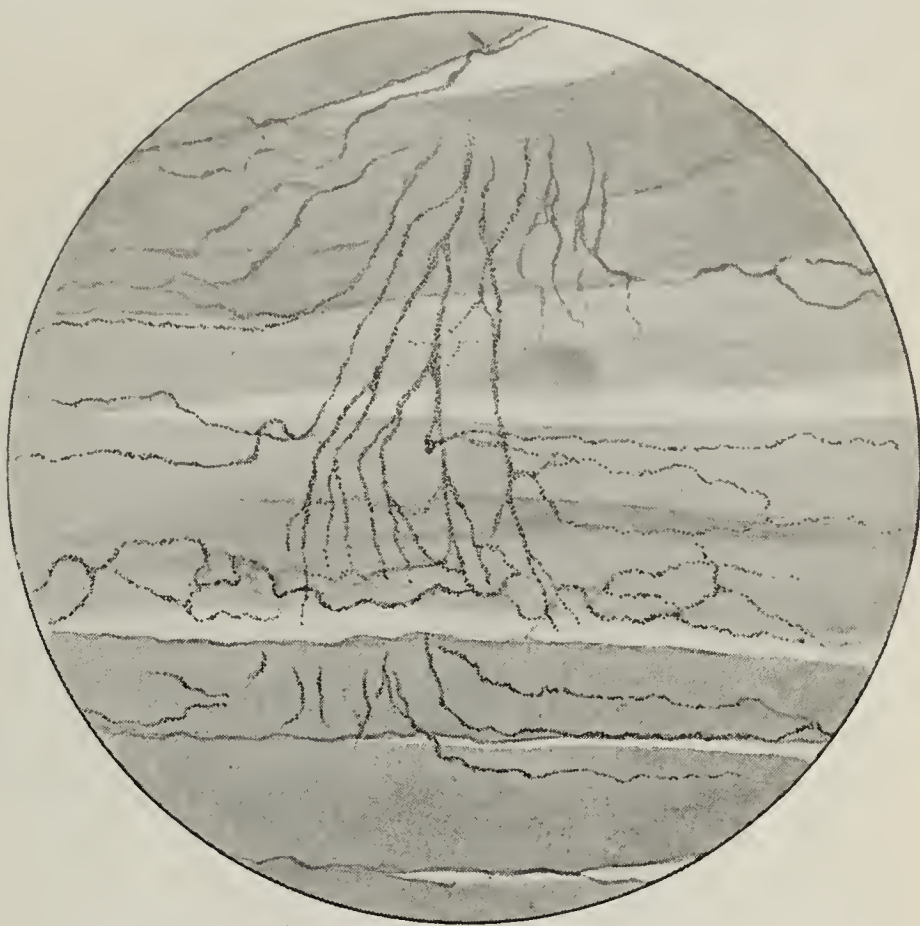


Fig. 4.—Nerves growing from paralyzed muscle above into paralyzed muscle below. Their dotted appearance and the straightness of their course are characteristic of new nerve growth.

Figure 2 shows an unsuccessful attempt at regeneration. The great number of nuclei testify to the activity of the endeavor, but there are no striations of fibers.

Figure 3, obtained from a dog, illustrates the successful attempt at regeneration. Note the nuclei, the striations and the compactness of the fibers.

Figures 4 and 5 show the growth of nerves from the sound muscle into the paralyzed muscle.

Figure 6 shows an end plate which in all probability is from the new nerve growth following the grafting operation.

The last three specimens were taken from a dog six weeks after the grafting operation and nine weeks after the artificial paralysis.

The operations on patients have been performed at the State Hospital for the Care of Crippled and Deformed Children and at the College Clinic. Specimens were taken and examined by Fraser from all of the clinical cases except six. The extent of atrophy was found not to be commensurate with the time since the attack, but to depend on the completeness of the paralysis. Loss of function may be complete in two muscles, and yet one of them may have sufficient nerve supply preserved to prevent the complete atrophy experienced by the other. Electricity has not helped me in estimating the extent of the paralysis, that is, the extent of the nerve supply remaining after the easily demonstrated loss of function. The discovery of some method of ascertaining the exact condition of the muscle before operation is greatly to be desired.

It is quite obvious that any attempt to regenerate a muscle which has lost all trace of muscle fiber would be futile. This was true in several of the patients operated on. They are all reported as cases of muscle

7. Elsberg: Science, New York, 1917, 45, 318.

8. Gerster and Cunningham: Med. Rec., New York, 1917, 92, 23.

grafting, since I finished the operations as nearly as possible as originally planned.

The operation is done as follows: An incision is made to bring into the field the bellies of the two muscles. Both are split lengthwise. The deeper edges



Fig. 5.—Another section showing new nerve growth.

of the two opened surfaces are sewed together with chromicized catgut. A few interrupted sutures are so placed as to approximate the central parts of the two freshened surfaces, and then the upper edges of the cuts are sewed together. The skin wound is then closed.

It will be seen that even if nothing is gained by such an operation, nothing is lost. No function is sacrificed, as is the case in such operations as muscle transplantation, tendon fixation and nerve implantation. The objection to early operation, which is so valid in all other procedures, does not hold good for this operation.

Sixteen cases, all I had done up to August, are here reported in the order of operation. In four of them, two paralyzed muscles each were operated on, making a total of twenty muscle graftings. Seven were complete failures, although one of these was operated on as recently as July 27 and may yet prove to be of some value. Six patients show a slight return of power, which, however, is by no means sufficient to be of functional use. This slight power, as we know from similar results in muscle transplantation, may add to the strength of the joint and thus be of some benefit. Four cases have given fair results and three good results. The last seven cases give us the courage to report our work at this time, although we fully realize that much more will have to be done in both the laboratory and the clinic before the operation should be either unconditionally accepted or discarded.

REPORT OF CASES

CASE 1.—C. B., aged 15, was operated on, Dec. 15, 1915, after an attack occurring nine years before. The normal gas-

trocnemius was grafted to the paralyzed peroneus longus. There was no return of power.

CASE 2.—J. D., aged 18, was operated on, Dec. 11, 1916, after an attack in early childhood. The normal soleus was grafted to the paralyzed peronei.

The result was good, as the peronei can now contract and the foot can be abducted.

CASE 3.—G. B., aged 14, was operated on, Feb. 12, 1917, after an attack occurring five years previously. The normal peroneus longus was grafted to the paralyzed extensor communis digitorum.

The result was good, as it was estimated that there was a return of fully half the muscle's normal power. A second operation was performed, March 18, when the normal biceps was grafted to the paralyzed vastus externus.

The result was slight, as the patella can now be moved upward and outward in attempts to extend the leg, and, with the opposition of gravity removed, extension is possible.

CASE 4.—E. N., aged 9, was operated on, Feb. 12, 1917, after an attack occurring at the age of 3. The normal tibialis anticus was grafted to the paralyzed extensor longus pollicis. There was no return of power.

CASE 5.—B. S., aged 13, was operated on, Feb. 23, 1917, after an attack occurring seven years previously. The normal peroneus longus was grafted to the paralyzed extensor communis digitorum. There was a slight return of power.

CASE 6.—J. M., aged 10, was operated on, Feb. 23, 1917, after an attack occurring four years before. The normal extensor longus pollicis was grafted to the paralyzed extensor communis digitorum. The result was good, as fully half the normal power was restored.

CASE 7.—H. B., aged 9, was operated on, March 7, 1917, after an attack occurring six years previously. The normal extensor longus pollicis was grafted to the paralyzed tibialis anticus and the normal soleus to the paralyzed tibialis posticus. There was no return of power.

CASE 8.—M. M., aged 4, was operated on, March 12, 1917, after an attack occurring ten months previously. The normal biceps was grafted to the paralyzed vastus externus. A fair result was obtained with the opposition of gravity removed; the patient can extend his leg.



Fig. 6.—An end plate from a muscle-grafting specimen, in all probability from the new nerve growth.

CASE 9.—J. C., aged 2, was operated on, March 12, 1917, after an attack occurring one year previously. The normal tibialis anticus was grafted to the paralyzed extensor communis digitorum, and the normal flexor longus digitorum to the paralyzed soleus. The result was a fair return to the extensor communis digitorum, and a very slight return to the soleus.

CASE 10.—M. H., aged 6, was operated on, March 15, 1917, after an attack occurring one year previously. The normal extensor longus pollicis was grafted to the paralyzed tibialis anticus. The result was a slight return of power.

CASE 11.—H. McC., aged 9, was operated on, March 23, 1917, after an attack occurring one year previously. The normal peroneus longus was grafted to the paralyzed extensor longus digitorum. There was no return of power.

CASE 12.—R. L., aged 9, was operated on, April 1, 1917, after an attack occurring seven years previously. The normal biceps was grafted to the paralyzed vastus externus.

There was a slight return of power, so that the patient can now extend his leg, with the opposition of gravity removed.

CASE 13.—E. H., aged 11, was operated on, May 3, 1917, after an attack occurring at the age of 2. The normal peroneus was grafted to the paralyzed soleus, and the normal extensor longus pollicis to the paralyzed tibialis anticus.

Fair results were obtained in the tibialis anticus and none in the soleus.

CASE 14.—M. E., aged 12, was operated on, May 7, 1917, after an attack occurring in early childhood. The normal peroneus longus was grafted to the paralyzed soleus. The result was fair, as the muscle now contracts with perhaps half its normal strength.

CASE 15.—W. L., aged 12, was operated on, July 27, 1917, after an attack occurring five years previously. The normal extensor longus pollicis was grafted to the paralyzed tibialis anticus. The result was a slight return of power.

CASE 16.—R. S., aged 5, was operated on, July 27, 1917, the time of the attack being unknown. The normal extensor longus pollicis was grafted to the paralyzed tibialis anticus. There was no result.

Fifty-Fifth Street
and Seventh Avenue.

Death Rate and Invalidity in Australia.—

The report of the Committee Concerning the Causes of Death and Invalidity in the Commonwealth of Australia, issued in 1917, contains some interest-

ing figures on community health in that country. In 1914 the general death rate for males was 11.7, for females, 9.3 per thousand. In our own registration area for the same period, the rates were 14.5 and 12.7 per thousand. One of the reasons assigned for the lower rate in Australia is the fact that the country is peopled with young men and women. A standardization for age would increase the rates.

The infant mortality rate in 1913 was 72.2 per thousand infants born alive. The lowest rate ever recorded in Australia was 68.5 in 1911. New Zealand had a rate of 51.4 in 1914. The rate in the United States, in our most progressive cities, when it does not exceed 100 is considered very favorable. The birth rate in Australia, in 1914 was twenty-eight per thousand as against forty-four per thousand in New South Wales in 1864 and thirty-eight in Victoria in 1870. This shows a decrease in the birth rate, as in European countries and the United States.

THE USE OF RELAXATION INCISIONS IN DEALING WITH EXTENSIVE UNSTABLE SCARS

JOHN STAIGE DAVIS, M.D.

Fellow of the American College of Surgeons.

BALTIMORE

The treatment of tightly stretched unstable scars that frequently break down has long been a source of worry to the surgeon, and of distress to the patient.

This type of scar usually follows extensive deep burns, or loss of tissue by trauma when the wound has been allowed to heal by the slow process of cicatrization, without the aid of skin grafting or of plastic operation.

The original wounds are always large and usually involve the entire circumference of a part, such as the leg or thigh, or occasionally the calvarium. In other words, the scar surrounds and compresses the part.

Some of the scars are bluish red with fine superficial

vessels, while others are pale and seem to have little or no blood supply. Frequently there are superficial ulcers of varying size scattered over the surface. The scars are as unstable as wet tissue paper, and the slightest injury will start an ulcer that will require weeks to heal.

There is little resistance to trauma or infection, and an area that is healed may, without any apparent cause in a very short time, break down entirely, or multiple ulcers may develop.

A number of these patients have come under my care, and for a long time they gave me much trouble. After I had used many methods

with little success, it occurred to me to try relaxation incisions, and to graft the defects thus made.

TECHNIC

It is preferable that the area be entirely healed before the incisions are made, but in some instances when the healing of the superficial ulcers has been extremely sluggish I have not waited for complete healing, but have operated as soon as the granulations have been brought into healthy condition. In preparation for operation in the unhealed cases, after the granulations are healthy, the part is put up in a dressing kept wet with physiologic sodium chlorid solution for twenty-four hours. The granulations are then painted with tincture of iodine, and the surrounding scar is cleaned with ether and alcohol.

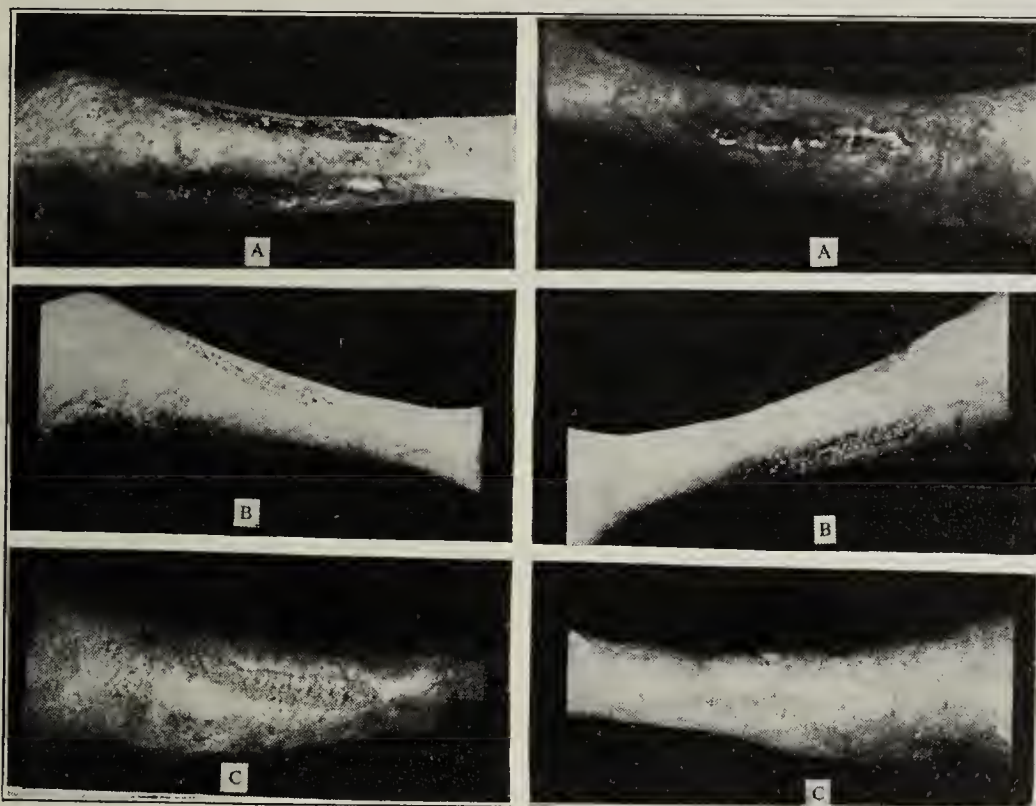


Fig. 1.—Scar involving the entire circumference of the leg. The patient had been bedridden for twenty-five months following a third degree burn. After the superficial ulcers were healed, three relaxation incisions were made under Schleich's infiltration anesthesia down to the deep fascia. The tissue was unfavorable for immediate grafting; hence granulation tissue was allowed to form in the wounds. *A*, four days after the incisions were made. The atrophy of the leg should be noted. The widths at the centers of the incisions were 3, 2½ and 1¾ inches. These defects were grafted with small deep grafts on the fifth day after the operation. *B*, the individual grafts and the firm, healthy appearance of the scar between the grafted areas, two months after grafting. *C*, six months after grafting. The width of the grafted areas should be noted. The depressions have filled up to the normal skin level. The leg has developed, and the patient walks without difficulty, and has again taken up his work.

Often the relaxation incisions can be made after infiltration with a local anesthetic, such as Schleich's solution, or 0.5 per cent. novocain. In other instances a general anesthetic is advisable, especially if large immediate Thiersch grafts are to be used to cover the defect.

On an arm or a leg (Fig. 1) long incisions should be made, parallel to the length of the part, down to the deep fascia or down to healthy tissue, if the destruction has been deeper than the fascia. Three relaxation incisions are usually sufficient for a limb, and they result in gaping wounds.

COMMENT

The immediate spread of each relaxation incision varies with the tightness of the scar. In some instances, it is as much as from $2\frac{1}{2}$ to 3 inches at the center of the incision. The spread of the first incision is, of course, the widest.

After the tension is relieved, the appearance of the scar tissue between the incisions soon changes, and instead of the thin, glossy, mottled look, the tissue seems to thicken and to acquire greater stability. This improvement is much more marked after a few days.

When the scar is stretched over a broad expanse of bone, such as the skull (Fig. 2), as many horizontal incisions as may be necessary should be made down to the periosteum. The spread of relaxation incisions over bone is not so marked as over soft parts, and some undercutting may have to be done.

In these cases the beneficial effect is more marked after a week or two, but in the end the result is very satisfactory.

In some cases of very long standing the tissue, exposed by relaxation incisions, has atrophied from pressure and lack of use, and has such a poor blood supply that immediate grafting is unwise. In these cases it is advisable to wait for several days until the wounds are lined with granulation tissue, and then to apply the grafts.

In other instances, immediate grafting is justified; but this point must be determined at the time of the operation.

It is extraordinary to note the rapidity of healing of the superficial ulcers after the relaxation incisions are made.

I have used only small deep grafts and Thiersch grafts on the defects caused by the relaxation incisions. These grafts so far have been entirely satisfactory; however, there is no reason why grafts of whole thickness skin should not be used in cases in which this type of graft may be necessary.

There has been no recurrence of superficial ulceration in any case when the tension has been completely relieved by the method previously described.

CONCLUSIONS

By the use of relaxation incisions with immediate or subsequent skin grafting of the defects, large unstable scars can be strongly healed in a comparatively short time, and patients who have been incapacitated for many months can resume their usual occupations.

I have used this method in a number of cases, with uniform success, and feel that it is a rational procedure and well worth trying.

1200 Cathedral St.



Fig. 2.—A tightly stretched adherent scar covering the entire cranium, the result of spontaneous healing following complete scalping. There were numerous superficial ulcerations. After ten days' treatment, and before complete healing of the ulcers, the relaxation incision was made. On account of the adherence of the scar to the skull, undercutting was necessary. A defect from $1\frac{1}{3}$ to 2 inches wide was made across the forehead, from temporal region to temporal region. General anesthesia was necessary in this case, and the defect was grafted immediately with a single Thiersch graft from the thigh. A, before operation, five years after the accident. The face has the typical Mongolian expression caused by the pull of the scar tissue. The superficial ulcers should also be noted. B, two weeks after grafting. The graft has taken completely, and the ulcers are healed. Note the disappearance of the Mongolian expression. C, five months after grafting. The tension on the eyelids has been permanently relieved, and the condition of the scar on the vertex is much improved.

condensed milk which the manufacturers have set apart for the American public, the War Trade Board, at the request of the Food Administration, has announced the following regulation to govern the exportation of condensed milk: "No licenses shall be granted for the export of condensed, canned, powdered or other forms of preserved milk unless there shall have been filed with the Bureau of Exports a certificate of the manufacturer stating that such milk has been sold directly to the exporter and for export purposes, or unless compliance shall be had with such other regulations as may be determined by the Food Administration." According to *Commerce Reports* speculation in food products has created a false condition of the market.

Exportation of Condensed Milk.—In order to discourage the operations of food speculators who have been purchasing for export from the retail stores the brands of

PROPHYLAXIS IN CEREBROSPINAL
SYPHILIS *

B. C. CORBUS, M.D.

CHICAGO

Of the treatment of general paresis, Ogilvie¹ has said:

The real problem is to recognize invasion of the central nervous system before even the interstitial tissue or the meninges are involved to any destructive extent. It is the consistent opinion of authorities generally that these parts are invaded prior to this period. If neurologic involvement is detected at this stage, we have adequate means of controlling it, and if these are judiciously employed, general paresis will, in not far distant years, become a comparatively rare picture in medicine.

We may add, not only general paresis but any form of cerebrospinal involvement.

There is no form of the later manifestations of syphilis so heartrending to the patient and his family and so discouraging to the clinician as the involvement of the cerebrospinal system. Occurring most frequently many years after the primary infection, this class of cases presents a pitiful picture, for once the nerve tissue of the patient has been destroyed, all hope of regeneration is lost. It is true that the condition may be arrested, but most cases levy an economic toll of loss on both the state and the family.

In 1914,² I called attention to the value of cerebrospinal fluid examinations in so-called "cured" syphilis in patients treated by the biologic method, that is to say, by a Wassermann examination of the blood. This report showed that many patients having a negative blood Wassermann reaction for from eighteen months to two years without treatment had subarachnoid involvement. It was recommended that lumbar puncture, with spinal fluid examinations, be demanded in all cases of syphilis, no matter what the stage of the disease, as a control on future complications of the nervous system.

Since that time, as an additional diagnostic aid, 108 spinal punctures have been made on all patients, regardless of whether or not a definite history of syphilis was obtainable.

Each serum was examined for cell count after the method of Swift and Ellis, and for globulin by the method recommended by Ross Jones. The serologic examinations were made according to the original Wassermann technic, serial dilutions up to 1 and 2 c.c. being used. Recently the colloidal gold chlorid test has been employed in addition.

The percentage of cases showing involvement of the cerebrospinal system without clinical symptoms is as follows: primary, six cases with no involvement; secondary, twenty-seven cases, nine of which showed involvement, or 33 $\frac{1}{3}$ per cent.; tertiary, five cases, two of which showed involvement, or 40 per cent., and latent, seventy cases, twenty-two of which showed involvement, or 31 per cent. Summing up these cases, we have, out of 108 cases of syphilis, thirty-three, or 30 per cent., which, although without definite clinical symptoms, showed early involvement of the nervous system. Surely this class of patients, if permitted to go untreated, will eventually show signs of degeneration as a result of their infection.

One eminent author³ says that if dermatologists and genito-urinary surgeons were familiar with the early manifestations of nerve involvement they would uncover many cases of syphilis of the nervous system. This is undoubtedly true, and therapeutic attack begun early is now most promising of success. But what about the clinician who is unable to detect these early manifestations of cerebrospinal involvement?

Unfortunately, a large percentage of syphilitic patients are treated by members of the medical profession other than specialists. Often the diagnosis is delayed, and treatment is given with the object only of healing up lesions and securing a negative blood Wassermann reaction.

Today, syphilis exists everywhere and, if we read the statistics, we shall see that it bids fair to increase. The report of the United States Public Health Service, dated April 27, 1917, gives the following figures for syphilis and tuberculosis for the year 1916 for the city of New York, with an estimated population of 5,062,841: 20,128 cases of syphilis were reported, the rate being 3.592 per thousand, and 19,297 cases of tuberculosis were reported, with a rate of 3.444 per thousand. If we consider the difficulty of securing accurate data from the imperfect reporting of venereal diseases as compared with the highly efficient methods of reporting tuberculosis, the rate for venereal diseases is probably even greater.

What is going to happen to this vast army of syphilitics in the future?

Many observers have not the training or the skill to locate every minute nerve change; but a lumbar puncture, if made when the patient presents himself for examination, no matter how long previously he was treated and discharged, will reveal the true pathology as regards the cerebrospinal fluid. This is illustrated by Case 1.

CASE 1 (135).—A man came to my office one morning complaining of a slight urethral discharge. A slide was prepared, and he was instructed to urinate. This he said he could not do while I was in the room, so I went out. Returning in a few minutes, I noticed the lack of force of the urinary stream. I immediately asked him if he had ever had syphilis. "Oh yes," he said, "but I had a negative blood Wassermann." On further examination, the knee reflexes were found to be absent. This patient was strong and well, as far as he knew, and had never been sick in his life. The urinary symptoms were of such gradual development that they had attracted no attention. The spinal fluid examination revealed: cells, 122; globulin test, positive, and Wassermann reaction, positive.

With the discovery that active spirochetes can be recovered from the cerebrospinal fluid of patients suffering from cerebrospinal syphilis, ways and means of attacking the disease in the nervous system have been devised, and in some hands many of the methods have been fairly successful.

Most of the methods aim to introduce the specific agent or some modification thereof directly into the spinal canal. These methods at best, however, require special technic, and often after the most careful management, complications occur.

Having had considerable experience with the Swift-Ellis method and with that devised by Ravaut, I was reluctant to try these methods in early cases.

Few observers realize that to attempt intraspinal treatment in cases of secondary, tertiary and latent syphilis, and even in early tabes, is a mistake. In

* Read at the meeting of the Mississippi Valley Medical Association, Oct. 9-11, 1917.

1. Ogilvie, H. S.: *Am. Jour. Syph.*, 1917, **1**, 509.

2. Corbus, B. C.: *Cerebrospinal Examinations in "Cured" Syphilis*, *THE JOURNAL A. M. A.*, Aug. 15, 1914, pp. 550-552.

3. Fordyce: *Med. Rec.*, New York, Sept. 30, 1916, p. 575.

1914 I² recommended that intensive intravenous injections should always be tried, especially in early cases, before intraspinal injections are resorted to. Sachs,⁴ in a recent article, discusses the question of the therapeutic value of intraspinal injections. He reviews the situation impartially and comments on the failure of the intraspinal method.

Recently there has come under my observation a number of patients with slight symptoms referable to the nervous system in whom intraspinal treatment had been instituted in the form of mercurialized serum, with the result that complications more dangerous than the original symptoms arose.

Gilpin and Earley⁵ believe that lumbar puncture, performed every week, or every two to three weeks, in order to reduce the pressure within the spinal column while intramuscular mercurial injections are being given, helps the mercury to pass into the cerebrospinal fluid.

Acting on this idea, I give intensive salvarsan injections combined with mercury rubbings in the following manner: Having satisfied myself by previous lumbar puncture as to whether or not definite or indefinite symptoms of subarachnoidal involvement are present, I give five doses of salvarsan, or some of the newer substitutes, in the course of two weeks. If the treatment is begun on Saturday, a second dose is given the next Wednesday, a third dose the following Saturday, a fourth dose the next Wednesday, and a fifth dose the following Saturday. The blood is examined at this time to see if arsenic is present. If so, it can be demonstrated by the Abelin test, which is as follows:

Reagents.—These are (1) resorcin, chemically pure; (2) hydrochloric acid, 20 per cent.; (3) sodium nitrite, 0.5 per cent.; (4) sodium hydroxid, 30 per cent.

Technic.—A 7.5 per cent. solution of resorcin is made up in the 30 per cent. sodium hydroxid. This can be kept as a stock solution. To 0.5 c.c. of cooled blood serum in a tube are added 8 drops of the hydrochloric acid and then 10 drops of the sodium nitrite solution, all of which are thoroughly mixed. In another tube is placed about 1 c.c. of the resorcin solution, to which is added, drop by drop, the serum treated with the acid and nitrite solution. In the presence of salvarsan or a changed amino derivative, a beautiful rose red contact ring appears most definitely in from one to two minutes. Normal serum gives a yellow ring.

One hour after the last injection, the patient is taken to the hospital, and lumbar drainage is performed. By this I mean the withdrawal of from 20 to 30 c.c., according to the pressure.

The great difficulty, as we all know, has been our inability to get salvarsan into the subarachnoid space in sufficient quantities to destroy the spirochetes.

It has been shown that salvarsan passes into milk secreted by the lacteal glands. Why, then, will it not pass through the choroid plexus if conditions are made ideal? The subarachnoid fluid is said to be secreted from the choroid plexus. If the fluid in the space is withdrawn in excess, the plexus must replace the fluid from the blood stream, which is saturated with salvarsan. This seems to me an ideal way to attack the infection. It compels the plexus to refill the canal from a blood stream saturated with salvarsan.

The patients are kept in bed for thirty-six hours with the foot of the bed elevated for twenty-four hours of that period.

In about ten days after this procedure, mercury rubbings are begun and continued for from three to four months. Then the salvarsan is again administered as previously described, lumbar drainage is performed, the fluid is examined, and the result is compared with the first examination.

It is my plan to continue the foregoing treatment twelve months after obtaining a negative spinal fluid, that is, through two series of salvarsan injections of five each and ten months of rubbings.

On alternate nights, during the treatment with mercury, the patient is rubbed on the chest and the back. Twice a week a hot bath is given, and the ointment all scrubbed off with soap and water. The patient is instructed to buy a tight-fitting undershirt, cut out the sleeves and wear this all the time under his nightshirt and also under his daily underwear, taking it off only when he bathes. This shirt rapidly fills with mercury and becomes a veritable pad, keeping the body continually in contact with the mercury.

Then, too, it is believed that by wearing this mercurialized shirt, the patient receives part of the mercury by inhalation. As he wears it continuously, night and day, some of the mercury is volatilized at body temperature, so that he has the additional advantage of mercury inhalation, with absorption through the skin. After a day or so, the odor, which at first may be very annoying, is hardly noticeable.

This shirt should be worn by the patient for at least six weeks. There is no objection to his taking a daily bath, but he is not permitted to wipe the mercury ointment from his chest and back. He should pat himself dry with a towel.

During the treatment with mercury, it is absolutely necessary to keep all fruit, fruit acids and buttermilk out of the patient's diet. If this precaution is strictly observed, with proper mouth hygiene, the gums will remain in a perfectly healthy condition. Equal parts of sodium bicarbonate and sodium chlorid make an excellent tooth-powder, which will also help to preserve the gums.

Occasionally, after six weeks of mercury rubbings, iodids are substituted for a month; then the mercury rubbings are resumed. I shall have no argument with those who prefer mercury injections to mercury rubbings. It is true that the rubbings are dirty, but in my hands this form of administration has been most effective.

REPORT OF CASES

In the following three cases, the intensive treatment was carried out. All showed stubborn infections, and a large amount of salvarsan was given, as will be seen from the records.

CASE 3 (30).—H. D. H. manifested symptoms of secondary syphilis with spinal fluid involvement. The blood Wassermann reaction was positive. Treatment was begun, March 14, 1914. The patient received fourteen full doses of 0.6 gm. of salvarsan during a period of nine months, after which he showed a negative spinal fluid. Later he received two additional salvarsan injections. Since that time he has maintained a negative spinal fluid reaction without further treatment. Examinations were made, Nov. 10, 1914, Sept. 24, 1915, and May 18, 1917.

CASE 3 (291).—C. G. manifested symptoms of secondary syphilis with spinal fluid involvement. The blood Wassermann reaction was positive. Treatment was begun, Feb. 3, 1913. This patient received twenty-nine doses of salvarsan during a period of three years and one month. He was one of the first treated by the intensive method, and mercury

4. Sachs, Bernard: Truth and Intraspinal Injections in Treatment of Syphilis of Nervous System, THE JOURNAL A. M. A., Sept. 1, 1917, p. 681.

5. Gilpin, S. F., and Earley, T. B.: Drainage of Cerebrospinal fluid as a Factor in the Treatment of Nervous Syphilis, THE JOURNAL A. M. A., Jan. 22, 1916, pp. 260-262.

rubbings were used in conjunction with the salvarsan. He showed a negative spinal fluid reaction in January, 1916. One year later, January, 1917, without further treatment, he still had a negative reaction.

CASE 4 (32).—G. K. L. manifested symptoms of secondary syphilis with spinal fluid involvement. The blood Wassermann reaction was positive. This case is most interesting, as the patient was over 50 years of age when he contracted the infection, and the diagnosis was delayed until he was in the full secondary stage. Treatment was begun, March 29, 1912. During a period of two years and seven months, he received twenty-two injections of salvarsan, together with the mercury rubbings. A negative spinal fluid test was obtained, Oct. 9, 1914. He maintained a negative serum reaction until almost one year later, Aug. 10, 1915. It is now three years, since he has taken any treatment, and he writes me that he is in the best of health.

In the following three cases, spinal drainage was added to the intensive form of treatment.

CASE 5 (135).—E. A. presented evidence of tabes with spinal fluid involvement. He was not aware of the spinal fluid involvement. He was feeling perfectly well. Treatment was begun, June 28, 1915. Spinal fluid examination revealed 122 cells per cubic millimeter, globulin test positive, and Wassermann reaction positive. He received five injections of 0.6 gm. salvarsan, followed by a spinal drainage. Then for three months mercury rubbings were employed. Following this, he received another five injections of salvarsan, with the same dosage, and another spinal drainage. Examination of the spinal fluid revealed 10 cells per cubic millimeter, the globulin test negative and the Wassermann reaction negative.

It took just seven and a half months of this intensive treatment, comprising ten full doses of salvarsan, with continuous mercury rubbings, to bring about the serologic change. The treatment was continued another year, ten more injections of salvarsan being given. The examination of the spinal fluid, Jan. 29, 1917, revealed 5 cells per cubic millimeter, the globulin test negative and the Wassermann reaction negative. In all, the patient received twenty doses of salvarsan. The spinal fluid Wassermann reaction was negative in six months, but the treatment was continued twelve months longer.

CASE 6 (38).—R. S. presented evidences of gumma of the testicle with spinal fluid involvement. The blood Wassermann reaction was positive. Examination of the spinal fluid revealed 30 cells per cubic millimeter, the globulin test positive and the Wassermann reaction positive. Treatment was begun, Nov. 28, 1916. The patient received five doses of salvarsan, of 0.6 gm. each, after which a spinal drainage was performed. Examination revealed no marked change in the spinal fluid. Then he had five months of the mercury rubbings, and another five doses of salvarsan, with the same dosage. This was followed by a spinal drainage. Examination of the fluid at this time revealed 3 cells per cubic millimeter, the globulin test negative and the Wassermann reaction negative. The Wassermann test made on the blood at this time was also negative.

The patient showed a negative condition, and it took just ten doses of salvarsan and the mercury rubbings to bring about the change of the spinal fluid after six months of treatment. He is still under treatment.

CASE 7 (121).—L. W. K. presented evidences of tabes with spinal fluid involvement. The blood Wassermann reaction was negative. The spinal fluid examination revealed 68 cells per cubic millimeter, the globulin test positive and the Wassermann reaction positive. Treatment was begun, Nov. 15, 1916. The patient received five doses of salvarsan, of 0.6 gm. each, followed by a spinal drainage, which revealed no marked change, and four months of mercury rubbings. Then he was given another five doses of salvarsan and another spinal drainage. Examination of the spinal fluid at this time revealed 4 cells per cubic millimeter, the globulin test negative and the Wassermann reaction negative.

In six months, this patient obtained a complete negative condition of the spinal fluid after ten doses of salvarsan, together with mercury rubbings. He, also, is still under treatment.

It is my purpose to give in a future paper a detailed account of all cases, showing the advantage of the intensive use of salvarsan and spinal drainage over the simple intensive form of treatment.

CONCLUSION

In cerebrospinal syphilis the ideal method of prophylaxis consists in attacking the disease during the primary stage. If correct diagnosis is made and energetic treatment instituted at this period, there should be no further signs of the infection, and subarachnoid involvement would be unheard of. The general aim in treatment, especially among otologists, laryngologists and ophthalmologists, seems to be the healing of the superficial lesions only.

Lumbar puncture, with negative spinal fluid findings, is demanded in every case as final evidence of cure, no matter how energetically the treatment has been carried out.

As a check on possible future complications involving the nervous system, lumbar puncture, with spinal fluid examinations, is demanded in every patient who presents himself for treatment after the primary period.

In view of results of my experience, extending over a year, with intensive salvarsan treatment and mercury rubbings, with spinal drainage, it is my belief that these constitute the most effective mode of treatment, at the same time causing the least danger to the patient.

30 North Michigan Avenue.

AN EXPERIMENTAL STUDY OF SURGICAL SHOCK *

PRELIMINARY REPORT

JOSEPH ERLANGER, M.D.

ROBERT GESELL, M.D.

HERBERT S. GASSER, M.D.

AND

B. LANDIS ELLIOTT

ST. LOUIS

"Shock," which we arbitrarily define as a reduction of the arterial pressure to or below 50 mm. of mercury, together with the other usual signs of that condition, has been produced in the dog by (1) exposure and manipulation of the abdominal viscera; (2) a two hour partial occlusion of the inferior vena cava¹; (3) partial occlusion of the thoracic aorta, lasting two hours; (4) twenty minute intravenous injections of 1:1,000 epinephrin,² and (5) the injection into the liver, via the splenic vein, of a suspension of lycopodium spores. Arterial pressure, venous pressure, jugular and portal (in a few experiments), and vasomotor tone have been followed. For the determination of vasomotor tone, a modification of the method used by Bartlett³ has been employed: From time to time the rate of the flow is determined of salt solution under constant pressure, one high enough to minimize the effects of changing venous and collateral pressures, through a part of the

* From the Physiological Laboratory of the Washington University Medical School.

* Undertaken as a part of the cooperative investigation started by the Committee on Physiology of the National Research Council, and participated in by the entire staff of the Department of Physiology.

1. Janeway and Jackson: *Tr. Soc. Exper. Biol. and Med.*, 1915, **12**, 193.

2. Report of British Committee: *Brit. Med. Jour.*, 1917, **1**, 381.

3. Bartlett: *Jour. Exper. Med.*, 1912, **15**, 415.

circulatory system for the time momentarily isolated for the purpose in such a way as not to injure the nerve supply of that part. These injections ("inflows") have been made in the main into the femoral artery; a few into a mesenteric and into the hepatic artery.

At the close of very protracted experiments, lasting, for example, six or more hours, the inflow rate may not be any faster than the normal initial inflow rate, and yet may show little or no mortal acceleration. The cause of this phenomenon is not yet clear. Presumably it is due in part, at least, to the development of a high state of local tone in the larger arteries, and possibly partakes of the nature of the postmortem contraction described by MacWilliam.⁴

SHOCK BY EXPOSURE OF THE ABDOMINAL VISCERA

From two to five hours of exposure and manipulation usually are necessary to reduce the pressure to 50 mm. of mercury. This does not include the time preceding the opening of the abdomen. The experiments usually occupy from about six to eleven hours each. The arterial pressure may be but little affected for several hours. During this time the vasomotor tone is usually somewhat increased, though often it is not outside of the normal range. The tone usually begins to decrease (inflow to increase) as the arterial pressure begins to fall, or to fall more rapidly, and it almost invariably passes below the normal level by the time the arterial pressure reaches shock level (50 mm. of mercury); that is to say, the inflow rate under the constant high injection pressure is then either normal or faster than normal.⁵ As has been said, there often is very little further dilatation as the animal dies, though not infrequently there is then a slight constriction (asphyxial?) followed by a slight dilatation, indicating that the vasomotor center, even at the end of long experiments, may not be entirely unresponsive or inactive. On account of the peculiar reaction of the blood vessels at this time, however, it is impossible to form any definite opinion as to the extent of this terminal reserve. Portal venous pressure usually steadily falls throughout the experiment. The jugular pressure (in one experiment) showed no striking change.

THE PRESENCE OF THE ABDOMINAL VISCERA NOT ESSENTIAL FOR THE PRODUCTION OF SHOCK

After the removal of the abdominal viscera, shock develops in from three to five hours. If allowance is made for the greater duration of the preliminary operation, which, as a matter of fact, involves considerable manipulation of the viscera, the time required for the onset of shock certainly is no longer than in uneviscerated animals. The arterial pressure falls in very much the same way as in the uneviscerated. Vasomotor tone, at first, is markedly increased, but as a rule has fallen well below normal by the time shock pressure develops.

SYMPATHETICLESS DOGS

In two animals the abdominal sympathetic chain was removed, and the splanchnic nerves cut several weeks before the experiment. Shock pressure developed in one and one-half and three hours, respectively, after exposure and manipulation of the abdominal viscera. There were no changes in the rate of the femoral

inflow. Shock apparently came on more rapidly in the absence of vasoconstrictor activity than in its presence, though it must be borne in mind that these animals were not so vigorous as are animals not operated on previously.

SHOCK BY PARTIAL OCCLUSION OF THE INFERIOR VENA CAVA

The observations of Janeway and Jackson were verified in almost every particular. In addition it was shown that during occlusion, vasomotor tone is usually markedly increased at first and then diminishes, so that before deocclusion (that is, before two hours have elapsed) it is always well below normal. If the arterial pressure improves with deocclusion, the tone may increase; but then it usually does not reach the normal level, and decreases again as the animal goes into shock. With death a further, usually considerable, dilatation occurs. During shock, therefore, vasomotor tone is usually well below normal but not lost. Portal venous pressure may be but very slightly increased by a grade of cava occlusion that eventually produces shock. For example, in one experiment the portal pressure was increased from 8 to only 10 mm. of mercury.

SHOCK BY OCCLUSION OF THE THORACIC AORTA

An obstruction, lasting two hours, of the thoracic aorta just beyond the arch that holds the peripheral arterial pressure at 30 or 40 mm. of mercury usually leads to shock, and usually within two hours after deocclusion, although, as after deocclusion of the vena cava, the arterial pressure after deocclusion of the aorta may for a time be almost as high as before occlusion. Vasomotor tone is markedly decreased during the period of compression, presumably as a result of the improved circulation in the brain. It increases beyond the normal on deocclusion, to decrease again as shock pressure develops, but does not pass below normal until the arterial pressure reaches, or has for some time been below, the shock level. With death, a further and very marked dilatation develops. In no other type of shock does the vasomotor mechanism possess as much residual terminal tone.⁶ Portal venous pressure is below normal, excepting, perhaps, momentarily at the time of deocclusion. The jugular pressure does not change materially.

SHOCK BY EPINEPHRIN

Epinephrin administered as described by the British Committee² does not often lead to shock. As a rule those injections of epinephrin that do lead to shock cut down the inflow, through peripheral action, almost to zero for a considerable period. Contrary to recent statement,⁷ epinephrin contracts the intestinal as well as the somatic arteries, and in these doses it may affect the large arteries (mesenteric, femoral) as well as the arterioles. The inflow method in these experiments gives no clue to the degree of activity of the vasomotor center other than to indicate that it is at least partially active to the end. Portal venous pressure is markedly increased at first, but rapidly falls, and may be below normal long before the animal goes into shock. In many instances death seems to be due to action of the epinephrin on the medullary centers and on the heart, and not to shock; for the heart or respiration may sud-

4. MacWilliam: Proc. Roy. Soc., 1902, 70, 109.

5. Normal vasomotor tone in the presence of a subnormal arterial pressure would result in tissue anemia and pallor.

6. More recent experiments indicate that the vasomotor centers hold up better in an animal anesthetized with morphin and ether than with ether alone. Inasmuch as morphinized animals require less ether, we are inclined to attribute the difference to the effect of the ether on the centers.

7. Hoskins and Gunning: Am. Jour. Physiol., 1917, 43, 399.

denly stop before shock, or even a particularly low arterial pressure, has developed.

SHOCK BY PLUGGING THE PORTAL RADICLES IN THE LIVER

In order to determine whether a portal obstruction resembling in character that which a hepatic constriction would develop will lead to shock, graded injections of lycopodium spores were made into the vena gastrolialis of the dog toward the liver. A dose that completely obstructs the portal circulation at first raises the portal pressure almost to the arterial pressure. But, presumably through the opening of collateral paths, the portal pressure soon falls until it becomes somewhat less than twice the normal, and this level is then maintained with little change until the animal begins to die. Until the collateral circulation is established, vasomotor tone is markedly increased, but then becomes practically normal. The arterial pressure is falling during this period, and soon arrives at the vicinity of 50 mm. of mercury. Some time later (two and one-half hours in one experiment), vasomotor tone begins to give way, the arterial pressure falls further, and the animal dies, whereupon the "inflow" undergoes a further and rapid increase. The anesthetic can never be completely removed, but toward the end only the lightest anesthesia is needed. Jugular pressure is not materially affected. Doses of lycopodium that do not produce complete obstruction and which, after the establishment of the collateral circulation, almost double the portal pressure, may be sustained indefinitely (four and one-half hours), and may only temporarily disturb the arterial pressure and vasomotor tone.

The rabbit, presumably on account of its longer intestine, is more susceptible to the lycopodium injections. A dose that almost doubled the portal pressure, however, was withstood perfectly by one animal for two hours.

SUMMARY AND COMMENT

Shock evidently may develop during or some time after markedly interfering with the blood supply to a considerable part of the body. It can be brought on by temporary partial obstruction of the inferior vena cava and of the thoracic aorta, by administration of doses of epinephrin that practically stop the circulation for long periods of time, and by the complete plugging of the portal capillaries. Failure of the vasomotor center in shock so produced is not the main cause of the condition, for at the time shock pressure first develops, vasomotor tone may be low, as in shock produced by occlusion of the vena cava; or it may be normal, or even above normal, as in shock produced by occlusion of the aorta. Still, it is important to bear in mind that a vasomotor center that holds the vessels merely to their normal caliber at a time when the arterial pressure is subnormal is not in normal condition. A normal center, under such circumstances, would hold the arteries to less than their normal size. But under any circumstances, the tone of the center falls below normal, if it is not already below normal, very shortly after shock pressure develops, as a result either of fatigue or of deficient blood supply to the center, both consequent, we believe, on the low blood pressure. The tone of the center is never entirely lost until the animal dies. Furthermore, sudden failure of the medullary vasomotor center in an otherwise normal animal apparently does not immediately lower the arterial pressure to the shock level. Increased portal pressure is not

the cause of shock as produced by obstruction of the vena cava, or of the aorta, or by epinephrin; for the portal pressure may not be raised at all (as in occlusion of the aorta), or it may be raised only temporarily (as in shock by occlusion of the cava and by the injection of epinephrin). Furthermore, by the injection of lycopodium into the portal capillaries, the portal pressure can be raised as high as or even higher than it may be raised by the aforesaid methods, and yet may not lead to shock. In the dog, at least, obstruction of the portal capillaries to lead to shock must be practically complete; even the rabbit may withstand, almost with impunity, a marked increase in portal pressure.

We conclude, therefore, that by these procedures processes are started peripherally that eventually lead to shock. It is conceivable that shock that is brought on by exposure of the abdominal viscera also owes its origin to peripheral circulatory or nutritional disturbances of the same nature, but limited in this case to the organs maltreated. In the latter type of shock the portal pressure is not increased, and the vasomotor center has begun to fail, by the time the arterial pressure has fallen to 50 mm. of mercury. Before this pressure is reached, the arterioles may be constricted somewhat more than normally. Evidently, therefore, the question as to whether or not the arterioles are actively constricted in this type of shock depends largely on the pressure criterion of shock that is adopted. Indeed, it is possible that if shock pressure could have been induced more rapidly by this procedure, the center might have been found normally or even supernormally active at the time the animals went into shock. Complete vasomotor failure occurs only after death, though the tone residuum seems to be smaller in shock brought on by exposure than in other types of shock.

Obstruction of the portal area alone does not bring on shock as rapidly as an obstruction of the inferior vena cava of the same grade, if the level to which the portal pressure is raised by these procedures may be regarded as a criterion of the grade of obstruction. Presumably, therefore, contrary to Mann's⁸ contention, the abdominal area is scarcely more potent in the production of shock than other parts of the body of comparable vascularity. This is indicated also by the fact that shock develops in eviscerated animals as rapidly as, indeed even more rapidly than, in normal animals.

We conclude, therefore, that the sole primary disturbance that leads to shock is not the retention of blood in the veins and capillaries of the splanchnic area, nor failure of the vasomotor center, two views that are quite prevalent at the present time. So far as we have gone, however, our results are not incompatible with the view, now apparently in the ascendency,² that the reduced pressure is to be attributed to a reduction in the effective volume of blood. Indeed, practically all of our results can be made to fit into this interpretation. But if this is the correct explanation of shock, our experiments thus far have thrown no light on the mechanism of blood depletion, or on the location of the displaced blood.

Of the five methods by which we have succeeded in producing shock, four, namely, obstruction of the cava and of the aorta, injection of epinephrin, and complete portal obstruction, certainly accomplish this by markedly reducing for some time the blood supply to a considerable part of the body; and it is not impossible that

8. Mann: Bull. Johns Hopkins Hospital, 1914, 25, 205.

the fifth method (exposure of the intestine) works in a similar manner, the reduced blood supply here possibly being due to the processes associated with the onset of the first stages of inflammation.⁹ One of these methods (obstruction of the aorta) undoubtedly leaves practically unaltered the functional capacity of the brain, the spinal cord, the heart, the vasomotor mechanism, etc. For these reasons we have developed the following working hypothesis:

Long lasting deficient blood supply starts a more or less extensive reaction, possibly of the nature of an inflammation. Engorgement of the small veins and capillaries,¹⁰ and transudation of blood plasma are two of the early consequences of the reaction, and account for the diminution in the effective blood volume of shock. If acidosis occurs in shock, as reports from the front now seem to indicate, might not this acidosis also be the result of the deficient oxidation which deficient blood supply undoubtedly has in its train?

While it is possible so to induce shock (for example, by obstruction of the aorta) as to leave unreduced the functional capacity of many of the organs, we do not entirely agree with the view now current that in shock the heart, the vasomotor mechanism, etc., are always normally active. From the work we have thus far done, we have gained the impression that under the influence of the low blood pressure of shock the heart, while still capable of considerable exertion, has not the normal reserve. Neither does the vasomotor center respond as readily or as markedly to reflex stimulation; it may not be able to hold the arterioles to a normal caliber under a normal pressure, and seems to be set so as to maintain a new and low pressure level, so that in plethora produced by the intravenous injection of glucose,¹¹ for example, the increased output of the heart fails to raise the arterial pressure materially. We have evidence also that in shock the respiratory center is sluggish, and is working very close to the limit of viability.

Reports from the front¹² indicate that "the occurrence of shock in the wounded soldier when seen soon after the infliction of his wound is exceedingly rare"; it usually appears in patients giving "a history of great exposure to cold and to fatigue during the time which elapsed from the receipt of their injury, to their arrival in the hospital." Such views lend strength to the opinion that laboratory shock is not very different from shock as seen in war surgery. On the basis of such reports, we venture to suggest, as the causative factor of shock, reduced circulation brought about possibly through the action of pain stimuli, and of a certain amount of hemorrhage, on the vasoconstrictor mechanism, this reduced circulation starting in its train such events as follow, for instance, the injection of epinephrin, and the temporary partial occlusion of the aorta, or of the vena cava.

We have not yet succeeded, through stimulation of the vasoconstrictor center, either reflex or direct, in inducing in animals a peripheral constriction of the duration that is necessary, in our experience with other methods, to start the animal on the road to shock. Possibly this can be accomplished only in the conscious animal, and therefore cannot readily be done in the laboratory.

INTRASPINAL TREATMENT OF SYPHILIS OF THE CENTRAL NERVOUS SYSTEM

ANOTHER VIEW

HOMER F. SWIFT, M.D., NEW YORK

Major, M. R. C., U. S. Army; U. S. Army General Hospital No. 1
(Presbyterian Hospital, New York)

FRANCE

In a recent address, Sachs¹ throws discredit on the principles and practice of intraspinal injections in the treatment of syphilis of the central nervous system. It had been arranged that the other side of the subject should be presented by me during the session at which Dr. Sachs made his address, but orders into active military service prevented.

It is naturally impossible to refer to the records and notes on the cases under my care for the past eight years, so that this communication must necessarily be in general terms. In a recent article,² however, are published the details in the treatment of cases which represent examples of practically all stages of the disease. As I was naturally interested in the welfare of my patients, both the bedside and the laboratory features of each case were accurately recorded. To neglect either one is not in accord with the modern tendency in clinical medicine. To disregard the laboratory picture of the disease is at least reactionary, for most of our knowledge of the action of drugs has been the result of laboratory investigation. In syphilis, the laboratory evidences of disease are of paramount importance, and changes in them give us a valuable measure of the efficacy of our therapeutic measures. In them also the personal element in measuring change is reduced to a minimum.

In considering the treatment of syphilis of the central nervous system, it is not advisable to throw all the various forms of the disease into one class and have a hard and fixed method of procedure for all. It is always well to separate, as far as possible, the symptoms that are the result of active disease from those that are the result of scars. Obviously, one does not expect to restore scarred nerve tracts or centers. The elimination of active syphilitic foci and the arrest of a progressive degeneration are the objects of our therapeutic efforts.

In the large majority of the tabetics in whom the Wassermann reaction was rendered negative in the blood and spinal fluid, there has been no progressive downward course as determined in periodic clinical examination. On the other hand, in those tabetics in whom it was impossible to influence appreciably the abnormal laboratory findings, the disease was often progressive. The cerebrospinal fluid from these resistant cases often showed a gold curve of the parietic type, and probably the persistence of the Wassermann reaction was due to the parietic nature of the disease. It is my experience, in common with most other workers, that our therapeutic efforts in paresis lead to little more than an increase in the number and length of the remissions. The disease usually terminates fatally. The period of useful life, however, seems to

9. Erlanger: Paper read at Symposium on Shock, American Association for the advancement of Science, Washington, May 25, 1912. Henderson: *Am. Jour. Physiol.*, 1917, **42**, 587.

10. Bier: *Virchows Arch. f. path. Anat.*, 1897, **144**, 256.

11. Erlanger, Joseph, and Woodyatt, R. T.: *Intravenous Glucose Injections in Shock*, *THE JOURNAL A. M. A.*, Oct. 27, 1917, p. 1416.

12. Archibald and McLean: *Ann. Surg.*, 1917, **66**, 280.

1. Sachs, Bernard: *Truth About Intraspinal Injections in Treatment of Syphilis of Nervous System*, *THE JOURNAL A. M. A.*, Sept. 1, 1917, p. 681.

2. Swift, H. F.: *Response in Treatment of Syphilis of Central Nervous System*, *Am. Jour. Syph.*, 1917, **1**, 524.

be lengthened, and the period of hospital confinement shortened.

In considering intraspinal treatment, it is well to differentiate sharply between the injection of salvarsan or neosalvarsan in amounts or concentrations that are injurious to the spinal cord, and the injection of serum, perhaps reinforced with a fraction of a milligram of salvarsan, which is practically never followed by any bladder or rectal disturbance. Although such serum contains only minute quantities of salvarsan, the fact that it is definitely spirocheticidal has been established by several workers. I have shown that the intraspinal injection of normal serum is at times followed by a diminution in pleocytosis and in the strength of the Wassermann reaction. In some cases that were stationary under this form of treatment, there was a further improvement when "autosalvarsanized serum" was substituted for normal serum. Hence we have two favorable factors, namely, normal serum and spirocheticidal substance, at work as the result of the injection of a serum which does not injure the delicate central nervous tissues.

So far as I am aware, nothing has been discovered in the recent work on the anatomy of the subarachnoid space and the physiology of the cerebrospinal fluid that is in any way contradictory to the principle of subarachnoid injection of therapeutic agents. While there has been an occasional report of the finding of arsenic in the spinal fluid after the intravenous administration of salvarsan, by far the majority of investigations have yielded negative results. Therefore, we are justified in concluding that the choroid plexus and the capillaries are usually effective barriers to the passage of arsenic into the cerebrospinal fluid.

In Weed's work on the formation and elimination of cerebrospinal fluid, even though he proved that the direction of the flow was outward from the perineuronal spaces, he did not prove that there was not a free circulation of the fluid. Blackfan and Dandy showed that, after intraspinal injections of finely divided carbon, there was a rapid distribution of the particles throughout the subarachnoid space. They showed also that phenolsulphonephthalein injected intraspinally was demonstrable in the fluid obtained a few minutes later from the ventricles, and that the same dyes could be quickly detected likewise in lumbar puncture fluid after injection into the lateral ventricles. From this evidence we should expect a fairly rapid distribution throughout the subarachnoid space of serum injected intraspinally.

The statement attributed by Dr. Sachs to Amoss, that the virus within the brain and spinal cord in poliomyelitis cannot be reached by intraspinal treatment alone, does not invalidate the principle of intraspinal injection in either syphilis or poliomyelitis.³ It simply shows that in such diseases it may be well to attack the pathologic condition both through the blood stream and through the cerebrospinal fluid.

In fact, I never contended that intraspinal treatment *alone* was the best or the ideal treatment of syphilis of the central nervous system. The method was advocated only as an addition to other therapeutic

measures. In my experimental work, it was necessary to eliminate all other forms of treatment in order to demonstrate that this form, of itself, was of decided value. This I feel I have demonstrated. The question is not one of intraspinal versus intravenous treatment, but of the value of the two methods combined. I have seen patients that did not respond to the intensive general treatment show improvement when intraspinal injections were added to the general treatment. I have also seen patients that showed only moderate improvement under intraspinal treatment alone improve more rapidly when intravenous treatment was added.

Intraspinal injections are not advisable in all cases, because not infrequently general treatment alone is sufficient. But when the general treatment is shown to be only moderately satisfactory, the addition of intraspinal injections is often of decided value.

Furthermore, I do not pretend that the present method is the final one. Doubtless, we may look forward to the time when we shall have drugs that are more efficient than salvarsan when applied both intravenously and intraspinally; but until that time has arrived, we are both obligated to and justified in continuing the use of procedures of determined therapeutic value.

PHYSICALLY HANDICAPPED CHILDREN

RECOMMENDATIONS FOR OUTDOOR, FRESH-AIR AND OPEN-WINDOW CLASSES *

ADELA J. SMITH

Assistant Director of Physical Training for Physically Handicapped Children

FRANCES COHEN, M.D.

AND

I. H. GOLDBERGER, M.D.

Assistant Directors of Educational Hygiene, New York City
Public Schools
NEW YORK

The beneficial results obtained through open-air treatment of respiratory diseases, particularly pulmonary tuberculosis, have influenced educational hygienists, as well as physicians, to adopt similar methods for the care and treatment of other disabilities common among schoolchildren.

Among the 800,000 children attending the New York City public schools there are hundreds of physically handicapped children, including those affected with active pulmonary tuberculosis, and with bone, skin and glandular tuberculosis. There are also many pre-tuberculous, anemic and crippled children, and cardiac cases. As these children cannot attend the regular classes, provision must be made for their comfort, health and progress in school by some process of segregating them into special classes, of providing special classroom and personal equipment, and a relaxed curriculum.

Because of the varied types of physical defects, and of the different kinds of treatment necessary, these children cannot be grouped in any one type of classroom. Since this is true, we believe in the segregation of groups of physically handicapped or subnormal children, according to the type of case, into (1) outdoor classes, (2) fresh-air classes, and (3) open-window classes, as outlined in the accompanying

3. In fact, I am not aware that Amoss has published such an exclusive or dogmatic statement. The reference would appear really to be to the combined intraspinal and intravenous serum treatment of poliomyelitis. Since epidemic poliomyelitis is a systemic as well as a special nervous infection, the combined treatment is advocated, not because the intraspinal injections are incapable of reaching all parts of the nervous organs, but because it is desirable to generalize the distribution of the immune serum throughout the body in the shortest space of time.

* From the Department of Physical Training and Educational Hygiene, Department of Education, New York City.

table. A system of segregation which partly embodies the recommendation contained in this article is at present in operation in the public schools of New York City.

OUTDOOR CLASSES

All cases of active pulmonary tuberculosis should be placed in classrooms of this type. A distinction should be made, however, between cases of active

adverse weather conditions may be partly regulated by movable glass wind and storm shields, which permit the passage of sunlight. Under the systems in use at the present time, canvas curtains and other cloth materials are used for wind shields. These are unhygienic from several points of view. They do not transmit sunlight, or prevent drafts, and they become dusty from prolonged use.

RECOMMENDATIONS FOR OUTDOOR, FRESH-AIR AND OPEN-WINDOW CLASSES

| Type of Classroom | Special Groups | Type of Case | Temperature | Type of Structure | | | | Type of Room Equipment | Type of Personal Equipment |
|--------------------|----------------|---|--|---|--|-------------|--------------------|--|---|
| | | | | Structure | Location | Ventilation | Heating | | |
| I Outdoor | 1 | Pulmonary tuberculosis (active) | Outdoor temperature regulated by glass storm shields | Outdoor room; no walls; movable glass wind and storm shields; also a warm indoor lunch room | On ferry boats, piers, hospital roofs, in parks, etc., but not in public schools; stair-climbing to be avoided | Direct | No artificial heat | A specially constructed adjustable movable chair resembling a Morris chair with desk attachment, rendering but one furniture equipment necessary for sitting and sleeping purposes; this is an evident economy; at present, desks, seats and cots are used | Wind-proof outer garment, with hood attachment—an outfit which may be easily washed so as to be sanitary Foot covering—Sitting out canvas-covered knee boots with felt insoles Army blankets—For use on very cold days, or when sleeping Bloomers—For additional warmth, if necessary, the girls wear bloomers under their skirts Sweaters, coats, caps and mittens are provided by the children, since these are articles of clothing commonly in use by all |
| II Fresh-air | 1 | The pretuberculous, i.e.: (1) Children exposed daily to tuberculosis in their homes (2) The so-called malnutrition and anemic type (3) Gland and skin tuberculosis | Not higher than 50 F. | Indoor room; specially constructed pivoted windows, so as to admit as much fresh air as possible without drafts | Corner room southern exposure, not higher than one flight | Direct | 1. Artificial heat | Same as outdoor classroom | Same equipment as outdoor classroom |
| | 2 | Pulmonary tuberculosis (arrested) | | | | | 2. Artificial heat | | |
| III Open-window | 1 | Normal children attending regular classes | From 50-60 F. | Open window with specially constructed window ventilators | 1. Any floor | 1. Direct | 1. Artificial heat | 1. Regular classroom equipment | Sweaters, coats, leggings, mittens, caps, and bloomers for the girls |
| | 2 | Subnormal children, i.e.: (1) Children discharged from fresh-air classes (2) Children predisposed to respiratory diseases other than tuberculosis (3) Possible cardiac cases: i.e., doubtful murmurs, mainly functional (4) Mild chorea cases (5) Selected organic cardiac cases | | | 2. Any floor | 2. Direct | 2. Artificial heat | 2. Regular classroom equipment | |
| | 3 | Cases of organic cardiac disease in which further school segregation and prophylactic care are indicated | | | 3. Not more than one flight | 3. Direct | 3. Artificial heat | 3. Special equipment as in fresh-air class | |
| | 4 | Classes for cripples: A. (1) Cripples, nontuberculous, poliomyelitis cases, etc. (2) Cardiac cases in which school transportation is indicated B. Cripples; bone tuberculosis of all types | | | 4. Not more than one flight | 4. Direct | 4. Artificial heat | 4. Special adjustable equipment | |

pulmonary tuberculosis and all other types of active tuberculosis.

Classrooms for children suffering from active pulmonary tuberculosis should be located on ferry boats, in parks, on piers, on hospital roofs, etc., but never in school buildings. In addition to the outdoor classrooms, provision should be made for a heated indoor lunch room on the same floor. When hospital roofs are utilized, stair climbing should be eliminated, through the use of an elevator. These classes are situated outdoors, and the outdoor temperature and

Since body heat must be provided through the child's own activities, not only should there be sufficient space for classroom activities and exercises through the use of movable furnishings, but the personal equipment of the child should permit unhampered activity. For these reasons, movable chairs should replace fixed desks and seats. A specially constructed chair, now in process of construction, is recommended. It resembles a steamer chair or Morris chair with a desk attachment. It is adjustable, and furthermore, it can be used for sleeping purposes, rendering necessary

only one set of classroom furnishings. This arrangement is a distinct advantage to the physical well-being of the child, as well as an economical provision. In the planning of classroom equipment, it is essential to take into account the need of a period for rest or sleep immediately after the noonday meal, a health measure which prominent specialists recommend for physically handicapped children, such as those suffering from carditis and tuberculosis. A careful consideration of the dietary of the physically handicapped child, both at school and at home, is of prime importance, and necessitates home visiting on the part of the teacher and the school nurse.

For the personal equipment, certain essential garments and coverings are recommended. This includes a wind-proof outer garment with hood attachment, an outfit easily washed, and therefore sanitary. Over the shoes a foot covering consisting of sitting-out canvas-covered felt knee boots with felt insoles is worn. These are warm and well ventilated, in contrast to the rubber arctics sometimes worn, which make the feet cold and damp by causing excessive perspiration.

An army blanket should be used on very cold days, or when the child is sleeping. It is hygienic because it is easily cleaned. The sleeping bag now commonly in use limits the physical activity of the child, and is a menace, because it rapidly becomes unhygienic and hazardous from the standpoint of dust, vermin and contagion, and, in addition, is difficult to clean. Furthermore, this cumbersome, immobilizing equipment is a real danger during fire drills and other emergencies.

Bloomers should be provided for additional warmth if necessary, to be worn under the girls' skirts. These may be made in the sewing department of the school. Sweaters, coats, caps and mittens should be provided by the children, since these are articles of clothing commonly in use by all.

It is evident that this type of personal equipment furnishes sufficient warmth, even on the coldest days, and allows the child opportunity for unhampered activity and physical training, besides being a great asset in times of fire drill and other emergencies.

FRESH-AIR CLASSES

Two special groups of physically handicapped children are included under this classification. The first group includes the pretuberculous children, that is to say, those exposed daily to tuberculosis in their homes, those suffering from malnutrition or anemia, and those suffering from gland and skin tuberculosis. The second group consists of children in an arrested stage of pulmonary tuberculosis.

The fresh-air classroom should be an indoor room located not higher than one flight, in order to eliminate excessive climbing of stairs for physically handicapped children. Preferably, it should be a corner room with a southern exposure, provided with specially constructed pivoted windows, to admit as much fresh air as possible without draft. Artificial heat should be available, but care should be taken to prevent the temperature from exceeding 50 F. The same type of classroom and of personal equipment recommended for use in the outdoor classrooms should be used in the fresh-air classrooms. A lighter weight personal outfit may be used, because of the higher temperature of the rooms. Similar methods should be observed in regulating the diet and periods of rest for children in these classes.

OPEN-WINDOW CLASSES

Four special groups are included in this classification. The first is made up of the normal children attending regular classes. The second includes physically subnormal children, those discharged from fresh-air classes, those who are predisposed to respiratory diseases other than tuberculosis, those who display possible cardiac symptoms, such as doubtful murmurs, mainly functional, those showing mild symptoms of chorea, and selected children showing symptoms of organic cardiac disease. The third group consists of the cardiac patients who require further school segregation and prophylactic care. The fourth group comprises the crippled children. To this group belong the nontuberculous cripples, that is to say, those suffering from poliomyelitis, scoliosis, spastic paralysis, congenital malformation, amputations, progressive muscular dystrophy, etc. It also includes children with cardiac diseases for whom transportation is indicated, as well as cripples suffering from bone tuberculosis of all types.

The open-window classroom requires no structural changes. The ventilation should be direct, fresh air being admitted through open windows equipped with specially constructed window ventilators, to prevent drafts. Under present methods, the open windows are not equipped with window ventilators, and the children are exposed to drafts. The temperature in the rooms should be maintained at a point between 50 and 60 F., by the use of artificial heat. The classrooms for crippled children and for those having marked chronic organic diseases should be located not higher than one flight up. The restriction need not apply to the location of open-window classes for normal and subnormal children designated in the accompanying table, in Groups 1 and 2 under the third section. There is also no need of special furnishings for these two groups. The crippled children and the cardiac patients needing special segregation, however, require adjustable school furniture carefully adapted to their physical disabilities.

It is the opinion of cardiac specialists that certain cardiac patients require rest in school, prone. Therefore, a chair of the type recommended for use in fresh-air classes, adaptable for both school work and sleeping purposes, should be used, rendering but one classroom equipment necessary.

Crippled children require a still more specialized type of adjustable furniture, because of the various kinds of mechanical appliances used in the treatment of their orthopedic defects. It is evident that the long iron leg brace, plaster hip spica and plaster jacket present definite problems of seating, which must be solved by the structural adjustment of the furniture. The furniture now in use for classes of crippled children in the New York City public schools solves these problems. Both desk and seat have a central floor support, instead of the side supports of regular furniture, and are fastened to the floor. This provision leaves ample floor space, both for the locomotion of crutch patients, and for full extension of rigid limbs of brace patients, when the latter are seated. Aisle spaces should not be less than twenty-four inches wide.

The desk top is so constructed that a variable plus or minus distance of great range may be instantly obtained to meet the special seating needs arising from the mechanical appliances worn by the crippled child.

The vertical adjustment is readily made by means of a hand screw on the central supports.

The seat is provided with an adjustable back, similar to that of a Morris chair, with a cane center to prevent undue pressure. This cane back is removable, so that all pressure on sensitive spines may be prevented. The front half of the chair seat is divided anteroposteriorly into adjustable sections, which may be lowered to various angles to meet the requirements of the various types of leg braces. The seat is pivoted, revolving on ball bearings in an arc of 180 degrees, to provide greater mobility and facility for the crippled child in sitting and standing. Additional accessories in seating for the comfort of the child include foot rests, foot braces and air cushions.

Each classroom for nontuberculous cripples is provided with a cot, a sleeping chair and a blanket for emergency use. Each classroom for children with bone tuberculosis is equipped with a cot or a sleeping chair and a blanket for each child to meet the orthopedists' recommendations of a sleeping period in school for this group.

Crippled children are provided with transportation by stage to school and to their homes.

When greater warmth is necessary, children in all open-window classes should be provided with sweaters, coats, leggings, mittens, caps and bloomers for the girls, in addition to their skirts. As these are articles of clothing in common use, no additional expense for personal equipment is needed. The personal equipment of the teacher should be similar in character to that worn by the children in the special class to which she has been assigned.

SUMMARY

1. The type of physical defect should be the basis for the segregation of groups of physically handicapped children in special types of classrooms, that is to say, outdoor, fresh-air and open-window classrooms.
2. The range of temperature is governed by the type of physical defect in each special group.
3. Glass wind and storm shields are recommended to admit light and regulate heat, replacing the canvas or wood protectors now in use. Specially constructed window ventilators should be installed in all open-window classes, to prevent drafts and to protect children seated near the open windows.
4. No classroom for physically handicapped children, with the exception of the kind mentioned in Groups 1 and 2, of the third section in the accompanying table, should be located higher than the second floor unless an elevator is available.
5. In outdoor and fresh-air classes, movable, adjustable chairs are recommended instead of fixed desks and seats. This equipment could then be used for sleeping, rendering but one set of classroom furnishings necessary. A movable equipment in outdoor and fresh-air classrooms has the following additional advantages: (a) Direct drafts on children are easily avoided. (b) Greater space for classroom activities and physical training is provided. (c) The children are permitted greater freedom. In classes for cripples, additional mobility is made possible through specially constructed desks and pivotal chairs.
6. The type of personal equipment should allow the greatest possible freedom for schoolroom activities and physical exercises, and should eliminate the danger

arising from fire drills and other emergencies. It should also be sanitary, so as to be easily cleaned. The type of equipment commonly in use fulfils none of these requirements. Before a child is placed in a special classroom with lowered temperature, he should be provided with sufficient underwear and appropriate outer clothing, as well as storm equipment, so that he may not feel the effects of exposure when he leaves the classroom at the end of a school session.

THE MORTALITY FROM PELLAGRA
IN THE UNITED STATES

WILLIAM F. PETERSEN, M.D.
CHICAGO

By force of circumstances, greater attention is at present being directed toward dietary problems than ever before. The growing disproportion between a practically stationary income and an increasing cost of foodstuffs has resulted in considerable hardship during the past few years, and has brought with it an accentuation of diseases commonly associated with defi-

TABLE 1.—PELLAGRA MORTALITY IN THE NORTH ATLANTIC STATES *

| | Deaths | |
|--------------------|--------|------|
| | 1915 | 1916 |
| Maine..... | 10 | 15 |
| New Hampshire..... | 5 | 10 |
| Vermont..... | 3 | 3 |
| Massachusetts..... | 26 | 37 |
| Connecticut..... | 1 | 1 |
| Rhode Island..... | 8 | 7 |
| New York..... | 12 | 27 |
| Pennsylvania†..... | ? | ? |
| New Jersey..... | 5 | 4 |

* Population, 29,246,000; deaths, 1915, 70; 1916, 104; mortality per hundred thousand population (excluding Pennsylvania), 1915, 0.33; 1916, 0.5.
† No statistics available.

TABLE 2.—DEATHS FROM PELLAGRA IN THE SOUTH ATLANTIC STATES *

| | Deaths | | Rate per 100,000 Pop. | |
|---------------------------|--------|------|-----------------------|------|
| | 1915 | 1916 | 1915 | 1916 |
| Delaware..... | 0 | 0 | 0 | 0 |
| Maryland..... | 15 | 3 | 1.1 | 0.2 |
| District of Columbia..... | 16 | 9 | 4.4 | 2.5 |
| West Virginia†..... | ? | ? | ? | ? |
| Virginia..... | 332 | 249 | 15.1 | 11.3 |
| North Carolina..... | 831 | 476 | 35.0 | 19.8 |
| South Carolina..... | 1,468 | 672 | 92.0 | 39.0 |
| Georgia‡..... | 2,012 | 958 | 70.0 | 32.8 |
| Florida§..... | 375 | 202 | 41.1 | 22.5 |

* Population, 13,343,000; deaths, 1915, 5,049; 1916, 2,524; mortality per hundred thousand population (excluding West Virginia), 1915, 42; 1916, 21.
† Deaths reported, but the total number not available to the state health office.
‡ No statistics collected in Georgia; the mortality given is estimated.
§ Statistics incomplete.

ciencies in diet, such as pellagra and scurvy. Profound alterations in the labor market have led, furthermore, to a far-reaching migration from southern agricultural to the northern industrial centers. Under such circumstances it is appropriate at this time to discuss briefly the recent pellagra statistics, and to call attention to the widespread distribution of the disease in the United States.

That the diet is of basic import, either as a contributing factor or as the etiologic agent in producing pellagra, has been generally accepted by observers, although it must be admitted that no one interpretation

of this relation to the disease has been definitely accepted. The corn ration more or less prevalent in the pellagrous districts is not in itself responsible, although it may be one of a number of factors that tend to bring about a state of nutritive deficiency, since zein, the chief protein constituent of the corn, is the

officers, has been collected; the graphic representation of the statistics is shown in Figure 1.

THE REDUCTION IN THE MORTALITY RATE

It is at once apparent from Tables 1-5 that a striking reduction in mortality took place during the year 1916, the total number of deaths recorded for 1915 being 10,663, while during 1916 only 6,289 were recorded in the state health offices. This reduction was of greatest extent in the South Atlantic group of states, where the mortality declined from 42 to 21 per hundred thousand population.

When the figures are examined on the basis of race (Table 6) it will be observed that a greater reduction occurred in the colored than in the white race.

INCREASE IN MORTALITY IN THE NORTH ATLANTIC STATES

While a decrease occurred in the chief pellagrous districts, it is rather interesting to observe that in the New England states the mortality, although still low, practically doubled during the year 1916, so that the death rate for Maine and Vermont, for instance, is almost as great as in some of the states directly bordering the pellagrous area.

THE STATISTICAL AND THE ACTUAL MORTALITY RATE

There is very little doubt that the diagnosis of pellagra submitted on the death certificates to the various state health offices is almost invariably correct. The statistics err only in the omission of a vast number of deaths actually due to pellagra but improperly entered on the records as deaths due to other causes. It is very probable that the actual mortality from the disease is from 50 to 75 per cent. greater than is indicated in the statistics presented. This condition is brought about

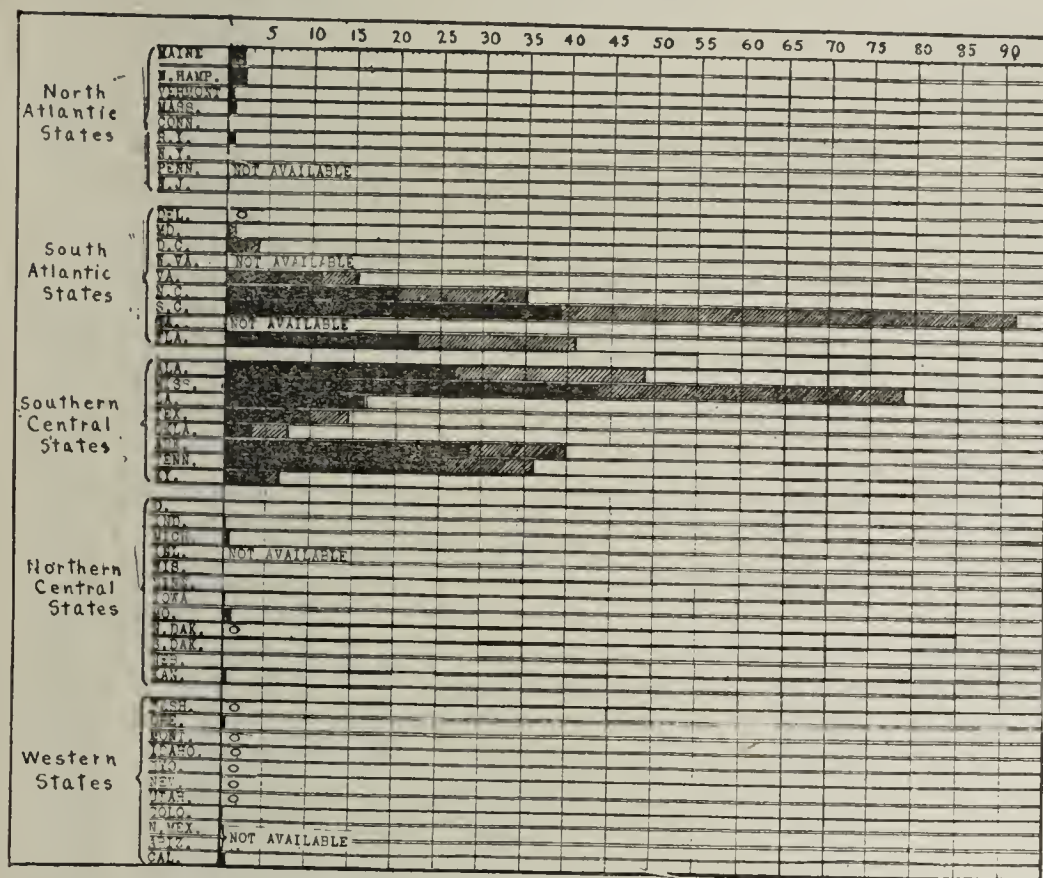


Fig. 1.—Graphic representation of pellagra mortality per hundred thousand population during 1915 and 1916. Shaded columns indicate mortality in 1915; black columns indicate mortality in 1916.

only one of the commonly used proteins that is definitely lacking in certain of the amino-acids. The more recent work of Goldberger and his associates has done much to confirm Funk's contention that the disease is due to a vitamin deficiency.

The possibility is not excluded that, instead of dealing with a deficiency, we have to do either with an intoxication from the absorption of toxic products originating in the intestinal tract and related to an altered flora (that such bacterial changes occur has been repeatedly demonstrated), or that a specific organism, as yet not isolated, causes the disease. The epidemiologic data collected by the Thompson-McFadden Commission and by Jobling in Nashville can be interpreted as lending support to the latter hypothesis.

The attention of the profession was directed to pellagra at a time when a rapid increase in the number of cases followed a period of financial stringency (1907-1908). This early period was probably followed by one in which the actual number of cases decreased, although the statistical evidence of this decrease was apparently negated by the increase in the number of cases that were correctly diagnosed. This period was followed by one of very definite and continuous increase in the mortality rate, until a maximum was reached in 1915, the number of recorded deaths for that year being well over 10,000.

In Tables 1-5 the states have been grouped and the pellagra mortality, as reported to the state health



dysentery, tuberculosis of the intestine, and chronic gastro-enteritis, are found commonly recorded for deaths due to pellagra, as well as symptomatic diagnoses referable to the changes resulting in the central nervous system. We have also to consider that a certain number of deaths recognized by the physician as due to pellagra are not entered by that name on the death certificate because of the prejudice on the part of the laity to a diagnosis involving to a certain extent the social status of the family.

THE MORBIDITY FROM PELLAGRA

Health authorities in the Southern States estimate that approximately 0.5 per cent. of the population is frankly pellagrous. With a population of about 32,500,000 in the pellagrous area, this would mean that there are some 165,000 pellagrins. It has been estimated by others that for each death from pellagra there are at least fifteen living patients. This ratio applied to the mortality figures for 1915 would result in an estimated total of 157,000. Both of these estimates are undoubtedly greatly below the actual morbidity.

SUMMARY

While the accompanying map (Fig. 2), showing the distribution of the pellagra mortality for the white race during 1916, illustrates that pellagra is still predomi-

TABLE 3.—NUMBER OF DEATHS FROM PELLAGRA IN THE SOUTH CENTRAL STATES *

| | Deaths | | Rate per 100,000 Pop. | |
|------------------|--------|------|-----------------------|------|
| | 1915 | 1916 | 1915 | 1916 |
| Alabama..... | 1,109 | 677 | 48.4 | 26.6 |
| Mississippi..... | 1,535 | 840 | 79.0 | 43.0 |
| Louisiana..... | 301 | 295 | 16.6 | 16.4 |
| Texas..... | 661 | 452 | 14.5 | 10.0 |
| Oklahoma..... | 152 | 71 | 7.2 | 3.2 |
| Arkansas†..... | 680 | 500 | 40.0 | 28.0 |
| Tennessee..... | 830 | 607 | 35.0 | 26.0 |
| Kentucky..... | 150 | 120 | 6.5 | 5.0 |

* Population, 19,270,000; deaths, 1915, 5,418; 1916, 3,562; mortality per hundred thousand population, 1915, 28; 1916, 19.
† The mortality for Arkansas is estimated. In 1915, when about 70 per cent. of the deaths were recorded, 477 deaths were reported due to pellagra. The 1916 statistics are not as yet available, and have been estimated as having decreased in the same ratio as those of Tennessee.

TABLE 4.—SUMMARY OF PELLAGRA MORTALITY IN THE NORTH CENTRAL STATES *

| | Deaths | |
|-------------------|--------|------|
| | 1915 | 1916 |
| Ohio..... | 5 | 6 |
| Indiana..... | 7 | 4 |
| Michigan..... | 12 | 4 |
| Illinois†..... | ? | ? |
| Wisconsin..... | 1 | 0 |
| Minnesota..... | 0 | 1 |
| Iowa..... | 5 | 4 |
| Missouri..... | 42 | 39 |
| North Dakota..... | 0 | 0 |
| South Dakota..... | 1 | 0 |
| Nebraska†..... | ? | ? |
| Kansas..... | 21 | 10 |

* Population, 32,315,000; deaths, 1915, 94; 1916, 68; mortality per hundred thousand population (excluding Illinois and Nebraska), 1915, 0.37; 1916, 0.27.
† Statistics from Illinois and Nebraska not available.

nantly a disease of the Southern States, nevertheless, deaths occur with considerable uniformity in all states with the exception of those in the northwest part of the country. In Canada, deaths from pellagra have been recorded¹ only in the Province of Ontario, although

1. Pinault, L. G.: Jour. Can. Med. Assn., 1916, 6, 228. Rolph, F. W.: Ibid., p. 323.

undoubtedly isolated cases occur in other parts of the Dominion.

The maximum mortality was evidently reached during 1915; since then the number of deaths has diminished. In the colored race the decrease in the mortality

TABLE 5.—STATISTICS COVERING DEATHS DUE TO PELLAGRA IN THE WESTERN STATES *

| | Deaths | |
|--|--------|------|
| | 1915 | 1916 |
| Oregon..... | 4 | 3 |
| California..... | 28 | 25 |
| Colorado..... | 0 | 3 |
| Washington, Idaho, Utah, Wyoming, Nevada, Montana..... | 0 | 0 |
| New Mexico, Arizona†..... | ? | ? |

* Population, 8,694,000; deaths, 1915, 32; 1916, 31; mortality per hundred thousand population (excluding New Mexico and Arizona), 1915, 0.4; 1916, 0.4.
† Deaths from pellagra occur in these states, but statistics are not available.

TABLE 6.—STATISTICAL COMPARISON OF THE MORTALITY FROM PELLAGRA DURING 1915-1916 IN THE WHITE AND COLORED RACES *

| | White | | Colored | |
|---------------------------|-------|------|---------|------|
| | 1915 | 1916 | 1915 | 1916 |
| Oklahoma..... | 6.1 | 2.6 | 14.9 | 6.6 |
| Tennessee..... | 26.0 | 20.0 | 75.0 | 49.0 |
| Florida..... | 19.0 | 13.2 | 77.0 | 38.0 |
| North Carolina..... | 24.0 | 14.6 | 58.0 | 30.0 |
| District of Columbia..... | 1.9 | 3.0 | 11.0 | 1.0 |
| Alabama..... | 28.0 | 19.0 | 74.0 | 44.0 |
| Louisiana..... | 5.0 | 7.0 | 32.0 | 28.0 |
| Maryland..... | 0.8 | 0.17 | 2.6 | 0.4 |
| Mississippi..... | 32.0 | 19.0 | 116.0 | 61.0 |
| Kentucky..... | 6.3 | 5.3 | 5.7 | 2.6 |
| Average..... | 14.9 | 10.3 | 46.6 | 26.0 |

* Statistics based on the mortality per hundred thousand population.

has been proportionately greater than in the white race. With the migration to the Northern States of large numbers of colored people, it is very probable that a considerable number of pellagrous individuals will have been included.

104 South Michigan Avenue.

Regulations Governing the Dispensary Treatment of Tuberculosis.—The department of health of New York City has recently amended the sanitary code to provide that “no public dispensary where communicable diseases are treated or diagnosed shall be conducted or maintained otherwise than in accordance with the regulations of the Board of Health.” This amendment includes ten regulations requiring that the examination and treatment of persons affected with pulmonary tuberculosis be conducted in a special dispensary or department of a dispensary; that proper microscopic examinations of sputum shall be made; that the maximum number of patients examined shall not exceed five an hour; that the necessary medical and nursing staff shall be on duty on all days set apart for the reception of patients; that a proper follow-up system be maintained, that circulars of instruction and advice shall be furnished, and that all applicants be examined at the time of their first visit, irrespective of their place of residence; that an adequate supply of approved sputum receptacles be provided and the use of cuspidors be prohibited; that complete and adequate records be kept of every case of pulmonary tuberculosis examined, such records not to be open to inspection by the public other than the representatives of the Department of Health of the City of New York and such persons as may be authorized by the law to inspect such records; and that every department of a dispensary wherein persons are treated for pulmonary tuberculosis shall employ proper facilities for the examination and treatment of the nose and throat lesions.

ETIOLOGIC FACTORS IN GROSS
LESIONS OF THE LARGE
JOINTSOBSERVATIONS FROM ONE THOUSAND ONE
HUNDRED CONSECUTIVE NECROPSIES *

HERBERT C. CLARK, M.D.

ANCON, CANAL ZONE

The routine performance of a necropsy, generally speaking, does not include a section and an examination of the joints unless the clinical history or the external appearance of the joint happens to indicate the presence of arthritis. There was no departure from this rule at Ancon until Dr. L. B. Bates began the application of the Wassermann test. He soon noticed that a number of the laborers who responded in a positive manner to the test had associated with their clinical history an ill defined type of arthritic symptoms. This feature became so significant among the negro laborers that Dr. Walter Baetz,¹ then in charge of the negro medical service, made a clinical study of the acute arthritic conditions occurring in his service. In his report, in 1913, of 100 cases of acute arthritis among negro laborers in the Panama Canal Zone, he thus named the types according to the frequency of their etiologic factor; syphilitic arthritis, 63; gonorrheal arthritis, 28; undetermined arthritis, 6; dysenteric arthritis, 2, and tuberculous arthritis, 1.

The important position given to syphilis in this report was so surprising that it stimulated some interest in what might be found at necropsy. Since the report of Baetz, others have occasionally appeared which also indicate the importance of syphilis in this respect. A study of the joints in 200 necropsies in Berlin showed that after exclusion of the typical types of joint disease there still remained in this series 178 bodies without a typical type of arthritis which revealed macroscopically visible changes in the joints in at least 143 individuals.²

Various textbooks on clinical medicine and on pathology grant but small space to a discussion of syphilis and age respecting lesions in the joints. In the fullest account to which I have ready access³ is the statement:

Syphilitic affections of the joints make their appearance either at the time of the secondary eruptive stage or in the tertiary stage of the disease. In the secondary stage the affection takes the form of a serous synovitis, resembling that associated with acute articular rheumatism. In rare cases a like effusion takes place even in the later stages; but as a rule the tertiary syphilitic arthropathies are of a chronic kind, and are characterized by the formation of gummatous nodes and thickenings in the capsule, proliferation of the synovial membrane, and fibrillation and erosion of the cartilage. Syphilitic arthritis may occur as a primary affection of the joint, or may be due to the extension into it of specific inflammation from the periosteum or bone marrow.

Since so little could be found regarding the incidence of gross pathology in the joints, and especially regarding the possible relation of syphilis to joint lesions, it seemed desirable to follow the local clinical observa-

tions with some anatomic observations. It was arranged to do a Wassermann test in all cases with a grave prognosis, and in the event of no antemortem test, to apply it to the postmortem serum whenever it was in a satisfactory state for analysis. To the routine necropsy examination was added a section of the large joints: the shoulders, hips and knees. Other joints were opened only when there was a clinical history or gross external evidence of disease in them or when extensive change was noted in the large joints mentioned.

It is common knowledge that a necropsy often reveals a lesion in the middle ears, accessory sinuses, tonsils, gallbladder, duodenum, appendix and the genito-urinary system that had not declared its presence, or had had its clinical picture obscured by the more important disease present at the time of death. With this fact in mind, it is to be expected that a joint might be the seat of a lesion which represents a remote sequel to a disease that may be little related to the disease causing death.

It is not the intention to include in this series of cases all those showing very small areas of degenerative change in the cartilages, such as flattening and change of color at the points of pressure, or effusions such as commonly occur in the joint cavities just as in other serous cavities in some chronic diseases. Only

TABLE 1.—ETIOLOGIC FACTORS IN ONE HUNDRED
AND SEVENTY-TWO CASES OF ARTHRITIS

| | Number of Cases |
|------------------------|-----------------|
| Syphilis | 96 |
| Arteriosclerosis | 33 |
| Gonococcus | 10 |
| Undetermined | 10 |
| Streptococcus | 6 |
| Staphylococcus | 5 |
| Tuberculosis | 4 |
| Pneumococcus | 2 |
| Meningococcus | 2 |
| Trauma | 2 |
| Pellagra (?) | 1 |
| Scurvy | 1 |

those joint changes are to be discussed which have offered a *well defined gross lesion* of the cartilages, bone or joint content. Since the inauguration of this method of examination, 1,100 necropsies have been performed. Less than 1 per cent. of these individuals were considered "arthritic suspects," yet 172 cases offered some significant type of a well defined gross lesion. It is quite impossible thoroughly to dissociate the various etiologic factors known to produce arthritis in the discussion of this series, since many of the individuals had a remote history or the present evidence of more than one possible etiology. As in many such studies, the matter resolves itself into the expression of a personal opinion; and after weighing the general findings, both clinical and pathologic, surrounding these cases, I am led to arrange them in the order given in Table 1.

A classification for the sake of convenience in further analysis is necessitated, and therefore the 172 cases have been arranged in three groups (Table 2). Group 1 includes all cases showing a degenerative type of lesion associated with a positive Wassermann test, or with supportive lesions of syphilis found at necropsy, or with the history of having been treated for syphilis. Group 2 includes only those showing a degenerative lesion associated with arteriosclerosis and not showing the presence of any other factor acute or chronic in type. Group 3 includes all well recognized types of arthritis and the undetermined acute types.

* From the board of health laboratory.

1. Baetz, Walter: One Hundred Cases of Acute Arthritis Among Negro Laborers on the Panama Canal Zone, THE JOURNAL A. M. A., April 5, 1913, p. 1065.

2. Beitzke, H.: Ueber die sog. Arthritis deformans atrophica, Ztschr. f. klin. Med., 1913, 74, 215, cited in Current Comment, THE JOURNAL A. M. A., Sept. 6, 1913, p. 779.

3. Ziegler, Ernst: A Text-Book of Special Pathological Anatomy, pp. 285, 286.

Practically all the bodies were of negroes or of negro mixtures. Nearly all were of persons who had been hard laborers, tradesmen on their feet all day, or domestic servants and laundresses. Of the cases listed under syphilis and arteriosclerosis (Groups 1 and 2), about 80 per cent. of the deaths had occurred as a result of chronic cardiovascular disease, renal disease or chronic disease of the central nervous system (many of the persons had been insane).

The Wassermann test on the blood was positive in sixty-six of the ninety-six cases in Group 1; in two

TABLE 2.—DISTRIBUTION OF ARTHRITIS CASES

| Age, Years | Number of Necropsies Performed | Syphilis Associated: Group 1 | Arterio- sclerosis: Group 2 | All Other Types: Group 3 |
|--------------------|--------------------------------------|------------------------------------|-----------------------------------|--------------------------------|
| Less than 2..... | 207 | 0 | 0 | 1 |
| From 2 to 9..... | 40 | 0 | 0 | 1 |
| From 10 to 19..... | 39 | 0 | 0 | 0 |
| From 20 to 29..... | 312 | 15 | 1 | 14 |
| From 30 to 39..... | 251 | 23 | 0 | 12 |
| From 40 to 49..... | 132 | 30 | 9 | 6 |
| From 50 to 59..... | 74 | 21 | 9 | 3 |
| From 60 to 69..... | 35 | 6 | 10 | 5 |
| From 70 to 79..... | 8 | 1 | 2 | 1 |
| 80 and over..... | 2 | 0 | 2 | 0 |
| Totals..... | 1,100 | 96 | 33 | 43 |
| Sex | | | | |
| Males | 792 | 77 | 23 | 27 |
| Females | 308 | 19 | 10 | 16 |
| Totals..... | 1,100 | 96 | 33 | 43 |

additional cases there was a positive spinal fluid test, eight could not be tested, and in nineteen there was a negative response but a history of syphilis, and supportive lesions of the disease at necropsy. The various special tests for the spinal fluid were not applied to the cases in this series.

Table 3 gives a list of some of the lesions found associated with the cases under Group 1 and believed to be "supportive lesions" of syphilis.

It is not considered important to discuss the cases in Group 3, since they were all well defined acute types that have already been indicated. Several of these cases, however, represent a secondary invasion by an acute factor of a joint already the seat of the chronic degenerative type of arthritis about to be described, and it is to be expected that such a joint, with its plates eroded and its nutrition below normal, would frequently favor the localization of an acute process.

The lesion found in the cases under Groups 1 and 2 were identical in character, and therefore the description of the lesion found in Group 1 will suffice.

LESION IN THE UNCOMPLICATED CHRONIC
DEGENERATIVE TYPE OF ARTHRITIS

The knee, being the most common location of the process, is best suited to illustrate the lesion. The external examination of the joint seldom offered any sign of the change to be exposed by the disarticulation of the joint. The cavity was usually almost dry or partially filled with a straw colored, transparent, gelatinous material. The synovial membrane many times presented no visible change, but infrequently it was found thickened, red and granular, and more infrequently containing a polypoid growth with a little flaky material or perhaps some free pieces of cartilage floating in the scanty joint fluid. Adhesions spanning the joint cavity between the bone surfaces were almost never found. The most common and significant change to be found was located in the cartilages at the

points of the greatest "occupational pressure." The cartilage of the patella, and the condyles of the femur and of the head of the tibia were in many instances almost destroyed; but the majority of the cases revealed a loss of substance in the cartilages only in those regions subjected to the greatest and longest continued pressure strain in the daily use of the joint. The buffer influence of the semilunar cartilages in most instances saved the tibia from extensive involvement; but the center of each condyle, the groove between the condyles at a little higher level, and the surface of the patella suffered such extensive losses of cartilage that comparatively large areas of bone were exposed. Many times this bony bed would be rough, red and cancellous in character, while at other times it was a polished, red surface. No pus or fibrin filled these exposed places, and granulations were seldom present. The patella appears to be the first to suffer, as a general rule; since, in what is considered to be the earliest stage of the process, the cartilage of this bone shows the most extensive softening, fibrillation and lemon color, and this condition is often present when the other bones show but scant involvement. The final stage of the lesion appears to be represented by those cases revealing complete absorption of the cartilages and exposure of large areas of bone at points corresponding to the pressure areas.

COMMENT

The character, position and size of the joint lesion strongly suggest a degenerative result and absorption rather than the local action of micro-organisms, although such a joint could well be expected to favor a secondary invasion by some pyogenic factor, since its devitalized condition and constant use would facilitate the localization.

It is believed that chronic vascular disease, such as syphilitic arteritis and arteriosclerosis, reduces nutrition to the joint plates, and that at the "pressure areas" nutrition is further reduced by the hard daily use of the joint, so that degeneration and absorption

TABLE 3.—SUPPORTIVE LESIONS IN GROUP 1

| | Number |
|---|--------|
| Aortitis | 63 |
| Chronic aortic endocarditis..... | 21 |
| Genital scars | 17 |
| Chronic osteitis | 14 |
| Scars in liver, spleen and kidneys..... | 14 |
| Aneurysm | 13 |
| Cerebral hemorrhage and softening in young adults..... | 28 |
| Chronic types of meningitis and focal areas of brain sclerosis..... | 10 |
| Gummas | 5 |
| Chronic orchitis | 5 |
| Arteritis obliterans | 4 |
| Chronic leg ulcer | 3 |
| Iritis | 2 |
| Rectal ulcer (stricture)..... | 1 |

of the cartilages take place, finally resulting in the exposure of the bone, and being usually limited to the areas of greatest pressure. Many of the persons in this series from early life had been in the habit of carrying burdens on their heads. Frequently this load would be greater than the same person could have carried by hand. This no doubt materially increased the strain on the hips and knees, and may account for the great incidence of the knee lesions; although this joint, being a large one situated between two important epiphyses and subjected to the strain of long, large bone levers supplied by many groups of powerful muscles, is to be expected to reveal this type of lesion more than any other joint.

It appears reasonable to suppose that syphilis may be frequently an important preliminary factor in producing this type of joint lesion. The results in the vascular system of an untreated course of syphilis are today well known, and a glance at the ages of the persons comprising Group 1 of this series will reveal a large number of adults in the early decades of life, periods earlier than senile changes are to be expected, although the lesion present resembles such a change. The summary⁴ of the year's work in this laboratory for the year 1916 showed that 3,947 negroes and mulattoes were examined by a Wassermann test and

TABLE 4.—DISTRIBUTION OF JOINT LESIONS

| Location | Syphilis Associated: Group 1 | Arterio- sclerosis: Group 2 | All Other Forms: Group 3 |
|----------------------|------------------------------------|-----------------------------------|--------------------------------|
| | | | |
| Right knee | 90 | 33 | 28 |
| Left knee | 92 | 32 | 28 |
| Right hip | 17 | 7 | 6 |
| Left hip | 9 | 6 | 4 |
| Right shoulder | 17 | 10 | 4 |
| Left shoulder | 8 | 9 | 5 |
| Right elbow | 2 | 0 | 3 |
| Left elbow | 2 | 0 | 2 |
| Right ankle | 2 | 0 | 4 |
| Left ankle | 3 | 0 | 1 |
| Right wrist | 1 | 0 | 0 |
| Left wrist | 0 | 0 | 0 |
| Spine | 1 | 0 | 2 |
| Digits | 0 | 0 | 1 |

that 30 per cent. were positive. When it is recalled that the 1,100 cadavers in this series of necropsies were of unselected persons with regard to the test, and that ninety-six out of 172 joint cases could be placed in Group 1, the relation of syphilis to these degenerative lesions seems to be more than mere coincidence. Syphilis and arteriosclerosis are indicated as important preliminary factors in preparing the joint plates for the development of degenerative arthritis.

These degenerative changes in the joints may represent the remote results of what Baetz has named, in the secondary period of the disease, "syphilitic arthritis."

Certainly the gross pathologist, in the absence of arteriosclerosis, should look on this condition when present in the body of a young adult as suggestive of syphilis, and apply the laboratory tests for the disease.

SUMMARY

1. Gross lesions of arthritis were found in 15.6 per cent. of 1,100 consecutive necropsies, and less than 1 per cent. of those showing the lesions were considered "arthritic suspects."

2. All but two of the persons showing arthritis were hard working adults belonging chiefly to the negro race.

3. A chronic degenerative type of arthritis included 129 of the cases, while forty-three cases were well known acute types of arthritis or some ill defined acute and chronic types combined.

4. Chronic vascular disease (syphilis and arteriosclerosis) and employment at hard labor are considered important etiologic factors in the production of chronic degenerative arthritis.

5. The focal degenerative arthritis found at necropsy in young adults offers the gross pathologist, in my opinion, some additional presumptive evidence of syphilis, and the application of the laboratory tests for the disease is indicated.

4. Russell, F. F.: Summary and Discussion of the Work Performed in the Board of Health Laboratory During the Year 1916, Proc. Med. Assn. Isth. Canal Zone, 10, Part 1.

MYOSITIS PURULENTA ACUTA CAUSED
BY BACILLUS TYPHOSUS

REPORT OF A CASE *

MASANAKA TERADA, M.D.

TOKYO, JAPAN

The pyogenic property of the typhoid bacillus was long a topic of discussion by medical writers. At present, as the result of satisfactory evidence, many authors agree that the typhoid bacillus can cause the formation of pus in various organs, although cases of typhoid followed by myositis purulenta acuta caused by the typhoid bacillus are very rare. Lately I have observed a case of myositis purulenta acuta of the upper arm caused by the typhoid bacillus during the course of typhoid fever.

REPORT OF CASE

History.—A man, aged 34, who had enjoyed good health, was suddenly taken ill with chills and fever, the temperature reaching 40.2 C. (104.3 F.) at onset. The lips were dry and the tongue was coated with a thick white fur; the appetite was poor; there was retraction of the abdominal wall, but no tenderness. At first there was slight diarrhea, but later, constipation. The spleen became enlarged, and its edge was distinctly felt below the costal margin. In the liver and the kidney no changes were clinically noted. The pulse was strong and regular, ranging 100 or more, and the heart sounds were normal. There were no changes of the respiratory organs throughout the entire course save for the occurrence of epistaxis two or three times. There were no serious nervous manifestations at the beginning, but only persisting headache and slight pain in the lumbar region. Toward the end of the disease the patient was delirious. There were no changes in the kidney. The urine was almost transparent, weakly alkaline, with a specific gravity of 1.010 and no sugar or precipitate, but with a trace of protein. The diazoreaction was positive. Microscopically there were no abnormal constituents except a few leukocytes. There were no changes in the testicle, epididymis or prostatic gland.

A few days after the onset, the characteristic rose-red rashes appeared. Two weeks later the patient began to complain of pain in both the upper arms. This attack of pain was accompanied by chills and high fever, and a reddish swelling appeared on the postero-external side of the right upper arm, extending from the elbow to the lower margin of the deltoid muscle. Petechiae were present, but a thickened periosteum was not palpable. The symptoms of the left upper arm diminished in severity. A deep incision was made in the upper third of the right arm, and a small quantity of seropurulent fluid was evacuated. Later a few blebs formed around the incision.

Bacteriologic Examination.—A few drops of the patient's blood were cultivated in bile broth and ordinary broth; both mediums showed uniform cloudiness. The growth, when cultivated on various mediums, showed the following characteristics:

Agar: After incubation for twenty-four hours at 37 C. (98.6 F.), small, circular, thin, bluish-gray, transparent colonies were seen which remained always thin.

Gelatin: All the colonies presented a characteristic appearance. After incubation at 37 C. for twenty-four hours, small, round colonies, always thin and transparent, appeared. The edge of each colony became indented and sinuous, and at the same time ridges extended from them into the center, which became thicker than the margins. The colonies developing in the depth of the gelatin and sometimes even those on the surface had quite a different appearance. They were round and opaque, and were about the size of a pinhead.

Stab Culture: After incubation for twenty-four hours at 37 C., along the line of the stab, small, round, yellowish-white

* From the microbiologic department of the Tokyo Charity Hospital-Medical College.

and confluent colonies appeared, while on the surface there were thin, transparent and widespread confluent colonies.

Milk: The bacillus grew abundantly without coagulating the milk.

Broth and Peptone Medium: The growth in these mediums showed a slight cloudiness, but gradually became more marked, and later the growth became flocculent and ultimately formed an abundant sediment at the bottom of the tube. There was no indol reaction in these mediums.

Litmus-Whey: The fluid remained transparent and reddish-purple, and the bacillus produced no acid.

Glucose-Agar: There was no production of gas.

Potato: At first sight there appeared to be no growth at all, but examination of the surface revealed a slightly moist and very thin deposit.

Morphologically, the bacillus cultivated on agar was as a rule very motile, easily stained with the basic anilin dyes, gram-negative, and rod shaped.

Immunologic Examination.—The bacillus was agglutinated markedly by typhoid-immune serum. Bacteriologic examination of the feces many times ended in negative results. Negative Widal reactions were obtained nine and fourteen days after the onset of the disease. From the fluid that flowed from the operative wound and from the blebs around the wound, a bacillus was cultivated whose properties were ascertained to be identical with those of the bacillus from the blood of the patient.

Postmortem Examination.—Local Changes: The operative wound of the right upper arm presented the appearance of myositis purulenta acuta, and on pressure a small quantity of grayish fluid flowed out.

Changes in the Intestine: In the lower part of the ileum, corresponding to Peyer's patches, were round or oval ulcers of various sizes. Their borders were as a rule undermined, and sometimes their surfaces appeared dark red. Large ulcers were seen, especially in the lower part of the cecum. The large intestine was filled with an enormous quantity of clotting, and its mucous membrane was a pale brownish gray. The spleen, the liver, the heart, the kidney and other organs also were undergoing acute degenerative changes.

COMMENT

The bacteriologic and pathologic findings justify the conclusion that the case was one of typhoid followed by myositis purulenta acuta. The onset was marked by chills and high fever. The temperature gradually fell, and in a week after the onset became normal. Soon afterward the temperature rose, and was accompanied by myositis purulenta acuta as a partial symptom of the general bacteremia.

Sanatorium Food Monotony.—The importance of nourishing food in sufficient quantities is no greater than the importance of having it pleasing and acceptable to the patient. This is recognized by the relatives, friends and well-wishers of the patient. But unfortunately in many sanatoriums attention is given only to the nutritive aspect of the food and its quantity, while a sad indifference is manifested to its no less important psychological aspects. In the patient's humble home, every effort is made—and properly—to cater to his appetite. The well sacrifice their own comfort in order to further the assimilative forces of the sick by attending to the psychic signaling of the stomach. In the sanatorium it is argued that individual attention in these matters cannot be given. Ergo, a nauseating monotony is introduced in the form of a weekly menu as unalterable as the laws of the Medes and Persians. The guaranteed stability of this dietetic order enables every patient to anticipate with apprehension and loss of appetite the exact arrival of the dish that to him happens to be intolerable. Moreover, the anticipatory distaste irradiates over other food in the same meal which would otherwise be agreeable. Thus the patient is deprived of a most important adjunct to his cure.—Samuel Wolman, M.D., *The Survey*.

Clinical Notes, Suggestions, and New Instruments

AN IMPROVED MODIFICATION OF THE DURHAM FERMENTATION TUBE

K. D. GRAVES, M.D., RICHMOND, VA.

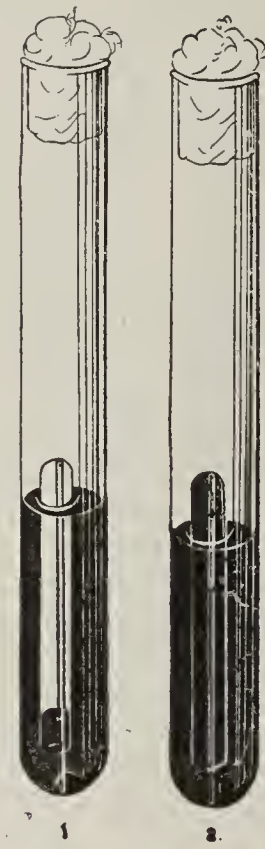
Owing to the fact that certain germs, notably the *Bacillus coli*, have specific action on lactose, breaking it up with the formation of gas when they come in contact with it in culture mediums, it has been the custom for a number of years to use a culture medium having lactose as one of its constituents as a means of testing germs for their sugar-breaking property. A number of containers for the culture mediums have been used, the first of which Smith¹ described in 1889. This bears his name, and has been the one most generally in use until the last few years.

In 1899, Hill² suggested a modification of Smith's tube, which consisted of a tightly fitting ground glass stopper with which to close the long arm.

Both Smith's and Hill's tubes, however, were expensive, bulky and hard to clean; hence, when Durham,³ in 1900, described his tube, which consisted of an ordinary test tube with a smaller tube inverted inside of it, it was considered a distinct step forward.

Durham's tube, which seemed to give satisfaction, has come into general use, and is now considered equally as efficient as the Smith tube. Recently, by a large series of experiments and comparative tests, Lee and Fegely⁴ have concluded that "from the standpoint of total efficiency, the Durham tube seems to be the superior of the Smith tube."

In 1914, Hall⁵ showed, by a comparative table of results, the value of having a beveled or diagonal edge, instead of a square one, on the inner tube. As Hall pointed out, one objection to the Hall tube is the fact that it is impossible to determine the quality of gas formed in this tube; but this is not really important, since it is simply the presence of gas-forming bacteria that is of interest in the presumptive test for colon bacilli. The chief objection to both the Hall and the Durham tubes is that with them it is difficult to shake up the mediums sufficiently to get the germs into the inner tube in a specimen which is not heavily infected. By running duplicates, inoculated with *B. coli*, I have found that by shaking samples thoroughly several times a day, I would frequently get gas formation in tubes whose unshaken duplicates would not show gas until



Tube 1, inner test tube in position inverted over a wooden rod; Tube 2, after being heated in the autoclave, the inverted tube becomes filled with the medium.

several hours later; and on comparing the shaken and unshaken tubes, a larger percentage of gas in the shaken tubes was usually obtained than in the unshaken ones.

These results caused me to feel that probably in making presumptive test of water samples for *B. coli*, this organism was present in a number of cases in such small amount that the germs did not multiply in sufficient numbers to inoculate the inner tube during the time allowed for incubation. The causes which could produce a negative report on a sample of water which had gas-forming bacteria present seem to me to be: (1) The germs might be purely aerobic; (2) the sample of water might have a tendency to stratify near the top of the tube, since it is of a lower specific gravity and does not mix

1. Smith, Theobald: *Centralbl. f. Bakteriol.*, 1890, **7**, 502.
2. Hill, H. W.: *Jour. Boston Soc. Med. Sc.*, 1899, **3**, 137.
3. Durham: *Jour. Exper. Med.*, 1900-1901, **5**, 353.
4. Lee, R. E., and Fegely, W. H.: *Am. Jour. Pub. Health*, 1914, **4**, 999.
5. Hall, I. W.: *Am. Jour. Pub. Health*, 1914, **4**, 1173.

freely with the bile medium, and (3) the live germs might be held near the surface of the medium by surface tension.

Taking these facts into consideration, I have devised a tube which overcomes the principal objection to the Durham tube. With this tube it is comparatively easy for bacteria to pass into the inner tube; it is scarcely any more difficult to make and to clean than is the Durham tube, and it is no more bulky.

Technic.—Into a test tube, about 20 mm. in diameter and 250 mm. long, is tubed about 20 c.c. of the medium to be used (1 per cent. lactose-peptone bile, or lactose-peptone broth). Into this is dropped a tube, 30 mm. long and about 5 mm. in diameter which is inverted over a wooden rod, 50 mm. long and about 2 mm. in diameter. Wooden swab applicators will answer this purpose (Tube 1). The test tube is then slanted to an angle of about 45 degrees and heated to 15 pounds' pressure in the autoclave for half an hour; the escape valve to the autoclave is left slightly open, so that the air which was in the inverted tube escapes as the medium heats up, and its place is taken by vapor from the medium; and later, after the heat is cut off and the medium cools, the vapor condenses, and the inner tube becomes filled with the medium (Tube 2).

I have used these tubes in the laboratory of the Richmond Health Department for the past six months, running them in duplicate with the regular Durham tubes, and they have proved themselves eminently satisfactory.

ADVANTAGES

The use of this tube offers the following advantages:

1. The mouth of the inverted tube is lifted some distance from the bottom of the test tube, allowing free circulation of the mediums in and out of the inverted tube.

2. Shaking is more thoroughly accomplished, since the impact of the inverted tube with the wooden rod causes a sort of churning movement, which draws in and expels the mediums.

3. Raising the mouth of the inverted tube causes a certain amount of gas which is formed between the mouth of the inverted tube and the bottom of the large tube to be caught.

4. The inside tubes are easier to fill, as they are raised from the bottom of the test tube, and a much better egress is offered for the air which they contain.

A DEVICE TO IMMOBILIZE THE HEAD AND EYELIDS DURING OPERATIONS ON THE EYEBALL

E. R. CROSSLEY, M.D., CHICAGO

Many forms of lid speculum have been devised for controlling the eyelids during operative procedures on the eyeball, most of which depend on the force of a spring of some character to retract the lids. All these devices have their weakness in their frailty and the fact that the patient "can squeeze the eyeball itself" with the lids and actually throw the speculum out of the eye during the operation.

With the ordinary form of speculum, the routine procedure before doing a cataract extraction, after the patient has been placed in position on the table, is to talk to him to get control and his confidence and attempt to exert a hypnotic influence on his mind. If he happens to be a good patient, the surgeon succeeds. If nervous and excitable, as most are, he may roll the head to one side at the critical moment, when the knife is through the anterior chamber, and interfere seriously with the incision or cause the operator to do serious damage to the eye with the knife, if he does not dexterously follow the movement of the head.

The most serious damage may come after the incision is completed and the anterior chamber is open. He may squeeze violently enough to throw out the lens and vitreous through the opening, and lose the eye entirely. Then the patient is told that it was his own fault, for he squeezed. This is not a true statement, for the act is largely involuntary on his part, and we as operators, knowing it to be such, are responsible and should take some positive means to control the patient so that such mishaps are impossible.

Undoubtedly, this common accident has occurred to all who are doing an extensive amount of this kind of work.

In the presentation of this appliance for the immobilization of the head and eyelids during operations on the eyeball, I offer a mechanical device that takes complete control of the head and eyelids more effectively and efficiently than a trained assistant can possibly do.

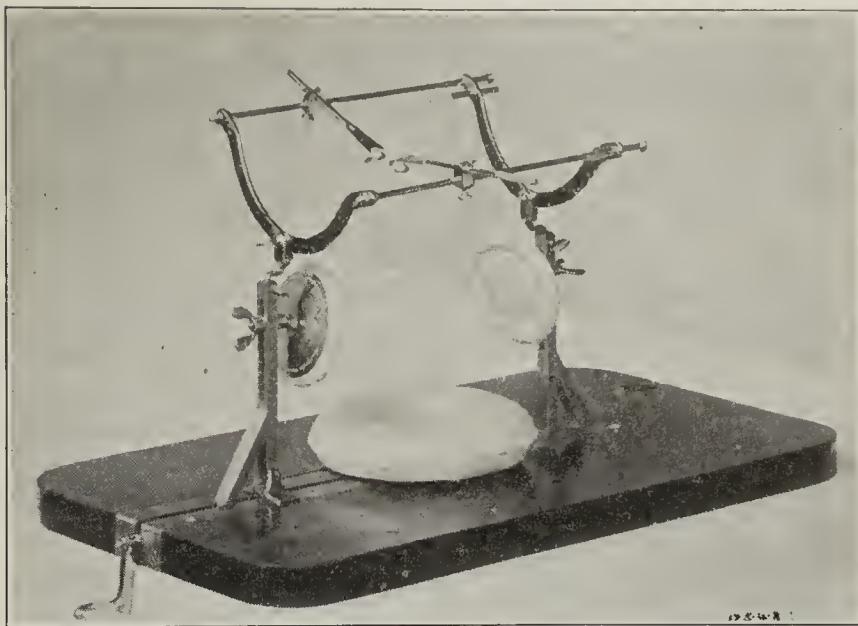


Fig. 1.—Apparatus for immobilization of the head and the eyelids.

With this head clamp and eyelid retractor, the operator can go to his operation with a feeling that no accident is going to occur to detract from his good results, and that he can positively assure his patient that he cannot move and injure himself during the operation.

This reassures his mind and inspires confidence in the operator, obtaining a perfect control of the situation that is impossible to obtain otherwise.

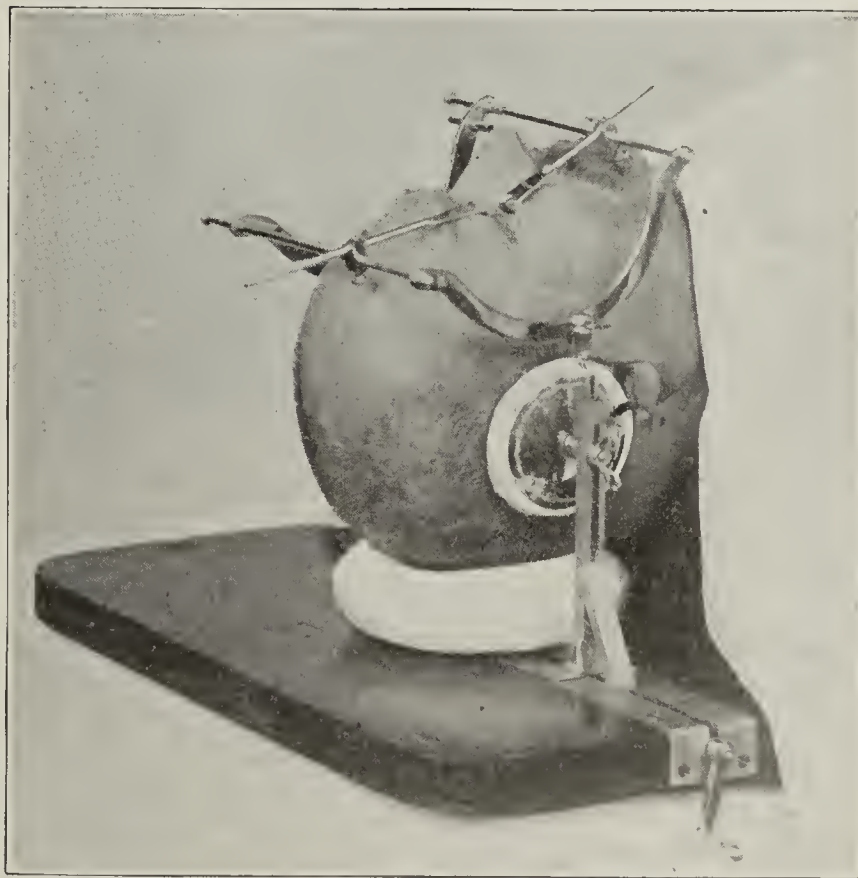


Fig. 2.—Patient with head and eyelids fixed ready for operation.

The apparatus consists of two parts, the base and superstructure or framework carrying the lid hooks.

The base consists of a rectangular wooden block 12 by 22 inches, lengthwise through which is a long screw on which are mounted two strong metal uprights, one of which is stationary, and the other movable. Attached to these are large pads, which grasp the sides of the head as the one approaches the other. The superstructure is a metallic frame which

attaches easily to the uprights. On the crossbars of this structure are mounted two sliding locks, for fixing the lid hooks after the lids have been retracted.

Figure 1 shows the apparatus fully set up. Between the two uprights is placed a circular pad which serves as a comfortable head rest. The length of the base is 22 inches, the average width of surgical tables. By means of clamps, the apparatus is fixed firmly to the table on which the patient lies.

Figure 2 shows the patient on the table with the head and the eyelids fixed ready for operation.

In this illustration it will be noticed that the lids are retracted away from the eyeballs, preventing any possibility of squeezing.

29 East Madison Street.

OPEN SAFETY PIN IN AN INFANT'S STOMACH AND DUODENUM

C. WINFIELD PERKINS, M.D., NEW YORK

A mother, after a temporary absence, entering the room of her child, aged 14 months, noted that the youngster was swallowing with difficulty. These symptoms terminated in a short time. The mother, naturally becoming suspicious,



Position of safety pin two weeks after the accident. Stomach distended. The duodenum is indicated by the white dotted line.

examined the child's clothing, and where there had been two safety pins, only one was in evidence. A physician was then consulted, and a careful watch for symptoms with a daily examination of the stools was made, without any results. The child all the time seemed perfectly well, showing no symptoms of discomfort whatsoever. A week passed, and the little patient was referred by Dr. J. P. Seward for roentgen examination.

Fluoroscopic and roentgenographic examination visualized and open safety pin lodged in the pyloric region. It was decided to wait a while longer with the hope that the pin might pass, as the child continued in good physical condition. The second roentgenogram, a week later, showed the pin located in the same position, associated with a distended stomach and the beginning of some gastric distress, for the child was now continually sleeping on the abdomen. Operation was now decided on, and Dr. W. G. Crump of New York removed the open safety pin, the location and position of which were of exceptional interest, the bar of the safety catch having passed the pylorus into the duodenum, while the sharp end of the pin was embedded in the gastric mucous membrane of the

pyloric region, thereby assuming the anatomic angle between the pylorus and the first portion of the duodenum. It can readily be seen that the passage of the pin under such circumstances would be practically impossible.

The child recovered without incident after the operation.

234 Central Park West.

A TUBE FOR BLADDER DRAINAGE IN THE FIRST STAGE OF SUPRAPUBIC PROSTATECTOMY

EDGAR G. BALLENGER, M.D., AND OMAR F. ELDER, M.D., ATLANTA, GA.

As a rule the major portion of the time required for the preliminary bladder drainage in a two-stage prostatectomy is

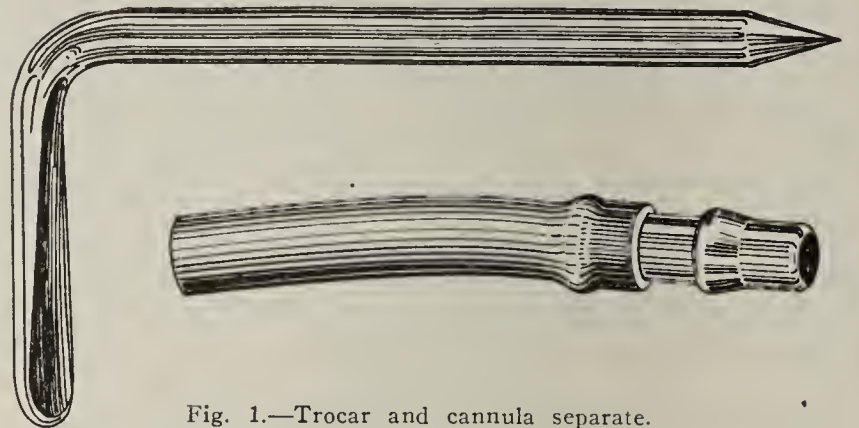


Fig. 1.—Trocar and cannula separate.

taken in securing a snug-fitting purse-string suture around the tube.

To shorten this time and to facilitate the procedure, we have devised a trocar-drainage tube, which is carried through the bladder wall by means of a pointed obturator, which is then taken out, leaving in place the drainage tube, which is connected to a rubber tube, and the urine allowed to flow out.

No suturing of the bladder wall is required, as the tissues composing it are merely pressed apart and it fits snugly around the tube, which cannot slip out of the bladder because of a shoulder on the part of the tube in the bladder. Another shoulder on the outer part of the tube prevents its slipping into the bladder. The obturator is sharpened in a rounded manner and therefore has no cutting edges.

The skin incision, which has been made in the usual manner, is closed with two or three silkworm-gut sutures. The usual care, of course, should be taken to have the bladder distended and the peritoneum pushed well up out of the way. The operation can always be done under gas-oxygen anesthesia or novocain, as it is not necessary to have the muscular relaxation that is required for a purse-string suture.

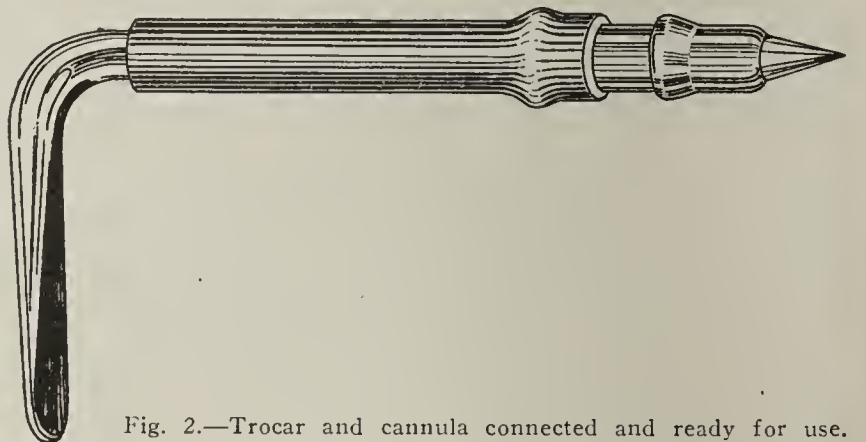


Fig. 2.—Trocar and cannula connected and ready for use.

The advantages, therefore, of such a tube are a shorter time for the operation, a milder anesthesia, and an opening in the bladder which fits the tube so closely that no leakage of urine occurs.

As can be seen from the illustrations, a rubber tube is firmly connected to the outer end of the metal tube. This permits an easy connection to the tube leading to the bottle into which the urine drains. The caliber of the tubes we have employed is one-half inch.

A CARDIOSPASM DILATOR

J. W. LARIMORE, M.D., St. Louis

The cardiospasm dilator described here was developed to meet certain exigencies in the treatment of cardiospasm cases. It was made by using an ordinary stomach tube of small diameter and attaching to its end the tapering tip of a small bougie. A rubber balloon was then fastened about the tube and bougie end, as shown. About this was placed a bag made of very light weight silk, and so cut that when the first or inner balloon was inflated, there would appear a constriction about the middle. A second balloon was fastened over this. Air-tight fastening of the ends of the balloons was made with rubber cement and winding with small silk thread. This constitutes the dilator proper. Another small balloon may be added inside the first large balloon at its proximal end (Figs. 1 and 2B). This balloon is also covered by a silk bag which limits its degree of inflation. Its tube for inflation may extend, as is shown, through the lumen of the stomach tube. By a three-way stopcock on the proximal end of the apparatus, either the small balloon or the large outer balloons may be inflated. The small balloon is used by inflating it primarily for locating the instrument definitely within the constriction. It may or may not be used, as circumstances demand.

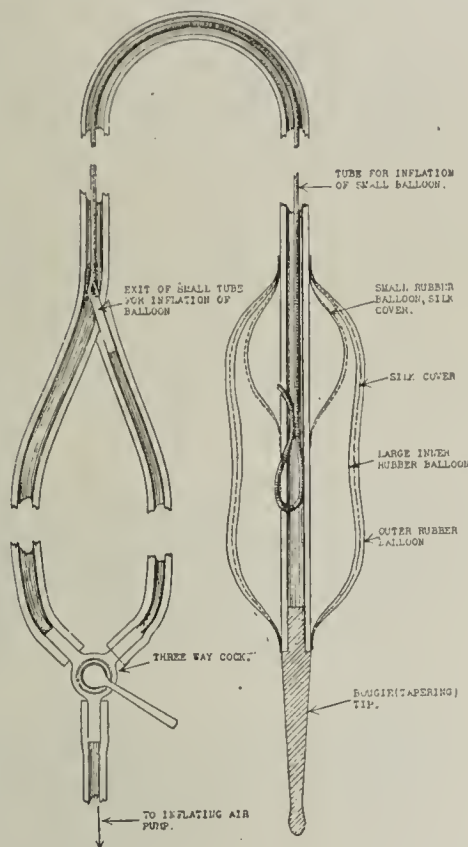


Fig. 1.—Construction of cardiospasm dilator.

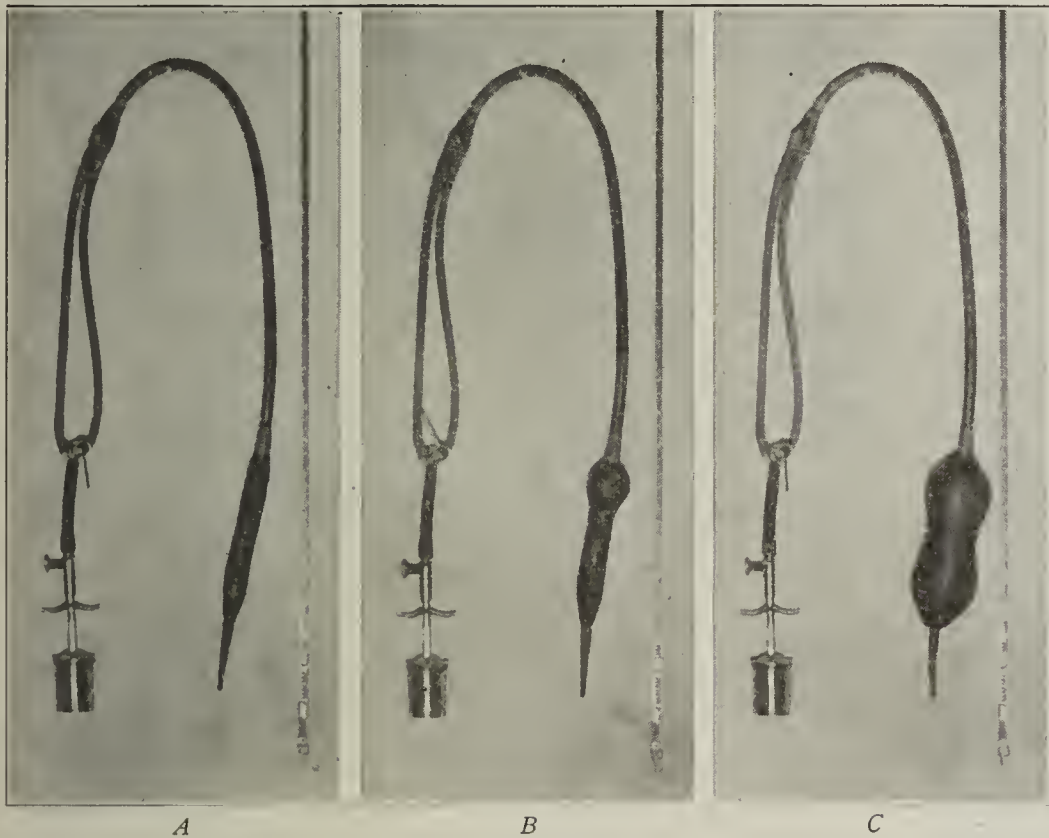


Fig. 2.—Cardiospasm dilator: A, uninflated; B, with the small inner balloon inflated; when this is introduced to the constriction, the large balloon is properly placed within the spasm; C, with the three walled dilating balloon fully inflated.

Air inflation has been found most satisfactory, and is accomplished by the pump from a blood-pressure apparatus. The instrument is shown in the illustrations, and its dimensions may be determined from the accompanying measure.

It has been found that a manometer need not be used, and that the expression of pain by the patient is an adequate

and sure guide. The number of strokes of the pump necessary to secure inflation to a moderate or high pressure may be previously determined, and with this knowledge the extent of dilatation during treatment may be readily estimated by counting the strokes which are sufficient to produce pain reaction.

A mandarin is unnecessary for the introduction of the instrument. The tapered bougie tip makes unnecessary preliminary dilatation with bougies. The construction of the inflation balloons allows the instrument to establish itself at the constriction level without slipping above into the sac or below into the stomach.

PELLAGRA IN CHILE

HOWARD K. TUTTLE, M.D., COQUIMBO, CHILE, SOUTH AMERICA

I believe that this case of pellagra is the first to appear in Chile.

History.—A white girl, aged 11 years, was brought to our company dispensary for treatment. The other members of the family, including three sisters and two brothers, were in good health. The patient first noticed that the skin on the backs of the hands was becoming red, and that the redness was gradually extending up the forearm, being accompanied by considerable burning and itching. Later the disease appeared on the face, forehead and sides of the neck; the tongue was swollen and sore, and the mouth hot and dry. There were pain in the epigastrium, intense thirst and severe attacks of vomiting. Diarrhea accompanied by cramplike pains in the lower abdomen had been present for some time. Nervous symptoms, such as headache, dizziness, choking sensations, tenderness over the spine, or mild convulsions, also disturbed the patient.

Physical Examination.—The skin over the backs of the hands, forearms, face, forehead and sides of the neck was covered with a reddish-brown, scaling, thickened epithelium. On the hands and arms the scaling was very marked, and extended from the base of the nails to within about 3 inches of the elbow, ending in a distinct outline at the dress sleeve.

The mucous membrane of the tongue was swollen, reddened and thickened, but smooth, except for a few deep fissures. The patient had a sad, forlorn facial expression. There was some tremor, and a slow, unsteady gait, showing marked weakness. Palpation revealed severe pain over the epigastrium and dorsal spine.

Treatment and Course.—All corn, cornmeal, rice and dried vegetables were prohibited, and meats, fish, eggs, fruits and milk substituted. Arsenic and dilute hydrochloric acid in proper doses were given internally, and an ointment composed of oil of cade, zinc oxid and petrolatum was applied. Under this treatment the dermatitis showed considerable improvement, especially on the face. This treatment had been instituted during the winter months, but when spring returned, the child was again living in the careless condition of poverty and indifference. The disease began to make rapid progress, resulting in extreme emaciation, anemia, mild dementia and death.

COMMENT

This case presented symptoms so distinct that they could hardly have been mistaken. It is of particular interest, since it serves to illustrate the wide distribution of pellagra, and it is probably the first case reported from Chile.

Disease Defined.—Disease is that condition of an individual in which there is, apart from the normal changes due to age, an alteration of the structures or functions or sensations usually found in the average man of any particular race.—Prof. Ernest S. Reynolds, Bradshaw Lecture.

SYMMETRICAL OSTEOMYELITIS FOLLOWED BY
COMPLETE REGENERATION

GEORGE BLACKBURNE, M.D., NEWARK, N. J.

Assistant Attending Surgeon, St. Michael's Hospital; Assistant
Attending Gynecologist, Newark City Hospital

M. R., white girl, aged 12 years, was referred to me in December, 1914, with the following history: Five months



Fig. 1.—Condition of thumbs, Dec. 28, 1914.

before, the ends of both thumbs had become swollen and painful. A pustule appeared on the ball of each thumb. These pustules were incised by the patient's physician, evacuated



Fig. 2.—Regeneration of phalanges, January, 1917.

and dressed at intervals for this period. Amputation of the terminal phalanges was suggested, but was refused by the family, who at about this time moved to Newark and brought the child to me.

Examination revealed a sinus on the ball of each thumb, and loose bone could be detected on probing. A roentgeno-

gram taken by Dr. C. F. Baker, Dec. 28, 1914, revealed complete destruction of the terminal phalanges of each thumb, extending to the epiphyseal line. There were loose sequestra, in each case, as shown in Figure 1. Under local anesthesia, the sinuses were enlarged and the sequestra removed. This was followed by healing in about three weeks.

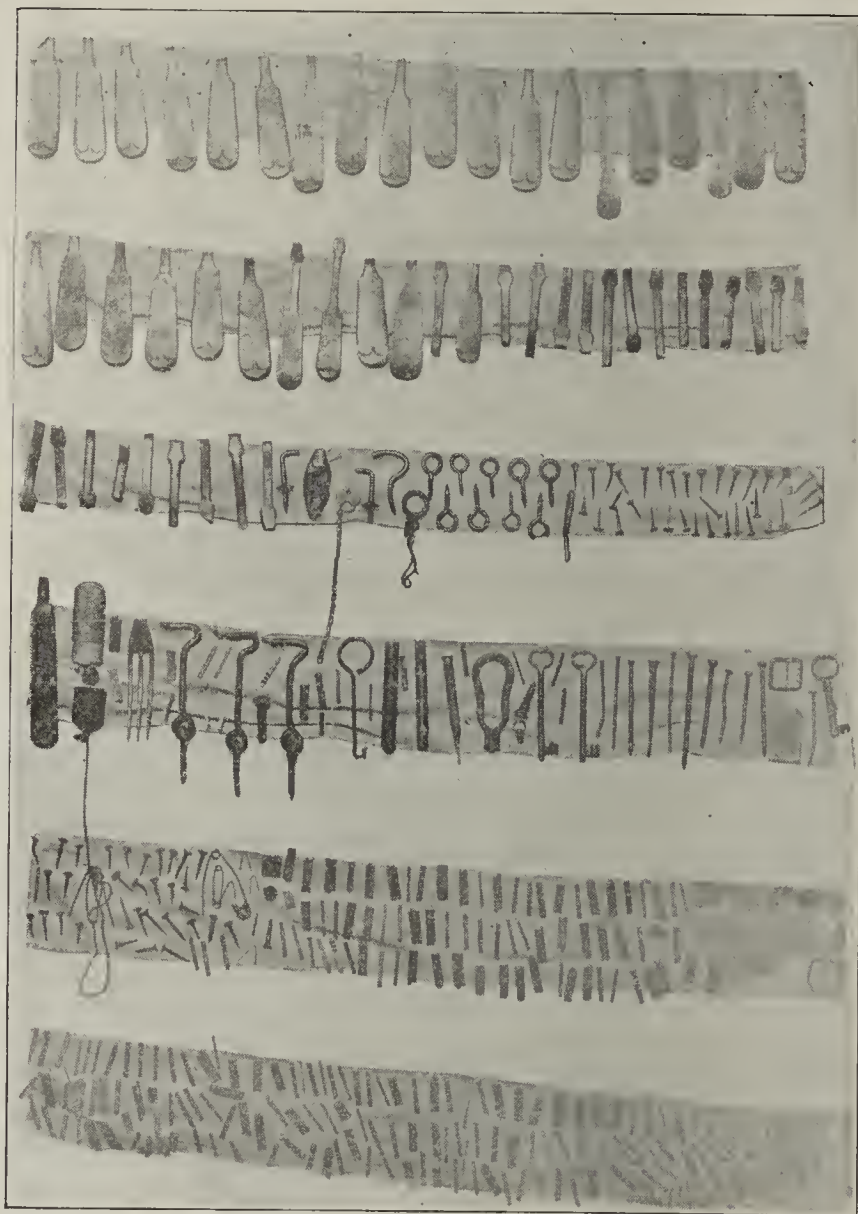
No further attention was given the patient until January, 1917, about two years later, when on examination bone had apparently reformed, and a second roentgenogram (Fig. 2) was taken, showing complete regeneration of the phalanges.

This case seems of particular interest, both from the standpoint of etiology (probably neurologic) and from the end-result.

A CASE ILLUSTRATING FOREIGN BODIES IN THE STOMACH

E. L. ELIASON, M.D., PHILADELPHIA

The patient was operated on in Dr. J. B. Carnett's service at the Philadelphia General Hospital. He was referred from



Foreign bodies removed from the stomach.

the men's nervous ward for operation for acute empyema of the gallbladder. At operation this condition was found, with 213 gallstones. In addition, 452 foreign bodies weighing 3 pounds were removed from the stomach. The patient made a good recovery.

REPORT OF CASE

J. S., man, admitted, June 16, 1917, to the neurologic service of Dr. Charles Potts in a rather pronounced state of melancholia, had a chill, July 4, and his temperature rose to 105 F. Physical examination revealed a rigid abdomen with marked tenderness and rigidity over the upper right rectus muscle. The leukocytic count was 11,800.

When the patient was transferred to the surgical ward the following day, the temperature had fallen to 100, and the rigidity was less. A few days later, because of a return of the symptoms, a further examination of the abdomen was

made. Rigidity and tenderness were again found over the gallbladder. In addition a mass was found with an irregular outline filling the right loin and extending across the abdomen and merging above with the liver. The mass on palpation was found to be movable, and gave the impression of a bag of stones. Dr. R. G. Torrey of the medical service reported the same findings, and further stated that the mass seemed distinct from the liver, but that it could not be clearly outlined on account of muscle rigidity. A hypernephroma of the right kidney was thought of, as was also a retroperitoneal neoplasm. The patient had vomited a rusty brown fluid, which was examined for blood and found negative. No roentgenogram was taken.

July 16, I operated through a modified Martin J-shaped incision. The gallbladder was found enormously distended, greatly infiltrated, and covered with organizing lymph. The duodenum, colon and omentum were closely adherent to it. Filling the entire upper abdomen was a greatly hypertrophied stomach, filled with foreign bodies. The stomach was opened and found to be filled with 452 bodies consisting of nails, pins, tacks, spoons, hooks, glass, forks, etc., as shown in the illustration. The printers' type was wedged so tightly in the pyloric end of the stomach that it had to be picked apart by the finger before it would come loose. The stomach was emptied and closed by a triple tier suture. The gallbladder was next removed and found to be gangrenous and filled with pus and stones.

The patient was drained and returned to the ward. The postoperative course was rather stormy for forty-eight hours, but the patient then improved rapidly. On the third day the patient tried to remove the safety pin from his drainage tube and swallow it.

August 10, the bile drainage had stopped and the wound was almost entirely healed. Roentgenoscopy revealed no foreign bodies in the gastro-intestinal tract. The patient stated that he swallowed the first foreign body just three weeks before operation.

August 14, the patient was out of bed.

August 23, the patient was surgically read for discharge.

320 South Sixteenth Street.

THE USE OF CALCIUM CHLORID TO PRESERVE MOISTURE IN ANATOMIC SPECIMENS AND CADAVERS

WILLIAM F. HEMLER, M.D., WASHINGTON, D. C.

Assistant Professor of Anatomy, Georgetown University School of Medicine

On account of the high price of glycerin, we began to experiment, about a year ago in the laboratories of Georgetown University School of Medicine, to obtain if possible some other substance to keep anatomic specimens moist. As a result, we have adopted for this purpose purified calcium chlorid.

Brain specimens were first hardened in a 5 to 10 per cent. solution of formaldehyd, for about two months, and then transferred to the saturated solution of calcium chlorid, in which they remained for one week. They were then placed on ordinary dissecting room trays, without any cover, except another tray inverted to keep out the dust, but in no solution whatsoever and without even a damp cloth covering to retain moisture.

These specimens have now been kept in this manner for periods ranging from one to nine months, at ordinary room temperature and during the hot months of a Washington summer.

The specimens are perfectly moist and well preserved, and in these trays are readily accessible for study by the students. The gray and the white matter are to be distinguished better than in fresh brains.

By putting about 2 pounds in the embalming fluid for each cadaver, we have apparently been successful also in keeping them moist during dissection.

1330 East Capitol Street.

Military Medicine and Surgery

TENDON OPERATIONS FOR GUNSHOT INJURIES OF THE HAND

LEO MAYER, A.M., M.D.

NEW YORK

In a recent series of articles¹ I outlined the principles of a new system of tendon transplantations based on the anatomy and physiology of tendons. The essential principle of this system lies in the coordination of each step of the operation with the exact anatomic and physiologic facts, as ascertained by researches on the cadaver, by animal experimentation, and by operations on human beings. Thus, the tension under which the tendon is sutured conforms to the normal tension, a physiologic fact hitherto unknown; the transfer of the tendon from its original bed to the new site follows the laws governing the gliding

mechanism of tendons; the implantation of the tendons is such as to assure an anchorage as firm as the normal; even in the postoperative treatment the length of time allowed before exercise is begun is determined by exact experimental data. The results attained by the method, as observed in 250 cases of poliomyelitis and in fifty tendon transfers subsequent to gunshot injuries, justify its employment as a sound surgical procedure.

At the present time a double significance attaches

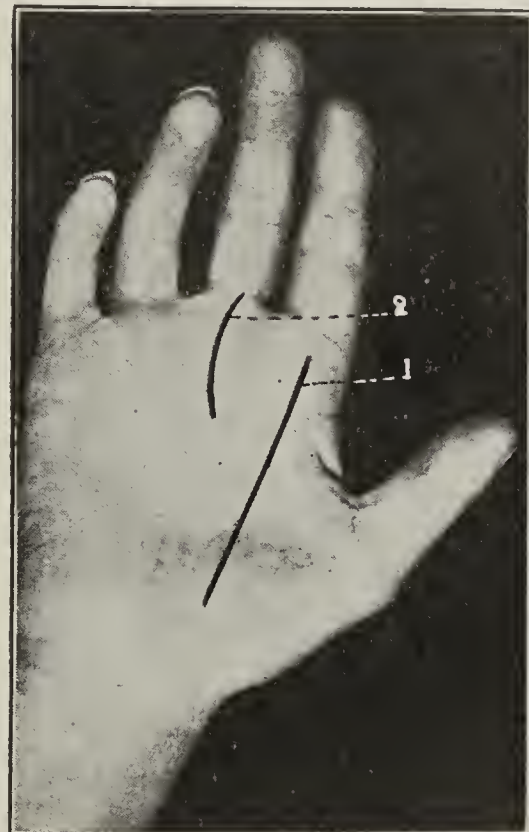


Fig. 1.—The incisions for transplantation of the flexor sublimis tendon of the index finger for the severed flexors of the middle finger: 1, first incision; 2, second incision.

to a rational system of tendon operations. First, there is the large group of poliomyelitis cases in which decided improvement of function can be obtained by tendon transplants; secondly, there will unquestionably, provided the war is not brought to an abrupt conclusion, be a large number of patients with gunshot injuries, on whom similar operations can be satisfactorily performed. That this group of patients will probably represent no small percentage of those to be treated in our American base hospitals is shown by my experience during a three years' service as surgeon to a 500 bed Red Cross base hospital near Berlin, where of 1,400 operations, fifty, or almost 4 per cent., were performed on tendons.

The purpose of this paper is to draw attention to several tendon transplantations hitherto not described, which I have found of service in gunshot injuries of the hand. One of the commonest lesions seen in a base

1. Mayer, Leo: Surg., Gynec. and Obst., 1916, 22, 182, 298 and 472.

hospital is a perforating wound of the hand, the wound of entrance being located on the palmar aspect, and the larger star-shaped wound of exit on the dorsum. Almost always one or more metacarpal bones are fractured, and the flexor and extensor tendons of one or more fingers are completely severed. Such an injury leaves the patient with a badly crippled hand, since one or more fingers are not merely useless but in the way. Despite the usual demand for amputation of the helpless members, it seemed to me advisable to conserve wherever possible, even though a complete restoration of function could not be hoped for. Therefore, in all cases in which the hand was not irretrievably shattered,

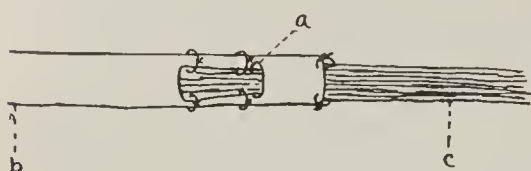


Fig. 2.—Suture of tendon to tendon when overlapping is possible: *a*, button-hole opening; *b*, flexor profundus tendon of the injured finger; *c*, transplanted flexor sublimis tendon.

I attempted to restore function by means of tendon operations for both the flexors and the extensors. These operations cannot be considered in the same category as the physiologic transplantations described in my previous articles, since from the nature of the injury it is impossible to utilize a tendon sheath as a path for the transferred tendon, and since the transferred tendon must be sutured to another tendon instead of being directly attached to the bone. In other respects, however, they conform to the principles of the physiologic method.

TECHNIC

The operation for the severed flexor tendons consists in transplanting the sublimis tendon of the adjacent finger and suturing it to the distal end of the injured flexor profundus tendon; that is, two adjacent fingers are thus supplied with the profundus tendons alone, since the one sublimis tendon is converted by the operation into a deep flexor. The steps of the operation, which I always perform under local anesthesia, are as follows:

(For the purpose of illustration I will assume that both flexor tendons of the middle finger have been severed, and that a mass of scar tissue the size of a 50 cent piece occupies the midpalmar region and is densely adherent to the bone.)

The first incision runs from a point 2 inches distal to the annular ligament in a line with the tendons of the index finger to the proximal phalanx of this finger (Fig. 1). The incision is deepened through the palmar fascia, until the sublimis tendon is visible throughout its course.

The second incision is made distal to the scar tissue over the severed flexor tendons of the middle finger; it is about 1½ inches long, slightly bowed, with the convexity toward the little finger, and extends to the base of the middle finger.

The flexor tendons of the middle finger are then dissected free from the adhesions which usually bind them down. The operator must pay particular attention to this step, since adhesive bands frequently extend well into the sheath. When properly freed, gentle traction on the flexor profundus tendon should produce flexion of the finger.

A subcutaneous channel is then bored with a dressing forceps from the proximal end of the first incision to the second incision. This step of the operation is usually rather difficult, owing to the presence of scar

tissue. It is better to give the channel a slightly curved direction, since a straight course would necessitate boring between scar tissue and bone; the slight curve tends to be obliterated by the action of the tendon as soon as active motion has begun, whereas boring between scar tissue and bone tends to produce adhesions which nullify the effect of the operation. When a channel sufficiently roomy to accommodate the tendon has been bored, the sublimis tendon of the index finger is divided at the metacarpophalangeal joint, dissected away from the deep tendon, and drawn through the subcutaneous channel as rapidly as possible so as to avoid drying.

The final step of the operation consists in suturing it to the flexor profundus tendon of the third finger. I have applied this suture in two ways. When both tendons are well developed and can be made to overlap for three-fourths of an inch, I make a buttonhole opening in the tendon of the injured finger about a quarter of an inch from its severed end, and thread the sublimis tendon through this opening (Fig. 2); the two tendons are held together by means of from four to six fine interrupted chromic gut sutures so placed as to flatten the tendons against one another. To promote firm fixation of the tendons to another, it is advisable to traumatize slightly the surfaces of the tendons which are brought into apposition.

Another method of tendon suture is indicated if the tendons are friable or cannot be made to overlap. Under these conditions I have found that the first suture method did not give sufficient security. Therefore, after suturing the tendons by means of the Lange stitch (Fig. 3 *A*), I reinforce this suture by transplanting a piece of fascia from the calf. The technic of this procedure when practiced occasions no difficulty. A 3 inch incision is made a hand's breadth

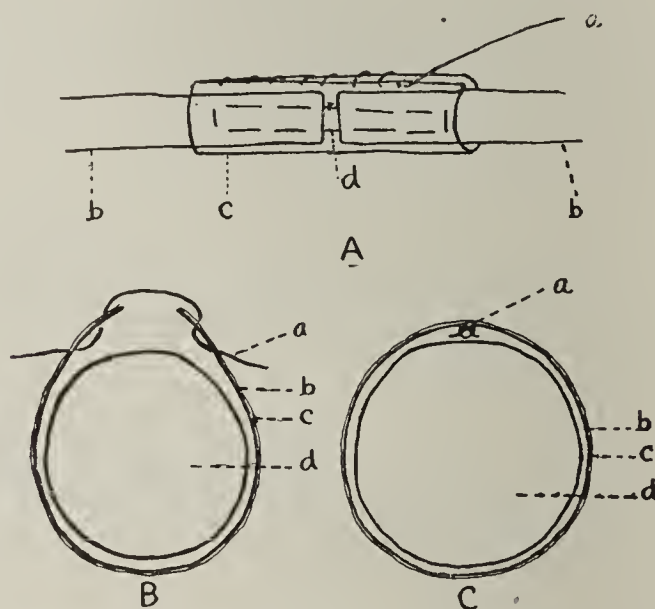


Fig. 3.—Suture of tendon to tendon when overlapping is impossible: *A*, longitudinal diagrammatic sketch showing the Lembert suture in process of application which closes the tube of fascia overlapping the tendons; *a*, Lembert suture; *b*, tendon; *c*, transplanted fascia; *d*, Lange suture. *B*, diagrammatic cross-section of the tendon and transplanted fascia indicating the manner of inserting the Lembert suture; *a*, suture; *b*, fascia (superficial surface turned toward the tendon); *c*, fascia (deep surface turned outward); *d*, tendon. *C*, diagrammatic cross-section of the tendon and transplanted fascia after the Lembert stitch has been drawn taut. Note that the smooth deep surface of the fascia adapted to the gliding function is turned outward: *a*, suture; *b*, fascia (superficial surface); *c*, fascia (deep surface); *d*, tendon.

above the annular ligament of the ankle and a strip of fascia 2 inches long and 1 inch wide is dissected away from the muscles. Particular care is taken to handle only the corners of the fascia, so as not to injure the loose fatty tissue, which at this point covers the deep surface of the fascia and is of particular importance in facilitating the normal gliding mechan-

ism of the muscles and tendons. At each corner of the fascial flap a suture is taken to permit more ready handling.

The assistant grasps two of these sutures, the operator the other two, and in this way the fascia is transferred from the calf to the hand. The sutured tendons are then lifted out of their bed so as to pass two of these fixation sutures beneath them. By means of a continuous Lembert suture the fascia is made to form a tube closely surrounding the sutured tendons



Fig. 4.—The incisions for transplantation of the index finger tendon of the extensor communis digitorum to replace the severed extensor of the ring finger.

(Fig. 3, *A*, *B* and *C*). The fascia is so placed as to turn its glistening deep surface outward; if the Lembert suture has been properly inserted, the point of union of the two tendons is completely hidden by a smooth strong envelop well adapted to a gliding function.

The results obtained by either of these tendon sutures are satisfactory. The first method is, of course, the one of choice on account of its simplicity. The operation is concluded by applying continuous skin sutures.

A similar operation can be performed for the divided extensor tendon, provided the tendon of the extensor indicis proprius has not been injured. It consists in transplanting the tendon of the extensor communis digitorum, which runs to the index finger, to replace the injured tendon. The extensor indicis proprius suffices, I have found, to extend the index finger. A 4 inch incision (Fig. 4) lays bare the index finger tendon of the extensor communis digitorum. A second incision over the severed extensor tendon frees it from the scar tissue which usually holds it adherent to the bone. By means of a subcutaneous channel the substituting index tendon is transferred to its new position and sutured to the injured tendon by one of the methods previously described.

In performing the tendon suture the rule governing the normal tension of tendons must be respected. Research studies² on animals have shown that when under narcosis the origin of the muscle and the point of insertion of its tendon are approximated, the tension is zero. In other words, in the case of the flexors of the fingers, when the fingers are passively flexed while the muscle is at rest, the tendons of the flexor muscles show no appreciable tension. Consequently, when the operation is being performed, the tendon should be sutured in such a way as to give just this normal degree of tension.

AFTER-TREATMENT

In the after-treatment, the most important question is when to begin active exercise of the transplanted tendon. The animal experiments referred to in my previous articles were of comparatively little assistance in deciding the question, since in them the tendon was attached directly to bone, whereas in these operations the tendon was sutured to tendon. By beginning exercise too soon, one ran the risk of tearing the tendons apart before firm union had taken place. By postponing active exercise too long, one permitted dense adhesions to form. In my first case, I began exercise too soon, namely, one week after the operation. The tendons tore apart, and a secondary operation had to be performed. In the second case, in which I waited three weeks, the final result was disappointing because adhesions prevented a free gliding of the tendon. In subsequent cases, I immobilized the tendons for two weeks before permitting function. The best exercises are the voluntary contractions of the patient's muscles. In some cases, when it was difficult to secure the patient's cooperation, I employed a galvanic current to secure the necessary muscular contraction. As soon as about 20 degrees of motion had been secured, the tendon was strengthened by simple resistance exercises. For at least four weeks following the operation, the fingers and hand should be protected by a splint that holds the operated finger in such a way as to remove all tension from the suture. Failure to observe this rule can prove disastrous, as was shown in the case of



Fig. 5.—The degree of flexion secured by transferring the flexor sublimis tendon of the index finger for the severed flexor tendons of the middle finger; upper, fingers extended; lower, fingers flexed.

one particularly ambitious patient who, contrary to orders, removed the splint while working in the garden two weeks after the operation. He happened to fall on the outstretched finger, and the suture gave way.

The outcome of the operations were satisfactory to my patients although not entirely satisfactory to me. Primary union occurred in all but one case, in spite of

2. Mayer, Leo: Surg., Gynec. and Obst., 1916, 22, 196.

the presence of shell fragments, and extensive scar formation. A complete restoration of function, however, I could not secure. In the most successful cases about 75 per cent. of the normal range of motion returned (Figs. 5 and 6). With this degree of motion my patients were able to use the finger for typewriting, holding pen and pencil, for light farm work, even, as in one case, for playing the piano. As a rule, the operations for the extensor tendon gave better results than that for the flexor. Sacrificing the flexor sublimis tendon produced distinct weakness for six or eight weeks after the operation; practically the normal strength returned when adequate exercise was instituted. The sacrifice of the extensor tendon of the index finger was scarcely noticed by the patients.

As stated before, these tendon operations on the hand are not ideal physiologic procedures. They represent an attempt to improve a desperate condition by a conserving method instead of ruthlessly sacrificing the entire finger. In the eyes of the patient the discomfort of the operation was fully repaid by the partial restoration of function. To the surgeon interested in tendon work these cases should form an incentive to further study, and to the perfection of a technic that will give



Fig. 6.—The extension made possible by transfer of the extensor tendon of the index finger (*extensor communis digitorum*) after complete division of the extensors of the ring finger. (The same hand is shown in Figure 4.)

a more complete restoration of the normal tendon motion than I have been able to secure in this first series of operations.

41 West Eighty-Third Street.

War Activities for Antituberculosis Associations.—The National Association for the Study and Prevention of Tuberculosis has made suggestions for a course of action to be followed by state, county and community tuberculosis associations with reference to men drafted for the Army. These suggestions were formulated as the result of conferences with Army officers, public health officials, Y. M. C. A. and other organizations engaged in war work. They have been found practicable in four of the cantonments where action has been taken to carry them out. They include the procuring of a record of men rejected for service in the Army because of tuberculosis or suspected tuberculosis; those rejected by local examining boards, rejected applicants for enlistment in the United States Marine Corps and those rejected by regimental surgeons in the camps and cantonments; follow-up work for all cases discovered, which would include the work of visiting nurses, who should be asked to make a survey of families of rejected conscripts; educational work for soldiers which would include the distribution of pamphlets and folders, lectures and talks in connection with the entertainments provided by the Y. M. C. A., the Knights of Columbus, etc., which would include motion picture reels, medical talks, etc.

CARDIOVASCULAR LESIONS AND TUBERCULOSIS

METHODS AND RESULTS OF EXAMINATIONS BY THE
CARDIOVASCULAR AND TUBERCULOSIS COMMISSION
AT THE SECOND PLATTSBURG TRAINING
CAMP FOR RESERVE OFFICERS

ALBERT P. FRANCINE, M.D., PHILADELPHIA
Captain, M. R. C., U. S. Army
CAMP GORDON, ATLANTA, GA.

J. WOODS PRICE, M.D.
First Lieutenant, M. R. C., U. S. Army
AND

FRANCIS B. TRUDEAU, M.D.
First Lieutenant, C. S., U. S. Army
SARANAC LAKE, N. Y.

On account of the military roster, we were assigned for examination one company a day, averaging 135 men. Each member of the board examined his third of this number, and any men found with signs in heart or lungs deviating from the normal were held up for combined study by the board.

In beginning our work we had no very definite plan to follow, except that our instructions, as to what would disqualify from active service or require a recommendation for special service, were plainly set forth in the very definite and excellent circulars, Nos. 20 (for tuberculosis) and 21 (for cardiovascular conditions) of the War Department, Surgeon-General's Office.

METHODS

The men in each company were assigned to us in groups of ninety in the afternoon, reporting at 1:30 p. m., and the remaining forty or forty-five men next morning, reporting at 10 a. m. The holdups from the previous day, of whom there were usually from five to ten, were reexamined by the board between 8:30 and 10 a. m. daily.

These groups reported to a sergeant in a large locker room and dormitory adjoining the three small examining rooms (bedrooms), and he entered on the form below their name, age, company and regiment. Then each examiner took a group of five men to his room and proceeded with their examination. Each examiner had a medical orderly who acted as clerk and filled in the accompanying form from dictation.

After some experimenting, we finally fixed on the following routine:

1. The five candidates were lined up and their pulses taken, standing and before undressing.
2. Then they stripped to the waist, and each man was inspected for abnormal pulsations, the character and location of the maximum heart impulse was determined, and the boundaries of the heart were outlined by percussion.
3. Then the whole five were made to exercise for about half a minute by marking double time and at the same time driving their arms forward and back, and at the command of "Halt" the examiner went down the line auscultating with care each man's heart. If when he reached a man his heart had already quieted down, he was made to exercise again. But with five men, the amount of exercise indicated was usually sufficient to keep the last man's heart well accelerated by the time he was reached. It was for this reason that we finally fixed on a group of five men and because better order and quiet could be maintained, than with a larger number, and it was also easier for the orderly at the desk.
4. Following the examination of the heart, the examiner proceeded with that of the lungs, confining this to thorough auscultation after cough and on deep inspiration. When any

deviation from the normal was found in heart or lungs, the examiner did not attempt to study the condition thoroughly, but told the man to report at 8:30 next morning for study by the combined board.

5. Each man was told to dress as the examination of his lungs was completed, and his pulse was again recorded before he left the room.

FORM FOR RECORD OF EXAMINATION

| | | | |
|--------------------------------|------|------------------------------|-----------|
| Name: | Age: | Company: | Regiment: |
| Pulse rate, dressed, standing: | | Abnormal pulsations: | |
| Maximum heart impulse: | | Thrills: | |
| Cardiac boundaries, left: | | Right: | |
| Accentuations: | | Arrhythmias: | |
| Pulse rate, after dressing: | | After resting, if above 112: | |
| Lungs: | | | |

After a little experience, we found that it took about twenty minutes to examine satisfactorily these groups of five men. This allowance of time can, of course, be cut down to twelve or fifteen minutes by not counting fully and not recording the pulse, except in those cases in which it is palpably rapid, or very slow. But we feel that in this work, which is exacting and in which one must remain standing and alert, the faster work is not compatible with the concentration and thoroughness which is its fundamental purpose. It also spoils the interest of the work, and it becomes a mere grind, for the work is interesting if done without rushing, and in the large number of men examined one may expect at any time to come on an interesting lesion, as will appear from the subjoined report. Hence, we do not feel that a man can do this work right, day in and day out, and work more than six hours a day.

At times we did more than this. We had to complete the examination of a company of coast artillery, which had been suddenly ordered away, 180 men in all, in one morning; and then went on with our ninety men in the afternoon, 270 men that day, or ninety men for each examiner. But it would have been impossible to have kept this pace up, nor did we in the case of the artillery men attempt to record the pulses or even to count them, but quickly satisfied ourselves that the rate was not abnormally rapid or the reverse. We think the strain and hurry showed in another way, for whereas we held up, for further study, as a rule, from five to ten men out of every company of 135 or 140 men, out of this battery of 180 men, we held up only two men at the end of the morning's work. Our examination, therefore, was probably not so thorough.

Again, a certain group of seven of the companies could be assigned to us only in the afternoons, so that their examination had to be completed then, averaging forty-five men for each examiner, with no work at all in the mornings. This we found an unsatisfactory arrangement.

From our experience, therefore, we would conclude that a full day for an examiner doing this work in a routine manner and thoroughly would be forty-five men in the afternoon and twenty men in the forenoon. This would not include the holdups, who would report to the board for study before the individual examinations began. In other words, about sixty-five men a day for each examiner and the holdups to be studied by the board is a full day's work. An outside limit would be forty-five men in the afternoon and thirty in the forenoon, or seventy-five new men a day for each examiner.

In regard to the holdups, it is very important that any lesions in the heart and lungs, even though not sufficient to disqualify, be carefully noted and reported to the Surgeon-General, in view of a possible future claim for pension for disability in line of duty.

While the foregoing does not seem numerically a great deal, or the hours very long, yet when one comes to standing on one's feet for six hours and ausculting hearts and lungs continuously day in and day out, and doing it with attentiveness, for one must neither lag nor grow inattentive, it makes a very adequate and even exacting working day.

RECOMMENDATIONS

We feel that:

1. Six hours a day is a full day for this work if done as a routine.
2. The new men should be examined in groups of five by each examiner working separately.
3. It should not take more than twenty nor less than fifteen minutes to complete the examination of these groups of five men for cardiovascular lesions and tuberculosis.
4. Each examiner should examine not less than sixty nor more than seventy-five new men a day.
5. The holdups from the previous day should report next morning for reexamination by the entire board, if the board is a small one, and this should constitute the first work of the day. Of course the holdups from each morning and afternoon period can be reexamined by the board immediately after the individual examinations on the same day. This has the advantage of not requiring the return of the holdups the next morning; it has the disadvantage of the examiners' not being fresh at the end of the afternoon's work, and there is the disadvantage of the candidate's not being fresh, as he is after a night's rest.
6. When the board is a large one, for instance, fifteen or twenty medical officers, the president of the board should select two other members to act with him as a clearing committee to whom all the holdups should be referred for final disposition. This insures uniformity of judgment and good order. The whole time of this committee will be occupied in keeping up with the holdups of the ten or more officers who are doing the routine examinations, and in the clerical work involved. The holdups of the other examiners for each day should report the following day to the clearing committee, divided, if numerous, into two groups, one in the morning and one in the afternoon.
7. The assignment of the men to the examiners should not be confined to company divisions because time is thereby lost all around; but assignment should be made by fixed numerical groups, the guiding factor being the quota stated above for each examiner. Thus three examiners, who are also doing the holdups, should be assigned sixty men in the morning, and 135 men in the afternoon, a total of 195 men, or in round numbers 200 men a day, as the extra five men could readily be added to the morning's quota of sixty. Or if the men must be assigned by companies, then the number of examiners should be adjusted to these numerical groups. In our case, with four examiners working, we could have examined two companies daily, whereas three examiners did not have quite enough to do taking one company a day, and yet could not possibly have taken two, in addition to the holdups. Where the companies number 250 men, four examiners should be assigned for each company, or according to this ratio. Thus, sixteen examiners should complete 1,000 men a day, but this board should total nineteen officers, three for the holdups.
8. There should be out of a group of 200 men, as a rule, from five to fifteen holdups daily (in the class of men in camps for reserve officers) to be studied by the board next morning.
9. The holding up of a man in this way does not in any sense mean his disqualification, and this should be explained

to him, but is simply in order that his condition may be adequately studied, and a detailed report noted for transmission to the Surgeon-General at the final completion of the examinations.

RESULTS

The holdups resolved themselves into two groups, those that had to be written up, and those that could be readily passed. Of the latter the great majority had rapid pulses. There is a wide variation of rate according to the time of day, and the character of the military exercises or drills to which the men have been subjected previous to the examinations. In the morning, the pulses as a rule ran in slow rhythm, or when the men had been doing map making or signal corps work. These averaged between 64 and 74 standing, and between 74 and 84 following the exercise test (after dressing). But in the afternoon, after a hurried or heavy lunch or a morning's hard drill, we found the majority varying between 84 and 100, and many above 100, even 120, before exercise test. The latter offered some difficulty, because even after sitting or lying down while the examiner continued with his work, many of them could with difficulty be counted below 100 (a persistent rate of 100 or above disqualifies). Accordingly, we were forced to send quite a number to the hospital for hourly observation of the pulse before we could let them go. Following this method in the more thorough search for an etiologic factor, we disqualified two candidates (Cases 1 and 3).

There is also to be taken into consideration the factor of nervousness as a cause for rapidity of pulse. Generally speaking, this played a minor rôle with the men we examined, although they were in many instances fearful of the result of the examination on account of their earnest desire to serve. There was very little effect of nervousness noted in the men who came in the morning; and as stated above, there were the other more obvious factors for acceleration of pulse rate in the men who came in the afternoon. Usually, when nervousness was a factor, a little rest brought the pulse down, or it was down when the candidate was reexamined next morning. This was true in every instance but one (Case 16), and this candidate was finally passed for active service in the absence of definite cause.

We discovered also a number of murmurs, systolic in time, in the pulmonary area and in the third and fourth interspaces to the left of the sternum, the area of auscultatory romance of Balfour. There were sixteen out of 3,134 candidates, or 0.51 per cent. These murmurs are striking, and their pathogenesis an interesting academic question; but clinically, in the absence of enlargement of the heart and accentuations, and with good response to the exercise test, they are not of particular significance, though they should be reported. Case 14 is a good example. They are not infrequent in long chested types, but occur also in big, well formed thoraces, and are not uncommon in early adult life.

There were also a number of men who developed after exercise a functional systolic murmur at the apex, transmitted into the axilla. Their hearts were, however, organically normal, and their response to exercise and pulse rate good. These were passed, and numbered fifteen out of 3,134 cases, or 0.47 per cent. Case 12 is an example.

We found also a number of cases in which the maximum impulse of the heart was in the sixth interspace when standing, but frequently in the fifth when

recumbent, and inside the nipple line and normal in character, without enlargement of the heart. Of these there were passed for active service, but reported, seventeen out of 3,134 cases, or 0.54 per cent. Case 15 is illustrative.

There was one very interesting case of total bradycardia (Case 17). There was one case of idiopathic dextrocardia; and there were several cases of moderate hypertrophy in athletes, without valvular lesion.

Another large group was temporarily held up on account of "colds" and râles in the chest. Acute bronchitis was quite prevalent, indeed, almost universal in the earlier period of the camp, though not all showed râles. The three members of the commission took an active, resonating and synchronous part in this general infection. The differentiation, however, between bronchitic râles and tuberculosis offers no great difficulty, and a little study cleared up this group of holdups.

There were the usual findings of atelectatic râles at the apexes, and the so-called marginal râles at the bases in front; but in these cases the men were not as a rule even held up, unless the râles were unduly persistent.

In regard to the organic cardiovascular lesions found, and the causes for disqualification, or recommendation for special service, and in regard to the similar regulations as applied to tuberculosis, the report of the individual cases is the best exemplar. We feel that the practitioner of medicine or any one interested in this subject would do well to familiarize himself with circulars of the War Department, Surgeon-General's Office, Nos. 20 and 21, which are brief, explicit and illuminating.

CARDIOVASCULAR DISEASES

TABLE 1.—RESULTS OF CARDIOVASCULAR EXAMINATIONS OF CANDIDATES

| | Number | Per Cent. |
|--|--------|-----------|
| 1. Candidates in reserve officers' training camp examined | 3,134 | ..... |
| 2. Accepted | 3,124 | 99.06 |
| 3. Disqualified because of cardiovascular lesions..... | 4 | 0.127 |
| 4. Recommended for special service but allowed to continue course at training camp | 4 | 0.127 |
| 5. Passed for active service, but with functional lesions reported | 51 | 1.62 |
| 6. Found with cardiovascular (organic) lesions (3 and 4 above) | 8 | 0.255 |

The following four candidates were disqualified for active service and recommended for discharge:

CASE 1.—Physical Findings.—S. G. E., aged 23, was remanded to the hospital for study of the pulse rate, where during six days' observation it was with few exceptions persistently above 100, averaging over 120 per minute. There was bilateral enlargement (moderate) of the thyroid, with a fine tremor of the head. There was no marked tremor in the hands or the fingers on extension. The heart was normal in size and there were no murmurs. There was little dyspnea after the exercise test, but the pulse rate was excessively rapid and there was palpitation of the heart.

Diagnosis.—Hyperthyroidism.

The candidate was disqualified for active service.

CASE 2.—Physical Findings.—G. H. B., aged 36, an artist, could not keep up with the work. Double time caused serious dyspnea and faintness. He could control himself only by sitting down and holding his head between his knees. He had a chronic cough. He was poorly developed and of slight physique. The heart was overacting and very irritable. The pulse was regular but rapid. The heart boundaries were normal. The man developed marked dyspnea after exercise. Breathing was very labored. The facies was anxious.

Diagnosis.—Myocardial insufficiency.

The candidate was disqualified for active service.

CASE 3.—Physical Findings.—F. L. M., aged 29, was of nervous type. After five days in the hospital the pulse remained persistently over 100, remaining between 88 (once), 112, 128 and 132, most frequently 128. He stated that he stood the work well. The heart apparently was normal. There was no evidence of hyperthyroidism or tuberculosis.

Diagnosis.—Persistent tachycardia.

The candidate was disqualified for active service.

CASE 4.—*Physical Findings*.—E. W., aged 47, had an area of definite dulness to the right of the arch in the second and third interspaces, with expansile pulsation, unequal pulses and some arteriosclerosis. There was no tracheal tug. The heart was hypertrophied and dilated, with the left boundary two finger breadths outside the nipple line, with diffuse and heaving impulse. There were no murmurs, but the sounds lacked muscle tone. There was passive congestion of both bases. In the urine, red and white blood cells and albumin were present.

Diagnosis.—Aneurysm of arch; dilatation of heart with failing compensation.

The candidate was disqualified for active service.

The following five candidates were recommended for special service, though it should be understood that as Plattsburg was a training camp for line officers, a recommendation for special service was, as a rule, tantamount to disqualification for active service, to the extent at least that the candidate in question could not, even if he completed his training, receive a commission as a line officer. As a matter of fact, however, there might be occasional demands for special service. For instance, the commanding officer was asked to nominate a small group of men for balloon service in connection with liaison work; and through the kindness of the camp surgeon, Candidate 5 was allowed to take this service. He was extremely anxious to do something, and though at first disqualified for active service, he never left camp.

CASE 5.—*Physical Findings*.—M. A. L., aged 35, had been a professional singer and later a musical manager. He was quite fat, and nervous and anemic. The heart was much enlarged to the left, the boundary being two finger breadths outside the nipple line, with the maximum impulse diffuse and heaving. There was no murmur nor accentuations. Response to exercise was poor. He showed considerable dyspnea after the exercise test. The pulse was very rapid. The urine and the Wassermann test were negative.

Diagnosis.—Hypertrophy and dilatation of heart.

The candidate was disqualified for active service and recommended for special service.

CASE 6.—*Physical Findings*.—R. P. C., age 30, big chested and of athletic type, had been through the last camp and stood the work excellently. The left boundary of the heart was one finger's breadth outside the nipple line with the impulse under the nipple. It was forcible but not heaving. There was a loud systolic murmur heard at the apex and transmitted to the axilla. There was accentuation of the second aortic sound. The man had had acute articular rheumatism in 1902.

Diagnosis.—Mitral regurgitation.

The candidate was recommended for special service, and allowed to continue training at Plattsburg.

CASE 7.—*Physical Findings*.—J. W. M., aged 22, gave a history of an acute heart attack following a 2 mile race from which he was in bed three months with fever and rheumatic pains. This was seven years ago. He was of a big athletic type, and had been a track man at college. There was a loud systolic murmur, heard at the apex and transmitted to the axilla and back. The heart was not enlarged. There was no accentuation of second sounds. Response to exercise and pulse rate was good.

Diagnosis.—Mitral regurgitation without enlargement of heart, and well compensated.

The candidate was recommended for special service, and allowed to complete training at Plattsburg. He was subsequently passed for active service by Major Janeway, and so is not included in figures for candidates recommended for special service.

CASE 8.—*Physical Findings*.—L. R. B., aged 26, had a distinct pre-systolic murmur with a very sharp first sound over the maximum heart impulse, with the right boundary one finger's breadth to the right of the sternum. He had slight dyspnea after the exercise test, but his general condition was good; he was big and powerful, and had played on a varsity football team.

Diagnosis.—Mitral stenosis.

The candidate was recommended for special service, and allowed to complete training at Plattsburg.

CASE 9.—*Physical Findings*.—C. A. W., aged 24, had an enlarged heart. The left border was one finger's breadth outside the nipple line. The impulse was under the nipple, forcible but not heaving. There was a systolic murmur in the third interspace to the left, transmitted upward and heard at both the pulmonic and the aortic areas, less at the aortic. Response to exercise was good. The pulse rate was within normal limits.

Diagnosis.—Aortic stenosis.

The candidate was recommended for special service, and allowed to complete training at Plattsburg.

In regard to the candidates showing functional or accidental murmurs, or who showed nonsignificant deviations from the normal, of whom there were fifty-one out of 3,134, or 1.62 per cent., the following case reports are quoted as illustrative. These candidates were all passed for active service following the rulings laid down in Circular 21, War Department, Surgeon-General's Office.

CASE 10.—*Physical Findings*.—W. H. G., aged 26, had a malformed chest resulting from a fall from a bicycle in childhood. The heart boundaries were normal, except that the maximum impulse was in the sixth interspace standing, returning to the fifth interspace when prone. There was a soft systolic whiff at the apex, localized to the bell of the stethoscope, heard under all conditions except at full inspiration. There were no accentuations. Response to exercise and pulse rate was normal.

Diagnosis.—Accidental murmur. Motile heart.

The candidate was passed for active service.

CASE 11.—*Physical Findings*.—J. W. B., aged 28, had a long chest and a motile heart. The boundaries of the heart were normal, but the maximum impulse was in the sixth interspace, standing, and the fifth interspace, prone. It was normal in character. When the candidate was standing, without exercise, no murmur was heard. After exercise, a fairly loud systolic murmur developed which was heard at the apex, in the axilla and in the back. This was heard also in the third and fourth interspaces to the left of the sternum, both on full inspiration and on expiration. Response to exercise was very good, and the pulse rate was normal.

Diagnosis.—Functional mitral systolic murmur.

The candidate was passed for active service.

CASE 12.—*Physical Findings*.—C. S., aged 30, had a systolic murmur at the apex after exercise and transmitted into the axilla. The heart was normal in size. The pulse rate and response to exercise were normal. The murmur was not heard when the man was quiet. There were no accentuations.

Diagnosis.—Functional mitral systolic murmur at apex.

The candidate was passed for active service.

Out of 3,134 candidates, there were fifteen cases, or 0.47 per cent., showing functional systolic murmurs at the apex.

CASE 13.—*Physical Findings*.—W. W. C., aged 29, was tall, very thin, flat and long chested, with a marked funnel shaped depression. The heart was normal in size and action. The apex beat was normal and not heaving. There was heard a systolic murmur, loudest in the third and fourth interspaces left of the sternum and in the pulmonary area, but also heard over the aortic cartilage, and also heard very faintly if at all in the vessels of the neck. After the exercise test this murmur became loud and was not altered by posture, and was heard best on full expiration, and faintly on full inspiration. Response to exercise was very good. The pulse rate and the blood pressure were normal, and the urine was negative.

Diagnosis.—Accidental murmur, probably cardiorespiratory.

The candidate was passed for active service.

CASE 14.—*Physical Findings*.—W. W. B., aged 25, when quiet heart sounds were apparently normal, as were the boundaries, except that the maximum impulse was in the sixth interspace standing, and the fifth interspace reclining. Following exercise there was heard a systolic murmur best in the third interspace to the left of the sternum, transmitted upward and heard both over the pulmonary and the aortic regions. It was very faintly heard on full inspiration. There was good response to exercise, and the pulse rate was normal.

Diagnosis.—Cardiorespiratory murmur. Motile heart.

The candidate was passed for active service.

Out of 3,134 candidates, there were sixteen, or 0.51 per cent., showing cardiorespiratory murmur.

CASE 15.—*Physical Findings*.—G. T. R., aged 22, showed the maximum impulse in the sixth interspace, on standing. It was normal in character. Response to exercise, and the pulse rate were normal. The heart was normal in other respects. The blood pressure was normal.

Diagnosis.—Motile heart (ptosis).

The candidate was passed for active service.

Out of 3,134 candidates, there were seventeen cases, or 0.54 per cent., in which the maximum impulse of the heart was in the sixth interspace, with the heart normal.

CASE 16.—*Physical Findings*.—F. H. D., aged 26, was well developed and nourished, but of nervous type. He was in the hospital four days for study of the pulse, which at times was below 100, but was often 120 or above while standing. The pulse leaped rapidly as soon as, or soon after, the radial artery was palpated. The left boundary of the heart was in the nipple line. The maximum impulse was normal in character. No murmur, no exophthalmos and no enlargement of the thyroid were observed. In the fingers extended there was a fine but not exaggerated tremor.

Diagnosis.—Paroxysmal tachycardia, due to nervousness.

The candidate was passed for active service.

CASE 17.—*Physical Findings*.—J. O. P., aged 23, had a pulse rate on standing of from 36 to 40, on three separate examinations one week apart. The ventricular impulse was conveyed regularly to the radials. The heart was normal in size; there were no murmurs nor accentuations. After exercise there developed a slight arrhythmia, which consisted in occasional interpolated extrasystoles. There were no pulsations in the veins of the neck, and no evidence of sets of waves in the jugular for each pulse beat. Except for the arrhythmia, there was good response to exercise. The candidate had been an athlete, playing on the Princeton varsity football team four years without being substituted for, and being chosen for the All America eleven. There was no history of syncope attacks, and he went through the last camp well and was not held up for physical disability. He was big and powerful, and

appeared in splendid condition. The urine and the Wassermann test were negative.

Diagnosis.—Total bradycardia.

The candidate was passed for active service.

This interesting case gave the board some concern, because it strongly suggested heart block, and heart block disqualifies. It even disqualifies in the French army, where of course the physical standards for acceptance are reduced to rock bottom. We therefore consulted Major Theodore C. Janeway of the Surgeon-General's staff, under whose supervision the board was acting, and after advice from him and further study of this candidate we felt that his condition was one of total bradycardia and not heart block, and so passed him for active service.

The organic cardiovascular lesions found in the examination of 3,134 candidates were:

- Hyperthyroidism, Case 1.
- Myocardial insufficiency, Case 2.
- Persistent tachycardia, Case 3.
- Aneurysm of arch, Case 4.
- Hypertrophy and dilatation of heart, Case 5.
- Mitral regurgitation, Cases 6 and 7.
- Mitral stenosis, Case 8.
- Aortic stenosis, Case 9.

The principal accidental or functional conditions found, not disqualifying, were:

- Cardiorespiratory murmurs, in sixteen cases, or 0.51 per cent.
- Functional systolic apical murmurs in fifteen cases, or 0.47 per cent.
- Apex of heart in sixth interspace, increased motility or so-called ptosis of heart, in seventeen cases, or 0.54 per cent.
- Many rapid pulses, and one case of apparent paroxysmal tachycardia due to nervousness.
- A very interesting case of total bradycardia.
- Several hypertrophied hearts in athletes, etc.

It is interesting to compare with the statistical scheme given in Table 1, the corresponding results obtained by the board in examining 584 enlisted men of the Regular Army, who were stationed at Plattsburg Barracks. These included 421 men of the Sixteenth U. S. Field Artillery, ninety-three men of Troop I, Second Cavalry, and seventy men of the Army Medical Corps (Table 2).

TABLE 2.—RESULTS OF CARDIOVASCULAR EXAMINATIONS OF REGULARS

| | Number | Per Cent. |
|---|--------|-----------|
| Examined | 584 | ..... |
| Accepted | 582 | 99.65 |
| Disqualified for cardiovascular lesions | 1 | 0.17 |
| Recommended for special service | 1 | 0.17 |
| Found with organic cardiovascular lesions | 2 | 0.34 |

Thus the percentage of organic cardiovascular lesions among the candidates for reserve officers was 0.255, while among the enlisted men of the Regular Army it was 0.34. But, as we shall see later, the percentage of tuberculosis among the regulars was much higher than among the candidates.

TUBERCULOSIS

TABLE 3.—RESULTS OF TUBERCULOSIS EXAMINATIONS OF CANDIDATES

| | Number | Per Cent. |
|---|--------|-----------|
| 1. Candidates in reserve officers' training camp examined | 3,134 | ..... |
| 2. Accepted | 3,121 | 99.58 |
| 3. Disqualified because of tuberculosis | 8 | 0.255 |
| 4. Recommended for special service, but allowed to continue course at training camp | 2 | 0.063 |
| 5. Passed for active service but with healed lesion reported | 3 | 0.095 |
| 6. Found to be tuberculous | 13 | 0.414 |

The following eight candidates were disqualified for active service and recommended for discharge:

CASE 18.—*Physical Findings.*—W. D. C., aged 22, had many fine râles on cough to the third rib and the fifth vertebral spine on the right. Note was impaired and breathing was bronchovesicular over this area. Roentgenoscopy¹ revealed a definite lesion at the right apex extending

to the third rib and fifth vertebral spine, involving the parenchyma and the root of the lung.

Diagnosis.—Old chronic pulmonary tuberculosis.

The candidate was disqualified for active service.

CASE 19.—*Physical Findings.*—J. M. W., aged 24, had fine dry râles from the apex to the fourth rib on the left, and about the same on the right, heard posteriorly to the fifth vertebral spine. Roentgenoscopy revealed, on the right, scattered parenchymatous infiltration to the second rib and the fifth vertebral spine. Many fibrous strands extended from the root toward the axilla. Through the lower two thirds were a few isolated, scattered tubercles. On the left, scattered through the upper half of the lung, were numerous small, calcified tubercles. These were more conglomerate in the apex, and were characteristic of a parenchymatous infiltration to the second rib and the fifth vertebral spine. Many fibrous strands extended from the root toward the axilla.

Diagnosis.—Old chronic pulmonary tuberculosis.

The candidate was disqualified for active service.

CASE 20.—*Physical Findings.*—J. B. G., aged 27, had fine dry râles on cough at the right apex extending to the third rib in front and to the fifth vertebral spine posteriorly, and also a few at the top of the left apex. Note was impaired on the right, and breathing was bronchovesicular. Definite lesion as indicated on the right was confirmed by roentgenoscopy.

Diagnosis.—Old chronic pulmonary tuberculosis.

The candidate was disqualified for active service.

CASE 21.—*Physical Findings.*—A. L. B., aged 26, had fine dry râles on cough at the right apex to the second rib and the fifth vertebral spine. Note was impaired and breathing was bronchovesicular. A tuberculous lesion involving this area was confirmed by roentgenoscopy.

Diagnosis.—Old chronic pulmonary tuberculosis.

The candidate was disqualified for active service.

CASE 22.—*Physical Findings.*—M. C. L., aged 27, had fine dry râles on cough in left apex to the third rib and the fourth vertebral spine; and in the right apex, above the clavicle. Note was impaired and breathing was bronchovesicular over these areas. Tuberculous infiltration of the areas outlined on both sides was confirmed by roentgenoscopy.

Diagnosis.—Old chronic pulmonary tuberculosis.

The candidate was disqualified for active service.

CASE 23.—*Physical Findings.*—E. C. F., aged 30, had fine dry râles on cough at both apexes, with impaired note and bronchovesicular breathing. Râles on the left extended to the third rib and the fifth vertebral spine; on right, to the second rib and the fourth vertebral spine. Roentgenoscopy confirmed these findings.

Diagnosis.—Old chronic pulmonary tuberculosis.

The candidate was disqualified for active service.

CASE 24.—*Physical Findings.*—S. F., aged 36, had fine dry râles at both apexes to the third rib and the sixth vertebral spine. Note was impaired and breathing was bronchovesicular. Roentgenoscopy confirmed tuberculous infiltration in these areas.

Diagnosis.—Old chronic pulmonary tuberculosis.

The candidate was disqualified for active service.

CASE 25.—*Physical Findings.*—A. F. B., aged 34, had an area of unresolved pneumonia at the left lower lobe posteriorly, about the size and (apparent) thickness of a man's hand; also a small area of consolidation in the right base posteriorly. Sticky râles, pectoriloquy and bronchial breathing were present over these areas, with friction in the left axilla. Roentgenoscopy confirmed findings, and the complement fixation test was positive for tuberculosis. The Wassermann test was negative. There were no symptoms, and the general condition seemed good. The candidate spoke German and was a reporter on the German front earlier in the war. He was an available man for intelligence service.

Diagnosis.—Unresolved pneumonia due to tuberculosis.

The candidate was disqualified for active service at the Plattsburg training camp, but recommended for special service after cure.

In the following two cases, the candidates were allowed to continue their training at Plattsburg, but were recommended for special service in this country afterward:

CASE 26.—*Physical Findings.*—H. B. G., aged 26, had fine râles on cough above the third rib on both sides. Breathing was soft and vesicular. The general condition appeared fine, and there were no symptoms. The candidate was an athlete and competed in running races at the camp the preceding week. Roentgenoscopy revealed: On the right, scattered parenchymatous infiltration to the third rib and the sixth vertebral spine, with a questionable area of parenchymatous involvement along the descending trunks; some evidence of fibrosis in the apex; probable pleurisy in the apex, some of which appeared to be interlobar. On the left: scattered parenchymatous infiltration to the third rib and the sixth vertebral spine, with rather much evidence of fibrosis in this region; pleurisy at the base, with diaphragmatic adhesions.

Diagnosis.—Old chronic pulmonary tuberculosis.

The candidate was allowed to continue training, but recommended for special service afterward in this country.

CASE 27.—*Physical Findings.*—G. S. C., aged 28, had dry râles and coarse friction at the right apex, and râles below the clavicle to the second rib. Roentgenoscopy revealed a lesion in this area extending to the second rib and involving also the peribronchial area. The candidate was well nourished, and his physical condition was good.

Diagnosis.—Old chronic localized tuberculous lesion.

The candidate was passed for active service at the Plattsburg training camp, but recommended for special service in this country afterward.

1. As facilities for roentgen-ray work were not fully completed at the post hospital, the examinations were gratuitously made at the Adirondack Cottage Sanatorium; Dr. E. R. Baldwin kindly gave us a clinical report on some of the cases.

In the following three cases the candidates were found to have localized and well healed lesions, and were passed for active service.

CASE 28.—Physical Findings.—W. P. H., aged 28, had a cold, but on two separate examinations (after two weeks), fine dry râles were heard above the left clavicle, breathing soft. He had been an athlete, and appeared wiry and strong. There was no cough nor symptoms.

Diagnosis.—Old localized pulmonary tuberculosis.

The candidate was passed for active service.

CASE 29.—Physical Findings.—H. R. D., aged 28, had fine râles at the left apex, below and above the clavicle and to the third vertebral spine on the left side. Roentgenoscopy revealed cloudiness of the left apex to the second rib.

Diagnosis.—Old healed tuberculosis lesion, left apex.

The candidate was passed for active service.

CASE 30.—Physical Findings.—T. C. B., aged 29, had fine small dry râles at the left apex to the second rib, and slight impairment of note. Roentgenoscopy revealed two calcified tubercles and slight cloudiness at the apex. The general condition was good. The candidate was strong and well nourished. There were no symptoms.

Diagnosis.—Old localized tuberculosis.

The candidate was passed for active service.

It may be pointed out in regard to the preceding group of cases that they represent a type not usually seen even by the so-called tuberculosis expert, because the men were to all appearances robust and athletic, for the most part; and practically all were free from any symptoms whatsoever that would draw attention to their condition. Their lesions, as a matter of fact, had been overlooked in previous physical examinations, of which each had passed several, before coming before the board; and it is extremely likely that the ordinary wear and tear of civil life would have failed to light up or activate their infection. The cases were in no sense early or incipient; they were not the usual type of incipient case that the tuberculosis specialists see, in which a person has spit a little blood, or lost a little weight, or had a night sweat or two, who has had, in a word, some symptom, however slight, which arouses his own suspicions and leads him to consult a physician, with the consequent discovery of a limited active process. They belonged to the relatively large group too large, which the general practitioner would discover if he carefully auscultated the lungs of all patients consulting him for other and trivial ailments. The lesions in every case were sufficiently plain to be revealed by ordinarily careful work.

There can be no doubt that the lesions in every case represented a much earlier childhood infection, which had failed to become acutely active; and it seems likely that the fine dry râles on cough which were elicited represented a subacute recrudescence caused by the intensive training and hard living. Such men from the point of view of their own welfare might and probably would run an unsafe risk if subjected to the exposure, fatigue and privation of active campaigning. They would certainly be an unsafe risk from the point of view of the government.

Finally, it is interesting to compare the percentage of tuberculosis among the candidates (Table 3) with the corresponding figures for the regulars that we examined (Table 4).

TABLE 4.—RESULTS OF TUBERCULOSIS EXAMINATIONS OF REGULARS

| | Number | Per Cent. |
|--|--------|-----------|
| Enlisted men examined | 584 | ..... |
| Accepted | 578 | 98.97 |
| Disqualified because of tuberculosis | 5 | .85 |
| Recommended for special service | 1 | .17 |
| Found to have tuberculosis | 6 | 1.027 |

It will thus be noted that among the candidates, the percentage of tuberculosis was 0.41 per cent., while among the regulars examined it was 1.027 per cent., or more than twice as high.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

ARSPHENAMINE.* — $\text{HCl.NH}_2.\text{OH.C}_6\text{H}_3.\text{As}:\text{As.C}_6\text{H}_3.\text{OH.NH}_2.\text{HCl}+2\text{H}_2\text{O}$.—The hydrochloride of 3-diamino-4-dihydroxy-1-arsenobenzene, corresponding to 31.57 per cent. arsenic (As).

Actions, Uses and Dosage.—The same as those of salvarsan (see New and Nonofficial Remedies, 1917, p. 45).

Arsenobenzol (Dermatological Research Laboratories).—A brand of arspenamine.

Manufactured by the Dermatological Research Laboratories, Philadelphia Polyclinic, Philadelphia, Pa.

Arsenobenzol (Dermatological Research Laboratories) 0.4 Gm. Ampules.—Each hermetically sealed ampule contains 0.4 Gm.

Arsenobenzol (Dermatological Research Laboratories) 0.6 Gm. Ampules.—Each hermetically sealed ampule contains 0.6 Gm.

Salvarsan.—A brand of arspenamine.

Manufactured by Farbwerke-Hoechst Co., New York. U. S. patent No. 986,148 (March 7, 1911; expires 1928). U. S. trademark No. 40,734.

Salvarsan 0.6 Gm. Tubes.—Each hermetically sealed tube contains salvarsan 0.6 Gm. (9 grains).

* The Federal Trade Commission adopted the name arspenamine as the term to apply to 3-diamino-4-dihydroxy-1-arsenobenzene first introduced as salvarsan. The Council on Pharmacy and Chemistry has voted to adopt this abbreviated name in place of arsenphenolamine hydrochloride now in New and Nonofficial Remedies.

CHLORAMINE-T. — Sodium Para-Toluenesulphochloramide.— $\text{CH}_3.\text{C}_6\text{H}_4.\text{SO}_2\text{Na.NCl}+3\text{H}_2\text{O}, 1:4$.

Actions, Uses, Dosage, Physical and Chemical Properties.—The same as those of chlorazene (see New and Nonofficial Remedies, 1917, p. 140).

Chloramine-T (Calco).—A brand of chloramine-T.

Manufactured by the Calco Chemical Company, Bound Brook, N. J. No U. S. patent or trademark.

NOVOCAINE. — $\text{CH}_2(\text{C}_6\text{H}_4.\text{NH}_2.\text{COO}).\text{CH}_2\text{N}(\text{C}_2\text{H}_5)_2.\text{HCl}$.—The monohydrochloride of para-aminobenzoyldiethyl-amino-ethanol.

Actions, Uses and Dosage.—See New and Nonofficial Remedies, 1917, p. 31.

Manufactured by Farbwerke-Hoechst Co., New York. U. S. patent No. 812,554 (Feb. 13, 1906; expires 1923). U. S. trademark No. 53,072.

Health and Recreation Clubs.—In the Albany public schools a campaign is going forward in the formation of health and recreation clubs among the pupils of the sixth, seventh and eighth grades of the entire school system for the improvement of their health and general well being, as well as to cultivate discipline and other good qualities and make better citizens of them. With the cooperation of the board of health and the entire school organization, including the director of health, Dr. Clinton P. McCord, a complete plan for the formation and conduct of these clubs has been worked out, and in the November number of the *Health Messenger*, the school bulletin, prepared and printed in the schools, this plan, including a form of constitution, a club manual, blanks for reporting, rules for the conduct of meetings, inspections, etc., are fully set forth. The organization of the clubs will be effected by the school nurses and teachers with the cooperation of the principals. At the end of the year, health and recreation club certificates will be awarded to those grades attaining certain standards in health habits and recreational activities. This will induce a wholesome rivalry between the boys and girls and between the different grades. This represents an effort in cooperation among the children and youth of the schools for the production of healthier, better citizens that is timely and is deserving of imitation in the schools throughout the country.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET . . . CHICAGO, ILL.

Cable Address "Medic, Chicago"

Subscription price Five dollars per annum in advance

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SATURDAY, DECEMBER 22, 1917

PRACTICAL ECONOMY

Our JOURNAL in common with all other publications is now paying abnormally high prices for paper, supplies, labor and postage. In addition, letter postage has increased 50 per cent. To offset these extra expenses, it is necessary to economize wherever possible. Under the new postage rate the cost for sending the customary bills for Fellowship and subscriptions and later receipts would total over \$4,000.00. One half of this can be saved if each Fellow and subscriber will remit without being individually notified by mail. It is believed that many will gladly do this. Under the circumstances, such notification will not be sent on the first of the year as heretofore. In lieu thereof, a remittance slip is inserted in this issue of THE JOURNAL. It is hoped that Fellows and subscribers will cooperate in this effort for economy and accept the remittance slip in place of the annual bill sent in previous years, remitting without further notification.

HOOKWORM INFECTION IN DEEP GOLD MINES IN CALIFORNIA

Hookworm disease, like other maladies associated with a microbiotic origin, can arise whenever the etiologic agent can gain entrance into the body by way of the mouth or respiratory passages, or through the skin after it has been cut or abraded. The larvae of the hookworm also can bore through the intact skin if infected dirt happens to come into contact with the body. When persons living in a hookworm infected region go without shoes, the larvae are enabled to gain entrance to the body through the feet. How persistent the danger may be is evident from the statement current that hookworm eggs will remain infectious for a year after they have been evacuated from the intestine. This may be the case when the eggs are exposed to the variable climatic conditions on the surface; but hookworm eggs appear to remain infectious for a period even longer than one year when they are deposited in mines, where temperature condi-

tions remain fairly uniform year in and year out. The insidiousness of the parasite is further emphasized by the fact that it "extends its evil influence in a quiet, cumulative manner, and in different directions." As a sanitarian recently expressed it, a man cannot enjoy normal health while the worms are attached to the inside of his intestine and daily sucking his blood. It should be remembered that although a person with hookworms may not be seriously affected himself, there is always danger of his spreading the infection if he commits a nuisance in a place favorable to the development of the eggs.

The problems of the campaign against hookworm disease are rendered difficult by a variety of conditions in part formerly unanticipated, some of which have recently been discussed in THE JOURNAL.¹ Dr. J. G. Cumming, director of the Bureau of Communicable Disease, California State Board of Health, and Joseph H. White,² sanitary engineer, U. S. Bureau of Mines, in a report on the control of hookworm infection at the deep gold mines of the Mother Lode, California, furnish added indication of the as yet intangible character of the sources of infection, as they occur in mines. Hookworm infection has long been known to be prevalent among miners in many parts of the world. The importance of its eradication from certain mines is shown by the fact that of the gold miners working underground about 40 per cent. contract this insidious infection in some of the mining districts of California, where it appears almost to be endemic. Aside from the hygienic and humanitarian aspects, the economic loss due to absence from work on account of illness and to inefficiency that cannot be directly measured is a large one. Hookworm infection in mines is a form of industrial disease that must be combated by knowledge of both the industry and the disease. Hence the unusual complexity of the problem.

The ultimate source of infection with hookworm in the California gold mines is not known. The immediate source is, of course, in the discharges from the bowels of those infected. The factors contributory to the spread of hookworm infection operate only after the infectious eggs have been set at large by the careless disposition of human excrement. In mines the soil readily becomes polluted. A miner cannot do his work without getting dirt on his hands and clothing; therefore his safety lies in keeping the dirt of the mine as noninfectious as possible. With a mine once infected, the means whereby the miner becomes infected are obvious. An illustration of the subtle possibilities was furnished by the California investigators in their inspections of miners' shoes. As they

1. Problems in the Campaign Against the Hookworm, editorial, THE JOURNAL A. M. A., Nov. 10, 1917, p. 1611; Hookworm in the Mines of China, Nov. 17, 1917, p. 1701.

2. Cumming, J. G., and White, J. H.: Control of Hookworm Infection at the Deep Gold Mines of the Mother Lode, California, Bull. 139, Dept. of Interior, Bureau of Mines, 1917.

remark, hookworm larvae might easily work their way through a fairly good pair of shoes, but the infection would be light. When a mine is known to be infected, a miner should take unusual care to keep his shoes in good repair. At the change house of one infected mine, 107 pairs of miners' shoes were examined, and forty-three pairs, or 40 per cent., were found to be broken or worn so as to permit hookworm infection.

To meet the situation in the Mother Lode mines so as to stop future infection and minimize danger from existing infectious areas, Cumming and White recommend that every employee should be examined for hookworm infection; and every infected miner should be treated until cured. No applicant for work should be employed until he presents a "hookworm certificate" from the California State Board of Health stating that he is free from hookworm infection. All mine workmen should be reexamined about one year from the date of the issuance of the "hookworm certificate." In addition to these personal features the introduction and further extension of suitable sanitary conveniences in the form of toilet facilities is urged. Rats must be exterminated, and the drainage systems improved where necessary. Finally, it is urged by the Bureau of Mines that the miners should be instructed in the causes, nature and prevention of hookworm disease, so that they may know how it is spread, and intelligently subscribe to the remedial measures that are introduced.

THE STATISTICAL EVIDENCE OF CANCER INCREASE

There is no doubt that the number of deaths recorded as due to cancer has shown a marked increase in the last few decades in all cities and countries for which reliable statistics are available. A sharp difference of opinion exists, however, as to whether the reported mortality represents a real or an apparent increase in the disease itself. It is evident that improvements in diagnosis must account for a part of the reported increase, that deaths now recognized to be from certain forms of cancer were earlier not diagnosed as such, but were reported under deaths from "old age" or other ill defined or unknown causes. It is when statisticians attempt to determine the relative importance of this factor in swelling the list of cancer deaths that they encounter statistical difficulties, and split into two groups: those who hold that cancer mortality is increasing more or less rapidly throughout the whole civilized world, and those who hold that the increase is only apparent, not real. The latter group has received a powerful ally in Professor Willcox,¹ who discusses the alleged increase of cancer in a recent weighty monograph.

Willcox first points out that of the previous investigations of this question, two stand in a class by them-

selves: the study by King and Newsholme in 1893 of data mainly derived from the mortality records of Frankfort, Germany, and the more recent study (1915) by Hoffman of cancer throughout the world. It is significant of the difficulties attending such inquiries that these two studies reach diametrically opposite conclusions.

Willcox analyzes the essential data comprehensively and subtly. Perhaps the most generally interesting portion of his paper is the reexamination of the Frankfort figures, with its extension of the period covered from thirty years (1860-1889) to fifty-four years (1860-1913), and the inclusion of 9,000 deaths instead of 3,000. The Frankfort tables and diagrams show that during this period there has been no significant change in the small mortality from accessible cancer of men, and that there have been irregular changes followed by a remarkable uniformity in the mortality from accessible cancer of women. Almost all the increase occurred in the mortality from inaccessible cancer. Study of this important material therefore indicates in Willcox's opinion that the apparent cancer increase in Frankfort was probably due entirely to improved diagnosis.

Another conclusion reached is that probably not less than one tenth of the reported increase of cancer mortality is due to changes in the sex and age composition of the population. With reference to the different sex incidence he says:

Cancer mortality is lower but increasing faster among men than among women. Both differences may be due to the fact that among men the organs chiefly attacked by cancer are inaccessible, while among women they are accessible. Hence the scope for improving the diagnosis of cancer among men was and is much wider.

Two important pieces of evidence drawn from American statistics also may be mentioned. The deaths ascribed to unknown or ill defined causes in the American registration states (of 1900) decreased between 1900 and 1915 to one tenth of the initial number. "If these deaths no longer ascribed to ill defined or unknown causes were distributed over the other causes in a random way, the transfer to cancer accounted for about one ninth of the increase in the reported mortality from that disease." This is certainly not an overstatement. Similarly the deaths ascribed to old age in the same American registration states decreased between 1900 and 1915 to a little more than two fifths of the initial figures; the death rate from this reported "cause" was lowered still more, to less than one third. There can be no doubt that a considerable proportion of the apparent cancer increase—Willcox puts it as at least one eighth—was due to transfer from the old age column to the cancer column.

Willcox points out also that the reported negro cancer mortality is lower than the white, but is increas-

1. Willcox, F. W.: On the Alleged Increase of Cancer, *Quarterly Publications of the American Statistical Association*, 1917, **15**, 701.

ing more rapidly, seeming to indicate here also the influence of the relative correctness of diagnosis. He also notes that the increase in reported appendicitis mortality in England and the United States is parallel with the increase in reported cancer mortality, and intimates that both may be due entirely, as they certainly are in large part, to the improvement of diagnosis. The whole argument leaves one in a frame of mind tentatively to accept Willcox's conclusions:

The cumulative evidence that improvements in diagnosis and changes in age composition explain away more than half and perhaps all of the apparent increase in cancer mortality rebuts the presumption raised by the figures, and makes it probable, although far from certain, that cancer mortality is not increasing.

THE NATURE OF MUSCULAR CONTRACTION

The theories as to the nature of muscular contraction have undergone profound changes since the opening of the twentieth century. Only a few years ago the working mechanism was still freely compared with a steam engine in which the direct combustion of fuel leads to the liberation of energy in the form of heat and motion. This analogy between the muscle and a heat engine received its greatest setback in the demonstration that muscular contraction is still possible in the absence of oxygen, without which true combustion promptly fails. As a sequence came the views that somehow very unstable energy-yielding compounds are built up in the contractile tissue, and that these disintegrate somewhat like the reaction of an explosive so as to do work. The chemical processes involved were vaguely conceived to consist essentially in "the building up of elaborate, unstable and oxygen-charged molecules, by the processes of so-called 'anabolism,' into the mystical complexes of irritable protoplasm." From the latter, energy was supposed to be discharged when the proper stimulus set off the charge, so to speak.

It is obvious that there must be something in a resting muscle which possesses some sort of potential energy; for when a muscle contracts, tension is developed and external work is done if the tension is made use of in processes requiring expenditure of energy. The energy of tension may also be allowed to appear in the form of heat. The nature of the processes involved have been greatly elucidated in recent years by the work of the Cambridge school of physiologists in England, notably Fletcher, Hopkins and Hill.¹ Today we know that the actual contractile process is not associated directly with the giving off of carbon dioxide or with the consumption of oxygen. Lactic acid is formed; but the chemical change up to this stage is not an oxidative process. What oxygen does is to remove by oxidation or otherwise the lactic acid

produced by contraction. Precisely how this happens is as yet a mystery, made more obscure by the fact that outside the muscle, in the circulation, for instance, lactic acid is not directly oxidizable at physiologic temperatures. Nevertheless the dissipation of the lactic acid that is an accompaniment of the contractile process is highly important, however it may be accomplished; for lactic acid is the most obvious determining cause of the signs of fatigue; and recovery from fatigue depends in no small measure on the removal of this acid compound. Somehow, with the destruction or removal of the lactic acid, the energy of the muscular system is restored.

From this standpoint there are two chemical events involved in muscle incident to its function. The act of contraction itself is now known to be an anaerobic process independent of oxygen, but accompanied by the formation of lactic acid. In the second stage of functioning, whereby the lactic acid is removed again, oxygen plays a prominent part. We may quote Fletcher and Hopkins' formulation of these phenomena. The special processes, they state, which, when they occur within a muscle fiber, culminate in a contraction, make no call on an oxygen supply; they proceed anaerobically. The oxidations which are always associated with muscular activity are separated in time from that moment in which mechanical energy is liberated. They occur immediately afterward, and are concerned not with the introduction of the mechanical act, but with a restoration to the status quo ante. They are concerned not with stimulation but with recuperation.

Is the production of lactic acid to be regarded, then, as an undesirable incident and the substance itself as a toxic product, destined to be eliminated or destroyed as speedily as possible? Certainly not in the light of the newer conceptions, in which the acid serves as an essential agent in the machinery of contraction itself. To quote the Croonian lecturers again, the development of acid, with free hydrogen ions, in the neighborhood of colloidal fibrils gives the condition for contraction, either by increasing the molecular tension along longitudinal surfaces or by the process of imbibition, causing a resultant increase of tension in the fiber. The removal of lactic acid under the influence of oxygen will give relaxation, as the original state of tension in the fibril is restored.

The Cambridge investigators conclude that in the muscle, which, after all, forms the chief seat of metabolism, the acid intermediary product appears at such a stage and place as to have more than a purely chemical significance. It marks, on the one hand, an obligatory stage in a particular set of successive chemical reactions; but, on the other hand, it has here its special rôle to play in connection with the muscle machinery. In the evolution of muscle it would appear that advantage, so to speak, has been taken of this acid phase in

1. An account of some of this development is given by Fletcher, W. M., and Hopkins, F. G.: *The Respiratory Process in Muscle and the Nature of Muscular Motion*, Croonian Lecture, Proc. Roy. Soc., B, 1917, 89, 444.

carbohydrate degradation, and that by appropriate arrangement of the cell elements the lactic acid, before it leaves the tissue in its final combustion, is assigned the particular position in which it can induce those tension changes on which all the wonders of animal movement depend.

Such conceptions carry us far away from the earlier views as to the mechanism of muscular contraction. We can no longer look on the muscle as a simple human heat engine. We are dealing in muscular work with something of a physical as well as a chemical nature. The potential energy must be in the form of surface energy or osmotic energy or both; in any event it is not directly associated with an oxidative chemical reaction of the familiar sort. In the words of Fletcher and Hopkins:

With an understanding that the relatively permanent physicochemical system of the muscle can, without itself undergoing chemical modification, carry changes of potential as a result of changes in its physical configuration, it becomes easier for us to realize that the foodstuffs, or at least that sugar, may be the direct source of the contractile energy. Placed in the right locality within the muscle, sugar, by a nonoxidative yield of acid at the right moment, and by a subsequent oxidation of this at another right moment, can yield its total energy in a manner exactly suited to serve the peculiar machinery in which, so to speak, it finds itself.

NEW EVIDENCE REGARDING THE FAT-SPLITTING FERMENT OF THE STOMACH

Where does the digestion of fats begin in the alimentary tract? Until only a few years ago the digestive cleavage of these foodstuffs was supposed to be a function of secretions poured into the gastro-intestinal canal somewhere beyond the stomach. An occasional investigation, it is true, had revealed the existence of small quantities of fatty acids in the contents of the latter organ after the ingestion of considerable fat; but it was not until the unexpected findings of Volhard published in 1900 regarding the existence of a fat-splitting enzyme in the stomach that the possibility of any significant gastric digestion of fats was taken seriously into consideration. A decade later von Fürth,¹ in reviewing the literature on the probable first phase of fat digestion, concluded that doubtless the stomach contains a lipolytic ferment, and that physiologically the cleavage of fats begins at this point; but he believed that the lipolytic power of pure gastric juice is distinctly less than was earlier assumed. Von Fürth attached no particular physiologic importance to possible lipolytic processes in the stomach.

The question here at issue became greatly complicated by the realization, now grown to a firm conviction, that after the taking of foods of various sorts —

and particularly after a meal of fatty food — it is easy to have a reflux of duodenal contents into the stomach. Obviously the pancreatic and intestinal fat-splitting enzymes may thus gain entrance into this organ. Is this, then, the true explanation of the source of the reputed gastric lipase? The failure of the earlier workers to rule out the regurgitation of pancreatic juice from the intestine as a source of lipase in the stomach, coupled with the low values for gastric lipase reported for the gastric juice by those who have examined purer specimens of the secretion, has thrown doubt on the actual existence of such an enzyme as a product truly elaborated by the gastric membrane.

It would not be surprising to find in the stomach secretion traces of any familiar enzyme occurring in abundance elsewhere in the body. Enzymes that find their way into the blood stream are known to "escape" into the gastric juice. The circulating fluids of the body do, in fact, contain some lipase. But if we may judge by the new observations of Hull and Keeton² at the Northwestern University Medical School, Chicago, this will not explain the appearance of gastric lipase, which they find in pure gastric juice in a concentration five or six times that in the succus entericus and the blood serum. They searched for lipase in gastric juice collected so that no contamination with intestinal or pancreatic products was possible. In the course of the investigation it developed that gastric lipase is a very unstable substance, a fact which at length explains the failure of many who have searched for the enzyme to find it. The fasting and acid-free juice always contains an appreciable concentration of lipase; it is, however, sufficiently sensitive to alkali or acid to be destroyed by a fifteen minute exposure to hydrochloric acid of the concentration (0.2 per cent.) frequently found in the stomach contents. The enzyme may be recovered from the stomach showing low acid secretion by immediate neutralization of the juice, and from stomachs in high secretory activity, if the acid is reduced by the addition of protein.

The Chicago investigators come to the conclusion that lipase is a true gastric secretory product, rather than an accidental "contamination" of the stomach contents. The persistence of the lipase in the stomach, they maintain, certainly seems to be a function of the free acidity. An acidity of 0.2 per cent. of hydrochloric acid appears to be about the upper limit for the recognition of much lipase, but in clinical observation this free acidity is not soon reached in the normal stomach under the usual diet conditions with average amounts of protein present to hold the acid. It is highly probable, therefore, that before the acid can accumulate to the point at which it can more than saturate the proteins, the lipase enzyme will have an opportunity of doing appreciable work, as the ptyalin

1. Von Fürth, O.: *Chemistry of Metabolism*, translated by A. J. Smith, Philadelphia, 1916.

2. Hull, Mary, and Keeton, R. W.: The Existence of a Gastric Lipase, *Jour. Biol. Chem.*, 1917, **32**, 127.

of the saliva certainly does and as administered trypsin must do also, according to the investigation of Long and Hull.³ At any rate, the possible importance of gastric lipolytic activity in the sum total of alimentary digestive performances is once more deserving of respectful consideration.

Current Comment

WINTER POLIOMYELITIS

The relative rarity of winter outbreaks of poliomyelitis is one of the chief reasons why officers of the United States Public Health Service have recorded in detail an epidemic occurring in Elkins, W. Va., in 1916-1917.⁴ The investigation in West Virginia has especial significance in showing the great importance of unrecognized cases and of carriers in the spread of the disease. The investigators were led to believe that types of nonparalytic poliomyelitis exist in which the symptoms are referred in the first instance to the digestive tract. These cases of digestive disturbance of slight severity are very likely an important source in the spread of poliomyelitis infection. The facts discovered in this outbreak are considered to emphasize the importance of human contact in spreading infection. No connection was found between general cleanliness, insect prevalence and similar factors, and the incidence of the disease. Indirect contact through adult passive carriers is considered as particularly important. As a measure of administrative control, the authors lay stress on the minimizing of general intermingling of adults and children, especially at times when poliomyelitis is prevalent.

THE FATE OF STRYCHNIN IN THE BODY

Strychnin has so long been employed in therapy, and has also been so conspicuous as a dangerous poison, that the question of its precise behavior in the organism has attained considerable prominence. Despite this, much of the essentially desirable information on the subject has been a mass of contradictions and confusion. This statement applies in particular to the fundamental questions as to how the alkaloid is excreted from the body and whether it experiences any alteration, deposition or destruction in its passage through the organism. From a medicolegal standpoint it has further been of decided interest to ascertain whether strychnin disappears in the course of post-mortem changes attended with putrefaction; for on the answer to this hinges in no small degree the possibility of our identifying the poison in the body in which it has wrought its havoc. These problems have been subjected to renewed experimental study in the pharmacologic laboratory of the Cornell University Medical College, by Hatcher and Eggleston.⁵ They

found that total amounts of strychnin equal to several times a single fatal dose may be administered to experimental animals in fractional doses on each of several successive days without causing permanent injury. From this clearly established fact it must be assumed that the poison is promptly disposed of in some way. It may come as a surprise to many to learn that only a small percentage of repeated toxic doses of strychnin can be recovered from the urine. Whatever is found in this excretion makes its appearance very soon after the administration of the substance. None can be recovered a day after the cessation of the dosage. The poison, administered parenterally without lethal effects, cannot be found in the feces. These facts, evincing the failure to detect in the excreta the bulk of administered strychnin, thus point to its deposition or destruction in the body. The latter outcome seems most probable in view of the practical failure of Hatcher and Eggleston to recover the alkaloid from the tissues even after administration of very large amounts, provided death did not ensue too speedily. The often made statement that strychnin is not decomposed during putrefaction appears to be quite untenable. These findings, based on careful experimentation, are believed to clear up some of the confusion in the literature. They may not render the task of the toxicologic chemist easier in his search for evidence of strychnin in the body; but they throw light on the tolerance of the organism and its capacities for defense against harm.

CITRIC ACID IN THE URINE

The announcement has just been made by Amberg and McClure¹ that normal human urine contains citric acid. It is asserted that the amount excreted in the course of twenty-four hours is quite appreciable—"enough to play a modest rôle in the acid-base economy of the organism." One naturally thinks of food sources for the excreted product. Citric acid is found in such fruits as oranges and lemons, and it is stated to occur to the extent of from 0.05 to 0.1 per cent. in human and cow's milk. Feeding experiments with citrates make it less probable, however, that the citric acid in the urine should come from the material ingested, since the latter seems to be destroyed with considerable ease in the body. In view of the alleged constant occurrence of citric acid in another product, milk, that fraction now said to be present in the urine may likewise have an endogenous origin. The evidence furnished by the Chicago biochemists regarding the output of citric acid is indirect and therefore not absolutely convincing. Pending more rigorous proof, speculation as to its origin may therefore well be suspended.

1. Amberg, Samuel, and McClure, W. B.: The Occurrence of Citric Acid in Urine, *Am. Jour. Physiol.*, 1917, **44**, 453.

3. Long, J. H., and Hull, M.: *Jour. Am. Chem. Soc.*, 1917, **39**, 162.

4. Leake, J. P.; Bolten, Joseph, and Smith, H. F.: Winter Outbreak of Poliomyelitis, *Pub. Health Rep.*, 1917, **32**, 1995.

5. Hatcher, R. A., and Eggleston, Cary: The Fate of Strychnin in the Body, *Jour. Pharmacol. and Exper. Therap.*, 1917, **10**, 281.

War Cripples.—The attitude of the public toward the returned soldier will do much to make or mar the success of work with war cripples. The cripple returning from the front deserves the whole hearted gratitude and respect of the nation, but to spoil and pamper him is an ill-advised way of meeting the obligation.—McMurtrie, *Columbia War Papers*

Medical Mobilization and the War

RED CROSS GETS NOBEL PRIZE

The International Red Cross Committee of Geneva has been awarded the Nobel Peace Prize for 1917, and by unanimous consent of the custodians of the special fund, the prize of 1916, which was not bestowed last year, was added to this award.

WOUNDED IN ACTION

The War Department received advices, December 11, from General Pershing, that Lieut. Edgar W. Young, M. R. C., McKinney, Va., a graduate of Baltimore Medical College, in 1911, had been seriously wounded in action.—Advices from France, December 16, state that Lieut. H. Cotter Boyle, M. R. C., of Luzerne, Pa., a graduate of Temple University, Philadelphia, in 1914, had been seriously wounded, December 7, while on duty with the British forces.

MEDICAL RESERVE OFFICERS AT WEST POINT

Major W. H. Haskin, M. R. C., U. S. Army, writes from West Point that the entire medical staff at the Military Academy are Medical Reserve Corps men. The personnel is as follows: Major W. H. Haskin, Lieuts. J. F. Grattan, J. D. Kelly, Sutherland Miller and Kenneth Phelps; Dental Corps, Lieutenants Bachman and C. Van de Water; veterinarian, Lieutenant Churchill.

MOVING PICTURES AND OTHER ILLUSTRATIONS FOR THE ARMY MEDICAL DEPARTMENT

The Surgeon-General has authorized the establishment at the Surgeon-General's Library and Army Medical Museum, Seventh and B Streets, S.W., Washington, D. C., of a repository for moving pictures, slides and photographs of camp and other activities related to the work of the Medical Department. These illustrations are to be made available for instruction purposes in camps, cantonments, etc., and will be lent for use in conjunction with lectures and other courses of study in medical schools, training camps and cantonments. Donations of such illustrations are solicited.

MILITARY ROENTGENOLOGY CLASS ORGANIZES

The class in military roentgenology in the course conducted by Capt. E. S. Blaine at the Cook County Hospital, Chicago, has arranged for a permanent organization. The class is composed of thirty physicians from fourteen different states: Iowa, Indiana, Tennessee, Florida, Wisconsin, Texas, New York, Illinois, Alabama, Minnesota, Ohio, Nebraska, Kentucky and Michigan. The work is not limited to military roentgenology, but each member is required to do radiography, fluoroscopy, therapy, developing and diagnosis. In the permanent organization Lieut. Thomas D. Cantrell of Bloomington, Ill., was chosen president, and Capt. D. W. Young of Paris, Ill., secretary.

VOLUNTEER SERVICE IN SOME BRANCHES FOR MEN REGISTERED UNDER SELECTIVE SERVICE

Under date of December 17 the Provost Marshal issued to the governors of the various states an announcement that men of draft age may still volunteer for certain branches of the service. White men only will be accepted and they may enlist only in the Infantry, Signal Corps, Medical Corps and Quartermaster's Department. All men enlisted for the Medical Department will be sent to the Medical Officers' Training Camp at Fort Riley by local boards west of the Mississippi, and to the Medical Officers' Training Camp at Fort Oglethorpe, Ga., by boards east of the Mississippi. Transportation and subsistence expenses to the camps are to be furnished volunteers by the local boards.

PAMPHLETS ON VENEREAL DISEASES

The Illinois Vigilance Association has prepared for distribution several pamphlets on venereal diseases which it offers to send free of charge, transportation prepaid, to any Army officer or medical officer who will ask for them and use them carefully among the soldiers. It also offers to send single copies free of charge to any physician on receipt of a self-addressed, stamped envelop. The pamphlets consist of one entitled "For Our Daughters" by Dr. Charles Burlureaux of the French Society of Sanitary and Moral Prophylaxis; one entitled "For Our Sons" by Professor Alfred Fournier; three Great Army Records by Wirt W. Hallam, and a pamphlet containing Lord Kitchener's "Instructions to Soldiers" and an article by Prof. William T. Belfield. The address of the Illinois Vigilance Association is 58 West Washington Street, Chicago.

WAR REVENUE LAWS AND THE DISPENSING OF ALCOHOL BY PHYSICIANS

Under the War Revenue Act of Oct. 3, 1917, which went into effect, Dec. 1, 1917, hospitals, sanatoriums and physicians who use alcohol for nonbeverage purposes are required to file a bond and obtain a permit from the revenue authorities. This law is being administered in connection with the Food Control Act of Aug. 10, 1917, and applies to every one handling alcohol. Heavy penalties are provided for noncompliance with or violation of the law. Physicians should make themselves conversant with the requirements if they have not already complied with the law. Druggists may not sell to physicians, hospitals or sanatoriums nonmedicated alcohol unless the physician, hospital or sanatorium has filed the required bond and obtained a permit. Druggists may, however, sell alcohol to physicians or the general public in any quantity up to 1 pint provided it is rendered nondrinkable by a prescribed proportion of the following substances: phenol, formaldehyd, mercuric chlorid, hydrochloric acid, tannic acid, alum, lysol or liquor cresolis compositus. A druggist having a permit may fill a physician's prescription or a physician with a permit may dispense prescriptions containing alcohol provided the prescription contains other drugs sufficient to render the alcohol unfit for beverage purposes. To be able to purchase nonbeverage alcohol physicians, hospitals and sanatoriums must, in addition to having filed the bond and obtained the permit, order such alcohol on a form prescribed by the law. The penal sum of the bond must equal \$3 for each proof (50 per cent.) gallon of alcohol expected to be on hand or in transit at any one time. The bond must be that of a surety company, or a personal bond signed by two sureties approved by the collector of internal revenue, or may be a personal bond secured by a deposit of liberty or other government bonds. More complete information may be obtained from the district revenue officers.

SUMMARY OF HEALTH CONDITIONS IN CAMPS OF UNITED STATES FOR WEEK ENDING DEC. 14, 1917

National Guard

With the exception of the Thirty-Fourth (Camp Cody), Thirty-Fifth (Camp Doniphan) and Fortieth (Camp Kearny) divisions, but few new cases of measles are reported from National Guard camps. In each of the divisions mentioned, with the exception of the Fortieth, the number of new cases is small as compared with the number reported for last week. In the Fortieth Division the number of new cases is 330 as compared with 279 for the previous week.

Pneumonia following measles is also rapidly decreasing in amount in all but three of the divisions in which measles has been epidemic. In the three divisions referred to, Thirtieth (Camp Sevier), Thirty-Fourth (Camp Cody), and Thirty-Ninth (Camp Beauregard), an increase in the number of cases is noted, although the total number of new cases reported in each division is not high.

For meningitis the number of new cases has increased in but two camps of the National Guard. The Thirty-Fifth (Camp Doniphan) Division reports six new cases as compared with two for the previous week and the Thirtieth (Camp Sevier) Division reports six as compared with one for the previous week. The number of new cases reported in the Thirty-Sixth (Camp Bowie) Division has decidedly decreased. The highest number of new cases reported in any other division of the National Guard is three.

National Army

In the National Army a marked increase has occurred in the number of new cases of measles in the Eighty-Seventh (Camp Pike) and Ninetieth (Camp Travis) divisions, and a slight increase in the Eighty-Ninth (Camp Funston) Division. In all other divisions the number of new cases of measles reported is insignificant.

Pneumonia conditions in all divisions of the National Army have decidedly improved during the week, except in the Ninetieth (Camp Travis) Division, in which an increase of thirty-six new cases is reported over the report of last week.

As regards meningitis, the Eighty-First (Camp Jackson) Division reports a marked increase in the number of new cases over the report of last week. The outbreak of this disease in the Eighty-Ninth (Camp Funston) Division continues to decline, but eight new cases having been reported during the week. The highest number of new cases reported in other divisions of the National Army is five. Seven divisions of the National Army reported new cases of this disease during the week.

NEWS OF THE BASE HOSPITALS

Base Hospital No. 22, Milwaukee, Wis., has been mobilized under the command of Col. Thomas Jellis Kirkpatrick, at the Light Horse Squadron Armory in Milwaukee. This unit is fully equipped, the equipment containing full hospital equipment for a 500 bed hospital, including 500 iron beds, 1,500 blankets and all accessories needed, a complete indoor telephone equipment, a complete supply of medicines, surgical dressings and surgical instruments, special eye, brain and jaw instruments, a \$7,500 roentgen-ray apparatus, including 500 roentgen-ray plates, a giant magnet, complete dental outfit, three White ambulances completely equipped, one 3-ton White motor truck, one Hudson seven-passenger officers' car, one motorcycle, a fully equipped kitchen outfit, and a "Kinyoun" portable bed disinfector capable of sterilizing ten bed mattresses at one time.

Most of the professional staff have received training at medical schools and army camps. Major Curtis Evans, the director of the base hospital, has been for the last three months at the neurologic school at Philadelphia taking the course in brain surgery. Captain Beffel and Lieutenant Lillie were there with him. Major Otho Fiedler has taken the Carrel course in New York and is now at the Rockefeller Institute taking a laboratory course. Captain Gilchrist is at Fort Travis with the base hospital there. Lieutenants Eagan, Rueth and Fitzgerald are at Fort Riley. Lieutenant Foerster is taking a course in New York City. Lieutenants Senn and Brook are at Waco, Texas.

In the absence of Director Evans, Major Robert Curtis Brown has been acting director. Capt. Oscar Lademan has been doing special work in examination of heart and lungs at Fort Oglethorpe. Lieutenants Campbell and Siewart have been taking special courses in dental surgery. Major Ruhland, Captains Ivy and Harry Gradle will continue in their present service.

The following is the personnel of the hospital: Majors Curtis A. Evans, director, chief surgeon; Robert Curtis Brown, chief of medical service; Otho Fiedler, staff surgeon; Capts. Henry B. Hitz, staff surgeon, ear, nose and throat; John W. Means, oral surgeon; Herbert Walker, ophthalmology; Philip F. Rogers, staff surgeon; Eugene A. Smith, staff surgeon, roentgenologist; John M. Beffel, Francis A. Thompson and Oscar E. Lademan, staff physicians; Lindsey Dennison, quartermaster; Lieuts. Ralph T. Gilchrist, chief of laboratory; Allen Sivyver, assistant in laboratory; Orville R. Lillie, Francis B. McMahon, Ulrich Senn, William J. Egan and Edward Rueth, staff surgeons; Harry Robert Foerster, Delparde W. Roberts, Jeffry J. Brook and George M. Fitzgerald, staff physicians; Stephen Campbell and George B. Siewart, dentists; Paul B. Jenkins, chaplain, and H. I. Rice, first sergeant.

The University of Minnesota Unit, Base Hospital No. 26, is mobilizing on the university campus under orders from the War Department, and will soon be ready to entrain for Fort McPherson, Ga., when the date for departure is definitely settled. Advance notice had been received asking the unit to be ready for mobilization, and the order to mobilize found the hospital fully equipped and prepared with the quarters for the men ready when they were told to report. This unit is a combination of the University of Minnesota and the Mayo Clinic. The commissioned officers include Majors Arthur A. Law, director and chief surgeon of the university, and S. Marx White, chief of medicine; Capts. E. C. Moore,

Los Angeles; Robert D. Mussey, Carl Fisher, ophthalmology and otolaryngology of the Mayo Clinic, and John Bentler, quartermaster; Charles A. Reed, orthopedics, Angus Morrison, neurologist; Gilbert J. Thomas, urologist; Harry B. Zimmerman and John Staley of the university; Lieuts. Alexander B. Moore, roentgenologist; W. W. Bissell, chief of laboratory; David M. Berkman, James M. Hayes, Fred Rankin and Thaddeus L. Sclapka of the Mayo Clinic, and Moses Barron, Archibald Beard, O. M. Klingen, Thomas Snodgrass, Gordon M. Clark and Taylor B. Smith of the university.

NEWS OF THE TRAINING CAMPS

Fort Riley

The event of the past week was the visit to the camp last Saturday of Surgeon-General Gorgas. He was accompanied by Col. D. C. Howard, M. C., U. S. Army; Major Victor C. Vaughan, M. R. C., and Prof. William Welch of Johns Hopkins University Medical School. The morning was spent in Camp Funston, inspecting the camp with special reference to contagious diseases and the inauguration of methods for their prevention. Particular attention was given to meningitis and pneumonia. The afternoon was devoted to the medical officers training camp. At 3:30 all the officers, instructors and students met in the Y. M. C. A. auditorium. General Gorgas was introduced by Colonel Bispham, and spoke to the officers on the work of the Medical Corps. Short talks were also made by Major Vaughan and Professor Welch.

An isolation camp has been established between Fort Riley and Camp Funston, with about 1,600 men. A new isolation camp on the western edge of the reservation is now being built with a capacity of 2,500. To this camp are sent all newly arrived men and all old men coming back on leave. The work being done here is evidently recognized, as the Surgeon-General has just asked for three men from the contagious disease squad to be sent to Camp Doniphan for meningitis field work.

Winter has descended on the camp with a rush. After long weeks of unbroken Indian summer, we had come to believe that the much dreaded Kansas winter was a myth and that a heavy overcoat was an unnecessary luxury. But the last week has undeceived the most skeptical. Thursday was gloomy, with a strong wind gradually working around into the North. Friday brought a few snowflakes and a temperature of about 10 degrees above zero. Saturday night was 5 degrees below. Since then, the temperature has depended on the brand of the thermometer and the imagination of the observer. Fifteen degrees below zero was reported one night, but this has not been officially confirmed. For the past six days the mercury has hovered near zero most of the time; but the work of the camp has gone on without interruption. Drills, horseback riding and maneuvers have been held the same as usual. Little personal inconvenience has been experienced. The company barracks had all been lined and boarded up in anticipation of cold weather, while the officers' quarters had been weather-proofed largely according to the judgment or ingenuity of the occupants. Stoves and an abundance of coal kept barracks, quarters or mess halls comfortable. Sheeplined coats, knit helmets, fur caps and heavy gloves have suddenly become popular. In spite of zero weather, windows are opened wide at night, the officer of the day inspecting all barracks at regular intervals each night to insure adequate ventilation. The health of the camp has been excellent, only two or three being on the sick list out of nearly 550 officers. In spite of the cold weather, the largest number of officers on the sick report any one day was three, on two days there was one each and on one day two, making a total of fifteen cases for seven days, or an average of two per day, 0.36 per cent., or 3.6 per thousand. Evidently, the medical officers' training camp would be an extremely poor place for any man to start in the practice of medicine.

The first instalments of student officers for the third training camp are now coming in, about 150 having arrived during the past week. Cold weather has made all trains late, so that some of the men reached camp after dark or even late at night. Company 14 has been filled and Company 15 started. These new companies are in the barracks formerly occupied by Companies 1 and 2. The regular schedule for Company 14 started Monday. Company 15 will begin its class work next Monday. The contrast between civilian life in steam-heated houses and office buildings and camp life in barracks is much greater to the men reporting for duty now than to those who began their work in the summer. But the new men are settling down to their work in dead earnest.

White collars are soon replaced by flannel shirts, and caps by field hats. While the cold weather has made drilling and hiking heroic experiences for men fresh from civilian life, there is no shirking. The new officers are taking hold with determination. Of course, the usual jokes are being attempted. Several newly arrived officers have visited the quartermaster, earnestly asking where they can secure the "O. D. Regulation Officer's Umbrella." Some have reported to the adjutant's office and asked for "butter checks," while a number have made careful search all over camp for "Colonel Latrine's headquarters" so that they might report for fatigue duty as directed. But these stereotyped camp jokes are accepted good naturedly as a part of the game, and in a few weeks the new "Docs" have ceased to be rookies, and are ready to help take in those who have come in since their own arrival.

THE FUNCTION OF ORTHOPEDIC SURGERY IN THE WAR

The Philadelphia County Medical Society in its meeting of Nov. 28, 1917, heard several papers descriptive of the work of the orthopedic section of the Surgeon-General's Office and the plans for reconstruction after the war. Major David Silver, Pittsburgh, vice chairman, orthopedic section, Surgeon-General's Office, states that in organization of the work of orthopedic surgery the Surgeon-General has been guided very largely by the experience of the English army and has, in addition, paid special reference to: (1) the securing of a sufficient personnel; (2) provision for an ample number of beds, and (3) the reception of the wounded soldier as early as possible in the division to which he belongs and with the least possible change of dressing. There are now about eighty-five men in training in Europe, sixty men assigned to camps in this country, and eighty or more placed in courses of instruction, with a considerable number still unassigned. Especial attention has been paid to the training of men who did not have a sufficient fundamental knowledge of orthopedic surgery. For these men the plan of instruction consists of intensive courses of six weeks' duration, work in the cantonment hospitals under qualified orthopedic surgeons, and later, work abroad as assistants to qualified men.

Efforts are also being made to instruct the medical men generally, the line officers, and the enlisted men themselves in the care of the feet, the handling of minor joint injuries, and the simpler injuries of the back.

In the plan for the organization of the work in France, the Surgeon-General has arranged for the establishment of an orthopedic section in each hospital, and this will be placed beside the fracture section in order that the same brace shop and curative workshops may be used for the two. From 5 to 7.5 per cent. of the wounded are expected to be returned to this country, and these will be placed in the general reconstruction hospitals that are being planned in the various sections of the country. Here the reeducational work will be carried out.

The Surgeon-General has established a laboratory for the study of the various problems connected with artificial limbs. There will not be much difficulty in the supplying of artificial legs to the soldiers, as this has reached a high degree of perfection in the hands of the American manufacturer. The substitute arm is naturally, however, not so satisfactory on account of the complicated demands that are made on it when we attempt to supply the functions performed by the normal hand. So far it has been found more satisfactory to use some form of mechanical hook for labor, reserving the hand for social use.

Orthopedic surgery is concerned also with the industrial problem, which is as important as that of the military. The comparison of statistics clearly demonstrates the great importance of applying the same plan that has proved so valuable in military work to industrial work as well. In war we may have a great many casualties in one day, while in industry the number of daily accidents is small; this loss, however, is continuous, so that the economic loss of industrial accidents in the long run assumes an equal importance to the casualties in war. In view of the probable industrial struggle that will follow immediately after the conclusion of the present war, it is of vital importance that the reeducational plan be so made as to embrace both the military and the industrial need.

The Civic Aspects of Orthopedic Surgery in the War

Major Henry R. Hayes analyzed the problem of reconstruction. While this might not seem to be a large problem, analysis reveals its extent. A man returned disabled for

service will probably need, in addition to the surgical treatment overseas, further surgical and curative treatment at home. His medical and mental limitations with relation to the character of his previous occupation in civil life must be carefully studied by the medical and vocational staff to determine the specific training he shall have. Surgeons and physicians must tell us what men with given disabilities cannot do. Experts in vocational training must advise what trades to teach the disabled. Employers and employees must advise us on the local trade and labor markets. There must be fundamental organization, that employers and employees may not be asked to take unreasonable risks; and there must not be discrimination against the crippled. A man reconstructed and reeducated must be presented to society, equipped to earn the pay of a given job.

Exemptions under the National Army draft law for physical disabilities have been astonishingly large, and not a small number of such disabilities are orthopedic in character. This situation is being studied by one department of the government, that such disabilities in the younger and future generations may be minimized. Reconstruction work, therefore, will require the close cooperation of Army federal bureaus, and state and local official and civilian organizations.

Dr. G. G. Davis, member of the Orthopedic Advisory Council, thought it strange that a great war should have been necessary to arouse the people to a sense of their responsibility. We speak, for instance, of the military reconstruction, the importance of the reconstruction in industrial enterprises; but the purely civil cripple is not yet receiving a fair chance. All through our community there is a class of cripples that cannot receive treatment because of the lack of provision. This problem has occupied the attention of the orthopedic profession but it seems to have required the war to make the people appreciate its importance.

Dr. A. Bruce Gill believed that it would be difficult to find experts in teaching trades to cripples, since the work is in its very beginning. No evil is unmixed, and the opportunity for the cripple from this time will be such as it never was before. Only four states in the Union have given any state attention to this work. There will be required cooperation and study to equip and find industrial positions for the cripples that will be returned to us after the war.

Dr. Charles K. Mills noted that the War Department is sending to Philadelphia military men who are receiving special training in certain courses of instruction; but these different classes have not been coordinated. There are a neuropsychiatric class, a neurologic surgical, and an orthopedic group. The relations of orthopedic surgery to neurology are most important. That which should most concern us in the treatment of cripples is the diagnostic study. The first consideration should be a knowledge of the various conditions of the nervous muscular system, bones and joints responsible for such cases. While the greatest possible attention should be paid to the training of men for orthopedic work, their studies should be devoted to a very considerable degree to neural medicine. There are cases in this war which bring back the statements of Sir Benjamin Brodies and of Sir James Paget that functional hysteria was due not to organic injury of nerve, muscle, bone or tendon, but to certain special conditions of the nervous system. Every orthopedic base hospital or reconstruction hospital should have, and doubtless will have, a neurologic member on its staff. One of the great hospitals with which Dr. Davis is connected is the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases. This combination of work was brought about by the great neurologist, S. Weir Mitchell, and Dr. Thomas G. Morton, surgeon, and the institution has obtained results that would have been impossible had there not been this coordination of neurology and surgery.

Major Silver, in closing, said that one distinction most important to make is that orthopedic and reconstruction are not synonymous terms. The point emphasized by Dr. Davis of the urgent need of carrying out orthopedic work in our general hospitals is one of the most important points in our industrial problems. Men discharged from the hospital failing to follow directions, or given no directions, acquire atrophy from disuse of an injured member. We must supply the missing link so that men are physically restored before they are allowed to leave the hospital. The question of the experts mentioned by Dr. Gill presents a difficult problem; yet, any one who has seen what is done by these men with amputated limbs will not ask for more finished experts than they are. One man with one arm amputated is a dentist. In reeducating these crippled soldiers, we shall be the ones who are reeducated.

NEWS OF THE CANTONMENTS

Twenty-Eighth Division, Camp Hancock, Augusta, Ga.

DEC. 9, 1917.

Friday, December 7, Major Stiles, the hookworm expert, of the United States Public Health Service, addressed the surgeons of the Twenty-Eighth Division on the subject of diseases of the southern negro, and care of troops in the South.

During the past week the Inspector-General of the Army has been making a close inspection of the division.

Thirty-First Division, Camp Wheeler, Macon, Ga.

DEC. 12, 1917.

The two epidemics of measles and pneumonia appear to have come to an end. While it was suspected that there was some connection between the two, it was not known that the connection was so intimate until the figures were tabulated. It was then seen that the curve for pneumonia rose following the rise for measles, reached an apex twelve days after the measles apex, and fell in the same manner. The collected figures showed that approximately 45 per cent. of the pneumonia followed measles. Of some 3,000 cases of measles approximately 7 per cent. were followed by pneumonia. Moreover the measles pneumonia was very much more fatal than the independent pneumonia. There is no longer any doubt in our minds that pneumonia is an infectious disease, or that preventive measures must be used very much as for meningitis. All factors which weaken men and lower the vitality are powerful predisposing causes. Of these measles is the chief; it prepares the bronchii for receiving the germs, spreads the pneumococcus through bronchial cough, and in some peculiar manner renders the patient especially susceptible. It may be said to produce a sort of anaphylaxis for pneumonia.

PERSONAL

Major Harrold of the One Hundred and Twenty-First Infantry is out of the hospital after a severe operation. He left Thursday for a short trip to Washington.

BASE HOSPITAL

Major Cole, chief of surgical service at the base hospital, is using the Carrel method of wound treatment, with good results. He finds the Dakin solution rather difficult to prepare and preserve. Freezing makes it worthless. The treatment was demonstrated to all medical officers on Thursday. Major Sailer, chief of medical service, addressed the medical officers on the old but ever new subject, pneumonia, on Friday.

Room for better handling of patients has been made by the transfer of 123 pneumonia convalescents to Fort McPherson.

Mumps are on the increase judging from the admissions during the week.

Major Hans Zinsser gave a most interesting and instructive lecture on the serum treatment and diagnosis of the various types of pneumonia on Monday night. He is now actively engaged in locating and isolating meningococcus carriers of whom a few have been found in the division.

ONE HUNDRED AND SIXTH SANITARY TRAIN

Major Lorin A. Greene, commanding Field Hospital No. 121, has returned from his leave of absence and has taken up his duties with renewed vigor.

Lieutenant Stearns of Ambulance Company No. 122 has been transferred to the base hospital at this station for permanent duty.

The many friends of Lieut. Peter S. Mallon are pleased to hear that he is recovering from his serious illness at the base hospital at Fort McPherson.

The "big house" started last week by Majors Keenan and Patterson has been completed and occupied. The train commander and the director of field hospitals certainly seem comfortable in their three-room bungalow.

Recruiting has been brisk the past week and the Field Hospital No. 124 has practically completed its quota through the activity of Captain Miles.

Lieutenant Meriwether of Field Hospital No. 122 is on a short leave of absence.

Thirty-Fourth Division, Camp Cody, Deming, N. M.

BASE HOSPITAL

DEC. 12, 1917.

Associated with each division in mobilization camps is a base hospital, which, while not a part of the division, necessarily works in the closest cooperation with it, both in the care of the sick and injured and in the training of the

personnel of the medical department. These hospitals are large, for they serve a population as great as that in our smaller cities. At Camp Cody, the base hospital has already a considerable history. This camp is not entirely new, but is over a year old, having come into being at the time of the trouble with Mexico, which led to the establishment of military camps at this and other places along the border. Ground within the town of Deming adjacent to the site of the camp was acquired by the Deming chamber of commerce and leased to the government for ninety-nine years at a nominal rate. Sewerage and water connections were given by the town council, and seven wooden buildings were erected, one for administration and six for use as medical and surgical wards. These were completed about August 1, and used for the hospital purposes under the direction of Major Truby, M. C., U. S. Army, first commanding officer of the base hospital.

Medical officers assumed command of the base hospital as follows: August 1, 1916, Major Truby; shortly afterward, Major F. W. Weed; December 1, Major M. H. DeLaney; April 17, 1917, Major H. C. Pillsbury; April 25, Lieut. (now Capt.) R. B. McLaws, and, Sept. 1, Major A. O. Davis, who is still in command.

With the advent of the Thirty-Fourth Division, the accommodations at the old base hospital became utterly inadequate, and the preparation of the new hospital was made part of the construction program. The site is 4 miles away from the noise and dust of the town, located in the full desert and affording an uninterrupted view of the mountains, which surround the Deming plain on all sides. Work was so far completed that, Nov. 1, 1917, all except the surgical patients were moved to commodious buildings ready for them. There are forty-three of these, built on the cottage plan, spread over a large area, but connected with one another by wide covered ways. These, and the spacious verandas surrounding the cottages, provide abundant opportunity for moving the sick and convalescent outdoors into the sunshine.

Twenty-two wards are occupied as follows: 1, measles and its complications; 2, 3, 6, 7, 8, 9, 10, 11, 13, 14, 15 and 16, medical wards; 4 and 5, genito-urinary wards; 12, pneumonias; 17 and 18, nose and throat cases; 19 and 20, orthopedic cases, and 21 and 22 (isolated) contagious diseases. Each ward accommodates forty patients, and there are in the hospital (December 6) 1,284 patients in the new hospital and 190 in the old. These include cases as follows; measles, 45; German measles, 192; pneumonia, 27; diphtheria, 3; scarlet fever, 8; venereal diseases, 16; tonsillitis, two wards; gastro-intestinal, one ward; awaiting possible discharge on surgeon's certificate of disability, 250. Thirty-three medical officers are in attendance and 311 enlisted man, Medical Department, including forty-five temporarily detached from the sanitary train. Major A. O. Davis, commanding officer, comes from Brighton, Maine; Major John W. Sluss of Indianapolis is adjutant; Major William H. Thomas of Philadelphia is chief of the surgical service, and Major Edward B. Bigelow of Worcester, Mass., of the medical service.

NOTES

French and British officers attached to the division are giving to the medical officers several talks on conditions on the west front. They are instructive and valuable, and are greatly appreciated.

Two divisional reviews have been held recently. Favorable comment was made on the character and conduct of the sanitary train.

The Thirty-Fourth led all the divisions in subscriptions to the Liberty Loan, having subscribed for a larger total and per capita amount than any other.

Over \$7,000,000 in war insurance has been subscribed within the division thus far.

Eighty-Fourth Division, Camp Zachary Taylor,
Louisville, Ky.

DEC. 15, 1917.

Owing to the impassable roads following the deep snow, it was impossible for the garbage contractors to use their trucks for the collection of garbage, and it was found necessary by Dr. Luther R. Poust, sanitary officer, to operate the camp incinerator for garbage disposal. The various units were ordered to utilize their own wagons in hauling the garbage from their respective kitchens to the kitchens' garbage depot.

Freezing water pipes in bath houses have been one of the inconveniences suffered by the men at a few of the barracks. Active outdoor training has been retarded by the cold spell,

and indoor lectures and classes have taken the place of drilling.

False reports of sufferings of soldiers at the cantonment and even stories of deaths from freezing have been circulated and branded as German propaganda. On the tenth instant, the second death from cerebrospinal meningitis occurred since the opening of the camp. Only a few days before he was taken sick, he took out a \$10,000 War Risk Insurance Policy in favor of his mother. She will be the first beneficiary to receive payment on an insurance policy taken out at this post. There are twelve other meningitis patients at the camp, but all are expected to recover under the serum treatment. All company commanders have been authorized to waive Army regulations in cases of men honorably discharged from the service and without means to provide themselves with heavy outer clothing, letting them have overcoats to wear home. Overcoats issued are to be returned to the nearest Quartermaster's Depot within fifteen days after discharge.

The base hospital suffered considerable inconvenience by the freezing of water pipes leading to the operating room, putting out of commission all sterilizers. The commanding officers took personal charge of a group of men detailed to thaw out the pipes, and in a few hours the operating room was ready for an operation. Fortunately, during the period that it was out of commission not an emergency arose that required its use. Many oil stoves were requisitioned to heat wards after the steam was found inadequate.

BASE HOSPITAL

Special orders issued on the 13th, from Washington, D. C., direct Lieut.-Col. Will L. Pyle of the Medical Corps to report to the commanding general of the Eighty-Fourth Division, Camp Zachary Taylor, in person and assume charge of the base hospital. Colonel Pyle has been on duty at Fort Niagara, N. Y. He has not arrived as yet, and will relieve Major J. W. Worthington, who is the senior officer in charge of the base hospital, and who has been ordered elsewhere.

On the 13th, 906 cases were under treatment in base and regimental hospitals, against 967 earlier in the week. There are 23 cases of typhoid fever, 17 cases of pneumonia, 315 of measles, 7 of mumps, 5 meningitis carriers, 13 meningitis and 11 erysipelas. On the 14th, 63 patients were discharged.

Lieuts. S. H. Geist and Mayer are two of the busiest officers at the camp each morning up to 10 o'clock, as they are in the hospital receiving ward. An average of forty patients arrive at the hospital each morning, where they are examined and admission history taken before they are assigned to the wards.

"Walker," the ambulance dog, has been reported "absent without leave." The ambulance company has adopted another dog they named "Sergeant" so they may be able to throw food at him when displeased with the mess.

A company of the Three Hundred and Thirty-Fifth Infantry was due to be released from quarantine for meals when a private who had been exposed for seven weeks developed the disease, and all will have to remain in the confines of their area for fourteen days longer, thus destroying their chances for a furlough for Christmas. The patient is being accused of being the slowest mortal alive.

Eighty-Fifth Division, Camp Custer, Battle Creek, Mich.

DEC. 11, 1917.

Although winter weather has come down on us with its fury, the men seem to enjoy it. Training necessarily has been interfered with, yet hikes, drills and school work goes on much the same as if there were not 8 or 9 inches of snow on the ground.

Whether the cold weather will have any effect on the health of the camp remains to be seen; but reports given out by the division surgeon show the rate to be less than that of the general rate of the National Army, with only 14.79 per thousand. Thirty-two per thousand is the rate of the entire National Army.

The good work of the state health department, the city officials and the military police is without question responsible for the rather unusual percentage rate of venereal infections here. Camp Custer's record is only 1.75 per cent. As this includes all types, including those that were brought to camp with the draft increments, the showing is particularly gratifying to the division surgeon.

It has been shown that thirty-five female carriers of venereal infection were isolated and confined in hospitals at Ann Arbor. There has been no provision made for male carriers. It is expected that arrangements will be made by

the state board of health for obtaining a building for segregation of civilian carriers.

The plan of instruction given the medical officers has been started again in paper work, gas defense work and map reading. The lyceum under the direction of Major Wood, commanding officer at the base hospital, has also begun, and much interest has been aroused by the interesting work planned by Major Wood. Every medical officer in camp is expected to attend these courses.

NOTES

Major George F. Suker, chief of the ophthalmic division of surgery of the head, addressed the Academy of Medicine at Kalamazoo, November 27, on "Injection of the Lateral Ventricles in the Treatment of Tabetic Optic Atrophy."

Major John Ridlon was again in camp, giving a course of instruction to the line officers on the care of the feet.

Eighty-Seventh Division, Camp Pike, Little Rock, Ark.

DEC. 9, 1917.

Camp Pike, in general with all southern cantonments, has just received a dose of the "Sunny South" that was entirely unexpected and unappreciated. The thermometer dropped to 2 degrees below zero, and there was a 6 inch fall of snow. The general style of architecture in the cantonment buildings is the same here as elsewhere, except that measures have been taken in northern camps to prepare for cold weather that have not been taken at Camp Pike. In the camps further north, the barracks have been lined with "compo" board, the foundations banked up and ventilators adjusted. At Camp Pike buildings are up on stilts, walls unlined on the inside, and ventilators open. It is a very difficult matter to make buildings of this type comfortable in zero weather, especially if there is a wind of considerable velocity blowing. These conditions are probably healthful and of no importance to robust individuals, but it is a matter for consideration as to the possible effect of such surroundings on persons either going through the period of incubation or recovering from certain contagious diseases. The conditions are ideal for the fresh air and cold air enthusiasts in the treatment of disease.

The state of health of the men in the division may be said to be very good. The base hospital at present is full, more than half of the patients having measles. There have also been scarlet fever and meningitis among some of the more recent arrivals from the North. Soldiers furnish about the same percentage of surgery as do individuals in civil life, so that this department is always reasonably busy.

The heating plant at the hospital has been completed, and the buildings are very warm and comfortable at present.

Major-General Gorgas visited the camp about December 1. Colonel Chamberlin of the Surgeon-General's Office was also a recent visitor.

One of the problems confronting Camp Pike at the time of its construction was the matter of suitable sewage disposal. It was necessary to discharge the sewage into Five Mile Creek, a small stream in this vicinity. This formed a bubbling, fetid and offensive stream which flooded Bayou Meto and Trammel Lake and other swampy areas in this region. A sprinkling filter basin for all sewage has been constructed which renders the sewage inoffensive as far as odor is concerned.

The tuberculosis examination board, under the direction of Major Gath of Cincinnati, although it has been here several weeks, is still very busy. Lieutenant De Witt of this board, formerly a member of the medical officers' training camp at Fort Benjamin Harrison, has been promoted to a captaincy, as have also Lieut. Charles Lerrigo of Topeka in command of Ambulance Company No. 347, Three Hundred and Twelfth Sanitary Train, and Lieut. T. R. Ayres of St. Louis, at present with the regimental infirmary of the Three Hundred and Thirty-Fourth Field Artillery.

Some of the medical officers in this division who have recently taken advantage of a ten day leave of absence in order to visit their homes are: Major J. W. Thornton of Iowa, Capt. J. B. Steele of Tennessee, Capt. Paul R. Howard of Nebraska and Lieut. N. R. Palmer of Missouri.

Eighty-Ninth Division, Camp Funston, Fort Riley, Kan.

DEC. 12, 1917.

During the week just passed, the Eighty-Ninth Division was honored by a visit from Surgeon-General Gorgas and his party, which included Colonel Howard, M. C., Major Vaughan, M. R. C., of the University of Michigan Medical

School, and Dr. Welch of Johns Hopkins. They inspected the base hospital, the camp and its infirmaries, and all expressed themselves as highly pleased with the organization and work of the medical department in this division.

On the first evening of their stay, the Surgeon-General, Dr. Welch and Major Vaughan delivered a short address to all the medical officers of the camp. After extending remarks of greeting to all, the Surgeon-General directed his remarks particularly to the colored medical officers of the Ninety-Second Division. He stated that, as one born and raised in the South, who had watched with interest and appreciation the struggles of a newly freed race toward better things, he thought it particularly commendable that the colored physicians should have taken it on themselves and succeeded in volunteering their services in the Medical Department, in this greatest of all wars for democracy. He stated that he was sure they would give a good account of themselves, both as officers and as physicians.

Dr. Welch, who accompanied the party as epidemiologist, showed the typical modesty of a great man, when he told us that there was more for him to learn from the way the medical department of this camp was conducted than there was for him to teach us.

Major Vaughan stated that, while the division sanitary inspector and the division surgeon had been justly complimented by the two previous speakers, he wished, in addition, to extend his congratulations to the regimental surgeons and other medical officers of the camp who had made the work run smoothly. He said he was sure that all the sacrifices represented by the presence of the officers in the audience before him would be amply repaid in the years to come by the feeling that when their country needed them, they had responded to the call.

ORDERS TO OFFICERS OF THE MEDICAL CORPS

Major JUNIUS F. LYNCH, relieved at Camp McClellan, and to *Camp Stuart*, Newport News, Va., for duty.

Lieut. ROSSNER E. GRAHAM, relieved at Allentown, Pa. and to *Camp Lee*, Petersburg, Va., for duty.

Major ADDISON D. DAVIS, relieved at Camp Kearny, and to *Camp Joseph E. Johnston*, for duty as commanding officer of the base hospital.

Major HENRY J. NICHOLS, relieved from U. S. Army General Hospital No. 1, and to *Walter Reed General Hospital*, Takoma Park, D. C., for treatment.

Lieut.-Colonel WILLIAM E. VOSE, relieved from station at Fort Williams, Me., to *Fort McPherson*, Ga.

Colonel LEIGH A. FULLER, relieved at Fort D. A. Russell, and to *Charleston*, S. C., to report in person to the commanding general, Southeastern Department, for duty as department surgeon.

Lieut.-Colonel WILLIAM L. LITTLE, relieved at Newport News, Va., and to *Fort Bliss*, Texas, for duty as division surgeon.

Major JESSE R. HARRIS, relieved at Fort Niagara, and to *Ithaca*, New York, Military School of Aeronautics, Cornell University, for duty.

Lieut. HENRY TIMROD SCHIFFLEY, relieved at Camp Sevier, and to report in person to the commanding general, 30th division, for duty in the base hospital.

Lieut.-Colonel JOHN W. HANNER, to *New York City* to command and mobilize Base Hospital No. 116, at the 71st Regiment Armory.

Capt. HERBERT R. DREARY, relieved at Camp McClellan, and to *his home* and honorably discharged from the Medical Corps of the National Guard.

ORDERS TO OFFICERS OF THE MEDICAL RESERVE CORPS

Alabama

To *Camp Bowie*, Fort Worth, Texas, base hospital, from Camp Meade, Lieut. GEORGE W. KIEHNHOFF, Daphne.

To *Camp Funston*, Fort Riley, Kan., as member of board for examination of command for tuberculosis, from Fort Worth, Lieut. SAMUEL E. JOHNSON, Clanton.

To *Camp Travis*, Fort Sam Houston, Texas, to examine the command for mental and nervous diseases, from Baltimore, Lieut. ROBERT H. HOWARD, Tuskegee.

To *Fort Oglethorpe*, for instruction, Capt. WALTER WILLIS ROSSER, Stevenson; Lieuts. WALTON L. BEAN, Andalusia; LEO C. WOODS, Birmingham; BURTON F. AUSTIN, Chancellor; Hospital Train No. 28 from Fort Oglethorpe, Lieut. ROBERT S. DODSON, Grand Bay.

To *New York City*, Base Hospital No. 116, for duty from Boston, Capt. PAUL L. COCKE, Birmingham; for instruction in orthopedic surgery, from Fort Ethan Allen, Lieut. DAVID RAMSEY, Pine Apple.

Arizona

To *Army Medical School*, Washington, D. C., for instruction in orthopedic surgery, from Fort Oglethorpe, Capt. RODERICK D. KENNEDY, Globe.

To *New York City*, Orthopedic Hospital for instruction in orthopedic surgery, from New York City, Capt. CHARLES T. STURGEON, Globe.

Arkansas

To *Camp Beauregard*, Alexandria, La., for duty, from Fort Smith, Lieut. WALTER G. EBERLE, Fort Smith.

To *Camp Pike*, Little Rock, Ark., for duty, from Camp Lee, Lieut. GUY A. McCORMACK, Little Rock.

To *Fort Oglethorpe*, Ga., for instruction, Lieut. ARTHUR F. HOGE, Fort Smith.

To *Little Rock*, Ark., to enlist the enlisted personnel of Hospital Unit "T," Capt. ALVIN L. JOBS, Little Rock.

To *Walter Reed General Hospital*, Washington, R. C., for observation and treatment, Lieut. TRUE S. BURGESS, Russellville.

California

To *Camp Fremont*, Palo Alto, Calif., base hospital, from Fort Mason, Capt. LOUIS P. HOWE, San Francisco.

To *Camp Kearny*, Linda Vista, Calif., for duty, Capt. CHARLES L. GARVIN, Los Angeles; Lieut. EDGAR O. CAMPBELL, Santa Barbara; base hospital, Lieut. HOWARD B. DIXON, Daly City; Lieut. CHARLES E. SCHWARTZ, San Francisco.

To *Camp Lewis*, American Lake, Wash., for temporary duty to examine the command in his specialty, Capt. WILFRED F. BEERMAN, San Francisco.

To *Camp Taylor*, Louisville, Ky., base hospital, from Fort Oglethorpe, Lieut. ELMER W. SMITH, San Francisco.

To *Fort Mason*, Calif., Base Hospital No. 30, Capt. HOWARD E. RUGGLES, San Francisco; CHARLES N. RICHARDS, San Jose; Lieuts. CLARK R. GILES, WILLIAM W. WASHBURN, JOHN H. WOOLSEY, San Francisco; from Camp Kearny, Capt. HERBERT S. THOMSON, Berkeley; Lieuts. ERNEST H. FALCONER; HAROLD W. WRIGHT, San Francisco; from Camp Lewis, Lieut. HUDSON SMYTHE, Stockton; from Camp Travis, Lieut. ARTHUR C. GIBSON, San Francisco; from San Francisco, Lieut. ELDRIDGE J. BEST, CHARLES L. TRANTER, San Francisco.

To *Fort Riley*, for instruction Capt. ROBERT M. JONES, JR., Fresno; GORDON B. HAMILTON, Oakland; Lieuts. BERNARD SHELTON, Long Beach; ERNEST E. WILSON, Walnut Grove; with Evacuation Hospital No. 7, from Camp Cody, Lieut. LIVA C. McLAIN, Bakersfield.

To *New York City Orthopedic Hospital*, for instruction in orthopedic surgery, from New York City, Lieut. JOSEPH R. JONES, Yreka.

To *his home* and honorably discharged on account of being physically disqualified for active service, from San Diego, Capt. ALEXANDER PATTERSON, San Francisco.

Honorably discharged, Lieut. SOLOMON C. MISH, San Francisco.

Canal Zone

To *Washington*, D. C., for duty in Aviation Section, Signal Corps, from Mineola, Capt. EDWARD P. BEVERLY, Balboa.

Colorado

To *Camp Custer*, Battle Creek, Mich., as president of board for examination of command for tuberculosis, from Camp Bowie, Major GERALD B. WEBB, Colorado Springs; base hospital, from St. Louis, Lieut. FRED H. CARPENTER, Denver.

To *Camp Doniphan*, Fort Sill, Okla., base hospital, Lieut. RANULPH HUDSTON, Denver.

To *Camp Joseph E. Johnston*, Jacksonville, Fla., as a member of the board for examination of command for tuberculosis, from Camp Bowie, Lieut. PHILIP A. LOOMIS, Colorado Springs.

To *Camp Mills*, base hospital, from Camp Mills, Lieut. PHILLIPS M. CHASE, Denver.

To *Fort Riley*, for instruction, Lieuts. JOSEPH B. SALBERG, Boulder; CARLETON O. BOOTH, Denver; JOSEPH A. KELLY, Oak Creek.

Connecticut

To *Fort Oglethorpe*, for instruction, Capt. JOHN B. GRIGGS, Hartford; Lieut. EDWARD A. WILLIAMSON, Stamford.

To *Fort Slocum*, N. Y., for duty, from Fort Ethan Allen, Lieut. M. H. GRISWOLD, Kensington.

To *Hoboken*, N. J., for duty, from Washington, D. C., Capt. ARTHUR B. COLEBURN, Middletown.

To *New York City*, for instruction in orthopedic surgery, from Hartford, Lieut. HERMAN M. HURWITZ, Hartford.

To *Philadelphia*, Pa., for instruction in orthopedic surgery, Capt. ROBERT H. YERGASON, Hartford.

District of Columbia

To *Fort Keogh*, Montana, for duty, from Fort Snelling, Capt. HARRY L. SCHURMEIER, Washington.

To *Fort Oglethorpe*, for instruction, Lieuts. CHARLES F. BOVE, GEORGE W. MANNING, Washington.

To *Hazellhurst Field*, Mineola, L. I., N. Y., for duty, from office of the Chief Surgeon, Major EDWARD G. SEIBERT, Washington.

Honorably discharged, Lieut. TRUE S. BURGESS, Takoma Park.

Florida

To *Fort Oglethorpe*, for instruction, Capt. MURDOCH L. CRUM, Bowling Green; Lieuts. ROBERT D. MAY, HOWARD C. VON DAHM, Jacksonville; JOHN L. ADAMS, Milligan; GEORGE H. GWYNN, HUMPHREY W. GWYNN, Tallahassee; EUGENE S. GILMER, Tampa; HERBERT A. McCLURE, Walnut Hill.

To *New York City*, Post-Graduate Medical School for instruction, from Camp Greene, Capt. HARRY A. PEYTON, Jacksonville.

To *his home* and honorably discharged on account of being physically disqualified for active service, from Camp Meade, Lieut. HARRY C. GALEY, Key West.

Georgia

To Atlanta, Ga., to enlist the enlisted personnel of Base Hospital No. 43, Lieut. EDGAR H. GREENE, Atlanta.

To Camp Beauregard, Alexandria, La., base hospital, from Fort Oglethorpe, Lieut. EARL T. NEWSOM, Camilla.

To Camp Cody, Deming, N. M., base hospital, from Fort Oglethorpe, Capt. WILLIAM B. OREAR, Savannah.

To Camp Gordon, Atlanta, Ga., base hospital, Lieut. JOSEPH A. MEGARITY, Draketown.

To Camp Logan, Houston, Tex., base hospital, Major THEODORE R. CERTEL, Augusta.

To Fort Bliss, Texas, with Headquarters Military Police, from Camp Greenleaf, Lieut. JESSE H. HENDRY, Shellman.

To Fort Oglethorpe, for instruction, Lieuts. LUTHER E. KELLEY, Atlanta; JESSE J. EVERETT, Campton; DENNIS F. WELDON, Dancsville; OSCAR S. SPIVEY, Eatonton; CLAUDE B. BROOKINS, Gordon; EUGENE F. THOMASON, Lumber City; WILLIAM T. RANDOLPH, Monroe; CHARLES B. UPSHAW, Rydal; WILLIAM M. WHITE, Watkinsville.

To Newport News, Va., for duty, from Fort Oglethorpe, Lieut. WALTER E. MOBLEY, Social Circle.

To New York City, Base Hospital No. 116, from Fort Riley, Capt. WILLIAM G. LEE, Macon.

To Philadelphia, Pa., for instruction in orthopedic surgery, Lieut. KENNETH S. HUNT, Milner.

To his home and honorably discharged from Fort Oglethorpe, Lieut. JOSEPH D. LYLE, Savannah.

Hawaii

To his home and honorably discharged from San Diego, Lieut. SAMUEL R. BARNES, Honolulu.

Idaho

To Fort Riley, for instruction, Lieuts. GEORGE B. RANDALL, Buhl; CLAUDE W. WILLIAMS, Laclede; JOHN C. WIK, Moscow.

To Vancouver Barracks, Wash., for duty, from Camp Lewis, Lieut. FREDERICK W. DIDIER, Harrison.

Illinois

To Boston, Mass., Harvard Medical School, for instruction in orthopedic surgery, Lieuts. ROBERT W. KISPERS, Chicago; BENJAMIN J. SCHWARTZ, Waukegan.

To Camp American University, Washington, D. C., for duty, from Fort Sheridan, Lieut. KARL J. HENRICHSEN, Chicago.

To Camp Beauregard, Alexandria, La., base hospital, from Fort Oglethorpe, Lieut. IRA E. NEER, Springfield.

To Camp Gordon, Atlanta, Ga., base hospital, from St. Louis, Lieut. HUDSON McB. GILLIS, Woodriver.

To Camp Mills, Garden City, L. I., for examining the command in his specialty, Lieut. JOHN T. MACCURDY, Pembroke Lodge.

To Camp Wadsworth, Spartanburg, S. C., base hospital, from Fort Oglethorpe, Lieut. ABEL P. M. SANDALH, Chicago.

To Fort Bliss, Texas, with Headquarters Military Police, from Camp Greenleaf, Lieut. JAMES K. JOHNSON, Ellsworth.

To Fort Oglethorpe, for instruction, Lieut. FREDERICK H. MAURER, Peoria.

To Fort Riley, for instruction, Capt. WILLIAM S. BROWN, Cairo; FREDERICK A. FISHER, THOMAS J. O'MALLEY, Chicago; JOHN A. BORTZ, Nauvoo; WALTER L. HOUGHLAND, Peoria; Lieuts. ALEXANDER P. ROBERTSON, Alton; HALLEY A. SMITH, Antioch; ELVEN J. BERKHEISER, Aurora; FRANK J. KOTALIK, Berwyn; FRANK A. ANDERSON, SAMUEL AXELRAD, EDWIN J. BARNETT, STEPHEN BIEZIS, BERNARD J. BOLKA, SYLVESTER A. BRENTA, CHARLES B. BROMBERG, HENRY CHRISTIANSEN, ROY E. CHRISTIE, FLOYD M. CLARK, HERMAN C. CLAYTON, LAZARUS COHLER, JOHN E. DAMRON, ABRAHAM L. DESSER, HARRY J. DWYER, VICTOR FINSAND, ULYSSES S. GEIGER, EARL W. GILROY, ELMER A. GUNDERSON, RUSSELL A. HENNESSEY, CARL B. HERRMANN, WILLIAM ISRAELSON, EDWARD J. JENKINSON, CARL J. JOHANNESSEN, HENRY C. JOHNSON, ROBERT F. KNOLL, MIECISLAUS J. KOSTRZENSKI, THOMAS LAHNERS, EDWARD J. MACDONALD, FRANK MADLEC, JOHN E. McGUIGGAN, FRED McK. MILLER, MAYER A. NEWHAUSER, HARRY S. NORTON, JOHN F. OATES, HOWARD S. PERRY, WILLIAM J. PICKETT, CHARLES E. PITTE, HAROLD A. RAMZER, ABRAHAM R. RIMMERMAN, FRANK J. SCHICK, FRED F. SCHWARTZ, WILLIS I. SILVERSTEIN, HARRY S. SOLOMON, HENRY A. STAIB, Chicago; CHARLES L. KERRICK, Christian; WARREN C. BLIM, Crete; GEORGE O. DE MOSS, Cropsey; THOMAS C. McCLURE, Dahlgren; MELVIN L. HOLE, Danville; GILBERT F. HARRIS, Easton; LAWRENCE J. BERNARD, East St. Louis; CLYDE J. CHAMNESS, Elkville; ALEXANDER W. FORDYCE, Gilman; HARRY P. REUSS, Granite City; HERMAN C. KOCH, Harvard; HARRY A. MYERS, Joliet; GEORGE J. BRAND, Lafayette; EDGAR C. COOK, Mendota; WILLIAM H. EVANS, Murphysboro; KEITH T. MEYER, Oak Park; HUGH E. COOPER, Peoria; HARRY H. HANLY, Peoria; GEORGE W. KIMBALL, Stewart; HORACE M. FRANCIS, Woodstock; LEO V. GATES, Zeigler.

To Fort Robinson, Neb., for duty, Lieut. ALBERT N. MACKAY, Aledo.

To Fort Slocum, N. Y., for duty, from Fort Ethan Allen, Lieut. MAURICE L. PUFFER, Downers Grove.

To Milwaukee, Wis., for duty in the office of the attending surgeon, from Chicago, Lieut. CLAUDE H. OGDEN, Chicago.

To New York City, for instruction in orthopedic surgery, Lieut. IRWIN H. CUTLER, Chicago; from Chicago, Lieut. VINCENT W. KOCH, Chicago.

To Philadelphia, Pa., for instruction in orthopedic surgery, Capt. EDSON B. FOWLER, Evanston.

To St. Louis, Mo., Washington University, for instruction in Urology and Dermatology, from Fort Oglethorpe, Lieut. GEORGE W. BOWMAN, Ashley.

Honorably discharged, Capt. WALTER P. MCGIBBON, Chicago.

To the inactive list, from Fort Benjamin Harrison, Lieut. IRVING A. PORGES, Chicago.

Indiana

To Camp American University, Washington, D. C., for duty, from Fort Benjamin Harrison, Lieuts. CLARENCE K. JONES, Indianapolis; GEORGE T. JOHNSON, Terre Haute.

To Camp Green, Charlotte, N. C., base hospital, from Roosevelt Hospital, New York City, Lieut. BROWN S. McCLINTIC, Peru.

To Camp Pike, Little Rock, Ark., base hospital, from Fort Oglethorpe, Lieut. MELCHERD H. KUTCH, Terre Haute.

To Camp Sevier, Greenville, S. C., base hospital, from Fort Oglethorpe, Lieut. SEWELL B. COULSON, Indianapolis.

To Camp Taylor, Louisville, Ky., as medical member of examining board and recruiting officer, from Fort Benjamin Harrison, Lieut. PAUL B. COBLE, Indianapolis; for duty, from Camp Custer, Lieut. PERRY C. TRAVER, South Bend.

To Chickamauga Park, Ga., for duty from Fort Benjamin Harrison, Lieut. CLAUDE D. HOLMES, Indianapolis.

To Fort Oglethorpe, for instruction, Capt. GEORGE T. WILLIAMS, Crawfordsville; Lieut. ANDREW F. GUGSELL, Ferdinand; from Houston, Texas, Lieut. MERTON A. FARLOW, Milroy; with Ambulance Co. No. 42, from Camp Custer, Lieut. ELTON L. TITUS, Indianapolis.

To St. Louis, Washington University, for instruction in urology and dermatology, from Camp Grant, Lieut. WARREN W. HEWINS, Evansville.

Iowa

To Fort Riley, for instruction, from Camp Dodge, Major CHARLES E. RUTH, Des Moines; Capt. BENJAMIN C. DYER, Ames; for instruction, Capt. MARK C. JONES, Boone; ALANSON M. POND, Dubuque; FRANK G. RHODES, Sioux City; Lieut. LOUIS B. AMICK, Millersburg.

Kansas

To Army Medical School, Washington, D. C., for duty, Lieut. GEORGE M. GRAY, Kansas City.

To Fort Riley, for instruction, Lieuts. SAMUEL N. MALLISON, Canton; CHARLES A. THOMAS, Edna; CHARLES S. FRY, St. George; ALBERT M. BROWN, Wichita.

To St. Louis, Washington University, for instruction in urology and dermatology, from Camp Taylor, Lieut. CLYDE M. ZINK, Wellington.

Kentucky

To Boston, Harvard Medical School, for instruction in orthopedic surgery, from Fort Oglethorpe, Lieut. JOHN W. STEPHENSON, Ashland.

To Fort Oglethorpe, for instruction, Major JULIAN P. McCLYMOMDS, Lexington; Lieuts. EUGENE C. HARTMAN, Brandenburg; EARL M. CUTLER, SELMAR F. HAUSER, CLIFFORD N. HEISEL, THOMAS H. KELLY, Covington; HAVILAND CARR, Cynthiana; HARRY F. MANN, Demonsville; RICHARD R. SNOWDEN, Irvine; HYLAN H. WOODSON, Kirkmansville; HUNTER W. GINGLES, Kirksey; JOSEPH R. ALLEN, Langley; LYTLE ATHERTON, Livermore; EDWARD L. IRVIN, MARION E. PIRKEY, ISAAC L. WYATT, Louisville; JOHN R. PRYOR, Mayfield; GIDEON W. STONE, Middlesboro; FREDERICK K. BLAIR, Morehead; HARLAN G. CLAYPOOLE, Mt. Olivet; HOMER A. SUTTER, Newport; MILTON J. STERN, Paris; RAYMOND M. EVANS, Tompkinsville; NATHAN FELD, Winchester.

To Fort Thomas, Ky., for duty, from Camp Dix, Capt. JOHN L. PHYTHIAN, Newport.

To Lexington, Ky., to enlist the enlisted personnel of Base Hospital No. 40, Lieut. GEORGE H. WILSON, Lexington.

To his home and honorably discharged from Fort Oglethorpe, Capt. EDWARD W. FORD, Hartford.

Louisiana

To Camp Joseph E. Johnston, Jacksonville, Fla., base hospital, from Fort Oglethorpe, Lieut. ERNASTUS L. MILLER, Longville.

To Camp Pike, Little Rock, Ark., for duty, from Camp Pike, Lieut. HOWARD P. DOLES, Blanchard.

To Fort Oglethorpe, for instruction, Lieuts. HAROLD G. F. EDWARDS, Abeville; EDWARD E. ARCHIBALD, Alberta; RALPH P. EVANS, Alexandria; WALTER P. LAMBETH, Allendale; HOWARD P. DOLES, Blanchard; ALARIC C. WHITTINGTON, JOSEPH L. EWING, Dodson; EDWIN M. LEVY, Jackson; BROOKS C. GARRETT, Shreveport; PATRICK H. FLEMING, St. Martinville; JOSEPH M. GORTON, Waterproof.

To his home and honorably discharged, from Fort Oglethorpe, Lieut. OLIVER W. ALFORD, Bovausa.

Maine

To Camp Wheeler, Macon, Ga., base hospital, from Harvard Medical School, Capt. WILLIAM C. WHITMORE, Portland.

To Fort Oglethorpe, for instruction, Lieuts. FREEMAN P. GLASON, GARDINER; ISAAC L. GORDON, Lincoln; WYVERN A. COOMBS, Westbrook; FRED E. WHEELER, West Paris.

To Fort Slocum, N. Y., for duty, from Fort Ethan Allen, Lieut. CHARLES E. COOK, JR., South Berwick.

Maryland

To Baltimore, Md., Johns Hopkins Medical School, from duty as contract surgeon, Lieut. LEWIS H. WEED, Baltimore.

To Camp Beauregard, Alexandria, La., base hospital, from Fort Oglethorpe, Lieut. JULIE R. ROLENSON, Baltimore.

To Camp Dodge, Des Moines, for duty, from Fort Des Moines, Major FRANK MARTIN, Baltimore.

To Camp Joseph E. Johnston, Jacksonville, Fla., as adjutant of the base hospital, from Camp Hancock, Lieut. IRVING K. LOVETT, Baltimore.

To Fort Oglethorpe, for instruction, Lieuts. CLAUDE C. KELLY, THEODORE S. MOISE, JOHN C. NORTON, CLARENCE M. REDDIG, HARRY E. WILSON, Baltimore; WILMER M. PRIEST, North East; HUGH R. SPENCER, Parkton; MILFERT W. MYERS, Taneytown.

To Fort Slocum, N. Y., for duty, from Fort Ethan Allen, Lieut. ANTONE C. SORENSEN, Baltimore.

To New York City, to inspect the Neurological School, then to Montreal, Quebec, Toronto, Ontario and Winnipeg, Manitoba, Canada, for duty and on completion to his proper station, Capt. CHARLES BAGLEY, Jr., Baltimore; for intensive training in his specialty, from Baltimore, Lieut. HENRY E. AUSTIN, Baltimore.

To Washington, D. C., for duty in Aviation Section, Signal Corps, from Millington, Capt. COMPTON WILSON, Friendship.

To his home and honorably discharged, Major A. COTTON, Baltimore.

Massachusetts

To Army Medical School, Washington, D. C., as professor of orthopedic surgery, Major ELLIOT G. BRACKETT, Boston.

To Boston, Mass., Harvard Medical School, for instruction in orthopedic surgery, Lieuts. EARLE M. HUSSEY, Fall River; GEORGE MOSSMAN, Westminster.

To Camp Beauregard, Alexandria, La., base hospital, from St. Louis, Lieut. CHARLES F. CANEDY, Greenfield.

To Camp Grant, Rockford, Ill., base hospital, Capt. JOHN BRYANT, Brooklyn.

To Fort Oglethorpe for instruction, Capt. NOEL E. GUILLET, Brookline; Lieuts. WILLIAM E. BROWNE, JAMES C. LEAVITT, Boston; CHARLES H. MERRILL, Lynn; EMIL U. DILLENBACK, Springfield.

To Hoboken, N. J., for duty, from Fort Myer, Lieut. EDWARD H. FRENCH, Boston.

To Morrison, Va., for duty, from Langley Field, Lieut. WILLIAM L. CONNERY, Springfield.

To New York City, Base Hospital No. 116, from Boston, Capt. SAMUEL W. ELLSWORTH, Boston.

To St. Louis, Mo., for instruction in urology and dermatology, Lieuts. ROBERT J. EVANS, JR., JOHNSTON L. CHERESKIN, Springfield.

To his home and the inactive list on account of being physically disqualified for active service, Lieut. HILMAR O. KOEFOD, Boston.

Michigan

To Camp MacArthur, Waco, Tex., base hospital, from Harvard Medical School, Capt. CURTIS D. PILLSBURY, Ann Arbor.

To Camp Mills, Garden City, L. I., to examine the command in his specialty, Lieut. NICHOLSON W. PINTO, Kalamazoo.

To Camp Sheridan, Montgomery, Ala., base hospital, from Fort Oglethorpe, Capt. FRANK C. KINSEY, Grand Rapids.

To Fort Riley, for instruction, Capt. LOUIS N. YORKES, Elk Rapids; Lieuts. HAROLD B. MARKHAM, Marquette; WILLIAM E. ALLEGER, Pittsford; LEON W. MARTIN, Plainwell; from Ann Arbor, Lieut. GORDON H. BAHLMAN, Flint; from Camp Custer, Lieuts. SPENCER VAN BARNUM, Coloma; WESLEY A. GIFFIN, Deckerville; FRANK W. GOWDY, St. Joseph.

To Hoboken, N. J., for duty, from Camp Sherman, Capt. GRIFFITH A. THOMAS, Detroit.

To Jeffersonville, Ind., Depot Quartermaster, for duty, from Fort Oglethorpe, Lieut. CYRUS B. GARDNER, Alma.

To New York City, for instruction in orthopedic surgery, from Ironwood, Capt. EUGENE B. STEBBINS, Ironwood.

To St. Louis, Mo., Washington University, for instruction in urology and dermatology, Lieut. LELAND H. TOWER, Battle Creek.

Minnesota

To Camp Beauregard, Alexandria, La., base hospital, from St. Louis, Lieut. FLOYD W. BURNS, St. Paul.

To Camp Dodge, Des Moines, Ia., base hospital, from Minneapolis, Lieut. CHARLES E. CONNOR, Minneapolis.

To Camp Greene, Charlotte, N. C., for duty, from Fort Snelling, Lieut. ELMER H. LUTZ, St. Paul.

To Camp Lewis, American Lake, Wash., base hospital, Lieut. HARVEY M. SLATER, Minneapolis.

To Camp Upton, N. Y., to examine the command for mental and nervous diseases, from Ann Arbor, Lieut. FREDERICK P. MOERSCH, Minneapolis.

To Fort Riley, for instruction, Lieuts. FRANK J. ELIAS, Duluth; VERNE S. COBOT, JAMES N. DUNN, Minneapolis; CLARENCE A. RATHBUN, Rice; STEWART H. ANDERSON, Wells.

To Hoboken, N. J., for duty, from Fort Snelling, Capt. MARTIN LARSON, St. Paul.

To Minneapolis, Minn., to enlist the enlisted personnel of Base Hospital No. 26, Lieut. GORDON M. CLARK, Minneapolis.

To Philadelphia, Pa., for instruction in orthopedic surgery, Lieut. IVER F. SELLESETH, Glenwood.

To his home and honorably discharged from the Medical Reserve Corps on account of being physically disqualified for active service, from Camp Custer, Capt. FRANKLIN R. WRIGHT, Minneapolis.

Mississippi

To Army Medical School, Washington, D. C., for duty, Lieut. WALTER B. DODSON, Jackson.

To Camp Sherman, Chillicothe, Ohio, base hospital, Lieut. AUGUST J. PEDEST, Natchez.

To Fort Oglethorpe, for instruction, Capt. ZACHARIAN J. SCOTT, Winona; Lieuts. ABNER J. BARNETT, Carthage; ARTHUR A. SPARKMAN, Cleveland; DUDLEY R. MOORE, Cockrum; LEON C. ELLIS, Columbus; JOHN D. SIMMONS, Gunnison; WILLIAM J. AYCOCK, Hohenlinden; WIRT A. RODGERS, Jackson; ROBERT B. HARPER, McBride; GEORGE R. STORM, Phillip; BURRIE E. BURCHFIELD, Ruleville.

Missouri

To Boston, Mass., Harvard Medical School, for instruction in orthopedic surgery, Lieuts. CHARLES W. BRESSLER, Grant City; FRED C. CALLAWAY, Ravanna.

To Camp Funston, Fort Riley, as a member of a board of medical officers for the special examination of the command for tuberculosis, from Fort Worth, Lieut. ALLEN G. WAINWRIGHT, St. Louis.

To Camp Hancock, Augusta, Ga., base hospital, from Fort Oglethorpe, Lieut. MOSES H. TOPPING, Flat River.

To Camp Lewis, American Lake, Wash., base hospital, Capt. JOHN BUTLER, Hawk Point.

To Camp Pike, Little Rock, Ark., base hospital, from St. Louis, Lieut. JAMES R. ELLIOTT, Kansas City.

To Camp Shelby, Hattiesburg, Miss., base hospital, Capt. EDWARD L. COOLEY, St. Louis.

To Camp Travis, Fort Sam Houston, Texas, base hospital, Capt. MINFORD A. HANNA, Kansas City; to examine the command for mental and nervous diseases, from Baltimore, Lieut. WILLIAM G. PATTEN, Farmington.

To Fort Riley, for instruction, Lieuts. WILLIAM O. FINNEY, Chaffee; HERMAN A. LAFORCE, Jasper; FRED E. DARGATZ, Kearny; THOMAS F. EDWARDS, Keota; VIRGIL S. DANGERFIELD, Luray; CLAUDE J. ALLEN, Rich Hill; CLAUDE D. HALLEY, CARL J. MULLER, St. Louis.

To Newport News, Va., for duty, from Fort Oglethorpe, Lieut. JAMES B. WOOD, St. Louis.

To Philadelphia, Pa., for instruction in orthopedic surgery, Lieut. HENRY L. HESS, Kansas City.

To Roosevelt Institute, for instruction in laboratory work, Lieut. BERNARD J. McMAHAN, St. Louis.

To his home and honorably discharged, from Camp Meade, Lieut. BENJAMIN F. JOHNSON, Buffalo; from Fort Riley, Lieut. ARTHUR O. TUCKER, Maysville.

Honorably discharged, Lieut. WILL L. FREEMAN, St. Charles.

Montana

To Camp Doniphan, Fort Sill, Okla., base hospital, from Fort Oglethorpe, Lieut. JOHN J. TOBINSKI, Missoula.

To Camp Shelby, Hattiesburg, Miss., base hospital, from St. Louis, Lieut. ROBERT L. OWENS, Hamilton.

To Camp Sherman, Montgomery, Ala., base hospital, from St. Louis, Lieut. KARL A. SNYDER, Great Falls.

To Fort Riley, for instruction, Lieuts. JOHN H. BRIDENBAUGH, Billings; WILLIAM D. MADDEN, Great Falls; from Fort Riley, Lieut. EDWARD O'NEILL, Kalispell.

Nebraska

To Army Medical School, Washington, D. C., for duty, Lieut. AUGUST F. JONES, Omaha.

To Camp Beauregard, Alexandria, La., base hospital, from Fort Oglethorpe, Lieut. DEXTER D. KING, York.

To Camp Cody, Deming, N. M., for duty, from Fort Riley, Lieut. HARRY J. JENKINS, Omaha.

To Camp Greene, Charlotte, N. C., base hospital, from Fort Oglethorpe, Capt. JUDD A. STRONG, Kearny.

To Camp Joseph E. Johnston, Jacksonville, Fla., as member of board for examination of command for tuberculosis, from Camp Bowie, Lieut. JOHN F. ALLEN, Omaha.

To Fort D. A. Russell, Wyoming, for temporary duty, from Fort Riley, Capt. CHARLES H. CAMPBELL, Columbus.

To Fort Riley, for instruction, Lieuts. RALPH P. HIGGINS, CHARLES L. HOUSEL, Ansley; GEORGE F. HAWES, Arlington; CHARLES E. PALMER, David City; LEONARD O. RIGGERT, Norfolk; CHARLES W. W. HARMS, JOHN HOLST, Jr., JOHN R. KLEYLA, Omaha; LESTER K. STRATE, Sutton; from Fort Riley, Lieut. CHARLES C. WALLINGSFORD, Ogallala.

To New York City, for instruction in orthopedic surgery, from Fort Oglethorpe, Capt. CHARLES E. REMY, Johnstown; Base Hospital No. 116, from Camp Dodge, Lieut. BENJAMIN R. McGRATH, Grand Island.

New Hampshire

To Camp Custer, Battle Creek, Mich., base hospital, from St. Louis, Lieut. JOHN B. WARDEN, Whitefield.

To Fort Oglethorpe, for instruction, Lieuts. EARL P. CUSHMAN, Claremont; PHILIP McQUESTON, Nashua; ERNEST L. BELL, Plymouth; WILLIAM H. SHANAHAN, Somersworth.

To Fort Slocum, N. Y., for duty, from Fort Ethan Allen, Capt. WILLIAM H. MITCHELL, London.

New Jersey

To Fort Logan, Houston, Tex., base hospital, from Fort Oglethorpe, Lieut. MAURICE COHEN, Patterson.

To Fort Oglethorpe, for instruction, Lieuts. GEORGE B. VERBECK, Caldwell; HENRY T. WEBB, Elmer; THOMAS M. BARBER, Mor-

Wrightstown; LYMAN B. HOLLINGSHEAD, Pemberton; IRVING F. CRAM, ROBERT HAMILTON, Wrightstown.

To Fort Riley, for instruction, from Camp Custer, Lieut. BENNETTE W. HOAGLAND, Woodbridge.

To New York City, Base Hospital No. 116, Lieuts. VICTOR S. SEIDLER, Montclair; FREDERIC A. ALLING, Newark.

Honorably discharged on account of being physically disqualified for active service, Lieut. GRANT E. KIRK, Camden.

New York

To Boston, Mass., Harvard Medical School, for instruction in orthopedic surgery, Lieut. DUDLEY J. MORTON, New York City; from Fort Ethan Allen, Lieut. ALFRED H. PARSONS, Great Neck.

To Camp Beauregard, Alexandria, La., base hospital, Lieut. STANLEY S. INGALLS, Parish.

To Camp Cody, Deming, N. M., base hospital, from Fort Oglethorpe, Lieut. HORD SHARP, New York City.

To Camp Devens, Ayer, Mass., base hospital, Lieut. ARTHUR H. TERRY, Jr., New York City.

To Camp Greenleaf, Fort Oglethorpe, Ga., Evacuation Hospital No. 6, from Cornell Medical College, Lieut. LOUIS GOLD, Brooklyn.

To Camp Jackson, Columbia, S. C., base hospital, and on completion to his proper station, Capt. GEORGE DRAPER, New York City.

To Camp Joseph E. Johnston, Jacksonville, Fla., base hospital, from Fort Oglethorpe, Lieut. JOHN T. WATKINS, New York City; as member of board for examination of command for tuberculosis, from Camp Bowie, Lieut. ROBERT E. PLUSKETT, Whitehall.

To Camp Lee, Petersburg, Va., base hospital, Capt. ROLAND O. MEISENBACH, Buffalo.

To Camp Mills, Garden City, L. I., N. Y., to examine command in his specialty, Capt. GEORGE A. SHARP, Beacon; from Fort Sheridan, Lieut. JOHN T. MACCURDY, New York City. For duty, from Camp Mills, Capt. JOHN F. W. MEAGHER, Brooklyn; Lieuts. LEIZER GRIMBERG, New York City; SAMUEL W. HAUSMAN, Ogdensburg; WARD W. MILLIAS, Rome; from Neurological Institute, Lieut. WILLIAM G. DICKSON, Oneonta; for temporary duty, from New York, Lieut. ARTHUR P. POWELSON, Walden.

To Camp Taylor, Louisville, Ky., for duty, from Fort Ethan Allen, Lieut. RALPH E. ROBINSON, Belmont.

To Camp Upton, L. I., N. Y., to examine command for mental and nervous diseases, from Ann Arbor, Lieut. GEOFFREY C. H. BURNS, Central Islip.

To Camp Wadsworth, Spartanburg, S. C., base hospital, from Fort Oglethorpe, Lieut. ALBERT C. MARGULIES, Brooklyn.

To Fort Bliss, Texas, as division sanitary inspector, from Camp Green, Major JOHN T. SPRAGUE, St. George.

To Fort Foster, N. Y., for duty, Lieuts. JOHN D. BOWEN, Binghamton; RAYMOND J. DEVINE, Syracuse.

To Fort Oglethorpe, for instruction, Major EDWARD A. SOUTHALL, Buffalo; Capt. WILLIS S. COBB, Corning; REED B. BONECOU, Ithaca; EVERETT C. BRENNAND, New York City; Lieuts. LOWELL B. ECKERSON, ABRAHAM GOTTLEIB, GEORGE R. HORTON, JOHN H. REYNOLDS, Brooklyn; FREDERICK BERNSTEIN, Glen Cove; JACOB H. HIRSCH, Haverstraw; ADDISON H. BISSELL, JOSEPH M. LINETT, RUDOLPH D. ORTH, MAURICE M. POMERANZ, ROBERT SHAPIRO, MAX K. SILBERMAN, GROVES B. SMITH, New York City; MORRIS R. BRADNER, BERNARD McD. KRU, Warwick.

To Fort Riley, Evacuation Hospital No. 7, from Fort Riley, Capt. CALVERT M. DEFOREST, Canastota.

To Fort Slocum, N. Y., for duty, from Fort Ethan Allen, Lieut. GEORGE E. STEVENSON, Himrod.

To New York City, as chief of the Medical Service, U. S. A. G. H. No. 1 from Camp Sherman, Major DUDLEY D. V. ROBERTS, Brooklyn; as chief of the surgical service in Base Hospital No. 116, from Washington, Major JOHN B. WALKER, New York City; Base Hospital No. 116, for duty, from Camp Devens, Capt. THEODORE J. ABBOTT, New York City; from Camp Meade, Lieut. WILLIAM BLANCARD, New York City; from Camp Mills, Capt. EDWIN G. ZABRISKIE, New York City; from Philadelphia, Lieut. WILLIAM S. GLENN, Jr., Brooklyn Orthopedic Hospital for instruction, from New York City, Capt. LEO B. MEYER, Lieut. ISAAC REITSFELD, New York City. To enlist the enlisted personnel of Base Hospital No. 116, Capt. HARRY C. W. SCHULTZ DE BRUN, New York City.

To Philadelphia, Pa., for instruction in orthopedic surgery, Lieuts. HARRY D. SONNENSCHNEIN, New York City; EARL E. WANDERWERKER, Schuylerville.

To St. Louis, Mo., Washington University, for instruction in urology and dermatology, from Camp Jackson, Lieut. GEORGE B. UBEL, Salamanca.

To Walter Reed General Hospital, Takoma Park, D. C., for instruction in tuberculosis examinations, Capt. GOSE KREMER, New York City.

To Watertown, Mass., Watertown Arsenal, for duty, from Fort Ethan Allen, Lieut. ARTHUR L. TINKESS, La Fargeville.

To Williamsbridge, N. Y., United States General Hospital No. 1 for duty, Lieut. WALTER S. WOODRUFF, Mount Vernon.

To his home and honorably discharged, from Camp Upton, Capt. OSMAN F. KINLOCH, Troy.

North Carolina

To Camp McClellan, Anniston, Ala., base hospital, from Army Medical School, Lieut. HICKMANN RAY, Raleigh.

To Camp Sevier, Greenville, S. C., base hospital, from Fort Oglethorpe, Lieut. CARL W. BELL.

To Fort Oglethorpe, for instruction, Lieuts. ARTHUR W. DEANS, Battleboro; COLIN SHAW, Burgaw; RALPH L. DANIELS, Coldsboro; WILLIAM H. SLOAN, Garland; CARL P. PARKER, Garysburg; EDWARD C. ASHBY, Greensboro; DAVID T. LONG, Hurdle Mills; GEORGE R. PATRICK, Lowell; ROBERT L. PAYNE, Monroe; ALONZO H. MYERS, North Wilkesboro; FRANK B. GARRETT, Rockingham; ROBERT P. BECKWITH, Rosemary; SAMUEL S. MONTAGUE, Roxboro; FRANK W. H. LOGAN, Rutherfordton; JACOB H. ROZELLE, Salisbury; BURNICE E. MORGAN, GRADY A. MORGAN, Stocksville; HARRY G. THIGPEN, Tarboro; RALPH C. SADLER, Whiteville; James F. Robertson, Jr., Wilmington; JAMES C. BRASWELL, Jr., Wilson; ROBERT J. LOVILL, Wingate; JACK H. HALL, Woodsdale.

To New York City, Base Hospital No. 116, for duty, Lieut. WILLIAM E. YOULAND, Lakeview.

To Oklahoma City, Okla., for instruction in orthopedic surgery, from Camp Gordon, Lieut. HUGH A. THOMPSON, Raleigh.

To Washington, D. C., Washington Barracks, for duty, from Fort Ethan Allen, Lieut. JOHN THAMES, Wilmington.

North Dakota

To Camp Beauregard, Alexandria, La., base hospital, from Fort Riley, Lieut. GEORGE V. JAMIESON, Devils Lake.

To Fort Riley, for instruction, Capt. WILLIAM A. GERRISH, ADOLPHUS W. GUEST, Jamestown; Lieuts. HUGO MELLA, Bismark; JOHN G. ABBOTT, Hope; CAMPBELL SANSING, Valley City.

Ohio

To Army Medical School, Washington, D. C., for duty, Lieut. CHARLES S. HAMILTON, Columbus.

To Camp Cody, Deming, N. M., base hospital, from St. Louis, Lieut. WILLIAM S. NICHOLS, Cleveland.

To Camps Custer, Grant, Dodge, Funston, Fort Thomas, Camp Sherman, Fairfield, Ohio; Columbus Barracks, to investigate the control of venereal diseases and on completion to Columbus, Ohio, for conference with the State Commissioner of Health of Ohio, Capt. EUGENE F. McCAMPBELL, Columbus.

To Camp McClellan, Anniston, Ala., base hospital, from St. Louis, Lieut. ROY F. JOLLEY, Richwood.

To Camp Mills, Garden City, L. I., for duty from Camp Mills, Lieut. JOHN C. GEORGE, Dayton.

To Camp Wheeler, Macon, Ga., base hospital, from Fort Oglethorpe, Lieut. LEWIS A. OSTER, Cleveland.

To Fort Oglethorpe, for instruction, Lieuts. CLARK E. SHARP, Chillicothe; GEORGE B. FAULDER, JAMES B. STEWART, JAMES H. WARREN, Columbus; FREDERICK SWING, Harrison.

To Fort Riley, base hospital, Lieut. PATRICK S. MURPHY, Cleveland; for instruction, Lieut. GLEN E. CHENOWETH, Lima.

To New York City, Base Hospital No. 116, from Fort McPherson, Lieut. FLOYD W. McRAE, Jr., Cleveland.

To report to the governor of the state as medical adviser, Lieut. CHARLES S. HAMILTON, Columbus.

To St. Louis, Mo., Washington University, for instruction in urology and dermatology, from Camp Custer, Lieut. MURREY B. McCONIGLE, Toledo.

To his home and honorably discharged, from Camp Sherman, Capt. ELMORE E. ADEL, Columbus; from Fort Oglethorpe, Lieut. BERNARD R. LEROY, Athens.

Oklahoma

To Fort Riley for instruction, Lieuts. ROSCOE R. AULICK, Carson; WALKER R. MARKS, Vinita; from Camp Doniphan, Lieuts. RAYMOND H. FOX, Altus; DANIEL S. LEE, Guymon; CHARLES C. SIMS, Healdon.

To St. Louis, Mo., Washington University, for instruction in urology and dermatology, Lieut. JOOL S. HOOPER, Tulsa; from Camp Sherman, Lieut. CHONNER P. CHUMLEY, Oklahoma.

Oregon

To Camp Lewis, American Lake, Wash., for duty, from Camp Lewis, Major CALVIN S. WHITE, Portland.

To Fort Riley for instruction, Lieut. CHARLES F. ENGELS, Portland.

To St. Louis, Mo., Washington University, for instruction in urology and dermatology, Lieut. BENJAMIN N. WADO, Portland.

Honorably discharged on account of being physically disqualified for active service, Lieut. BENJAMIN F. DEVERE, Oakland.

Pennsylvania

To Army Medical School, Washington, D. C., for duty, Lieut. JAMES C. SMALL, Chambersburg.

To Atlantic City, N. J., Camden, Trenton and Newark, N. J., Providence, R. I., New Haven, Bridgeport and Hartford, Conn., for duty and on completion to his proper station in Washington, Major HENRY D. JUMP, Philadelphia.

To Boston, Mass., Harvard Medical School, for instruction in orthopedic surgery, Lieuts. JOHN H. ALEXANDER, BROWN FULTON, Pittsburgh.

To Camp Beauregard, Alexandria, La., base hospital, from Fort Oglethorpe, Lieut. ERNEST M. DORSETT, Philadelphia; from New York City, Lieut. THOMAS S. MEBANE, Wilkes-Barre.

To Camp Cody, Deming, N. M., base hospital, from Fort Oglethorpe, Lieut. JOHN E. NEWHOUSE, Pittsburgh.

To Camp Dix, Wrightstown, N. J., for duty, from Post-Graduate Hospital, Lieut. ROBERT E. DAVISON, Pittsburgh.

To Camp Doniphan, Fort Sill, Okla., base hospital, from Fort Oglethorpe, Lieut. JOHN P. MAUS, Philadelphia.

To *Camp Green*, Charlotte, N. C., base hospital, from Fort Oglethorpe, Capt. WILLIAM P. CLANCY, Clarendon; from New York City, Lieuts. JOSEPH G. FERNBACH, Philadelphia; ROY L. SCOTT, Sayre.

To *Camp Joseph E. Johnston*, Jacksonville, Fla., base hospital, from School of Roentgenology, Pennsylvania, Lieut. SAMUEL B. HARRIS, Norwood Station.

To *Camp McClellan*, Anniston, Ala., base hospital, from Fort Oglethorpe, Lieut. ALBERT J. WINEBRAKE, Scranton.

To *Camp Taylor*, Louisville, Ky., base hospital, from St. Louis, Lieut. THOMAS S. HICKS, Braddock; for temporary duty, base hospital, from Chickamauga Park, Lieut. HOMER P. PROWITT, Washington.

To *Fort Bliss*, El Paso, Texas, for duty, Lieut. HUGH M. SHANNON, Philadelphia.

To *Fort Oglethorpe*, for instruction, Capt. ALEXANDER R. KIDDER, Connellsville; Lieuts. JESSE N. SWICK, Beaver Falls; JOHN C. CRIST, Chester; WILLIAM G. FRANCIS, Coatesville; DON D. BROOKS, Connellsville; DONALD B. COOVER, Gettysburg; PAUL M. BLACKBURN, Greensburg; PETER B. MULLIGAN, Hazelton; BARTON BROWN, Linden; SAMUEL FIRESTONE, JR., McKeesport; HARKLEY C. ALBRIGHT, JOHN V. ALLEN, JR., WILLIAM H. ANNESLEY, GEORGE F. BAIER, SAMUEL CHARTOCK, ABRAHAM E. COLCHER, JOHN M. CONNELLY, JOHN R. DAVIES, JR., OMER R. ETTER, ISRAEL SPIERS, Philadelphia; ROY D. CHAMPLIN, Reading; CAREY C. BRADIN, JOHN R. FASON, Tyronie; ALBERT E. COUGHANOUR, Uniontown; ROBERT B. BROWN, RAYMOND T. FRANCIS, Waynesboro; JOSEPH F. DELPHIN, Wilkes-Barre; FRANCIS R. WISE, York; from New York, Lieut. CHARLES E. YOHO, Pittsburgh.

To *Fort Riley*, base hospital, Lieut. HENRY W. CATTELL, Philadelphia.

To *Fort Sam Houston, Tex.*, for duty, from Camp Greenleaf, Lieut. FREDERICK V. LICHTENFELS, Pittsburgh.

To *Fort Washington, Md.*, for duty, from Fort Ethan Allen, Lieut. CLARENCE E. LINCOLN, Wayne.

To *Hoboken, N. J.*, for duty, from Rockefeller Institute, Lieut. PHILIP F. WILLIAMS, Philadelphia; from Takoma Park, Lieut. JAMES H. BALDWIN, Philadelphia.

New York City, Base Hospital No. 116, for duty, from Evans Dental Institute, Capt. CARLTON N. RUSSELL, Philadelphia; for instruction in orthopedic surgery, Lieut. HARRY O. POLLOCK, Wilmording.

To *Philadelphia, Pa.*, for instruction in orthopedic surgery, Lieuts. FRANK P. MCCARTHY, Erie; SCOTT A. NORRIS, Homestead; ISADORE M. LEAVY, Philadelphia; HENRY J. GILES, Pittsburgh; JAMES B. HELLER, Pottsville.

To *St. Louis, Mo.*, Washington University, for instruction in urology and dermatology, Lieut. JAMES K. ANDERSON, Pittsburgh.

To *his home* and honorably discharged from Camp Stuart, Lieut. FRANK L. KNOX, Clayville.

To *his home* and honorably discharged on account of being physically disqualified for active service, from United States Army General Hospital, Lieut. SAMUEL BRISTER, Philadelphia.

Rhode Island

To *Fort Oglethorpe*, for instruction, Lieut. ARTHUR F. ANDERSON, Providence.

To *New York City*, Base Hospital No. 116, for duty, from Camp Devens, Capt. CHARLES H. HOLT, Pawtucket.

South Carolina

To *Fort Bliss, Texas*, as assistant division surgeon, from Fort Oglethorpe, Lieut. LAWRENCE R. KIRKPATRICK, Bennettsville.

To *Fort Oglethorpe* for instruction, Lieuts. HARRISON A. PRUITT, Anderson; HILLAND S. THOMAS, Chester; JOSEPH A. DILLARD, Columbia; JOHNSTON PEOPLES, Estill; LANDRUS W. WOOD, Greer; JOSEPH E. THOMAS, Jefferson; JOE P. JEWELL, Piedmont; LADSON D. BOONE, Romesville; GRADY S. CLINKSOALES, Starr; from Camp Sevier, Lieut. ASHLEY B. WEATHERSBEE, Belton.

To *Philadelphia*, for instruction in orthopedic surgery, Lieut. ROBERT T. FERGUSON, Gaffney.

To *St. Louis, Mo.*, Washington University, for instruction in urology and dermatology, from Fort Oglethorpe, Lieut. JAMES M. WALLACE, Greenville.

To *his home* and honorably discharged, Lieut. ANDREW T. BAIRD, Darlington.

South Dakota

To *Camp Travis*, Fort Sam Houston, Texas, base hospital, from Fort Oglethorpe, Lieut. WILLARD A. BATES, Northville.

To *Fort Riley*, for instruction, Lieut. WILLIAM E. M. DEVERS, Mitchell.

To *his home* and honorably discharged from Fort Oglethorpe, Lieut. GEORGE H. RICHARDS, Clear Lake.

Tennessee

To *Camp Bowie*, Fort Worth, Texas, base hospital, from St. Louis, Lieut. THOMAS A. MITCHELL, Nashville.

To *Camp Gordon*, Atlanta, Ga., base hospital, from Fort Oglethorpe, Capt. LEON L. MEYER, Memphis.

To *Camp Sevier*, Greenville, S. C., base hospital, from St. Louis, Lieut. DORSEY T. GOULD, Lawrenceburg; for duty, from Camp Sevier, Lieut. FLEETWOOD GRUVER, Nashville.

To *Camp Oglethorpe*, for instruction, Lieuts. LAWRENCE J. LINDSEY, Covington; LLOYD S. NEASE, Del Rio; CHARLES T. RICHARDSON, SEYMOUR H. ROWLAND, GETTIE T. SHEFFIELD,

Memphis; PHILLIP J. TRENTZSCH, Rives; LONNIE O. WILKERSON, Stanton; EDWARD S. STEWART, Summertown; from Little Silver, Lieut. CLEVELAND PAYNE, Oakland.

Texas

To *Fort Oglethorpe*, for instruction, Lieuts. MAURY J. PERKINS, Alice; MATTHEW F. KREISLE, Austin; STERLING C. WOOD, Bessmay; WILLIAM L. HESTER, Burkett; IVISON GRIMES, Camden; GEORGE T. VAN ZANDT, Cameron; JOSEPH E. MAMS, Clayton; WALDO B. LAIN, Cooper; ELMORE G. BRITTAIN, Dallas; LUM M. DAVIS, Donna; JESSE P. LOCKHART, Eden; CHARLES W. GRAY, El Campo; ERWIN J. CUMMINS, THOMAS C. LIDDELL, KEVIN D. LYNCH, El Paso; WILLIAM C. WRIGHT, Farmersville; JAMES D. BOZEMAN, GILES A. DEASON, IVAN E. HIX, HOWARD D. MITCHELL, Fort Worth; HARRY P. HARBER, Galveston; EDWARD C. BLACKWELL, German; CLARENCE S. MURPHY, Groveton; CHARLES C. CLEVELAND, Hamilton; HENRY U. WOOLSEY, Hillsboro; CARL B. YOUNG, JR., Houston; CHARLIE C. PARKS, Lancaster; DON PAUL JONES, Leckney; ST. JULIAN R. MURCHISON, Marshall; PERE M. KUYKENDALL, Moody; COLEMAN J. CARTER, Oakwoods; LOUIS H. COCKERHAM, Palestine; ROGER ATKINSON, Pleasanton; GEORGE E. GLOVER, Refugio; WILLIAM A. CHERNOSKY, Rosebud; HOWARD M. BUSH, GEORGE A. MUELLER, OLIVER H. TIMMINS, San Antonio; IVY STANSELL, Sanderson; THOMAS R. BEECH, Slaton; TILGHMAN O. DARBY, Sour Lake; JOHN F. CRAWFORD, Tolar; WILMER A. HADLEY, Webster; THOMAS W. HEDRICK, Wheelock; HARRY H. BROWN, JR., Yoakum.

To *Fort Riley*, for instruction, Lieuts. ROBERT S. SUTTEN, Bartlett; GEORGE W. HOWARD, Dallas; SIMEON H. NEWMAN, El Paso; ROSCOE ETTER, Hubbard; JOSEPH E. McDOWELL, Shamrock; JAMIE D. STEPHENS, Temple; from Camp Cody, Lieut. ERNEST H. HAMILTON, Kilgore.

To *New York City Orthopedic Hospital*, from New York City, Lieut. QUINCY B. LEE, Wichita Falls.

To *Oklahoma City, Okla.*, for instruction in orthopedic surgery, Capt. WILLIAM B. CARRELL, Dallas.

To *St. Louis, Mo.*, Washington University, for instruction, Lieut. DEWITT SMITH, Dallas.

Vermont

To *Fort Oglethorpe*, for instruction, Lieut. JOSEPH A. CIMINERA, Burlington.

To *Fort Riley*, from Evacuation Hospital No. 7, Fort Riley, Capt. HENRY C. JACKSON, Woodstock.

To *New York City*, Base Hospital No. 116, from Fort Ethan Allen, Lieut. ROBERT I. MAYNARD, Burlington.

Virginia

To *Camp Greene*, Charlotte, N. C., base hospital, from Fort Oglethorpe, Capt. STANLEY H. GRAVES, Norfolk.

To *Camp Lee*, Petersburg, Va., base hospital, from Fort Oglethorpe, Capt. JAMES H. SMITH; Lieut. GREER BAUGHMAN, Richmond.

To *Camp Mills*, Garden City, L. I., for duty, from Camp Mills, Lieut. FRANK H. REDWOOD, Richmond.

To *Camp Wadsworth*, Spartansburg, S. C., base hospital, from Richmond, Lieut. LEVIN P. MAGRUDER, Richmond.

To *Fort McPherson, Ga.*, for duty, Lieut. CLAUDE D. KELLAM, Norfolk.

Washington

To *Camp Lewis*, American Lake, Wash., base hospital, from Camp Lewis, Capt. WILLIAM G. CASSELS, Seattle; to examine the command for mental and nervous diseases, Capt. ALBERT C. STEWART, Fort Steilacoom.

To *Fort Mason, Calif.*, Base Hospital No. 30, from San Francisco, Capt. NATHAN P. WOOD, Seattle.

To *Fort Riley*, for instruction, Capt. FRANK L. WOOD, Lyden; JAMES G. MATTHEWS, Spokane; Lieuts. GEORGE I. HURLEY, Hoquiam; KENNETH J. HOLTZ, Renton; GEORGE W. OVERMEYER, Seattle; WARREN J. HOUGH, Tacoma.

To *report by telegraph* to the Commanding General, Western Dept., for assignment to duty, Lieut. IRVING M. LUPTON, Spokane.

West Virginia

To *Fort Oglethorpe*, for instruction, Lieuts. WILBUR F. SHIRKEY, JR., Charleston; CHARLES L. RUGGLES, Wellsburg.

To *New York City*, Base Hospital No. 116, for duty, from Pittsburgh, Lieut. LOWELL S. GOIN, Wheeling; for instruction in orthopedic surgery, from Louisville, Lieut. ALVAH L. PARSONS, Charleston.

To *Walter Reed General Hospital*, Takoma Park, D. C., for instruction in tuberculosis examinations, Capt. ALBERT L. GRUBB, Berkeley Springs.

Wisconsin

To *Fort Riley*, for instruction, Capt. GEORGE H. LAWRENCE, Fond du Lac; Lieuts. WILLIAM N. MOORE, Appleton; FRANK H. KENNEDY, Greenwood; JAMES H. FOWLER, Lancaster; JOHN J. WILKINSEN, Milwaukee; EDWARD W. HANSON, Three Lakes.

To *Philadelphia, Pa.*, for instruction in orthopedic surgery, Lieut. MERRITT LAC. JONES, Wausau.

To *St. Louis, Mo.*, Washington University, for instruction in urology and dermatology, from Camp Pike, Lieut. CHARLES B. RYDELL, Superior.

Wyoming

To *Fort Riley*, for instruction, Lieut. ROBERT H. SANDERS, Kemmerer.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

New Officers.—At the annual meeting of the Tehama County Medical Society at Red Bluff, Dr. Frank J. Bailey was elected president; Dr. Walter Gavey, vice president, and Dr. Frank L. Doane, secretary-treasurer, all of Red Bluff.

Personal.—Dr. Melvin L. Moore, Los Angeles, who has been ill at his home for several days, is convalescent.—Dr. Clelia D. Mosher, medical adviser of women at Leland Stanford University, Palo Alto, has started for France to engage in welfare work for the Red Cross.—Dr. Edith E. Johnson, Palo Alto, has succeeded Dr. Mosher as medical adviser to students.—Dr. George A. White, Sacramento, who has been ill for several weeks, is now reported to be convalescent.—Dr. Rexwald Brown, Santa Barbara, is reported to be in a critical condition at Johns Hopkins Hospital, Baltimore.

Popular Medical Lectures.—A course of popular medical lectures will be given at the Stanford University Medical School, during January, February and March. The schedule of these lectures is as follows:

January 4: "The Control of Vice Diseases Among Troops Through Civil and Military Cooperation," Colonel Louis M. Maus, U. S. Army.

January 18: "Surgery of the Present War," Dr. Leo Eloesser.

February 1: "Industrial Fatigue," Prof. E. G. Martin.

February 15: "Food Poisoning from Canned Goods," Dr. Ernest C. Dickson.

March 1: "Recent Experiences of a Medical Man in the War Zone," Dr. William P. Lucas, Professor of Pediatrics, University of California.

March 15: "Circulation of the Blood," illustrated with moving pictures, Dr. Arnold A. D'Ancona.

CONNECTICUT

Personal.—Dr. Frederick C. Goldstein has succeeded Dr. Louis H. Wilmot as city health officer of Ansonia.—Dr. Seymour L. Spier, police surgeon of New Haven, who was operated on, November 30, is reported to be convalescent.

Medical Milk Commission Formed.—At the November meeting of the Bridgeport Medical Association, a medical milk commission was appointed, consisting of Dr. Charles N. Haskell, chairman, Dr. Walter Brown, Dr. Fessenden L. Day, C. E. Calvin and J. H. Bowdry. This commission will cooperate with the department of health in the supervision of certified milk to be sold in the state.

State Health Association Organized.—At a meeting of health officers and other men in Hartford, December 6, the Connecticut Public Health Association was organized, and the following officers were elected: president, Dr. Stephen J. Maher, New Haven, chairman of the state tuberculosis commission; vice president, Dr. Charles J. Bartlett, state bacteriology; secretary, Dr. Charles P. Botsford, Hartford, and treasurer, James A. Maher, Bridgeport. It was decided to organize subsidiary committees in each county of the state.

ILLINOIS

Smallpox.—There are said to be forty cases of smallpox in Hanover, Jo Daviess County, and the disease has also appeared in Elizabeth and Galena. The state board of health has the situation in hand.

Tuberculosis in Chicago.—As a result of the first accurate tuberculosis survey made in Chicago, Health Commissioner Robertson reports that there are between 60,000 and 70,000 cases of tuberculosis in the city.

Antitoxin Supply Cut Off.—Health Commissioner Robertson has received notice from the state health department to cut off the supply of diphtheria antitoxin on account of the appropriation for this purpose having been expended.

Personal.—Dr. Clara E. Hayes of the medical staff of the Peoria State Hospital has been appointed superintendent of the State Training School for Girls, Geneva.—Dr. Herman M. Adler, Chicago, criminologist of the state department of public welfare, is head of the Voluntary Mental Hygiene Consulting Commission, which was opened, December 17, at the Cook County Psychiatric Hospital.—Major Richard J. McDonnell, Chicago, has resigned as medical adviser of the One Hundred and Eighth Engineers.—Major Eugene G.

Clancy, Chicago, has been made director of field hospitals of the division.

Voluntary Medical Units Ready.—A medical unit and an ambulance unit have been mustered into the state service. The first unit of the Medical Corps is headed by Major Charles E. Boynton, and consists of Capt. E. Stillman Bailey, and Hugh R. Scofield, and Lieuts. Adrian R. Karreman, Ralph R. Holmes, John G. Campbell, James L. Smith and William J. Timmer. The ambulance company is commanded by Capt. C. M. Price, and is assisted by Lieuts. Guy E. Beard, W. S. Hubbard and R. I. Humphrey. The ambulance unit was enlisted from the employees of the McCormick plant of the International Harvester Company, which donated the ambulance and equipment to the organization.

KENTUCKY

Social Service Exchange.—A social service exchange has been established by which there will be a coordination of the charitable agencies of Louisville cooperating. A large proportion of these agencies have already affiliated with the exchange. This exchange will prevent duplication of effort, facilitate relief and promote efficiency. The expenses will be borne by the Federation of Social Agencies.

New Appointments.—The following appointments have been made by the Board of Public Safety of Louisville: Dr. J. N. Sebastian, city physician, western district; Dr. W. W. Smith, sanitary inspector, eastern district; Dr. E. L. Whedbee, negro, sanitary inspector to look after the indigent negroes. Drs. Florence Brandeis and Annie Veech, medical inspectors of schools; Dr. L. A. Crutcher, sanitary inspector, western district.

LOUISIANA

Appointed to Sanitary Corps.—John Henry O'Neal, sanitary engineer for the state board of health, has gone into the Sanitary Corps and has already entered the service. He has been granted leave of absence from his duties on the state board of health during the continuance of the war.

New Society Meets.—At the annual meeting of the Orleans Parish Medical Society, held in New Orleans, December 9, a service flag was raised, the central star of which was in honor of Rudolph Matas, M. R. C., U. S. Army. The following officers were elected: president, Dr. Paul J. Gelpi, Jr.; vice presidents, Drs. Frank J. Chalaron, Hector E. Bernadas and Everard W. Mahler; secretary, Dr. Paul T. Talbot, and treasurer, Dr. Henry W. E. Walther.

Medical Examiners in Session.—The State Board of Medical Examiners concluded its session, December 1. In the reorganization of the board, Dr. Leon J. Menville, Houma, succeeds Dr. John G. Martin, Lake Charles, as president, Dr. Thomas E. Wright, Monroe, succeeds Dr. Stuart L. White, Ruston, as vice president, and Dr. Edmund D. Martin, New Orleans, was elected secretary, succeeding Dr. James A. Henderson, who is in the military service.

MARYLAND

Personal.—Dr. Lewis A. Griffiths of Upper Marlboro has been appointed by the President to be inspector of explosives for the state of Maryland. Dr. Griffiths has been a member of the state board of medical examiners for the past fourteen years and has also served on the state board of health.—Capt. Clarence B. Farrar of the Canadian Army Medical Corps, a former Baltimorean, who has been for the past two years in charge of a large hospital at Coburg for returned Canadian soldiers who have suffered from shell shock and various types of mental disorders as a result of the war, spoke at a special medical meeting in Osler Hall, Baltimore, on December 14.

MISSOURI

Honors Paid Dead Officer.—Memorial services were held at Kansas City recently in honor of Lieut. William E. T. Fitzsimmons, M. R. C., U. S. Army, Kansas City, the first American medical officer to be killed in France. The meeting was attended by the consuls of all the allied nations.

Personal.—Dr. J. Adolph Gandy, Valley Park, St. Louis County, while crossing the Frisco tracks, November 24, was struck by a train and seriously injured.—Dr. James C. Welch, Jefferson City, formerly physician at the State Penitentiary, who had been charged with bribery, was acquitted, November 24.—Dr. Robert F. Hyland, St. Louis, is under treatment at St. John's Hospital, St. Louis, on account of injuries received in a collision between his automobile and a motor truck recently.

NEW YORK

Grenfell in Rochester.—Dr. Wilfred T. Grenfell, Labrador, gave a lecture under the auspices of the Commonweal Club, Rochester, December 8.

New Officers for Academy.—At the annual meeting of the Elmira Academy of Medicine, December 5, Elliot E. Bush, Elmira, was elected president; Dr. Oscar J. Bowman, Horseheads, vice president; Dr. J. Lee Kinner, Elmira, secretary, and Dr. Abraham Lande, Elmira, treasurer.

New York City

New Hospitals Incorporated.—At a special meeting of the State Board of Charities, December 12, the applications for incorporation of the Carson C. Peek Memorial Hospital, Brooklyn, and the Mercy Hospital, at Cazenovia Park, Buffalo, were approved. A dispensary license was granted to the Greenpoint Hospital, Brooklyn, of the Department of Public Charities. Action on the application for the incorporation of the Hebrew Convalescent Home at 235 West One Hundred and Twentieth Street and for the institution planned by the Committee for the Care of Jewish Tuberculous was deferred.

Pediatricians Plan to Solve War Problem.—At the stated meeting of the Section on Pediatrics of the New York Academy of Medicine, December 13, the subject of malnutrition in schoolchildren was discussed. Dr. Henry Dwight Chapin, New York, read a paper entitled, "The National Danger from the Defective Development of Growing Children in Time of War," in which he presented statistics showing that malnutrition is greatly on the increase among the schoolchildren of New York. His conclusion was that there are 120,000 children suffering from malnutrition, or on the borderline, in the public and parochial schools of the city. A motion was carried providing for the appointment of a committee of pediatricians to investigate existing conditions in reference to malnutrition, to act in an advisory capacity in cooperation with other relief agencies working along similar lines, and to keep a record furnishing information as to what service the individual members of the section were prepared to contribute to the solution of this problem. The endeavor will be made to work out a plan of relief that may serve as a standard for other cities.

OHIO

Communicable Diseases.—Smallpox is reported to be epidemic in the village of Monroe and several outlying sections of Middletown, where about thirty cases have been reported. —Schools, churches and lodge halls of Malinta have been closed on account of an epidemic of scarlet fever. —The smallpox epidemic at Tarlton is reported to be well under control.

Councillor District Meeting.—The annual meeting of the First Councillor District Medical Society was held in Cincinnati, December 5, under the presidency of Dr. William Kelley Hale, Wilmington. Dr. Francis M. Fitton, Hamilton, was elected president, and Dr. Erie R. T. Wachtman, Cincinnati, secretary-treasurer. The afternoon session was held in the newly completed medical school building of the University of Cincinnati.

Hospital Notes.—The state department of health has recommended that a tuberculosis hospital be established for Crawford, Wyandot, Seneca, Hancock and Wood counties. During 1916, 168 deaths were said to have occurred in this district from tuberculosis. —A conference was held in Columbus, December 6, between orthopedists of the state and the hospital commission regarding the policies to be adopted in the proposed State Hospital for Crippled Children in which they agreed that the hospital should start with a limited number of patients, that its service should be broadened slowly, and that patients after operation should be retained at the hospital for education to fit them for useful work thereafter.

Personal.—Dr. Edward J. Schwartz, for fifteen years health officer of Salem, has resigned to accept a position as director of communicable diseases in the state department of health. —Dr. Julius H. Jacobson has resigned from the staff and board of St. Vincent's Hospital, Toledo. —Dr. Gertrude H. Transeau has passed an examination for assistant epidemiologist in the state department of health. —Dr. William H. Rabberman, Forest, froze both feet while answering a professional call, December 10. —Dr. William C. Marshall, district physician of Dayton, has resigned, and will locate in Selma. —Dr. Frank H. Williams, Portsmouth, has been appointed local surgeon of the Chesapeake and Ohio Railway, succeeding Dr. Orin W. Robe, Portsmouth, who has been called to the colors. —Dr. Rush R. Richison, Yellow

Springs, has been appointed superintendent of the district tuberculosis hospital, Springfield. —Dr. Frank P. Corrigan, Cleveland, has started for his new post of duty in Chile, where he is in the employ of the Chilean Exploration Company.

Cincinnati

Public Health Officers Organize.—The Cincinnati Public Health Council was organized at the Cincinnati General Hospital, November 23, and health officer, Dr. John H. Landis, was elected temporary chairman.

Research Society Elects Officers.—At the annual meeting of the Cincinnati Research Society, Dr. Jacob L. Tuechter was elected president; Dr. Meyer L. Heidingsfeld, Cincinnati, vice president, and Dr. Raphael Isaacs, secretary.

Physicians Appoint Fund Trustees.—Dr. John H. Landis, president of the Cincinnati Academy of Medicine, November 12, appointed Drs. William D. Porter, Benjamin K. Rachford, J. Ambrose Johnston, Frank W. Langdon and John W. Murphy, trustees of the \$5,000 which was subscribed recently for the benefit of Cincinnati physicians in the military service.

Personal.—Dr. Charles A. L. Reed, who has been seriously ill in Atlantic City with hemiplegia consequent on an infectious thrombosis, is reported able to be up and around. —Dr. Oliver P. Holt has resigned as a member of the medical staff of the General Hospital. —Dr. Arthur C. Bachmeyer, superintendent of the Cincinnati General Hospital, has requested that his salary be reduced from \$4,500 to \$2,100 a year during the period of the war, as he is also in active service as a captain in the Medical Reserve Corps.

OKLAHOMA

Personal.—Dr. Francis B. Fite, Muskogee, has been appointed a member of the State Board of Education, to succeed himself.

Smallpox at Lawton.—The conditions at Lawton regarding smallpox and other communicable diseases are so acute that the chief surgeon of Camp Doniphan has sent a letter to the governor of the state asking him to immediately take steps to have Lawton quarantined from the state. The governor thereupon assigned state health officer Dr. J. W. Duke, Guthrie, and his assistant, Dr. Herbert V. L. Sapper, Oklahoma City, to go to Lawton and make a preliminary survey of the situation.

OREGON

Detention Home for Women.—Kelly Butte, the sub jail, is to be made the detention quarters and hospital for women found to be suffering from venereal disease. The committee has recommended to the county commissioners that the hospitals be put in condition immediately for the detention and treatment of these women. The cost for the next six months is estimated at \$10,000.

Personal.—Dr. William M. Campbell, Portland, has been commissioned major and chief surgeon of the Oregon National Guard. —Dr. Esther C. P. Lovejoy, Portland, who is at present serving in France, is reported to have been commissioned first lieutenant by the French government. —Dr. Earl Smith, Portland, has been appointed coroner of Multnomah County, succeeding Dr. Ferdinand H. Dammasch, resigned to enter the military service.

PENNSYLVANIA

Anniversary of Academy.—The twenty-second anniversary of the founding of the Harrisburg Academy of Medicine was celebrated, December 7, at the academy in connection with the Dauphin County Medical Society. The address of the evening was delivered by Major Charles A. E. Codman, Philadelphia, M. R. C., U. S. Army.

Personal.—Dr. Rollin L. Shinaberry, Scranton, was shot and seriously wounded, December 10, by a man believed to be of unsound mind. —Capt. Lauren C. Thomas, M. R. C., Latrobe, has been given an honorable discharge from the service on account of ill health. —Dr. John W. Luther, Palmerton, is reported to be seriously ill. —The house of Dr. James R. Gormley, Dutch Ridge, near Beaver, was destroyed by fire, December 5, and Dr. Gormley narrowly escaped death.

Philadelphia

Babies' Hospital Campaign.—December 11, a whirlwind campaign to raise \$175,000 for the Babies' Hospital began, and, December 15, had totaled \$92,520. On the fourth day of the crusade, the teams turned in \$20,190.

Heroin Seized.—With an arrest in a house at Green and Sixteenth streets recently, 40 ounces of pure heroin were seized, the largest single seizure of narcotics ever made in this city. The man arrested is under \$10,000 bail.

Dinner to Women Doctors.—The board of corporators and the faculty of the Woman's Medical College of Pennsylvania gave a dinner, December 7, in honor of three alumnae of the college who are about to sail for France. These are Drs. Marie K. Formad, Marry Getty and Laura Hunt.

Personal.—Dr. Elizabeth M. Moyer, Baltimore, addressed the Medical Society of the Women's Hospital of Philadelphia, December 17, on "Radium Therapy."—Dr. Bernard Kohn has been appointed temporary director of school medical instructors to fill that position during the absence of Dr. Walter S. Cornell, now major in the Medical Reserve Corps.

WISCONSIN

Physicians Appeal.—An appeal was filed in the circuit court, November 28, in the case of Drs. Frederick C. Gessner, William F. Becker, Herbert W. Powers and William F. Wegge, who had sued Milwaukee County for \$275 each for expert witness fees. The appellants testified in an insanity case, and claimed fees of \$50 a day each, but the county board estimated the value of their services at \$4 a day.

Hospital Notes.—The health committee of the Milwaukee Society of National Defense has adopted resolutions urging the governor to include in the call for a special session of the legislature a bill permitting the merging of the Emergency and County hospitals.—In the campaign to raise \$500,000 for the new Columbia Hospital, Milwaukee, more than half the desired amount has already been secured.—Dane County Anti-Tuberculosis Sanatorium, largely a gift from Dr. Charles H. Vilas, Madison, a member of the board of regents of the University of Wisconsin, was opened for patients, December 1. About \$30,000 has been expended in this work, and the sanatorium consists of an administration and an infirmary building and two cottages, furnishing accommodation for thirty patients.—The Tri-County Tuberculosis Sanitarium for Ashland, Bayfield and Iron counties is now an assured fact, as they county board of Bayfield County has authorized an appropriation of \$30,000, and the Iron County board one of \$20,000 for the same purpose.

Personal.—Dr. George C. Ruhland, Milwaukee, health commissioner, who relinquished his office to accept army service, and who has been on duty at Fort Sill, Okla., has been honorably discharged, and will resume his duties, January 1. Dr. Lewis J. Daniels, health commissioner ad interim, relinquished the position as by previous agreement.—Lieut. Ladislaus Louis Adamkiewicz, assistant surgeon, U. S. Navy, Milwaukee, was rescued when the United States destroyer *Jacob Jones* was sunk by a submarine.—Dr. Thaddeus D. Smith, Neenah, who was wounded in an air raid over an American base hospital in France a short time ago, is returning to America, invalided.—Dr. Peter J. Christofferson, Waupaca, was seriously injured by the overturning of his automobile, December 4.—The house of Dr. James Hittner, Seymour, was destroyed by fire, November 19, at a loss of \$12,000, little more than half of which was covered by insurance.—Dr. Gilbert E. Seaman, Milwaukee, has been made chief surgeon of the Thirty-Second Division at Camp McArthur, Waco, Texas.

CANADA

Relief for the Blind.—According to Sir Frederick Fraser, superintendent of the School for the Blind, Halifax, N. S., a committee for relief work among those blinded in the recent disaster in that city has commenced. The situation is appalling, as there have been more than 210 persons blinded through the terrible explosion.

Hospital News.—Lieut.-Col. P. W. H. McKeown, Toronto, O. C. Kitchener Hospital, Brighton, England, has applied for six months' leave of absence, and will visit Ireland.—The board of consultants of the Canadian Hospitals Military Commission is inspecting the military hospitals in Toronto and vicinity. They were accompanied on their tour of inspection by Lieut.-Col. E. Stanley Ryerson, A. D. M. S., Toronto.—The organization of the new Canadian special hospitals in England is authorized as follows: Westcliffe Eye and Ear Hospital, Folkstone, 400 beds; King's Canadian Red Cross Hospital, Bursley Park, 300 beds; affiliated hospital, Clarence House, Roehampton, 106 beds.—From London, December 14, it is announced that Major Philip Burnett, Montreal, is appointed to command the Red Cross Hospital at Buxton, replacing Col. Frederick Guest, St. Thomas, Ont. Major

Lewis R. Murray, Sussex, N. B., is to command Uxbridge Convalescent Hospital, replacing Lieut.-Col. William Webster, Winnipeg, Manit., who assumes command at Bramshott, replacing Major Henry E. Kendall, Halifax, N. S. Major Gilbert B. Peat, Andover, N. B., is to command the Patricia Hospital at Ramsgate, replacing Lieut.-Col. Alexander J. Mackenzie, Toronto, Ont., who assumes charge of the medical section at Ramsgate. Capt. J. Adrien Grenier, St. Tite, Que., is gazetted flying officer.

GENERAL

Urges Efficient Medical Education for Negroes.—At its annual meeting, held in Memphis, November 15, the Southern Medical Association adopted several preambles and a resolution pointing to the necessity of perpetuating and making more efficient negro medical education in the United States.

Rockefeller Foundation Budget.—The Rockefeller Foundation budget for war relief expenditures in 1918 will total \$5,050,000, with a possible addition of \$5,000,000. This budget was approved by the trustees, December 11. The proposed expenditure includes \$3,345,000 for the work of the International Relief Board, \$424,000 of which is for the use of the tuberculosis commission in France.

Fenger Memorial Fund.—The directors of the Fenger Memorial Fund announce that the sum of \$500 has been set aside for medical investigation, the money to be used to pay a worker, the work to be done under direction in an established institution, which will furnish the necessary facilities and supplies free. It is desirable that the work should have a direct clinical bearing. Applications with full particulars should be addressed to Ludvig Hektoen, 637 South Wood Street, Chicago, before Jan. 15, 1918.

Seaboard Railway Surgeons Meet.—The twenty-second annual meeting of the Seaboard Medical Association of Virginia and North Carolina was held at Norfolk, Va., December 4-6, under the presidency of Dr. Kirkland Ruffin, Norfolk, Va. Kinston, N. C., was chosen as the next place of meeting, and the following officers were elected: president, Dr. Ira M. Hardy, Kinston, N. C.; vice presidents, Drs. William L. Harris, Norfolk, Va.; Henry W. Carter, Washington, N. C., and Philip St. L. Moncure, Norfolk, Va.; secretary, Dr. Clarence Porter Jones, Newport News, Va., and treasurer, Dr. George A. Caton, Newbern, N. C.

Correction.—In the discussion by Dr. Alfonso G. Castelli, New York, on the paper by Drs. Lewellys F. Barker and Thomas P. Sprunt, Baltimore, which appeared in *THE JOURNAL*, December 8, p. 1926, it is stated:

"We may start with 0.1 gm. of iron arsenate in 1 c.c. of solution, to be administered every day, children and undersized patients accordingly, and the dose may be increased up to 0.7 gm."

This should be:

"We may start with 0.01 gm. (1 centigram) of iron arsenate in 1 c.c. of solution, to be administered every day, children and undersized patients accordingly, and the dose may be increased up to 0.07 gm. (7 centigrams)."

Bequests and Donations.—The following bequests and donations have recently been announced:

The ambulance company of Major John A. Hawkins, stationed at Allentown, Pa., a donation of more than \$4,000, raised by the Automobile Club of Pittsburgh and the Allegheny County Medical Society.

Alumni Association of Jefferson Medical College, a bequest of \$10,000, by the will of Dr. Joseph M. Malatesta.

New York Post-Graduate Medical School and Hospital, \$5,000, by the will of Cora V. R. Catlin.

Hahnemann and St. Luke's hospitals, Philadelphia, each \$30,000, by the will of William H. Keim.

Michael Reese Hospital, to found two rooms in memory of his two daughters, in the Chicago Jewish Orphan Asylum, \$1,000, and Chicago Home for Aged Jews, \$1,000, by the will of Simon Florsheim.

Philadelphia Home for Incurables, \$1,000, and Home of the Merciful Saviour for Crippled Children, \$300, by the will of Mary D. Day.

American Red Cross Commission, a donation of \$250,000 for Italian wounded and needy refugees, by William K. Vanderbilt.

Presbyterian Hospital, Chicago, \$10,000, by the will of Mrs. Mary R. Harris.

Chief of Bureau of Animal Industry Dies.—Alonzo Dorus Melvin, aged 55, chief of the Bureau of Animal Industry, Department of Agriculture, Washington, D. C., and the foremost figure of the government in combating foot-and-mouth disease and other diseases of cattle, died suddenly at his home in Washington, December 7, after a hemorrhage of the lungs. He was a native of Illinois, and a graduate in veterinary medicine from the Chicago Veterinary College in 1886. He at once entered the service in the United States Department of Agriculture, and transferred to Baltimore a year later. In 1890, he was sent to Liverpool to inspect animals and vessels from the United States, and two years later was placed in charge of the meat inspection in Chicago. He was made

chief of the inspection division in 1895, and chief of the bureau, Dec. 1, 1905. Dr. Melvin was a member of the advisory board of the Hygienic Laboratory, U. S. P. H. S., was the president of the American Veterinary Association in 1909, and was an honorary associate of the Royal College of Veterinary Surgeons, London.

Once More a Warning.—Last week attention was called to a subscription swindle now being worked among physicians similar to a method worked at various times during the last few years. The individual presents himself as a contestant for a prize in the form of a scholarship to be awarded by an educational association to the one obtaining the most subscriptions during a certain period of time. It is worked under different names. We have called attention to it as the National Educational Association, the Cornell Educational Association, The United Students' Aid Society, and last week as the Advance Society of the University of Illinois. The latest form, the University Progressive Club of Cincinnati, is herewith reproduced.

E. H. Compton, Pres.

Wallace Lane, Secy. and Treas.

University Progressive Club

University of Ohio

CINCINNATI, OHIO

\$ 8.50

Dec 11 1917

We hereby certify that A. R. Rogers
has paid to this Club Eight 50/100 Dollars
in payment of 1 year's subscription to the following periodicals, etc.
1. Journal of the American Medical Association to begin at the Exp
2. Journal of the American Medical Association to begin of pres sub
3. _____ to begin _____
4. _____ to begin _____

Please note that signature of contestant on this receipt corresponds to that of contestant or credentials.

UNIVERSITY PROGRESSIVE CLUB.

E. H. Rogers.Receipt No. 115 Contestant No. 14.

Form used by subscription swindlers. (See item, "Once More a Warning.")

Physicians should be on the watch for these swindlers, and should not pay money to agents whom they do not personally know.

LONDON LETTER

LONDON, Nov. 20, 1917.

The War

DECREASE OF INSANITY

It is a curious fact, for which several explanations may be suggested, that during the war the number of the insane has decreased year by year. According to the returns for 1916, which have just been published, the number under care in England and Wales was 134,029, Jan. 1, 1917, as compared with 140,466, Jan. 1, 1915—a fall of 3,159 during the year 1916. If the average annual increase during the ten years previous to 1915 had been maintained, the number would have been 144,968—nearly 10,000 in excess of the number recorded. The relative sex percentages under care in 1916 were: males, 45.7, females, 54.3, against 46.2 and 53.8, respectively, in 1914. There were nearly 2,000 mental and nervous patients in the military hospitals, some of whom probably will eventually be certified as insane. This partly accounts for the disparity in the two sexes. Of the male attendants in the lunatic asylums, more than 50 per cent. have joined the army.

GERMAN HONORS RENOUNCED BY BRITISH SCIENTISTS

A note on membership of German academies and scientific societies has been circulated among the fellows of the Royal Society over the signatures of the following professors: Dr. W. M. Bayliss (physiology, University College, London); Sir James Dewar (experimental philosophy at Cambridge); Sir David Ferrier (neuropathology, King's

College, London); Dr. J. N. Langley (physiology, Cambridge); Sir W. H. Perkin (chemistry, Oxford); Sir Ronald Ross (tropical sanitation, Liverpool University); Dr. C. S. Sherrington (physiology, Oxford); Dr. E. H. Starling (physiology, University College, London):

"The declaration of war by Germany against Russia and France was received with enthusiasm by practically every section of the German nation. The professors, who form the backbone of the German scientific academies and societies, were prominent as a whole in arousing this enthusiasm. It is largely due to them that a belief was created in German minds that Germany was superior to other nations, and that in consequence it was only just and right that German power over other nations should be extended. No German scientific academy or society has, so far as we know, issued any protest against the many infringements of humanity and of international law which have been characteristic of the German conduct of the war. The members of the Royal Society doubtless reprobate the action of the German government in bringing on the war, and its methods of conducting it, as much as any other section of British folk. It seems, therefore, incongruous that fellows of the society should continue to announce in the year-book of the society, in "Who's Who," or elsewhere, their membership of German academies and scientific societies as an honor which they value. It seems more consistent with the actual state of affairs that such mention should be omitted. Some fellows of the society have, we understand, already adopted this course with a view to bringing home to German scientific men that learning and research cannot be divorced from public conduct. Others with whom we have spoken intend to do so. Our occupations have prevented us from obtaining the opinions of the fellows generally, but as we believe that there is a widespread desire for common action, we venture to call attention to the matter. We intend to omit mention of German academies and societies."

A SPECIALIZED MEDICAL SERVICE FOR THE AIR FORCE

The establishment of the air force as an independent service instead of a branch of the army or navy, as it has been up to the present, is now arranged. Among the changes introduced is a specialized medical service. Flying men are subject to many peculiar physical disabilities, and research into the methods of prevention and cure has advanced very rapidly. So long, however, as the flying services remained merely as appendages of the army and navy, it was difficult to provide for their study and for the special treatment of the patient. Knowledge on the subject is limited almost entirely to those few medical officers and physicians who have had considerable numbers of flying men continuously under their care. It is necessary at once to take special measures to provide separate accommodation for the patients and a separate staff to concentrate on the problems that have arisen. The mere selection of candidates for the flying services has become a highly specialized business, and the standard of fitness required for flying is diverging from the standard required for the ordinary naval and military services. There are many minor physical imperfections which render a man unfit for flying, but which if treated early may be remedied. Still more important, many precautions have to be taken to enable pilots to maintain their fitness under the severe conditions of modern air warfare.

PARIS LETTER

PARIS, Nov. 22, 1917.

The War

CHILLING OF THE FEET AS PREDISPOSING TO TETANUS

At a recent meeting of the Académie de médecine, Dr. H. Vincent, professor at the Val-de-Grâce Military Medical School, discussed the subject of tetanus provoked by frosting of the feet of the combatants. Vincent's experimental research has shown that if one injects the leg of a guinea-pig with tetanus bacillus spores, without the toxin, and then subjects the leg to cold and wet by means of continuous irrigation with water for two hours or more, tetanus develops, often acute or splanchnic. These experiments fulfil the etiologic

conditions identical with those causing frosting of the feet in soldiers. Dry cold does not have the same effect. It is the prolonged maceration resulting from standing in the water in the trenches for many hours which is responsible for the chilling of the feet, the edema and the trophic disturbances. The tetanus bacillus spores get into the abrasions on the feet. Cold (15 C.—59 F., or below) annuls the phagocytic power of the leukocytes against the spores. The bacilli find a fertile culture medium in the edematous fluids as the tissues are warmed up, and the ultimate adsorption of this culture medium is equivalent to an injection of tetanus toxin. The symptoms of acute tetanus supervene in spite of prophylactic injections of antitetanus serum, no matter how potent it may be. The underlying tissues remain edematous for some days. The constriction caused by the leggings, which shrink under the influence of the imbibition of the water, favors the continuance of the edema, and hence the production of tetanus. It would be expedient, circumstances permitting, to empty the trenches of water, to loosen the puttee straps or use impermeable cloth leggings. Among the individual measures to be recommended, the most important is to wear large shoes, carefully greased or oiled, and woolen socks impregnated with grease containing some formaldehyd. The soldier should, whenever possible, remove his shoes for an hour or two, rub and dry his feet, and anoint them with some fatty substance. Men presenting the first symptoms of freezing, pains, etc., should be sent to a warm place near by where they can be treated by rubbing with alcohol.

RENOVATION OF COTTON COMING FROM MILITARY HOSPITALS

The Service de Santé (army medical department) uses enormous quantities of cotton. Paris alone uses at least 2,000 kg. a day. M. R. Villey, a chemist, has proposed to treat this soiled cotton so that it can be used again. The manipulation and transport of the cotton favors the dissemination of pyogenic organisms; hence certain precautions must be taken, notably to place at the disposition of the hospitals metal boxes that can be hermetically closed. The method of procedure is as follows: The hospitals sort out the cotton that is not too much soiled. The cotton which is wholly unfitted for further use is burned. The remaining cotton is conveyed, at regular intervals, to a designated place in town and from there to the sterilizing station, where it is subjected to a chemical treatment and transformed into absorbent cotton. It is important to free the cotton of all fatty substances which envelop the fibers like a greasy insulating sheath. To accomplish this result, the cotton is boiled for ten or twelve hours in soda lye, or, preferably, the cotton is autoclaved under pressure for about three hours, the steam containing a carbonate of soda lye. The cotton, freed of its fat sheath, is taken out of the autoclave, and is well washed in a tub provided with a strong paddle. It is then dried in a special turbine, which revolves very rapidly so as to remove all the moisture from the cotton. The product, well washed and dried, is placed in a calcium hypochlorite decolorizing bath, which bleaches the cotton to an immaculate whiteness. It is next washed thoroughly in water until free from the hypochlorite. After another drying, the cotton is carded, packed, and again autoclaved to insure perfect sterilization. As yet, only one sterilizing station has been equipped. It is situated at Montferrand, in the province near the Swiss border. About 20,000 kg. are treated daily. The soiled cotton is received from the central expediting hospital. The treated cotton is resold to the state at 1 franc 50 centimes (30 cents) per kilogram. In view of the fact that the price paid for cotton from America is 3 francs (60 cents) a kilogram or more, the saving to France amounts to more than 5,000,000 francs (\$1,000,000) a year. Therefore it is contemplated to install sterilizing stations at Lyons, Mans, in the North, and in the Pyrenees.

Medical Instruction at the Front

In accord with the military authorities, M. Justin Godart, undersecretary of state for the military medical department, has organized, in the principal hospital centers in the army zones, courses for students of medicine, which will enable them to continue their studies and receive credits which may be presented for recognition later. The course is divided into two cycles, the first corresponding to the first and second years of the medical course, for which students will receive from two to eight credits. The second cycle corresponds practically to the third and fourth years of the medical course, and may be taken by students possessing nine to sixteen credits. The duration of each series is six months,

three months being devoted to theory, with practical work, throughout the whole course in the center of instruction. The last course really is only three months' duration. Shortly, such courses will be given in each army, at the suggestion of the commander in chief himself, who desires to keep his younger medical officers as near at hand as possible. The courses are to be concluded by an examination held by the professors of each center and the civilian professors delegated by the various faculties. Failure postpones further work for six months, when the candidate is obliged to enter on a new course of study. The passing of the examination entitles the candidate to a diploma, which, at the close of hostilities, will be accepted as representing a certain number of credits, which entitle the candidate to cumulative credits.

Professional Training for Young Men with the Colors

The minister of public instruction has been impressed by the great danger to which the liberal professions are now exposed owing to the students and potential students being with the colors. It is to the best interests of the country that the professions be kept up under the most favorable conditions. Therefore, the minister has addressed a circular to the universities which authorizes them to register in the faculties and schools: (1) students who, following a war wound or disease contracted at the front, have been classified in the auxiliary service, and maintained in that position after thorough reexamination; (2) the reserve officers, serving with the fighting troops, who have been released from service, because of wounds or disease contracted at the front, and who are disqualified for further service; (3) the younger medical officers and pharmacists discharged for wounds or disease contracted at the front. These students will be permitted to register until December 1. When, by reason of their residence or of their service, it will be impossible for them to follow the regular course of study, they can ask for cumulative credits under the regular conditions. Thanks to this measure, they will be at liberty to resume their work as soon as their present situation will permit. The minister believes that this course of action is justified by the exceptional services they have rendered to the country, and that it is independent of the reparative measures that will be taken at the close of hostilities, and which will reestablish all possible equality between the young men who have pursued their normal course of study, and those who by the performance of their military duty have been temporarily diverted from their professional training.

Marriages

LIEUT. CHARLES SNOWDEN PANCOAST, M. C., Pa. N. G., Philadelphia, to Miss Minnie Loretta Percell of New York City, in Philadelphia, November 28.

LIEUT. GRANVILLE INMAN WALKER, M. R. C., U. S. Army, Savannah, Tenn., to Miss Katherine Welton of St. Paul, Ark., at Memphis, Tenn., December 2.

LIEUT. JOHN CHRISTIAN KNAPP, M. R. C., U. S. Army, to Miss Elizabeth Karsch, both of Philmont, N. Y., in New York City, November 12.

GEORGE ALVIN HUGHES, M.D., Cassopolis, Mich., to Mrs. Lenora Dennis of Edwardsburg, Mich., at Warsaw, Ind., November 29.

JEREMIAH ALEXANDER KLOTZ, M.D., Punxsutawney, Pa., to Miss Isabel Heimbach of Allentown, Pa., at Topton, Pa., November 22.

ASST. SURG. GEORGE OTIS CUMMINGS, U. S. Navy, Portland, Me., to Miss Sybil M. Kemp of Kingston, N. H., in Portland, November 25.

HARVEY ALEXANDER PRICE, M.D., Coquimbo, Chile, to Miss Marion Lenker of Mount Carmel, Pa., at Spring City, Pa., May 30.

LIEUT. WEBB WILLIAM WEEKS, M. R. C., U. S. Army, New York City, to Miss Ruth Thayer of Oklahoma City, December 2.

ROBERT VAL HOFFMAN, M.D., Detroit, to Miss Eleanor Robbins Presstman of Baltimore, November 22.

CHARLES P. WHITE, M.D., Wilmington, Del., to Miss Elizabeth B. Lobb of Philadelphia, November 28.

NEIL HERBERT BAILEY, M.D., to Miss Florence Gertrude Long, both of Hartford, Conn., November 29.

Deaths

Brig.-Gen. Bernard John Dowling Irwin, M. C., U. S. Army (retired); one of the most distinguished representatives of the Medical Department of the Army; aged 87; died at his country home, at Coburg, Ont., December 15. General Irwin was born in Ireland in 1830. He began the study of medicine in the Castleton (Vt.) Medical College in 1850, and later entered the New York Medical College from which he was graduated in 1852. After service as acting assistant surgeon, U. S. Army, for several months, he entered the Army as assistant surgeon, with the rank of lieutenant, and advanced through grades to Colonel and Assistant Surgeon-General, Aug. 28, 1890; was retired by operation of law, June 28, 1894, on attaining the age of 64, and was advanced to Brigadier-General (retired) by the act of April 23, 1904.

His service in the Army included numerous expeditions against the Indians, and he was awarded the Medal of Honor by Congress for "distinguished gallantry in action, Feb. 13-14, 1861." He was made medical director of the Army of Kentucky in 1862, and was captured in the battle of Richmond, Ky. After the close of the Civil War he served as post surgeon at a number of posts, chiefly in the West, and was attending surgeon, headquarters, Military Division of the Missouri, Chicago, from 1880 to 1882. He was in charge of the Army medical purveying depots in New York City and San Francisco until his promotion to colonel in 1890.

General Irwin devised the first field tent hospital for treatment of the wounded on the battlefield, at the time of the battle of Shiloh; its value was immediately recognized and it was promptly introduced into the military service, as the type of the most modern field hospital, and has since been adopted by the armies of all civilized nations.

Edward Augustus Ayers, M.D., Branchville, N. J.; New York University, New York City, 1880; aged 61; a Fellow of the New York Academy of Medicine, and a member of the Medical Society of the State of New York; emeritus professor of obstetrics in the New York Polyclinic; formerly a member of the New Jersey State Board of Health; founder and first president of the Mothers and Babies Hospital of New York; well known as a lecturer on scientific subjects; who won the Carpenter prize of the New York Academy of Medicine on "The Mosquito as a Sanitary Problem"; died in the Franklin (N. J.) Hospital, December 3, from pleuropneumonia.

Ramon Guiteras, M.D., New York City; Harvard Medical School, 1883; aged 57; a Fellow of the American Medical Association; well known as a urologist; a member of the American Association of Genito-Urinary Surgeons, and American Urological Association; consulting surgeon to the French Hospital; visiting surgeon to the City and Columbus Hospital; professor of venereal and genito-urinary surgery in the New York Post-Graduate Medical School; well known internationally as a surgeon and big game hunter; died in the French Hospital, New York City, December 13, from meningitis.

William Allen Baker, M.D., Coloma, Mich.; Rush Medical College, 1882; a veteran of the Civil War; representative in the state legislature in 1887 and 1889; town supervisor; for several years justice of the peace, and for a number of terms president of the village of Coloma; promoter and builder of the railway from Coloma to Paw Paw Lake; builder and operator of the Coloma water works; died at his home, December 3.

George H. F. House, M.D., Indianapolis; Medical College of Indianapolis, 1879; aged 69; formerly a Fellow of the American Medical Association; a member of the Indiana State Medical Association; once vice president of the Marion County Medical Society; for one term president of the Indianapolis City Board of Health and Charities; died at the home of his daughter in Clayton, Ind., December 2, from cerebral hemorrhage.



Died in the Service

CAPT. AUGUSTIN DE Y. GREEN, M. R. C.,
U. S. ARMY, 1875-1917

(See *The Journal*, last week, p. 2059)

Surg. Richard Bland Williams, Lieutenant Commander, U. S. Navy, Norfolk, Va.; University of Virginia, Charlottesville, 1898; aged 42; a Fellow of the American Medical Association; chief surgeon of the U. S. S. *Florida*; who entered the Navy, Nov. 17, 1900, as lieutenant, junior grade; while despondent on account of fear of losing his eyesight, is reported to have committed suicide in a hotel in Norfolk, December 5.

Edmund W. Meisenhelder, M.D., York, Pa.; Jefferson Medical College, 1868; aged 64; a Fellow of the American Medical Association, and a member of the staff of the York Hospital; a veteran of the Civil War; died suddenly from heart disease, while making a professional call, December 1. Tributes were paid to the memory of Dr. Meisenhelder at a meeting of the York County Medical Society, December 1.

Morris Norton Bemus, M.D., Jamestown, N. Y.; College of Physicians and Surgeons in the City of New York, 1889; aged 55; a Fellow of the American Medical Association, and of the New York Academy of Medicine; once president of the Medical Society of the State of New York, and of the Jamestown Medical Society; died at his home, December 9, from disease of the liver.

Mary Elizabeth Baldwin, M.D., Newport, R. I.; Women's Medical College of the New York Infirmary for Women and Children, 1874; aged 70; a Fellow of the American Medical Association; for twenty-five years secretary of the Newport Medical Society; died in a hospital in Brooklyn, from general toxemia following a nervous breakdown, November 21.

Edward Manning Brown, M.D., Springfield, Mass.; College of Physicians and Surgeons in the City of New York, 1898; aged 45; a member of the Massachusetts Medical Society and a specialist in dermatology and genito-urinary diseases; died in the Springfield Hospital, November 22, from meningitis consequent on an osteomyelitis of the skull.

Surg. Henry Albert Dunn, Lieutenant Commander, U. S. Navy, Philadelphia; George Washington University, Washington, D. C., 1897; aged 43; a Fellow of the American Medical Association; who was appointed an assistant surgeon and ensign in the Navy, June 7, 1900; died in a hotel in New York City, December 13, from heart disease.

Alice Byran Condict, M.D., Orange, N. J.; Chicago Homeopathic Medical College, 1883; Tufts College Medical School, Boston, 1906; aged 73; a Fellow of the American Medical Association; for more than a

quarter of a century a medical missionary of the Presbyterian Board in India; died at her home, December 10.

John H. Hoxsey, M.D., Spokane, Wash.; American Medical College, St. Louis, 1885; aged 58; a member of the Washington State Medical Association; at one time physician to the Spokane County Poor Farm, and a member of the State Board of Medical Examiners; died at his home, November 29, from nephritis.

James Spencer Howard, M.D., Oswego, N. Y.; New York University, New York City, 1879; aged 80; for ten years surgeon to the Oswego City Hospital, and Oswego Orphan Asylum; a member of the board of health from 1908 to 1912; for several years jail physician; died in the Oswego Hospital, December 3.

Israel Cone Jones, M.D., New York City; Miami Medical College, Cincinnati, 1874; aged 67; a Fellow of the American Medical Association, and New York Academy of Medicine; since 1876 medical superintendent of the Home for Incurables, New York City; died in that institution, December 6.

Samuel Marcus Moore, M.D., Evanston, Ill.; Chicago Homeopathic Medical College, 1895; aged 47; a Fellow of the American Medical Association; from 1903 to 1914, chief surgeon of the Illinois Steel Company; died in the Greenwood Inn, Evanston, December 12, from pneumonia.

James E. Shannon, M.D., Sharon, Tenn.; University of Louisville, Ky., 1889; aged 52; formerly a Fellow of the

American Medical Association; a member of the Tennessee State Medical Association; died in St. Thomas Hospital, Martin, Tenn., December 1, from septicemia.

John Jay Sullivan, M.D., Passaic, N. J.; Albany (N. Y.) Medical College, 1890; aged 56; a member of the Medical Society of New Jersey; a specialist on internal medicine; died in Roosevelt Hospital, New York City, November 30, five days after an operation for gastric ulcer.

Hiram Beauregard Stout, M.D., Parkersburg, W. Va.; Medical College of Ohio, Cincinnati, 1899; aged 54; formerly a Fellow of the American Medical Association; a member of the West Virginia State Medical Association; died at his home, November 19, from arteriosclerosis.

Frank David Rieman, M.D., Paterson, N. J.; University and Bellevue Hospital Medical College, 1915; aged 33; a member of the visiting staff of the Isolation Hospital, and of the local board of school hygiene; died in St. Joseph's Hospital, Paterson, December 1, from pneumonia.

Herman F. W. Baltzer, M.D., St. Louis; University of Würzburg, Germany, 1875; aged 66; formerly a Fellow of the American Medical Association; a member of the Missouri State Medical Association; died in the Deaconess Hospital, St. Louis, October 17, from pneumonia.

John E. Bromwell, M.D., Mount Airy, Md.; University of Maryland, Baltimore, 1867; aged 77; formerly a Fellow of the American Medical Association; a member of the Medical and Chirurgical Faculty of Maryland; died at his home, November 9, from arteriosclerosis.

Daniel P. Gerberich, M.D., Lebanon, Pa.; Hahnemann Medical College, Philadelphia, 1881; aged 62; state senator from Lebanon County for two terms, and once president pro tem of the state senate; died at his home, November 29, from the effects of a fracture of the hip.

Daniel B. Summers, M.D., Shelby, Ohio; Pulte Medical College, Cincinnati, 1888; aged 54; a member of the Ohio State Medical Association; died at his home, November 30, from the effects of a gunshot wound, self-inflicted, it is believed, with suicidal intent.

William Merrick Semans, M.D., Delaware, Ohio; Miami Medical College, Cincinnati, 1887; aged 55; formerly a Fellow of the American Medical Association; a member of the Ohio State Medical Association; died at his home, December 5, from arteriosclerosis.

Sylvanus Chase Curran, M.D., Yonkers, N. Y.; Albany (N. Y.) Medical College, 1885; aged 71; for ten years captain of the Twenty-Third Separate Company, N. G., N. Y.; died in the home of his daughter in Yonkers, November 21, from cerebral hemorrhage.

William H. Wills, M.D., Milford Center, Ohio; Starling Medical College, Columbus, Ohio, 1879; aged 57; a member of the Ohio State Medical Association; died at his home, November 27, from injuries received in an automobile accident the day before.

Denis W. Barry, M.D., San Pedro de Madoris, Dominican Republic; Yale University, New Haven, 1884; aged 55; formerly a practitioner of Brooklyn and of Pretoria, South Africa; died in the Skene Sanitarium, Brooklyn, December 6, from pneumonia.

Sallie Justina Ermentrout, M.D., Eldridge, Calif.; Women's Medical College of Pennsylvania, Philadelphia, 1891; aged 60; a Fellow of the American Medical Association; a member of the staff of the Eldridge State Hospital; died at her home, November 21.

Adolphus Henry Carter, M.D., Wiggins, Colo.; Northwestern Medical College, St. Joseph, Mo., 1892; aged 67; formerly a Fellow of the American Medical Association; for many years a practitioner of Salt Lake City; died recently at his home.

William Alder Smith, M.D., Galena, Ill.; Northwestern University Medical School, Chicago, 1897; aged 45; a member of the Illinois State Medical Society; died at Council Hill, Ill., November 17, from asthma associated with heart disease.

Mark W. Bynum, M.D., Brownwood, Texas; University of Pennsylvania, Philadelphia, 1857; aged 82; once physician of Brown County, and president of the Brownwood District Association; a Confederate veteran; died at his home, November 28.

Jackson Walker, M.D., Bethany, Mo.; University of Michigan, Ann Arbor, 1867; aged 81; formerly a member of the Missouri State Medical Association; a veteran of the Civil

War; died at his home, November 18, from cerebral hemorrhage.

George Abbott Campbell, M.D., Manchester, N. H.; Boston University School of Medicine, 1881; aged 60; for the last twenty years a florist and proprietor of the Ray Brook Gardens; died in a hospital in Manchester, about December 2.

Oliver A. Collins, M.D., Mohawk, Ind.; Medical College of Indiana, Indianapolis, 1886; aged 54; formerly a Fellow of the American Medical Association; a member of the Indiana State Medical Association; died at his home, December 30.

George Leiter Greenawalt, M.D., Fort Wayne, Ind.; Bellevue Hospital Medical College, 1880; aged 66; a Fellow of the American Medical Association, and a widely known surgeon; died at his home, December 6, from cerebral hemorrhage.

Isaac B. Malcolm, M.D., Lowell, Mich.; American University of Pennsylvania, Eclectic, Philadelphia, 1867; aged 72; one of the earliest practitioners of Kent County; died suddenly on the street, November 21, from heart disease.

Thomas Jefferson Powell, M.D., Childersburg, Ala.; University of Maryland, Baltimore, 1866; aged 76; formerly a member of the Medical Association of the State of Alabama; died at his home, November 23, from angina pectoris.

James Walsh Southworth, M.D., Glasgow, Mo.; New York University, New York City, 1862; aged 79; assistant surgeon of the Eighth New Hampshire Volunteer Infantry, during the Civil War; died at his home, about November 21.

Henry L. Porter, M.D., Seneca, Mo.; Homeopathic Medical College of Missouri, St. Louis, 1880; aged 68; a Fellow of the American Medical Association; died in a hospital in St. Louis, November 15, after a surgical operation.

John M. Woodburn, M.D., Boise, Idaho; Jefferson Medical College, 1881; aged 58; formerly a member of the Idaho State Medical Association; died in a hospital in Boise, November 28, from acute dilatation of the heart.

William Gibson McClumphy, M.D., Moundsville, W. Va.; Starling Medical College, Columbus, Ohio, 1882; aged 67; a member of the West Virginia State Medical Association; died at his home, November 26, from malaria.

Clarence Morgan Kurtz, M.D., Reading, Pa.; Jefferson Medical College, 1886; aged 56; a member of the Medical Society of the State of Pennsylvania; died suddenly at his country home, Old Ferry, Pa., November 25.

Emmett Burr Daley, M.D., Bennington, Vt.; New York University New York, 1879; aged 62; a member of the Vermont State Medical Society; died in the Samaritan Hospital, Troy, N. Y., October 10, from acute nephritis.

Harry Alta Andrews, M.D., San Francisco; Cooper Medical College, San Francisco, 1891; aged 48; formerly a member of the Medical Society of the State of California; died at his home, August 22, from cerebral embolism.

Lafayette D. Fuller, M.D., Rockville, Conn.; Eclectic Medical College of Pennsylvania, Philadelphia, 1867; aged 73; a medical cadet during the Civil War; died in his apartment, December 6, from cerebral embolism.

Harry Hallock Lente, M.D., Oldtown, Me.; Bowdoin Medical School, Brunswick and Portland, Me., 1912; aged 31; a member of the Maine Medical Association; died at his home, about November 3, from meningitis.

William Frederic Boes, M.D., Brooklyn; Long Island College Hospital, Brooklyn, 1892; aged 64; a member of the Medical Society of the State of New York; died at his home, November 27, from arteriosclerosis.

Robert Eugene Cato, M.D., Americus, Ga.; Jefferson Medical College, 1886; aged 57; a Fellow of the American Medical Association; died at his home, in Reese Park, Americus, November 26, from heart disease.

Richard Leonard Eldredge, M.D., Bonfield, Ill.; College of Physicians and Surgeons, Chicago, 1903; aged 51; a Fellow of the American Medical Association; died in Minooka, Ill., November 29, from pneumonia.

Elias B. Mesirov, M.D., Chicago; College of Physicians and Surgeons, Chicago, 1894; aged 56; formerly a Fellow of the American Medical Association; died at his home, December 10, from lobar pneumonia.

Gilmore Robert Stevenson, Hubbard, Ohio (license, Ohio, years of practice, 1896); aged 79; for fifty-one years a practitioner; a veteran of the Civil War; died in the Youngstown (Ohio) Hospital, December 2.

Margaret Enort Colby, M.D., Berkeley, Calif.; Northwestern University Woman's Medical School, Chicago, 1884;

aged 62; formerly a practitioner of Clear Lake, Iowa; died at her home, December 10.

David Cleveland Gordon, M.D., Washington, D. C.; Jefferson Medical College, 1856; aged 81; a veteran of the Civil War; a clergyman of the Protestant Episcopal Church; died at his home, December 1.

David Ashby Kincaid, M.D., South Portland, Me.; Bowdoin Medical School, Brunswick and Portland, Me., 1878; aged 63; formerly a member of the Maine Medical Association; died at his home, November 29.

Aloysius Kessler, M.D., New York City; New York University, New York City, 1877; aged 74; formerly a member of the Medical Society of the State of New York; died at his home, November 30.

James A. Phillips, M.D., Morristown, N. Y.; Albany (N. Y.) Medical College, 1865; aged 80; for forty-eight years a practitioner of Morristown; died at the home of his son in Syracuse, November 28.

Henry Chorley Watt, M.D., Colorado Springs, Colo.; licentiate of the Apothecaries' Society of London, 1875; aged 45; a member of the Colorado State Medical Society; died at his home, December 1.

Nathaniel Babcock Darling, M.D., Brooklyn; College of Physicians and Surgeons in the City of New York, 1873; aged 83; also a pharmacist; died at his home, November 28, from arteriosclerosis.

Franklin Clark Terrill, M.D., Big Rapids, Mich.; University of Michigan, Ann Arbor, 1879; aged 68; a member of the Michigan State Medical Society; died at his home, December 4, from carcinoma.

John Francis McCooley, M.D., Woonsocket, R. I.; College of Physicians and Surgeons, Baltimore, 1903; aged 37; died in St. Vincent's Hospital, Worcester, Mass., December 1, from peritonitis.

James Louis Beyea, M.D., New York City; New York Homeopathic Medical College, 1880; aged 80; a veteran of the Civil War; died in the Flower Hospital, New York City, December 4.

Joseph de la Cruz de Varona, M.D., New York City; Bellevue Hospital Medical College, 1865; aged 74; died at the home of his brother in New York City, November 30, from influenza.

Richard West Bourne, M.D., Mexico, Mo.; Jefferson Medical College, 1848; aged 97; the first mayor of Mexico, elected in 1856; died at the home of his daughter in Mexico, November 23.

Charles James Allen, M.D., Sheffield, Iowa; Rush Medical College, 1887; aged 61; died at his home, August 31, from tuberculosis.

Quintus L. Adams, M.D., Philadelphia; Jefferson Medical College, 1888; aged 51; died at his home, November 27, from pneumonia.

Henry A. Crawshaw, M.D., Bush, Ill.; St. Louis College of Physicians and Surgeons, 1895; aged 47; was instantly killed in an automobile accident at Carbondale, Ill., November 7.

Isaac Riley Bucher, M.D., Lebanon, Pa.; Pennsylvania Medical College, Philadelphia, 1857; aged 85; died at the home of his son in Lebanon, November 23.

Albert Charles Nussle, M.D., Chippewa Falls, Wis.; University of Illinois, Chicago, 1908; aged 33; was accidentally drowned, October 14.

Thomas J. S. Kimbrough, M.D., Weatherford, Texas; University of Nashville, Tenn., 1870; aged 74; died at his home, September 28, from nephritis.

Henry D. Jones, M.D., Grand Marais, Minn.; Eclectic Medical College of the City of New York, 1878; aged 82; died in East Chatham, N. Y., August 21, from senile debility.

A. T. Hagemeyer, M.D., Youngstown, Ohio; Medical College of Ohio, Cincinnati, 1886; aged 58; was found dead in bed, November 30.

J. Abraham Wilson, M.D., Billings, Mo.; University of Tennessee, Nashville, 1885; aged 82; died at his home, October 17, from arteriosclerosis.

A. W. H. Wullschleger, M.D., Reno, Nev.; University of Zurich, Switzerland, 1902; aged 38; died at his home, October 11, from edema of the brain.

R. H. White, Cabot, Ark. (license, Arkansas, 1903); aged 57; a practitioner since 1893; died in Jacksonville, Ark., in September, from tuberculosis.

Davis Boswell, M.D., Beatrice, Neb.; Rush Medical College, 1888; aged about 70; died in Birmingham, Ala., November 24.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

TIMES-PICAYUNE THROWS OUT MEDICAL FRAUDS

Accepts Only Medical Advertisements That Have Been Investigated and Passed on by State Board of Health

About four years ago THE JOURNAL commented editorially on the rules which the New Orleans *Item* then put into effect governing the acceptance of medical advertising. These rules, while not binding the *Item* to reject all "patent medicine" advertising, did call for the rejection of such as was plainly fraudulent or was, after rigid scrutiny, open to suspicion. As the managing editor of the *Item* wrote at the time: "Practically the whole business will go out on October 1. I am frank to say that I did not know how bad it was until I had it collected and began to look at it in a critical way." The *Item* was fortunate in having connected with its staff a physician who aided in drawing up its rules and, more important yet, in interpreting and applying these rules.

Within the last month or two another New Orleans paper—the *Times-Picayune*—has made a decision with reference to the acceptance of medical advertisements that is, if anything, more far reaching than that made by the *Item*. The *Times-Picayune* is going to follow the standards for medical advertising set by the National Vigilance Committee of the Associated Advertising Clubs of the World. These standards are practically identical with the recommendations in the report issued about two years ago by the Commission on Proprietary Medicines that was appointed by the American Pharmaceutical Association. The *Times-Picayune* explains how it is going to be in a position to follow these standards:

"In order that these rules might be fully maintained, it obtained the cooperation of Dr. Oscar Dowling, president of the Louisiana State Board of Health, to see that they were strictly lived up to, agreeing not to print any medical advertisements without first receiving the approval of the Louisiana State Board of Health. Sept. 1, 1917, the Louisiana State Board of Health undertook the work for the *Times-Picayune*.

"This set another precedent in leadership for the *Times-Picayune*, as it was the first newspaper in the South, and probably anywhere in the country, to take such an advanced step. Censorship by the State Board of Health means that every medical advertisement now appearing in the *Times-Picayune* has been thoroughly investigated and passed upon by the State Board of Health."

The new policy of the *Times-Picayune* has been officially endorsed in resolutions adopted both by the Southern Medical Association in recent annual convention and by the Orleans Parish Medical Society at a meeting held November 26. Nor is the New Orleans *Item* backward in extending its congratulations to its competitor contemporary. This paper, in a recent discussion of "patent medicine" frauds and the nostrum evil generally, said:

"Our competitor, the *Times-Picayune*, has recently joined the ranks of newspapers which recognize this evil. It now refuses to accept money for advertising medicines whose advertising is not approved by the Louisiana State Board of Health. The president of this board, Dr. Oscar Dowling, has taken a brave, a creditable and, we believe, a highly intelligent stand against these frauds. It is with sincere pleasure that we note the stand taken by the *Times-Picayune*. When it is borne in mind that the amount of advertising of this class runs into tens of thousands of dollars a year, it will be appreciated that our contemporary is sacrificing large revenue for correct principle."

Louisiana is one of the few states that have made any serious effort to curb the evils of quackery and "patent medicine" frauds. Its work in this direction and the growth

of public opinion as reflected in the action of two of its most influential newspapers is undoubtedly due to the fact that the state has in its chief health officer an aggressive and uncompromising foe of fraud.

Correspondence

ENLARGEMENT OF LINGUAL TONSIL IN WHOOPING COUGH

To the Editor:—Last week I had called to my attention again a condition which I have noticed in whooping cough and of which, so far as I have been able to find out, there has been no mention made. For a few years back I have been examining all the patients with whooping cough that I have seen, and I find an inflammation and enlargement of the lingual tonsil in practically every case. Since April, 1914, I have examined forty-three cases and in all but one there was this same finding in connection with other throat symptoms. It has been decidedly more prevalent than any other one condition in the throat, with the possible exception of an acute pharyngitis.

Through THE JOURNAL I should like to ask other physicians to examine for inflammation of the lingual tonsil in their cases of whooping cough, because if this is a constant condition in this trouble, I believe it possible to work out a more rational treatment for this cough than we have had.

W. M. RUCKLE, M.D., Grand Rapids, Wis.

"PRAYERS FOR PROFIT"

To the Editor:—An item headed "Prayers for Profit" in THE JOURNAL for June 9 has come to my attention. Its occasion is THE JOURNAL's satisfaction over the recent defeat of a proposed amendment to the laws of Ohio legalizing spiritual healing.

Permit me to correct the statement which it contains, that "it is well known" that Christian Science practitioners treat their patients "for the profit there is in it." It is not well known for it is not true, neither is there evidence on which to base the charge, nor the allied charge that the church is "evidently commercial." On the contrary, Christian Scientists are well known to their neighbors throughout the world to be an honest and conscientious body of people not given to charlatanism of any sort.

But the criticism of THE JOURNAL manifestly arises, neither from the fact that Christian Scientists are paid for their healing ministrations, nor from a supposed variation from the practice of Jesus, but from the fact that THE JOURNAL disapproves of the healing effort of Christian Science. Indeed, it evidently regards all spiritual healing as inimical. The evidence of this is supplied by the fact that the section which it was proposed to add to the Ohio Medical Practice Act, and over the defeat of which THE JOURNAL rejoices, reads as follows: "Nothing in this chapter shall be construed to apply to or interfere in any way with the practice of those who endeavor to prevent or cure disease or suffering by spiritual means or prayer."

It is evident, therefore, that while THE JOURNAL refers with approval to Jesus and his practices, it nevertheless believes in interfering with healing by spiritual means or prayer.

In these circumstances it may not be out of place to remind your readers that Jesus could not have passed the examination in materia medica which is properly required of those preparing to administer material remedies, but this fact did not prevent him from earning the title of "the Great Physician."

AVERY COONLEY, Chicago.

[COMMENT.—The item to which Mr. Avery Coonley takes exception—Mr. Coonley, it will be remembered, is the "Christian Science Committee on Publication for the State of Illinois"—was a brief editorial comment to the effect that the Christian Science Church is said to have among its followers no scientist recognized by men of science, no biblical

authority recognized by biblical students, no man of standing in the world of philosophy and no physician of standing among medical men. It further commended the attitude of the state of Ohio for not granting the Eddyites who would treat the sick exemption from the educational requirements of the Medical Practice Act of that state.

Mr. Coonley's statement that "Jesus could not have passed the examination in materia medica which is properly required of those preparing to administer material remedies" might be true if Christ is conceived as a man without the powers of divinity. It is equally true that Moses could not pass the examination given by the Bar Association nor could Noah qualify as commander of an ocean liner. These limitations, however, should not be held against either Noah or Moses; neither should one criticize the public of today for insisting that their legal advisers and their ship commanders should have knowledge commensurate with twentieth century requirements.—Ed.]

A NEW CONCEPTION OF THE CAUSE OF SCARLET FEVER AND THE OTHER ACUTE EXANTHEMS

To the Editor:—In 1895, Bergé ("La pathogénie de la scarlatine," Paris) said, in regard to the cause of scarlet fever, "An imposing array of evidence points to the streptococcus in one of its virulent forms as the pathogenic agent of the disease." Time and further experimental work have served only to strengthen this belief in the minds of many investigators.

It is generally assumed that the chief portal of entry for the causative agent in scarlet fever is the upper respiratory tract, more particularly the throat and tonsils. However, the many apparently typical cases of scarlet fever developing shortly after childbirth, severe burns, wounds and surgical operations suggest the fact that the causative agent may also find extrafaucial portals of entry. For many years we have been aware of the relation between complicating streptococcus infection and childbirth, burns, wounds and surgical operations.

How is it possible for the same micro-organism to cause in some persons the typical symptoms of ordinary streptococcic puerperal septicemia, streptococcic wound infection and streptococcic sore throat, and in other persons a typical or atypical scarlet fever? What, after all, is the difference between a case of septic sore throat due to the streptococcus and a case of so-called scarlet fever? I would suggest that these various conditions are due to differences in the susceptibilities of persons to the streptococcus. Scarlet fever may possibly be described as a streptococcic anaphylaxis superimposed on a streptococcic sore throat, or on a septicemia from some other portal of entry, in a person who has previously been made sensitive or hypersusceptible to the streptococcus, either through the gastro-intestinal tract or in some other way.

This conception is based on a thorough study of both scarlet fever and anaphylaxis. I am sure that the more one studies these two conditions, the more convinced one will become that the former is nothing more than a special manifestation of the latter.

Furthermore, may we not explain the other acute exanthems on the same basis? The only differences may be in regard to the specific micro-organisms and the portals of entry concerned in sensitization and intoxication.

When the time comes in which the microscope seems to fail us in the further search for a specific causal agent, should we not attempt to correlate the various facts that we already have at our disposal, and make intelligent use of them for the explanation of certain diseases that may depend on something more than a mere primary infection with a micro-organism? LEVERETT DALE BRISTOL, M.D., Augusta, Maine.

State Commissioner of Health.

Military Medicine.—The fundamental object of the Army Medical Service in war is to provide healthy men for the fighting line, to keep these men in good physical condition, and if sick or wounded, to make them fit and ready for fighting as soon as possible.—Col. T. H. Goodwin.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

CHLOROFORM IN STERILIZATION OF CULTURES

To the Editor:—In THE JOURNAL, Nov. 10, 1917, p. 1658, appears an abstract of an article by G. Stradiotti and G. Ollino on "Autogenous Vaccines in Treatment of War Wounds," published in the *Rivista critica di clinica medica* (1917, 18, 357) in which the statement is made that chloroform was used to sterilize the cultures. Can you give me information as to the amount of chloroform used to sterilize the vaccines?

W. E. Putz, M.D., Chicago.

ANSWER.—The technic is only casually mentioned, as follows: "For the sterilization of the cultures, the method selected was always the addition of chloroform in slight excess to the culture fluid, agitating at intervals during two or three hours; after this the fluid was always absolutely sterile; so much so that in the several hundred injections we made we never noted an abscess or febrile reaction of any account or evidences of local intolerance; we noted nothing but fleeting redness at the site of the injection, and the usual slight painfulness, which never lasted more than a few days."

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 8. Chairman, Dr. S. W. Welch, Montgomery.

COLORADO: Denver, Jan. 8. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Jan. 8. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

HAWAII: Honolulu, Jan. 10-13. Sec., Dr. G. A. Batten, Box 375, Honolulu.

INDIANA: Indianapolis, Jan. 8-10. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.

MINNESOTA: St. Paul, Jan. 2-4. Sec., Dr. Thomas McDavitt, 741 Lowry Bldg., St. Paul.

NATIONAL BOARD OF MEDICAL EXAMINERS: New York City, Jan. 9-17. Sec., Dr. J. S. Rodman, 310 Real Estate Bldg., Broad and Chestnut Sts., Philadelphia.

NEW MEXICO: Sante Fe, Jan. 14. Sec., Dr. R. K. McClanahan, East Las Vegas.

NEW YORK: Albany, Buffalo, New York City and Syracuse, Jan. 29-Feb. 1. Sec., Dr. W. J. Denno, Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 1. Sec., Dr. G. M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, Jan. 8-9. Sec., Dr. J. J. Williams, Weatherford.

OREGON: Portland, Jan. 1. Sec., Dr. Herbert S. Nichols, Portland.

PENNSYLVANIA: Philadelphia, Jan. 8-10. Sec., Nathan C. Schaeffer, State Capitol, Harrisburg.

RHODE ISLAND: Providence, Jan. 3. Sec., Dr. B. U. Richards, State House, Providence.

SOUTH DAKOTA: Pierre, Jan. 8. Sec., Dr. P. B. Jenkins, Waubay.

UTAH: Salt Lake City, Jan. 7-8. Cor. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

WASHINGTON: Spokane, Jan. 1. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

WISCONSIN: Madison, Jan. 14. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.

WYOMING: Laramie, Feb. 6-8. Sec., Dr. H. E. McCallum, Laramie.

Washington July Examination

Dr. C. N. Suttner, secretary of the Washington State Board of Medical Examiners, reports the written examination held at Seattle, July 3-5, 1917. The examination covered 11 subjects and included 110 questions. An average of 60 per cent. in each subject was required to pass. Of the 43 candidates examined, 40, including 5 osteopaths, passed, and 3 failed. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|--------|------------|-----------|
| College of Physicians and Surgeons, Los Angeles | | (1916) | 93.6 |
| Hahnemann Med. College of the Pacific | .. | (1916) | 81.7 |
| Denver and Gross College of Med. | | (1917) | 83.9 |
| Columbian University | | (1905) | 84.6 |
| Chicago College of Medicine and Surgery | | (1900) | 84.2 |
| | | (1916) | 80.2 |
| | | (1917) | 86.1 |
| Northwestern University | | (1906) | 88.3 |

| | | | | | |
|--|-------|--------|-------|--------|-------|
| Rush Medical College | ..... | (1899) | 80.4; | (1906) | 92.2 |
| University of Illinois | ..... | (1916) | 74.5, | 80.6, | 88.3. |
| Physio-Medical College of Indiana | ..... | (1898) | 80.3 | | |
| Southwestern Homeo. Medical College and Hospital | ..... | (1909) | 84.3 | | |
| University of Louisville | ..... | (1917) | 84.1 | | |
| University of Michigan Medical School | ..... | (1917) | 88.4 | | |
| American Medical College | ..... | (1903) | 70.1 | | |
| St. Louis University | ..... | (1915) | 84 | | |
| Washington University | ..... | (1910) | 78.9 | | |
| John A. Creighton Medical College | ..... | (1916) | 73.8 | | |
| Columbia University | ..... | (1896) | 80.9 | | |
| University of Oregon | ..... | (1917) | 87.6, | 92.2, | 93.8. |
| Jefferson Medical College | ..... | (1916) | 86.7 | | |
| Medico-Chirurgical College of Philadelphia | ..... | (1905) | 68.7 | | |
| University of Pennsylvania | ..... | (1916) | 88.8; | (1917) | 86.2 |
| Nippon Special Medical School | ..... | (1912) | 84.5 | | |
| Okayama Special Medical School | ..... | (1913) | 85.5 | | |

FAILED

| | | | |
|---|-------|--------|---|
| Barnes Medical College | ..... | (1905) | * |
| Miami Medical College | ..... | (1888) | * |
| Jefferson Medical College of Philadelphia | ..... | (1892) | * |

* No grade given.

Connecticut July Examination

Dr. Charles A. Tuttle, secretary of the Connecticut State Medical Examining Board, reports the written examination held at New Haven, July 10-11, 1917. The examination covered 7 subjects and included 70 questions. An average of 75 per cent. was required to pass. Of the 37 candidates examined, 24 passed and 13 failed. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|--|--|------------|-----------|
| Yale University..... | (1915) 84.3; (1917) 80.2, 81.5, 83.4, 83.7 | | |
| College of Physicians and Surgeons, Baltimore..... | (1915) | | 81.3 |
| Johns Hopkins University | (1916) | | 79.7 |
| University of Maryland | (1916) | | 80.6 |
| Harvard University | (1915) 84.7, 89.8; (1917) | | 88.2 |
| Tufts College Medical School | (1917) | 80.4, 86.5 | |
| Dartmouth Medical School | (1914) | | 76.7 |
| Albany Medical College | (1898) | | 75.8 |
| Columbia University | (1912) 83; (1916) | 78.2, 86.6 | |
| Long Island College Hospital | (1916) | | 75.9 |
| Jefferson Medical College of Philadelphia | (1912) | | 76.1 |
| Medico-Chirurgical College of Philadelphia..... | (1909) | | 75.4 |
| Woman's Medical College of Pennsylvania | (1912) | | 75.2 |
| University of Vermont | (1916) | | 83.2 |
| University of Glasgow | (1909) | | 77.2 |

FAILED

| | | | |
|--|-------|----------------------------------|------------|
| Maryland Medical College | ..... | (1913) | 57.9 |
| University of Maryland | ..... | (1916) | 73.8 |
| Harvard University | ..... | (1915) | 73.3 |
| Tufts College Medical School | ..... | (1917) | 73.9, 74.3 |
| University of Vermont | .... | (1912) 72.4; (1914) 68.2; (1917) | 72.2 |
| University of North Carolina | ..... | (1910) | 60.8 |
| Medico-Chirurgical College of Philadelphia | ..... | (1915) | 72.8 |
| Meharry Medical College | ..... | (1913) | 63.4 |
| Medical College of Virginia | ..... | (1917) | 62.5 |
| University of Athens | ..... | (1917) | 53.5 |

Colorado July Examination

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the written examination held at Denver, July 5, 1917. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 27 candidates examined, 20, including 1 osteopath, passed, and 7, including 4 osteopaths and 1 drugless healer, failed. Twenty candidates, including 2 osteopaths, were licensed through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|------------|-----------|
| University of Colorado (1917) | 80, 81.1, 82.5, 82.7, 83, 83.7, 84, 84.1, 84.1, 84.5, 84.6, 86.1, 86.4, 87, 89.2, 89.7, 89.7. | | |
| St. Louis College of Physicians and Surgeons..... | (1914) | | 75.4 |
| North Carolina Medical College | (1917) | | 75.1 |

FAILED

| | | | |
|--|-------|--------|------|
| St. Louis College of Physicians and Surgeons | ..... | (1915) | 70.6 |
| University of Tennessee | ..... | (1903) | 48.4 |

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|--|------------------------------|------------|------------------|
| Chicago College of Medicine and Surgery | ... | (1910) | Illinois |
| Chicago Homeopathic Medical College | | (1897) | Illinois |
| College of Physicians and Surgeons, Chicago | | (1909) | Illinois |
| Hahnemann Medical College, Chicago | | (1906) | Iowa |
| Medical College of Indiana | | (1902) | New York |
| College of Physicians and Surgeons, Keokuk | | (1889) | Iowa |
| Keokuk Medical College, Coll. of Phys. and Surg. | | (1901) | Iowa |
| State University of Iowa College of Medicine | | (1916) | Iowa |
| University of Kansas | | (1906) | Kansas |
| Baltimore Medical College | | (1898) | N. Dakota |
| St. Louis University | | (1908) | Illinois |
| Washington University | | (1905) | Missouri |
| University of Oklahoma | | (1911) | Oklahoma |
| University of Nashville | | (1901) | Tennessee |
| Vanderbilt University | | (1915) | Missouri |
| Marquette University | | (1916) | Wisconsin |

Book Notices

REPORT OF THE PHYSICAL WELFARE OF MOTHERS AND CHILDREN: ENGLAND AND WALES. Volume 1. By E. W. Hope, M.D., D.Sc., Medical Officer of Health for the City and Port of Liverpool. Volume 2. By Janet M. Campbell, M.D., M.S., One of Senior Medical Officers, Board of Education. The Carnegie United Kingdom Trust. Paper, 1917.

"Save the babies that are born" is the central idea of this report. The object is avowedly to stimulate interest in the task of reducing the amount of illness and mortality among mothers and children of the poor. The authors consider such aspects of the problem as the incidence of infant mortality and its relation to poverty, municipal sanitation, the establishment of antenatal and postnatal centers, special aid for expectant mothers in rural districts, and the training of health officers and midwives.

It is pointed out that bad housing and poverty go hand in hand, and that the economic condition of the parent is largely responsible for congenital weakness in the child, since the struggle for existence among the poor reacts on the fetus. The importance of proper sanitation is recognized for the reason that filthy courts and alleys, bad drainage, and the absence of personal and domestic hygiene are powerful factors in the intestinal diseases of infancy. Diarrhea and enteritis are cited as common in neighborhoods in which defective sanitation and bad housing are prevalent.

Considerable attention is paid to antenatal and postnatal supervision of mothers and babies by the health authorities. The antenatal clinic reduces the number of stillbirths and miscarriages among the poor, and aids in training the prospective mother for the future care of her child. It also enables the practitioner to detect and check such ailments as varicose veins, albuminuria and ophthalmia, and in cases in which syphilis is suspected, to apply the Wassermann test with the aid of the local bacteriologic laboratory. Postnatal supervision in England and Wales includes provision for the registration of births and deaths by the authorities, and for the recording of a brief life history of the child, as well as for visits to the home at intervals until the child is of school age.

The provision of sanatoriums for expectant mothers in rural districts is not yet an accomplished fact in the United Kingdom, but the authors strongly recommend their establishment, on account of the difficulty of getting skilled medical aid to the mothers in periods of emergency. On this account, Wales and parts of England remote from London and the great towns suffer more than the latter in infant mortality and loss of maternal life. The authors also recommend the subsidizing of midwifery service in rural districts by the county councils.

The need of intelligent health authorities is emphasized because of their responsibility, not only in problems of municipal housing, but also in the exercise of authority over the practice of midwifery. The regulation and training of midwives receives the fullest attention from the authors. They report a decided decline in the death rate from puerperal septic diseases from 1900 to 1914, as a result of the passage of the Midwives Act in 1902, whereby the practice of midwifery by uncertified midwives was made practically impossible. Through the agency of the Central Midwives Board, which was established to regulate the training, examination, certification and conduct of the practice of midwives, the standard has been materially raised.

In the second volume of the report, much attention is devoted to a historical survey of English midwifery during the period from the sixteenth to the nineteenth century, inclusive. It also contains a valuable chapter on modern conditions in England and Wales, and another on present-day practice of midwifery in Austria, France, Germany, Russia and Switzerland. Attention is directed to the fact that whereas in the United States the general tendency is to eliminate the midwife because of the low grade of intelligence her type represents, the policy in European countries is to improve her status and educate her more broadly for her work. In England, as on the continent, she is recognized as a permanent institution, through whose care passes a large

percentage of the births in the United Kingdom, amounting, in some urban centers, to more than 75 per cent.

The report includes many interesting charts showing the incidence of maternal and of infant mortality; tables of returns from medical health officers; model plans of health administration; model housing and playgrounds specifications, and abstracts of the Midwives Act, the Notification of Births Act and other legislative enactments affecting the welfare of mothers and children.

NOTES ON GALVANISM AND FARADISM. By E. M. Magill, M.B., B.S., D.P.H. Cloth. Price, \$1.50 net. Pp. 220, with 67 illustrations. New York: Paul B. Hoeber, 1916.

This is a concise statement of the facts concerning this much neglected branch of therapeutics. As stated by the author, the book is primarily intended for the use of masseuses; but the practitioner who does not have the time or desire to wade through the larger and more technical works can get a good working knowledge of the subject from this book. One of the especially pleasing features is the giving of exact and minute directions to the student for applying the different treatments.

Social Medicine, Medical Economics and Miscellany

An Irruption of Antiseptics

Under this heading, the point of view of the pharmacist is thus presented in an editorial note in the *Pharmaceutical Journal and Pharmacist* (1917, 99, 120):

"While the pharmacist is not professionally concerned with the relative therapeutic merits of the many antiseptics which have had a vogue in the past or are now competing for supremacy, he is bound, both for professional and business reasons, to keep himself conversant with all the latest phases of antiseptic treatment, with special reference to new antiseptic compounds and preparations. Sooth to say, since the outbreak of war this has been no easy task. One result of the enormous demand for hitherto staple and standard antiseptics for the treatment of war wounds has naturally been to stimulate research for the discovery of effective substitutes, while the progressive surgeon, always on the *qui vive* for improved methods of asepsis or antiseptics, has utilized to the utmost the legitimate opportunities afforded by unprecedentedly vast and varied clinical experience to give a trial to antiseptic agents and methods for which in normal times there would have been little or no opening. It is hardly an exaggeration to say that for a year or more the medical journals have announced new antiseptics at the rate of about one a week, and the battle between the partisans of the different discoveries rages loud and long. Fortunately it is not our affair to adjudicate on the issues of the controversy, but the unfortunate pharmacist can hardly be an indifferent spectator of it, seeing that he may be expected to stock or prepare on short notice one or other of the variants of, say, Dakin's solution or the paraffin compound for the treatment of burns, or to reel off for the information of the medical inquirer all about the chemistry and transcendent potency of chloramin-T, or any of the other chemicosesquipedalianly named compounds which we are assured is destined for ever to supersede all its predecessors and contemporaries. It would ill become us to belittle any effort toward the advance of antiseptic surgery, or to deprecate the need for continuous criticism and revision of existing methods and material. We have traveled far since Lister revolutionized clinical surgery as regards the prevention and treatment of the microbic infection of living tissues. But the principles on which his method was based, while not unchallenged, remain unshaken. Such differences as do obtain refer exclusively to methods of treatment or to the superiority of one antiseptic over another. In the meantime, happily, the patient is not sacrificed to an absolutely bad as compared with a perfectly good method. At the worst, all that happens is that the inferior method may

delay the cure. From the pharmacist's point of view, it would be an immense relief if it were possible for the medical profession, if not to adopt Sir Almroth Wright's simple saline plan, at least to attain to some measure of standardization and uniformity in the selection and use of antiseptics, so as to minimize the practical difficulties and vexations inherent in the present lack of system, which opens the way for the needless multiplication not only of antiseptics, but of variants in the composition and preparation of them for use."

Medicolegal

Liability of Employer for Surgical and Hospital Services After Thirty-Day Period

(*In re Henderson (Ind.)*, 116 N. E. R. 315)

The Appellate Court of Indiana, answering an inquiry of the industrial board of the state, says, in construing Section 25 of the workmen's compensation act, that it will be seen that such section provides for the furnishing by the employer of an attending physician in two instances only, namely, during the thirty-day period from the date of the injury, when he is required to furnish such physician, and thereafter when he may at his option furnish such physician. The additional services of a surgeon and hospital are limited to said periods and conditions. There is no authority to furnish the latter services except during the period of the attendance of the physician, furnished as indicated. If during the first thirty days after the injury the employer furnishes such physician, or, without cause, fails to furnish such physician, in either event the attending physician or the industrial board may during such period require surgical and hospital services for which the employer may be properly charged. However, after the thirty-day period no obligation rests on the employer to furnish an attending physician, and in the court's judgment the board has no authority or discretionary power by which it may require such a service after the expiration of said period; and hence, unless the employer elects to furnish such attending physician, the power of the board to require surgical and hospital services and supplies ends with the expiration of the thirty-day period. But the legislature intended that, so long as the employer continues to exercise the option that the statute gives him, to furnish voluntarily the injured employee a physician, if either such physician or the industrial board should determine that any surgical or hospital services are necessary in such case, the employer should be liable therefor. Moreover, if in this case the industrial board is of the opinion that the evidence before it shows that the emergency for the amputation of the employee's foot arose before the expiration of the thirty-day period, and that such amputation should have been and could have been performed before the expiration thereof, and that the employer was responsible for the delay that prevented the amputation before the expiration of such period, the board would be authorized, under the section of the act in question, in holding such employer liable for any surgical or hospital service and supplies that were in fact furnished or might have been furnished within said period, notwithstanding the employer's written notice to the attending physician and the hospital that he would not be liable for any surgical and hospital services after the expiration of thirty days from the date of the injury, and notwithstanding such services may not have been in fact furnished until after the expiration of said period.

Proof Required of Standard of Care and Skill

(*Norkett vs. Martin (Colo.)*, 165 Pac. R. 256)

The Supreme Court of Colorado, in affirming a judgment in favor of the defendant, a physician, says that this action was brought by a minor suing by her next friend to recover damages for alleged negligence in the diagnosis and treatment of an ailment from which she was suffering, a verdict being returned for the defendant and a judgment of dis-

missal being entered thereon. The only error alleged was in an instruction to the jury which read: "In considering whether the defendant, in his diagnosis, care and treatment of the plaintiff's injury or disease exercised ordinary care, you cannot set up a standard of your own, but must be guided in that regard solely by the testimony of the physicians, and if you are unable to determine from the testimony or the physicians what constituted ordinary care and skill under the circumstances of this case, there would be a failure of proof on the only standard for your guidance, and the evidence would be insufficient to warrant any verdict for the plaintiff." Counsel conceded that this instruction was a copy of one that was approved in *McGrav v. Kerr*, 23 Colo. App. 163, 128 Pac. 870, but insisted that a difference in facts rendered that case inapplicable. But this court cannot agree with that conclusion. The court there was considering, and discussed at some length, by what evidence a jury should be guided in determining whether or not a physician had exercised such care and skill as his employment required, and held that it was a question for experts. It also held that "if no standard was established by the testimony of physicians, then the jury had no standard." This case is clearly within the rule thus laid down. The principle on which the rule is based was announced by the court in *Jackson v. Burnham*, 20 Colo. at page 536, 39 Pac. 577, and is supported by abundant authority. The instruction was correct.

Treatment of Cancer of Mouth by Dentist Under Direction of Physician

(*In re Carpenter's Estate (Mich.)*, 162 N. W. R. 963)

The Supreme Court of Michigan affirms a judgment in favor of the claimant, a dentist, who charged for treating and cleansing cancer of the mouth three times a day for seventy-seven days, at \$2 per day, and from four to six times a day for sixty-four days, at \$3 per day, and made three charges of \$4 each for cocaine and antiseptic. The court says it appeared from the record that the patient was suffering from an incurable cancer of the mouth. The record also showed beyond question that the treatments administered by the claimant were so administered from the very first under the direction of a duly qualified physician, first under one physician, and later under another. It further showed that such treatments were necessarily administered from three to six times each day, the lesion in the jaw being extremely painful, and emitting a discharge highly offensive in odor. It further appeared that in the administering of said treatments some skill was required. No question was raised in this record as to the value of the claimant's services. At the conclusion of the claimant's case, counsel for the estate made a motion for a directed verdict on the ground that the services rendered by the claimant were for the treatment of a cancer by a man not shown to be legally qualified to practice medicine in the state of Michigan; that a treatment of cancer by a dentist is a treatment in violation of the law. He said: "The only question of importance involved in this case is whether the claimant in doing what he did for the decedent was engaged in the practice of medicine contrary to the provisions of Act 237 of the Public Acts of 1899 as amended." But the court is of the opinion that the claimant was entitled to recover on either of two theories: First, that the services rendered were those of an ordinary nurse under the direction of a competent and duly qualified surgeon; and, second, that they were rendered by the claimant as a duly qualified dentist under the provisions of Act 183 of the Public Acts of 1913, Section 7 of which provides: "Any person shall be said to be practicing dentistry within the meaning of this act . . . who shall . . . treat diseases or lesions of the human teeth or jaws, . . . or who shall for a fee, salary, or other award paid or to be paid, . . . treat diseases or lesions of the human teeth or jaws." The treatments administered by the claimant would clearly fall within the definition of the practice of dentistry contained in the statute. The court is of the opinion that the claimant in rendering the services for which claim was made was not practicing medicine within the meaning of Act 237, Public Acts of 1899, nor of Act No. 368, Public Acts of 1913.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Minneapolis, Dec. 27-29.
American Physiological Society, Minneapolis, Dec. 27-29.
Porto Rico Medical Association, San Juan, Dec. 22-23.
Society of American Bacteriologists, Washington, D. C., Dec. 27-29.

SOUTHERN MEDICAL ASSOCIATION

Eleventh Annual Meeting, held at Memphis, Tenn., Nov. 12-15, 1917
(Continued from page 2067)

Tetanus Following Laparotomy for Ectopic Pregnancy; Treatment by Subarachnoid Injections of Magnesium Sulphate and Antitetanic Serum; Recovery

DR. DEWITT B. CASLER, Baltimore: Certain patients are definite tetanus carriers, and, as such, are liable to be a source of infection to themselves in any surgical operation on the bowel, or about the rectum. In any abdominal operation, especially in pelvic work, when the surgeon has to deal with inflammatory masses, indurated and adherent to the bowel wall, great care should be taken to close in this indurated area as thoroughly as possible, and so avoid the danger of tetanus developing in the injured bowel wall. In every case of postoperative tetanus, it is wise to begin at once subcutaneous injections of magnesium sulphate, and in the severe cases, subarachnoid injections. There is always a certain amount of danger from paralysis of the respiratory center, and when subarachnoid injections are given, means for artificial respiration should be at hand. Magnesium sulphate given intraspinally affords the greatest amount of comfort and relief in those cases, in which death often comes, not only from the toxemia, but also from exhaustion.

Popularizing Public Health

DRS. C. E. TERRY and F. SCHNEIDER, JR., New York: As a means of bringing to the public a realization of health truths and a knowledge of the importance of health work, the family magazine has unparalleled possibilities. The seventh baby campaign has pushed this experiment in constructive journalism a step farther. A field force of trained and experienced public health nurses has been assembled, and two traveling laboratories with experienced laboratory men have been provided. This field force is now engaged in making surveys of infant mortality in particular, and public health work in general, in communities of between 10,000 and 40,000 population. Careful inventories of local conditions are made, and reports are submitted giving findings and outlining a practical program for public health progress. The field work is conducted only on the request of local authorities, and with their cooperation. The subjects covered are infant mortality in particular, that is, the number and causes of infant deaths and existing efforts to prevent them; milk supply; water supply; sewers and sewage disposal; privies and fly-breeding; waste disposal, and organization and budget of the health department.

Distribution of Vaccines and Serums by the State

DR. C. A. SHORE, Raleigh, N. C.: Cities and many counties should have their own laboratory for diagnostic purposes and for the control of water and milk supplies. The state laboratory should serve sections not otherwise provided for, and in addition should have a much wider field of usefulness and a direct public health service in making and distributing those vaccines and serums that have been accepted as reliable curative or prophylactic agents. In our state, typhoid vaccine is given free to all registered physicians. We have been sending out annually for three years an average of 400,000 doses. We estimate that at least 100,000 citizens are immunized against typhoid fever each year. I believe in the free distribution of diphtheria antitoxin. It is only then that we can hope for its use in all cases of diphtheria.

Health Education in Rural Districts

DR. L. A. RISER, Columbia, S. C.: Two counties in South Carolina were this year induced to appropriate money

through the legislature for a campaign for better health in their rural districts. Notwithstanding the phenomenal rise in the price and scarcity of labor and material in our state, we have been able to make a fair showing, and to stir up an enthusiasm for civic betterment along the line of disease prevention that will cause a demand on the part of the rural population in these counties for a continuation of this work next year. We have largely stressed the prevention of intestinal diseases by approved methods of sanitation, but we have also devoted a part of our work to the prevention of tuberculosis, and diseases of childhood. Lectures in schools, both negro and white, have been given in practically every community. In our county and community fairs we have had health exhibits, which have taught valuable lessons in disease prevention to thousands.

Relative Value of the Public Health Nurse in the Solution of the Tuberculosis Problem

DR. W. L. HEIZER, Frankfort, Ky.: The chief advantages of starting a health campaign in a county by employing competent public health nurses are: the natural inclination of a community to spend a smaller amount of money, a false economy, to accomplish a public service; the popular appeal to the public by the ministrations to the sick; the prenatal care in selected cases, and a quick appreciation of the value of public health work by reason of its publicity, secured as the result of appeals for aid to churches, fraternal organizations, and the city and county government. When a nurse is employed by a county health and welfare league, as is the policy of our commission, or a similar organization with a large county membership, it is a logical and certain means of crystallizing an awakened public health sentiment to the formation of a permanent county, city or state health department with efficient officers and sufficient equipment and assistance to make real work permanent, constructive and effective.

Physical Status of Juvenile Delinquents

DRS. ELIZABETH BASS and MAUD LOEBER, New Orleans: Many children who are sent to reformatories would make better men and women if even superficial attention were given to them before their commitment by a physician attached to the juvenile court, to be followed up in each instance, according to the opinion of the court, either by the child's natural or rightful guardian, or, should the court deem commitment proper, by the custodian of the municipal or state institution. Physical and clinical records should be kept of each child at the time of admission into the reformatory, and observations recorded once each month thereafter, or more frequently, should the case require it. Each reformatory attending physician should have as his assistants specialists in the various branches of medicine to treat cases needing attention in his specialty, and a resident trained nurse. The diet and mode of life in an institution should be passed on by that institution's attending physician.

DISCUSSION

DR. OSCAR DOWLING, Shreveport, La.: The prison system in vogue is an insult to our intelligence and a disgrace to our civilization, and there is no feature of the whole system more in need of reform than that which pertains to the juvenile criminal. Although not complete, there are sufficient data to show the close and intimate relation of mental states to abnormal physical conditions. That defects or bodily pain are the cause of actions often mistakenly called criminal is clear. Then, logically, the cause should be discovered and the remedy applied. Every court should take cognizance of pain or mental defect as a predisposing cause of crime. No jury would convict an insane person. Institutional life at its best is not an environment which gives ideal results, and for the physically defective cannot be other than trying in the extreme. I heartily approve the recommendations contained in the paper, each one of which is important and imperative. I believe they are practical and can be put into immediate effect wherever public opinion will make the demand. I believe full publicity as to the details of juvenile court proceedings and institutional life will stimulate public sentiment to the degree that the demand will be made.

Syphilis of the Heart and Aorta

DR. BRYCE W. FONTAINE, Memphis, Tenn.: The records of the Memphis General Hospital for the years 1916 and 1917, inclusive, show a total admission of 219 patients with cardiovascular disease. Disease of the cardiac valves heads the list with the occurrence of mitral insufficiency in 133 of the cases, and aortic insufficiency in twenty-four. Next in point of number were aneurysms of the aorta and the peripheral arteries, of which there were eighteen. Such a study showed in the cases of mitral disease thirty-seven, or 27.8 per cent., infected with syphilis; in the cases of aortic disease, eleven, or 45.8 per cent.; and in the cases of aneurysm, eleven, or 61.1 per cent. In every case of aortic insufficiency in a young adult, in addition to the physical and other examinations, there should be made a roentgenographic examination of the chest, for this may be the only means of differentiation from chronic aortitis or aneurysm.

(To be continued)

KENTUCKY STATE MEDICAL ASSOCIATION

Sixty-Seventh Annual Meeting, held at Louisville, Nov. 6-9, 1917

(Concluded from page 2067)

Acute Intestinal Obstruction

DR. GEORGE A. HENDON, Louisville: Any acute illness that is characterized by abdominal pain, shock and nausea, not associated with diarrhea, is sufficient evidence of intestinal obstruction to justify laparotomy. An estimate of the degree of pain is important. Any abdominal pain that cannot be quieted by a hypodermic administration of one-fourth grain of morphin in the adult and corresponding doses in children is always indicative of an organic lesion. To this rule I have never found a single exception. Such a case will sooner or later demand surgical intervention. Nausea that persists after normal stomach contents have been evacuated is never due to local conditions in the stomach. Such nausea is due either to pyloric spasms or reversed peristalsis. To produce either pyloric spasms or reversal of the peristaltic wave, an obstruction, either physiologic or mechanical, must exist. If associated with pain, such as mentioned above, the obstruction is always mechanical. The nausea of intestinal obstruction is characterized more by its persistence than by its severity. Sometimes the efforts of vomiting are mild and devoid of violent retching, but they are constant and uncontrollable. The vomited material consists first of undigested food, then mucus and bile, and later of intestinal contents. It is utterly inexcusable to wait for fecal vomit before making a diagnosis. Shock is a conspicuous symptom and is always present. The greater the degree of vascular involvement in the obstruction, the more profound is the shock.

DISCUSSION

DR. J. GARLAND SHERRILL, Louisville: Patients with intestinal obstruction die not so often of peritonitis due to the original trouble as from the absorption of the contents of the bowel. If we give such a patient purgatives, he will certainly die.

DR. A. D. WILLMOTH, Louisville: The conditions presented by Dr. Hendon are not due to infection but to the absorption of material within the intestine itself. The mucosa of the intestinal tract is not only a simple absorbing and secreting surface, but under certain conditions it has the power of manufacturing chemical agents that may destroy the patient's life rapidly unless some form of drainage is instituted.

DR. D. W. PAYNE, Bardwell: In the last year I have had three cases of acute intestinal obstruction in which the symptoms of abdominal pain, nausea and diarrhea were conspicuous by their absence.

Latency in Tuberculosis

DR. JOSEPHUS MARTIN, Cynthiana: There is often a period of latency in tuberculosis. Just in what percentage of cases and exactly how this comes about is not well established. Deaths from consumption are infrequent before the fifteenth year. The careful study of tuberculosis would indicate an

attempt on the part of nature at the production of acquired immunity in this disease. This is the case in as high as 95 per cent. of children examined. Latent tuberculosis in children is often revealed by defects in development. The previously normal appearing child begins to grow thin and pale; the skin and muscles feel flabby, and the bones are inclined to soften and bend. The mind often develops precociously. Children with latent tuberculosis catch cold readily; eczema and pruritis are frequent, and there may be periods of difficulty in breathing, with or without bronchitis. Pains at different points are also instructive.

Surgical Management of Hypertrophy of the Prostate

DR. H. H. GRANT, Louisville: Early removal of the prostate in the first stage, with tumor and residual urine, is a wise step. In the second stage, when the urine has become foul, the prostate should be removed by the two-stage method as soon as the patient is in condition to bear surgery. In the first stage, when surgery is unsafe, suprapubic drainage will often make the patient comfortable. The shock of the perineal operation is far less and the subsequent convalescence much more rapid and comfortable than in the suprapubic method, but it should be reserved for the small prostate about the neck of the bladder and for those grave cases in which something must be done, in which the more trying operation is too dangerous. These patients are not to be allowed to drag along with a few antiseptics for the urine and various temporizing methods until the opportunity for security in surgery has passed.

DISCUSSION

DR. HERBERT BRONNER, Louisville: A class of cases the essayist did not mention is that class with nerve lesions. We not infrequently see patients who have hypertrophy of the prostate, but in whom the prostate is not palpable by rectum. Large sounds can be passed with ease. The cystoscope will reveal a trabeculation that is characteristic of nerve lesions.

DR. FRANK BOYD, Paducah: I wish to call attention to the danger of too rapid evacuation of a bladder that has long been under tension from overdistention. The better plan is to withdraw 10 ounces of urine at a time, gradually emptying the bladder in two or three days. In that way we overcome the tendency to rapid dilatation of the bladder wall.

Early Diagnosis and Treatment of Ectopic Gestation

DR. CHARLES A. VANCE, Lexington: Prompt operative intervention is imperatively demanded in every instance, regardless of the stage of the gestation when the patient comes under observation. In the presence of severe abdominal pain and shock, even when the diagnosis is uncertain, celiotomy is justifiable and may be a life-saving measure. Vaginal operations are not advised under any circumstances in the treatment of ectopic gestation. The primary object to be borne in mind is the safety of the mother. It is inadvisable to delay operation, hoping that the product of conception may be finally extruded through the tubal fimbriae without hemorrhage or shock, since it is impossible to determine in what portion of the tube impregnation has occurred.

Border Line Tonsils

DR. W. B. MCCLURE, Lexington: No matter how much the tonsil may be hypertrophied, or how much it apparently is diseased, unless there is a history of tonsillitis or quinsy, unless there are glandular enlargements about the neck or throat, unless there are constitutional symptoms of tonsillar origin, I unqualifiedly advise against their removal.

Celiohysterectomy for Puerperal Eclampsia and Placenta Praevia

DR. WOODSON H. TAULBEE, Maysville: I do not propose cesarean section in every case of eclampsia or in every case of placenta praevia, but there are definite indications which make this procedure not only justifiable but the safest to both mother and child. When immediate delivery is indicated, cesarean section is often the method of choice. Every patient with eclampsia and placenta praevia or concealed hemorrhage should be given the promptest treatment possible after the first convulsion or hemorrhage. Celiohysterectomy

is done rapidly; shock is greatly lessened; the control of hemorrhage is more complete; there are no cervical tears; there is less likelihood of infection; we are not working in the dark; delivery of the placenta is immediate; there is less likelihood of postpartum hemorrhage, and less danger of injury to the bladder; a living child is more certain and, if deemed necessary, the patient may be sterilized.

Treatment of Cardiac Disease by Measures Other than Drugs

DR. CURRAN POPE, Louisville: Rest is an essential feature of every method and every system of treatment of cardiac diseases. Physical rest may be obtained in many ways. In some cases rest may be obtained by simply diminishing the day's work and increasing the time of general physical rest. This form of rest is particularly valuable in ambulant cases with slight or moderate weakness of the myocardia. Psychic rest is almost as important as physical rest. As far as possible, the so-called "worries" should be removed. The vast majority of such worries are in reality irritations that can be removed readily by hospital residence. The management of the diet of these patients commences with cleanliness of the entire oral cavity. Mastication is essential, and this is best secured by having the patient take small mouthfuls of food, chewing it well. We diet our cardiac patients too much. One of the most valuable, as well as the simplest, hydrotherapeutic measures in the treatment of cardiac diseases is the precordial ice bag. The ordinary ice bag or cap may be used, and should be filled with small pieces of ice to which some ordinary coarse or rock salt has been added, in the proportion of one of salt to four of ice. Massage is a very practical and useful adjunct in the treatment of cardiac diseases and disorders. In bedridden cases, manual massage and vibration have been used successfully. The sinusoidal current is of considerable value in the treatment of cardiac diseases and disorders. It seems to be especially useful in myocardial disturbances. I employ an even, smooth, short wave without surging of any kind. It produces the most lasting impression.

NEW YORK NEUROLOGICAL SOCIETY

Regular Meeting, held Oct. 2, 1917

The President, DR. FREDERICK TILNEY, in the Chair

Cinematographic Records of War Neuroses

DR. FRANKWOOD E. WILLIAMS, Associate Medical Director of the National Committee for Mental Hygiene: Shortly after the declaration of war, the Surgeon-General created in his department a division of psychiatry to organize a neuropsychiatric service in the Army to meet the problem of war neuroses as it developed in the American forces. Dr. Pearce Bailey, chairman of the Mental Hygiene War Work Committee of the National Committee for Mental Hygiene, was given charge of the new division. The creation of this division of psychiatry represented the first attempt in any army to take into consideration the mental and nervous qualifications of recruits for military service.

The National Committee for Mental Hygiene then undertook to interest the neurologists and psychiatrists throughout the country in this work. The result was that whereas there were few medical officers in the Army at the time of the declaration of war who could be called psychiatrists or neurologists, there are now approximately 300 of these specialists commissioned in the Medical Reserve Corps. There have been, of course, many new problems before the division, but the work has divided itself largely into three parts: (1) the examination of recruits, (2) provision for the care of war neuroses in the expeditionary force, and (3) provision for the care of invalided soldiers returned to this country. Psychiatrists and neurologists are now detailed to each of the American camps, where they are examining the troops in a systematic way in order that those recruits will be eliminated who are found unfit for military service because of neuropathic or psychopathic conditions. No statistics are available at the present time, but it is estimated that from 1 to 2 per cent. are being eliminated.

In order that the cooperation of line officers might be obtained, a special report was prepared indicating those personality traits that frequently come to the attention of such officers and which are considered of possible psychiatric significance, and they are requested to refer those men to the specialists for examination.

Neuropsychopathic wards are being planned for the base hospitals at each of the sixteen cantonment camps. Three or more psychiatrists and a corps of specially trained attendants are to be detailed to each of these hospitals, which will be provided with adequate hydrotherapeutic and electrotherapeutic equipment. The plans for the expeditionary force called for thirty bed neuropsychiatric units with each base hospital and for a 500 bed special hospital for war neuroses. The latter will be staffed by nineteen medical officers, a corps of 150 nurses and male attendants, and a corps of specially trained reeducational workers. It is probable that eventually specialists from the base hospitals will be on duty at the casualty clearing stations so that a patient can be handled from these stations through the base hospital unit and, if necessary, through the special hospital for war neuroses.

War Shock, Its Occurrence and Symptoms

DR. T. H. AMES: From observation of chronic cases of war neuroses in convalescent hospitals in different parts of eastern Canada, I believe that a classification for the differential diagnosis of every case of nervousness developing at the front might be made in the following way: (1) Constitutional inferiority group, including the high grade morons and epileptics. (2) Psychoses, such as general paresis, dementia precox and manic depressive states. (3) Concussion, that is, organic injury to the brain or spinal cord, so that on physical examination disturbances in reflexes and in the spinal fluid were demonstrable. (4) War shock, or the functional cases which had no organic signs, either wounds from bullets or shrapnel, and showed no abnormal changes in reflexes. (5) Malingering, or deliberately feigned symptoms.

A rough estimate of cases of nervousness in all forms is about 3 per cent. of all the casualties, perhaps one half being cases of war shock.

It is interesting to study the types of men who suffered from these conditions. Throughout the war it had been a matter of continuous comment that prisoners of war and wounded men did not have war shock. All nervousness ceases instantly on being wounded, and war shock never develops in a sleeping man when a shell bursts near him. Crack regiments have fewer men coming down with war shock, as do old regiments with long traditions of pride. Among officers there is relatively a smaller percentage than among privates. One of the most striking features is the relatively small number of cases among woman nurses and civilians who are often exposed to shell fire.

The immediate exciting incident provoking the attack might be either a physical or an emotional shock. Being gassed, aeroplane raids, mine explosions, or anticipated mine explosions act as exciting causes. The emotional causes are apt to produce less sudden onset of symptoms; the factors are most frequently fear or suspense. The large percentage of cases, however, have their onset some time after the shock, some of the men coming out of unconsciousness and being for several days without any symptoms at all, then developing mutism, blindness, tremors, etc. Once the symptoms appear, they are apt to assume their maximum severity within twenty-four hours. As a rule, from the time the man was taken care of the symptoms began to abate, subsiding, in the majority of cases, one by one, at irregular intervals. Some of the symptoms that disappeared did so in a few moments' time; the use of the voice came back all at once, blindness disappeared almost instantaneously, as did paralysis, though the use of limbs that had been paralyzed might be slow and gradual. The cessation of tremors, however, had never been rapid. The course of the disease might be continuous or interrupted, exacerbations being quite common. The severity of the symptoms varied in many respects. Some were extremely severe and others very mild. Those cases which were monosymptomatic were apt to be more severe than

those with more than one symptom. The intensity of any symptom was in inverse proportion to its duration. The symptoms might be classified as psychical or physical. There was a third group involving the autonomic system, gastrointestinal, cardiac, respiratory, secretory or excretory systems.

DISCUSSION

DR. JOHN T. MACCURDY: The prevalence of "shell shock" is not well known because no statistics have been published. Major Bailey showed that 12 per cent. of those invalided home to Canada suffered from neuroses and mental diseases, 58 per cent. of which had a diagnosis of "shell shock." The War Council of Great Britain gave Major Salmon statistics of all discharges from the British Army; one seventh of these were for mental and nervous troubles, of which the largest proportion were war neuroses.

War neuroses seem to be constant and simple in their type. In England, I visited seven or eight special hospitals for nervous cases and found that the physicians who did most for their patients and returned the most men to active duty classified their material into two groups, anxiety neuroses and the conversion hysterias. In the anxiety neuroses the symptoms were almost purely psychic, in contrast to the hysterias, where the symptoms were somatic. A further difference was found in that the anxiety cases occurred mostly among officers. In Scotland, in a 300 bed hospital for officers, they had only one example of anxiety neurosis with gait disturbance; the other 299 were cases with no somatic symptoms beyond occasional tremors of brief duration. The paraplegias, the blindness, the mutism, tics, etc., constituted the hysterias, and these occurred preponderantly among the private soldiers. Privates, as a rule, were comparatively ignorant men; they were not surprised to find a scratch on the shoulder resulting in paralysis of the arm, a sequence which an educated man would view with astonishment. This was one reason for the rarity of hysterias among officers, and corresponded to the experience in civilian practice, where functional palsies, etc., were rarely met with outside of dispensary practice. The onset of the anxiety condition was gradual and usually marked by fatigue. The hysterias, on the other hand, developed quickly. It was the anxiety neuroses that had the greater military significance. The officer who later developed an anxiety state passed through a latent period during which he felt more and more fear and struggled against it. It was impossible for a man putting forth 90 per cent. of his energy in smothering fear to encourage his men with the necessary abandon; consequently their neuroses led to the breaking up of the morale of their companies.

The treatment for the two groups is different. Hysterical symptoms are amenable to suggestion, hypnotism and reeducation, all of which efforts are successful with anxiety neuroses only to a limited degree.

The common soldier hoped to receive some wound, a "blighty" one, and when his neurosis appeared the symptoms assumed corresponding physical form; his sight went or the tics, paraplegias, etc., developed. The officer had higher ideals; he would not harbor the thought of being disabled; he did not want to get out of the war by any subterfuge, and so it came about that he developed a fear of death and fearful dreams of being killed began. When this occurred his sleep was disturbed by nightmares, and this aggravated his condition until it was only a question of time before he broke down. All these premonitory symptoms went on for some time and just how fast they developed to the point of incapacitation depended on circumstances. The soldier was waiting for some final precipitating factor which might be a purely psychic trauma or a physical accident such as concussion.

DR. CHARLES L. DANA: The disorders and symptoms described under the term "war shock" are not new. The grouping of the cases and classification corresponds to the groups of neuroses and psychoneuroses seen in civil life as the result of trauma and shock. The frequency, however, of different types and the combination of symptoms are different in war shock and civil shock cases. Thus, in civil life there are very few cases of hysterical mutism, deafness, or blind-

ness, but plenty of tremor, paralysis and skin anesthesia. The group which the term neurasthenia covers better than "anxiety neuroses" seems to have much the same characters as the traumatic neurasthenias of civil life, where there are often types of mild depressions brought out by shock; neither war nor civilian shocks are often the real cause of the obsessive psychosis. The main measures to pursue in trying to prevent or to prepare individuals against shock are the avoidance of excessive fatigue and education against fear, measures which are rather councils of perfection. The ear and the body can, however, be educated to withstand the noise and concussion of cannon firing and shell explosion, as has been shown in the artillery branch of the army service, where soldiers, ignoring ear protectors, sleep peacefully in the gun pits of even the heavy artillery.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

November, XXII, No. 3

- 1 Early History of Germ Cells in Armadillo, *Tatusia Novemcincta*. A. S. Vanneman, Galveston, Texas.—p. 341.
- 2 Development of Serous Glands (von Ebner's) of Vallate Papillae in Man. E. A. Baumgartner, St. Louis.—p. 365.
- 3 Anatomy of Seven Months' Fetus Exhibiting Bilateral Absence of Ulna Accompanied by Monodactyly (and Also Diaphragmatic Hernia). J. C. Watt, Toronto.—p. 385.
- 4 *Normal Shape of Mammalian Red Blood Corpuscle. L. B. Arey, Chicago.—p. 439.
- 5 Seasonal Changes in Interstitial Cells of Testis in Woodchuck (*Marmota monax*). A. T. Rasmussen, Ithaca, N. Y.—p. 475.

4. Shape of Mammalian Red Blood Corpuscles.—Arey is convinced that the shape of the mammalian red blood corpuscle depends largely on the osmotic pressure of the examining medium. In solutions corresponding to calcium 0.9 per cent. sodium chlorid the erythroplastid possesses a biconcave form. In progressively less concentrated (hypotonic) solutions water is imbibed and the corpuscles swell to thin-walled cups, thick-walled cups, dimpled spheres and finally lake forming shadows. In hypertonic media crenation results. Between the limits of form induced by a 0.3 per cent. sodium chlorid solution and by mild crenation the shape of the red corpuscles is repeatedly reversible. Individual variability exists in the response of erythroplastids to diluting media; this is perhaps referable to diverse elasticities of the corpuscular membranes. Undiluted drawn blood, and blood diluted with human serum, show the red corpuscles to be biconcave disks. Human serum must be diluted about one third with water before the cup form predominates. Freezing point determinations which show that mammalian plasma is isotonic with a 0.9 per cent. saline solution (instead of 0.6 per cent.) are roughly substantiated by such dilution experiments. The study of circulating blood in nonanesthetized living mammals corroborates the normality of the disk. The results gained by the use of fixatives, although seemingly adverse to the disk view, may be satisfactorily interpreted in terms of unequal fixation; this is supported by experiment. The several lines of evidence presented by Arey seem to justify the conclusion that the biconcave disk represents the normal shape of the mammalian erythroplastid—the concavoconvex cup being merely an occasional modification.

American Journal of Physiology, Baltimore

November, XLIV, No. 4

- 6 *Occurrence of Citric Acid in Urine. S. Amberg and W. B. McClure, Chicago.—p. 453.
- 7 Reception of Mechanical Stimuli by Skin, Lateral Line Organs and Ears in Fishes, Especially in *Amiurus*. G. H. Parker and A. P. Van Heusen.—p. 463.
- 8 Reversal of Reciprocal Inhibition in Earthworm. F. P. Knowlton and A. R. Moore, Woods Hole, Mass.—p. 490.
- 9 *Attempts to Produce Experimental Thyroid Hyperplasia. G. E. Burget, Urbana, Ill.—p. 492.

- 10 Relative Physiologic Value of Spectral Lights. H. Laurens and H. D. Hooker, Jr., New Haven, Conn.—p. 504.
- 11 All-Or-None Principle in Graded Response of Skeletal Muscle. F. H. Pratt, Buffalo.—p. 517.
- 12 *Alleged Relation of Epinephrin Secretion of Suprarenals to Certain Experimental Hyperglycemias. G. N. Stewart and J. M. Rogoff, Cleveland.—p. 543.
- 13 *Is Death from High Temperature Due to Accumulation of Acid in Tissues? A. G. Mayer, Washington, D. C.—p. 581.
- 14 *Phenol Excretion of Guinea-Pigs. Maintained on Exclusive Oat Diet. W. G. Karr and H. B. Lewis, Urbana, Ill.—p. 586.
- 15 Formula for Rate of Nerve Conduction in Sea Water. A. G. Mayer, Washington, D. C.—p. 591.

6. **Occurrence of Citric Acid in Urine.**—With the intention of studying the fate of citric acid introduced in the organism by various routes and in various diseases, Amberg and McClure tested the applicability of the method of Kunz to the quantitative determination of citric acid in the urine and other body fluids. They found that citric acid is a normal constituent of the urine of infants, children and adults. Quite an appreciable amount of citric acid is excreted in the course of twenty-four hours, enough to play a modest rôle in the acid base economy of the organism. The amount excreted varied from 21 to 50 mg. per 100 c.c.

9. **Experimental Thyroid Hyperplasia.**—Adult rats kept under hygienic conditions and fed a high protein diet were found to develop hyperplasia of the thyroid gland. Rats kept under unhygienic conditions develop hyperplasia of the thyroid if given a standard diet of bread and milk. Unhygienic conditions plus a high protein diet bring about a higher degree of hyperplasia in the adult rat than either factor taken alone. Young, growing rats kept under hygienic conditions do not develop hyperplasia of the thyroid when given a high protein diet which will induce this condition in adult rats. Feces either from goiter patients or from goitrous dogs fail to induce any changes in the thyroid of the cat when given by stomach. The central end of the phrenic nerve when sutured to the peripheral end of the cervical sympathetic either does not form a physiologic anastomosis or, if formed, the stimuli thus carried are not efficient in increasing the output of thyroid secretion to the point of producing the pathologic changes accompanying exophthalmic goiter in man. Removal of a section of the cervical sympathetic cord produces no change in the thyroid gland in the cat, indicating that secretory fibers, if there are such fibers present, play no part in the normal mechanism of thyroid secretion.

12. **Epinephrin Secretion and Experimental Hyperglycemia.**—The relation of the epinephrin secretion of the suprarenals to experimental hyperglycemias can be investigated under much better conditions in animals whose epinephrin output has been abolished or greatly reduced by removal of one suprarenal and section of the nerves of the other, than in animals deprived of both suprarenals. For in the first case the animals, after recovery from the operation, remain indefinitely in good health, whereas after total suprarenalectomy observations on the blood sugar are complicated by the fact that they must be made: (a) practically on dying animals (unless survivors in species where accessory suprarenals are common are employed) and (b) on animals suffering from the immediate effects of a major operation and anesthesia. The hyperglycemia associated with asphyxia and ether anesthesia is obtained in cats which have undergone the suprarenal operation described, even when no detectable residual liberation of epinephrin is present. No essential difference could be made out by Stewart and Rogoff in this regard between these animals and control normal cats. Accordingly, the mobilization of sugar, of which these experimental hyperglycemias are the expression, is not mediated through the epinephrin secretion of the suprarenals. Such observations as the authors have made on the effect of fright do not support the view that so-called emotional hyperglycemia is a constant or even a common phenomenon in cats. If it exists, it does not depend on an increase in the epinephrin liberated from the suprarenals. For (a) no essential difference could be detected between the results of emotional disturbance on the blood sugar content in the cats whose epinephrin output had been interfered with, and in the con-

trol normal cats; (b) no evidence was obtained that emotional disturbance increases the output of epinephrin in normal cats.

13. **Cause of Death from High Temperature.**—Mayer's researches lead him to believe that death from high temperature may be due to the accumulation of acid (possibly H_2CO_3) in the tissues, the rate of formation of this acid being commensurate with the rate of metabolism of the tissues. Thus animals of the same class having a high rate of metabolism, as measured by oxygen consumption, are more sensitive to heat and to carbon dioxide than are those having a low rate of metabolism. Death at high temperature is not due to asphyxiation.

14. **Oat Diet and Phenol Excretion in Guinea-Pigs.**—In guinea-pigs on an oat diet no changes in the urinary elimination of phenols nor in the degree of conjugation of the phenols were observed, provided the factor of partial starvation was ruled out. This is believed to indicate that no increased bacterial action occurs in the intestine of scorbutic guinea-pigs despite the difficulty of evacuation of the feces.

American Journal of Public Health, Boston

November, VII, No. 11

- 16 Food Conservation and War. H. C. Hoover, Washington, D. C.—p. 922.
- 17 Navy and Its Health Problems. W. C. Braisted, Washington, D. C.—p. 928.
- 18 Health Problems of Army. W. C. Gorgas, Washington, D. C.—p. 937.
- 19 Preservation of Health of Soldier on Western Front. T. H. Goodwin, Washington, D. C.—p. 940.
- 20 Sewage Disposal Problems of Coast Summer Resort. W. E. Brown, Boston.—p. 944.
- 21 Hospital and Industrial Hygiene. W. Wright, Boston.—p. 949.
- 22 Milk Supervision and Its Control. J. A. Gamble, Washington, D. C.—p. 953.
- 23 Mosquito Growth in Catch Basins. J. W. M. Bunker, Boston.—p. 956.
- 24 New Ideas in Food Control. H. E. Barnard, Indianapolis.—p. 960.
- 25 Diagnosis of Syphilis from Specimens Sent to Laboratory. A. Gehrman, Chicago.—p. 964.

American Review of Tuberculosis, Baltimore

November, I, No. 9

- 26 *Present Status of Induced Pneumothorax in Pulmonary Tuberculosis. W. N. Beggs, Denver.—p. 509.
- 27 *Deductions from Four and One-Half Years' Use of Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. C. L. Minor, Asheville, N. C.—p. 522.
- 28 Two Cases of Spontaneous Pneumothorax During Course of Induced Pneumothorax. M. I. Marshak and J. W. Craighead, Edgewater, Colo.—p. 540.
- 29 *Wassermann and Luetin Reactions in Tuberculosis. H. J. Corper, W. A. Gekler and H. C. Sweany, Chicago.—p. 544.
- 30 Relation of Fistula in Ano to Tubercle Infection. H. B. Stone, Baltimore.—p. 548.

26. **Present Status of Induced Pneumothorax.**—As the result of personal experience and a review of the literature Beggs would make the following summary: While the operation of induced pneumothorax per se is not a dangerous one, the practice of collapse therapy calls for special skill and judgment. Collapse therapy unquestionably restores to practical health many otherwise hopeless cases, and prolongs the lives and increases the comfort of many others. It is of positive influence in decreasing the period of incapacity. It should be used in all cases of recurrent, severe and protracted hemorrhage. It should be invoked, generally speaking, much earlier than is now the usual custom. In justice to the patient it should be considered in every case of advanced or moderately advanced, slowly progressive pulmonary tuberculosis, and in every case of actively progressive pulmonary tuberculosis in any stage, because the natural trend of all these is toward death. The constant tendency to diminution of the gas pocket by pleural contraction following exudation should be persistently combated by frequent refillings under positive pressure. Control by frequent roentgenographic and fluoroscopic examinations should be insisted on whenever at all possible.

27. **Artificial Pneumothorax in Treatment of Tuberculosis.**—In Minor's opinion the method is chiefly applicable to moderately advanced, or advanced chronic cases, with or

without acute exacerbations, but not to florid, acute cases, or to incipient ones, unless these show an acute waking up. It seems also that so far we have no definite guide as to the duration of the treatment, though after one year we should always consider the advisability of removing the gas and allowing the lung to reexpand. Minor is satisfied that many cases are kept collapsed too long. Further, it may at times be useful in cases of abscess of the lung, and in hemorrhage, if we can be sure of the lung from which the blood comes, it is one of the author's most valuable measures, granted no adhesions exist. The procedure is unquestionably very dangerous if carried out carelessly, or without the constant use of the manometer, but in careful hands the percentage of danger should be very small, and while the chief danger arises while giving the preliminary injection, air embolism and other dangerous complications can occur during the course of reinjections. Forlanini's advice that small amounts of gas be injected slowly and under low pressure should never be forgotten now in cases of hemorrhage.

29. Wassermann and Luetin Reactions in Tuberculosis.—Seventy-nine of a total of 170 negative Wassermann cases gave a positive luetin reaction, while only 18 out of a total of 28 positive Wassermann cases gave a positive reaction, justifying the conclusion that the luetin reaction cannot be used as a test for syphilis in a tuberculosis sanatorium to displace the Wassermann test.

Archives of Pediatrics, New York

October, XXXIV, No. 10

- 31 Clinical Manifestations of Poliomyelitis. E. K. Armstrong, Chicago.—p. 723.
- 32 Emotional Life of Child. C. P. Oberndorf, New York.—p. 747.
- 33 Osteogenesis Imperfecta (Osteopathyrosis, Fragilitas Ossium); Report of Two Cases. H. R. Mixsell, New York.—p. 756.
- 34 Significance of Certain Dental Stigmata of Congenital Syphilis. J. S. Wall, Washington, D. C.—p. 765.
- 35 *Case of Hemorrhagic Disease in New-Born Treated by Indirect Transfusion. J. H. M. Knox, Jr., Baltimore.—p. 771.
- 36 *Therapeutic Use of Blood Serum. R. G. Freeman, New York.—p. 773.
- 37 Intussusception, Its Early Recognition. H. Apfel, New York.—p. 781.

35. Indirect Transfusion in Hemorrhagic Disease in New-Born.—On the third day of life, Knox's patient nursed well at 9 a. m. and shortly afterward vomited a considerable amount of dark blood-stained fluid. There was no fever and no cough. When seen shortly afterward, the baby was found to be rather sallow, but vigorous. During examination the child passed from 3 to 5 ounces of tarry, blood-stained material, evidently a hemorrhage from the intestinal tract. There was no lesion about the anus. It was at once concluded that this was a case of melena, and transfusion from the mother was determined on. About 50 c.c. of the mother's blood was received into 60 c.c. of sodium citrate solution. With a syringe, about 15 c.c. of this was introduced in the longitudinal sinus and the rest in small quantities intramuscularly into the buttocks. From 12 noon to 3:30 a. m., when the transfusion was completed, the child passed three or four tarry stools, and was greatly blanched, pulse became thready and respiration shallow and the baby seemed about to die. With complete rest, however, the condition slowly improved through the night, and the following morning the child seemed much better. The following day the baby had one bloody discharge from the bowel, not accompanied by any change in pulse or rise in temperature. The material was darker than before and was probably part of the original hemorrhage. The child was hungry and the amount of milk was increased to 6 drams, every two hours. The following day the baby had two yellow stools with some mucus, and the color was further improved. She was given 1 ounce of milk at two-hour intervals during the night. From this time on the child made an uninterrupted recovery, and there was no further bleeding.

36. Therapeutic Use of Blood Serum.—A baby, 2 days old, had a movement which consisted of 1½ ounces of clotted blood. Three smaller movements of the same character had previously been passed. The child was pale and its condition critical. The father was fortunately accessible. A needle

was passed into one of his veins and 6 ounces of blood removed; 15 c.c. of the blood serum was injected into the baby at 5 p. m. When the child was seen again at 9 p. m. no more blood had been passed and a second injection of 15 c.c. of blood serum was used. A movement the next day contained two small clots of blood, but it was evident from the time the first blood serum was injected that the bleeding had been entirely controlled. This baby went on to a normal development. Freeman also reports four cases in which horse serum was used to good advantage.

Arkansas Medical Society Journal, Little Rock

November, XIV, No. 6

- 38 Malignant Growths. A. W. Hale, Nashville.—p. 119.
- 39 Intestinal Diverticula. L. Kirby, Harrison.—p. 122.
- 40 Croupous Pneumonia. B. H. Hawkins, Mena.—p. 124.

Boston Medical and Surgical Journal

November 22, CLXXVII, No. 21

- 41 Wounds of Knee Joint. B. Moynihan, Leeds, England.—p. 717.
- 42 Method of Electrocardiography and Electrocardiogram in Health. H. B. Williams, New York.—p. 749.
- 43 Significance of Arrhythmias and Systolic Murmurs in Relation to Cardiac Efficiency. H. A. Christian, Boston.—p. 750.
- 44 Basis of Certain Changes in Electrocardiogram. A. E. Cohn, New York.—p. 753.
- 45 Acute Carditis. F. T. Fulton, Providence, R. I.—p. 756.
- 46 *Treatment of Pernicious Anemia—Especially by Transfusion and Splenectomy. G. R. Minot, Boston and R. I. Lee, Cambridge.—p. 761.

46. Treatment of Pernicious Anemia by Transfusion and Splenectomy.—Of the ninety-six cases of pernicious anemia studied by Minot and Lee, 115 observations may be used for the study of therapeutic procedures. The effect of two different procedures was observed in nineteen cases at times so remote from each other that there could be no confusion of their effects. Forty patients were treated either by no special therapy or by arsenic in some form, and represent "untreated" patients. There are suitable data for study of forty-six different patients transfused in one relapse of each case. Seventy transfusions were given, not counting the transfusions associated with or given at any time after splenectomy. Nineteen patients were splenectomized, with one operative death in a case with a red count below 1,000,000. Ten patients were treated by exposure of the spleen to the roentgen rays. There was, inside of a few weeks, definite improvement beyond a simple filling up with transfused blood in about 50 per cent. of the forty-six patients that were transfused. Very slight improvement occurred in about 13 per cent. more, so that about 63 per cent. of the transfused patients showed at least some improvement beyond that due to the volume of transfused blood; while 84 per cent. of the nineteen splenectomized patients showed definite improvement following the operation. The degree of the improvements following transfusion or splenectomy averaged greater than the improvements in the "untreated" patients. In a time proportionate to that in which the transfused and splenectomized patients showed definite or slight improvement, only about 35 to 40 per cent. of the forty untreated patients showed any improvement at all, though about 80 per cent. of any pernicious anemia patients at some time in their course show some definite improvement. There is no conclusive evidence that the duration of the improvements or clear-cut remissions are any longer in the transfused and splenectomized patients than in the untreated ones. However, there were but 7.5 per cent. of the untreated patients that showed such marked and rapid gains in the same period of time (about a month) as 30 per cent. of the splenectomized and transfused patients did (18 per cent. of the transfused and 46+ per cent. of the splenectomized). The untreated patients formed a similar number of the different types of the disease as those splenectomized and transfused, except that all four cases of the acute type occurred in the transfused group. It is to be noted that the transfused group contained more unfavorable cases than the untreated group, and that ten of the transfused patients died within a month, while but four of the untreated patients did so.

Journal of Cutaneous Diseases, Chicago*November, XXXV, No. 9*

- 47 Teaching of Syphilis. J. A. Fordyce, New York.—p. 717.
48 Teaching of Syphilis in School and Hospital. C. M. Smith, Boston.—p. 726.
49 Teaching of Syphilis in Undergraduate Schools. W. J. Heimann, New York.—p. 723.
50 Classification of Urticarias. R. L. Sutton, Kansas City, Mo.—p. 749.
51 Late Urticaria Pigmentosa, or Urticaria Pigmentosa Beginning After Puberty. M. B. Hartzell, Philadelphia.—p. 756.

Journal of Experimental Medicine, Baltimore*December, XXVI, No. 6*

- 52 *Petroff's Cultural Method for Isolation of Tubercle Bacilli from Sputum and Its Application to Examination of Milk.¹ F. C. Stewart, New Haven, Conn.—p. 755.
53 Biologic Identity of Friedländer Bacillus. C. B. Coulter, New York.—p. 763.
54 *Effect of Alcohol on Reproductive Tissues. A. H. Arlitt and H. G. Wells, Chicago.—p. 769.
55 Meningitis in an Infant Due to Hitherto Undescribed Organism, Micrococcus Florens. W. C. Davison, A. S. Davison and M. K. Miller, Baltimore.—p. 779.
56 *Relation of Spleen to Blood Destruction and Regeneration and to Hemolytic Jaundice. Influence of Splenectomy and of Blood Disintegration on Production of Bile Pigment. K. Goto, Philadelphia.—p. 795.
57 Staggers in Sheep in Patagonia. F. S. Jones and J. F. Arnold, Princeton, N. J.—p. 805.
58 *Diversion of Pancreatic Juice from Duodenum into Stomach. Its Effects on Level of Gastric Acidity and on Pancreas. E. G. Grey, Baltimore.—p. 825.
59 Abiotic Action of Ultraviolet Light. H. S. Newcomer, Philadelphia.—p. 841.
60 *Changes in Peripheral Blood Consequent on Diversion of Splenic Blood into General Circulation. W. C. Burket, Baltimore.—p. 849.
61 Identity of Toxins of Different Strains of Bacillus Welchii and Factors Influencing Their Production in Vitro. C. G. Bull and I. W. Pritchett, New York.—p. 867.

52. Isolation of Tubercle Bacilli.—Tubercle bacilli were isolated by Stewart by the Petroff method from 64.8 per cent. of the sputums which were found to be positive by the direct microscopic method. The organism was recovered from 69.2 per cent. of the samples of milk that were artificially infected. Of the milk obtained through the New Haven Health Department Laboratory 8.4 per cent. of the samples were found to contain tubercle bacilli, while none of the twenty-nine samples from the state laboratory gave positive cultures. All the guinea-pigs (thirteen), except one, which were used as control animals died without any visible signs of tuberculosis. Stewart concludes that Petroff's method for the isolation of tubercle bacilli from sputum may be applied successfully to the examination of milk. With slight modifications, the method should prove constant and reliable. The need of such a method for the examination of milk and milk products is apparent.

54. Effect of Alcohol on Reproductive Tissues.—Arlitt and Wells found that the administration of alcohol in the food of male white rats for two or more months, in daily quantities of 0.25 to 2.25 c.c., results almost constantly in the appearance of marked degenerative alterations in the testicles. These changes affect the steps of spermatogenesis in inverse order to their occurrence, so that for some time before sterility and complete aspermia result the animal is producing spermatozoa with all possible degrees of abnormality and deficiency. The possible relation of this abnormal spermatogenesis to the production of defective offspring is obvious. Individual rats show marked differences in the degree of change produced by equal amounts of alcohol. The fibrous, interstitial, and vascular elements of the testicle are not affected, except for intertubular edema compensating for tubular atrophy. These experimental observations harmonize with the necropsy findings in human alcoholics. No other tissue was found to be noticeably affected by the alcohol; especially to be marked is the absence of cirrhosis of fatty infiltration in the liver.

56. Blood Destruction and Regeneration in Hemolytic Jaundice.—In four animals with a bile duct ureter anastomosis and without disturbance due to obstruction or absorption, the total quantity of bile pigment output during a day under

normal conditions varied from 0.0618 to 0.0678 gm. These figures are practically identical with those of Stadelmann (9, 10) but lower than those given by Hooper and Whipple (7), who find that the average bile pigment excretion amounts to about 1 mg. per pound of body weight per 6 hours. In all of Goto's experiments there is definite evidence of a decrease in bile pigment elimination after splenectomy. This is true not only of the elimination when no hemolytic agent is administered, but also when excessive blood destruction is caused. Under the latter circumstances the amount of bile pigment is greatly increased, but never reaches the high level of blood destruction before splenectomy. These observations appear to show conclusively that the absence of the spleen influences the formation of bile pigment. To what extent the influence is mechanical (that is, change in the course of the blood to the liver) and to what extent due to anemia, cannot be stated at present.

58. Diversion of Pancreatic Juice.—From the results of Grey's experiments it appears that the presence of a considerable amount of pancreatic juice in the stomach throughout the period of digestion leads only to a moderate decrease in the acidity level of the ingesta in the later stages of digestion. Earlier in the process there is no constant alteration of the acidity level in either direction. The findings, then, serve not only to corroborate the views of Boldyreff, but also to demonstrate the remarkable compensatory activity of the gastric glands under conditions which entail an unusual quantity of alkali in the stomach. In addition the work has shown that when the larger pancreatic duct is properly transplanted into the wall of the stomach, it may remain patent for months. In animals in which this operative procedure has been carried out, the pancreas has been found to undergo no inflammatory or other degenerative changes. This finding is regarded as evidence against the postulation of Hlava that gastric juice is probably responsible for the occurrence of certain cases of acute hemorrhagic pancreatitis.

60. Diversion of Splenic Blood.—The splenoreal venous anastomosis made by Burket offered a simple and satisfactory method of diverting the splenic blood into the general circulation because it was easy and produced no gross abnormal intra-abdominal changes, and the vessels normally lay parallel to each other and were readily approximated without tension. The operation was successful in every case. The animals did very well after operation and were healthy and active. No noteworthy histologic changes were observed in any of the organs or tissues. There was no essential change in bile production that could be detected by jaundice. The urine and stools showed no changes.

Journal of Laboratory and Clinical Medicine, St. Louis*November, III, No. 2*

- 62 Investigation of Chemical Composition and Biologic Availability of Peptone. L. Davis, Detroit.—p. 75.
63 Tentative Explanation of Mechanism of Hemolysis Associated with Loss of Water and Bearing of Phenomenon on Certain Biologic Problems. C. C. Guthrie, Pittsburgh.—p. 87.
64 *Studies on Cholesterol. Influence of Bile Derivatives in Bloor's Cholesterol Determination. G. Luden, Rochester, Minn.—p. 93.
65 Value of Calcium Sulphid in Treatment of Poisoning by Mercuric Chlorid. C. C. Haskell and R. H. Courtney, Richmond, Va.—p. 110.
66 *Etiology of Arteriosclerosis. L. M. Warfield, Milwaukee.—p. 115.
67 Modified Wassermann Technic Based on Rapid Fixation of Complement Present in Human Serum. C. J. Bartlett and A. L. O'Shansky, New Haven, Conn.—p. 118.
68 Measurement of Spinal Puncture Needle. A. Levinson, Chicago.—p. 127.
69 Device for Accurate Pipetting. L. R. Thompson, Napa, Calif.—p. 130.
70 An Inexpensive Colorimeter. J. W. Weir, Oklahoma City.—p. 132.

64. Studies on Cholesterol.—In 748 parallel blood cholesterol determinations made by Luden according to Bloor's original method, with sodium ethylate, and Bloor's modification of his method, without sodium ethylate, a constant difference could be observed in the cholesterol values obtained by both methods, lower values being registered by the tests with sodium than by those without. This difference was found to be most pronounced in samples of icteric blood obtained from cases of obstructive jaundice, but a constant slight

difference, ranging from 0.05 mg. to 0.07 mg. could be observed also in normal blood. Luden's observations suggest that parallel cholesterol determinations with Bloor's original method and its modification might furnish valuable information concerning the chemistry of the blood, particularly in cases of biliary disturbance without visible symptoms of icterus, as Bloor's method is extremely simple and could easily be supplemented if desired by the dialyzation method of Hoover and Blankenhorn.

66. **Etiology of Arteriosclerosis.**—Five hundred persons were examined by Warfield for the purpose of showing that the infectious diseases played an important part in the production of arteriosclerosis, but the results of this study showed that they play little or no part in the etiology of this condition

Laryngoscope, St. Louis

November, XXVII, No. 11

- 71 Vincent's Angina. T. Hubbard, Toledo, Ohio.—p. 789.
- 72 Three Cases of Stricture of Esophagus Due to Accidental Swallowing of Concentrated Lye Solutions. C. J. Imperatori, New York.—p. 796.
- 73 New Iodin Preparation "Iodosan." M. D. Lederman, New York.—p. 800.
- 74 Tonsillectomy in Tuberculous. F. L. Dennis, Colorado Springs, Colo.—p. 805.
- 75 Complete Unilateral Deafness Resulting from Acute Parotitis; Report of Case. G. H. Willcutt, San Francisco.—p. 811.
- 76 Pneumococcic Meningitis Following Acute Suppurative Otitis Media. J. Clothier, Pocatello, Idaho.—p. 813.
- 77 Device or Artificial Ear Drum for Use in Impaired Hearing and for Prevention of Concussion Deafness. E. Baum, Philadelphia.—p. 815.

Medical Record, New York

December 1, XCII, No. 22

- 78 Probing the Mind. Normal and Abnormal. J. V. Haberman, New York.—p. 927.
- 79 Malignancy of Biliary Apparatus. W. G. Vincent, New York.—p. 933.
- 80 Some of Newer Methods of Treating Wounds. F. C. E. Mattison, Pasadena, Calif.—p. 937.
- 81 Cesarean Section for Eclampsia in Twin Pregnancy; Saving Mother and Both Children. A. Schachner, Louisville, Ky.—p. 941.
- 82 Blood in Stools in Duodenal Ulcer. A. J. P. Pacini, New York.—p. 942.
- 83 Henoch's Purpura. M. B. Wesson, El Paso, Texas.—p. 943.

December 8, No. 23

- 84 Psychical Changes Observed in Pulmonary Tuberculosis and Its Relation to Insanity. S. A. Silk, Washington, D. C.—p. 969.
- 85 Obstetric Fads and Heresies. E. H. Grandin, New York.—p. 980.
- 86 Simple Method of Forming Original Mental Associations. E. Preble, New York.—p. 982.
- 87 Complications of Mastoiditis. J. M. Smith, New York.—p. 983.
- 88 Differential History Form for Enlargements of Thyroid. F. Christopher, Evanston, Ill.—p. 985.
- 89 Acute Diabetes Mellitus. E. O. Elmer, Hartford, Conn.—p. 987.
- 90 Standard for Exemption of Tuberculous Recruits from National Army. M. J. Fine, Newark, N. J.—p. 988.

Medicine and Surgery, St. Louis

November, I, No. 9

- 91 *Heart Block in Acute Rheumatic Pericarditis; Report of Cases. H. A. Christian, Boston.—p. 911.
- 92 Myocardial Degenerations and Their Treatment. A. E. Roussel, Philadelphia.—p. 921.
- 93 Diagnosis and Prognosis of Heart Disease. R. H. Babcock, Chicago.—p. 931.
- 94 Complement Fixation Test in Tuberculosis. R. B. H. Gradwohl, St. Louis.—p. 937.
- 95 Pulmonary Syphilis. M. F. Morris, Jr., Chelsea, Mass.—p. 949.
- 96 Prognosis and Treatment of Pulmonary Tuberculosis. J. Dworetzky and M. G. Milan, Otisville, N. Y.—p. 959.
- 97 Lesions of Chest Most Frequently Mistaken for Pulmonary Tuberculosis. M. I. Marshak, Edgewater, Colo.—p. 969.
- 98 *Relative Value of Five Diagnostic Procedures in Four Hundred Consecutive Cases Investigated by Group Study Method for Pulmonary Tuberculosis. R. L. Ochsner, San Francisco.—p. 975.
- 99 Angina Pectoris. D. Rochester, Buffalo.—p. 982.
- 100 Pulmonary Area, or Region of Romance. R. Abrahams, New York.—p. 993.

91. **Heart Block in Acute Rheumatic Pericarditis.**—In Christian's experience heart block has been relatively quite frequent in one type of rheumatic cases, namely, where with or shortly following acute articular disturbances the patient develops the typical physical signs of acute pericarditis. In sixteen consecutive cases of this type, heart block has been demonstrated in five and possibly may have been present in a

sixth in whom irregularity of pulse was felt. Christian fears that it may have been overlooked in some of the others, though in all but two electrocardiograms were made. Still, block may have occurred on other days than those when electrocardiograms were taken and suggestive evidence of it not be found by detecting any irregularity in the pulse. After all, as the condition is transitory, it is remarkable that it was detected as often as it was in this group. The part played by digitalis in this group is not certain. In one case with block no digitalis was given; in others digitalis did not seem always closely related to the occurrence of the block. In four patients in whom block was not demonstrated digitalis was used, in one case in fairly large amount. From what Christian has seen in the use of digitalis in other cardiac cases, digitalis would not seem to be the chief cause of the heart block in this group. Probably, however, with a rheumatic lesion in the conduction system digitalis has had an added effect on it and led to block where without it block would not have occurred. In this sense digitalis may have been a contributory factor in the occurrence of block. The frequent occurrence of partial heart block in these cases of rheumatic pericarditis emphasizes further the extent of the involvement of the heart in rheumatism and justifies the caution in allowing the patient convalescing from rheumatism to exercise. In Christian's cases the block has not appeared to have influenced in any way the clinical course of the patients' disease. All but one of the patients recovered and a fatal case was one in the group not showing block.

98. **Group Study Method for Pulmonary Tuberculosis.**—Two years ago, the diagnostic section of St. Luke's Hospital, San Francisco, established a method of clinical investigation different from any system hitherto recorded. This difference lay in the extensiveness and completeness of examination as well as in the carefulness and completeness of its records. The method agreed on is as follows: Patients who are chronically ill (average, two years and a half), who have shown no tendency toward spontaneous recovery, are sent to the hospital by their own physicians for investigation. They are then examined by twelve clinicians representing the following departments: pathology, bacteriology, roentgenology, eye, ear, nose and throat, cardiovascular diseases, respiratory diseases, gastro-enterology, urologic surgery, neurology, orthopedic surgery, general surgery and general medicine. Thus each clinician examines each case, whether or not it falls symptomatically into his department. Furthermore, he makes a written report of his findings. The members of the section meet formally each day to discuss the case until all are satisfied with the conclusions. Through the correlation of each clinician's findings, cases are carefully culled and diagnosis is narrowed down to the fewest possibilities; also, in ruling out symptomatology which simulates tuberculosis, the respiratory clinician has been so greatly assisted by the findings of the other departments that he states with conviction his conclusions as found in this paper, for his findings are not that of one man but of one plus eleven others. From the data thus collected, the respiratory clinician presents the diagnostic results of 400 cases examined serially by the group, setting forth the value of the history, physical examination, tuberculin tests, laboratory and roentgen rays reports in coming to a conclusion for or against pulmonary tuberculosis.

It seems that the physical examination gives the most reliable information and for this reason more and more time is now being given to this part of the investigation, an hour often being spent in examination of the chest; the history is of next importance and should be checked carefully and repeatedly, since often at first the questions are misunderstood or their importance is not apparent; the tuberculin reactions can be relied on in only two thirds of the positive cases and in 96 per cent. of the negative cases. The roentgen ray gives no positive evidence in nearly 50 per cent. of the cases, gives less positive evidence than the tuberculin test, and is of no value except in a negative sense, until extensive pathologic changes have taken place, this occurring in most cases long after the symptomatology and physical examination are well marked. The examination of the sputum from the pathologic standpoint is positive only about once in ten

times, and too often this pathologic conclusion gives the attending physician a feeling of false security that the case is negative, much valuable time for the patient thus being lost.

New York Medical Journal

December 1, CVI, No. 22

- 101 Surgical Treatment of Wounded Men at Advanced Units. H. M. W. Gray, Aberdeen, Scotland.—p. 1013.
- 102 Manual Treatment of Cervical Sympathetic. E. F. Cyriax, London.—p. 1021.
- 103 Case of Pontine Syndrome. M. Osnato, New York.—p. 1026.
- 104 Effect of Accidental Instillation of Stock Solution of Corrosive Sublimate into Conjunctival Sac; Report of Case. A. Brav, Philadelphia.—p. 1027.
- 105 Death in Tabes Dorsalis. M. Grossman, New York.—p. 1029.
- 106 Wassermann Complement Fixation Test for Syphilis. J. W. Smith, Jr., New York.—p. 1030.
- 107 Hyoscin and Apomorphin; Prompt Emergency Hypnotic. C. J. Douglas, Boston.—p. 1032.
- 108 Physical Training and Hygiene for Busy People. L. F. Fuld, New York.—p. 1032.

South Carolina Medical Association Journal, Greenville

November, XIII, No. 11

- 109 Value of Thorough Roentgen-Ray Examination in All Injuries; Roentgen Ray in Military Surgery. W. F. Ashmore, Anderson.—p. 725.
- 110 Hydrotherapeutic Hints Boiled Down for General Practitioner. W. W. Blackman, Atlanta.—p. 727.
- 111 Ectopic Pregnancy. J. C. Harris, Anderson.—p. 730.
- 112 Autoserum in Arthritis as Used by Author. W. R. Barron, Columbia.—p. 735.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

November, XXV, No. 11

- 113 Extra Pleural Collapse of Tuberculous Lung in Hopeless Case. M. O. Shivers, Colorado Springs, Colo.—p. 272.

Texas State Journal of Medicine, Fort Worth

November, XIII, No. 7

- 114 Tuberculin as Diagnostic Agent. S. von Ruck, Asheville, N. C.—p. 237.
- 115 Home Treatment vs. Sanatorium Treatment for Tuberculosis; Observations on Climate. W. O. Wilkes, Waco.—p. 242.
- 116 Early Diagnosis of Pulmonary Tuberculosis by Physical Signs. I. S. Kahn, San Antonio.—p. 246.
- 117 Diagnosis and Prevention of Syphilitic Nerve Lesions. I. L. McGlasson, Waco.—p. 248.
- 118 Tonsils as Portal of Infection in Poliomyelitis. J. M. Woodson, Temple.—p. 251.
- 119 Is There a Paratonsillar Gland? H. B. Decherd, Dallas.—p. 253.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

October, V, No. 18

- 1 Methods and Results of Transplantation of Bone in Repair of Defects Caused by Injury or Disease. E. W. H. Groves.—p. 185.
- 2 *Case of Diffuse Traumatic Aneurysm in Surgical Neck of Humerus. R. L. Knaggs.—p. 243.
- 3 Gunshot Wounds of Kidney and Ureter as Seen at Base. A. Fullerton.—p. 248.
- 4 Bullet Marks on Skin of Abdominal Wall; Note on Question of Heat Retained by Spent Bullet. G. H. Makins and Pinches.—p. 289.
- 5 *Pathology of Projectile Fracture of Bones of the Extremities. E. K. Martin and G. F. Petrie.—p. 292.
- 6 Case of Peptic Ulcer Opening into Transverse Colon. G. Barling.—p. 343.
- 7 *Case in which Markings of Nutrient Canals of Ilium were Mistaken for Fracture. A. K. Smith-Shand.—p. 346.

2. Diffuse Traumatic Aneurysm in Surgical Neck of Humerus.—In Knaggs' case a bullet had passed through the surgical neck of the left humerus. The wound of entry was behind the shoulder over the posterior fibers of the deltoid, and the bullet had passed out through the center of the upper part of the biceps. Both wounds were healthy, and apparently superficial, when the patient was admitted. About four weeks later the man had a bad night owing to a great deal of pain in the shoulder, and the next morning pulsation was first detected about an inch above the exit wound. Examination showed that the upper part of the shaft was considerably enlarged, and that this enlargement was the subject of expan-

sile pulsation. The main artery was normal as it coursed over the internal aspect of the swelling. No bruit could be made out, and there was no thrill. The roentgenogram showed a large irregular aperture in the surgical neck, with comminution of the internal surface, the fragments being displaced as if they had been forced outward by the explosive effect of the bullet. Ten days later an enlarged gland was noticed in the supraclavicular fossa. The general swelling of the shoulder that had followed the wound had now completely subsided, and the increasing expansion of the bone showed as a definite rounded tumor about the size of a cricket ball, altering the normal contour of the limb. There was a general agreement in a diagnosis of rapidly growing endosteal sarcoma but at the operation nothing was seen that looked like tumor tissue. A mass of black clot was evacuated. This was followed by very free arterial bleeding, and the cavity was at once firmly packed. After weighing the pros and cons in the case an interscapulothoracic amputation was performed by Littlewood's method, that is, from behind. A rapid recovery followed. Knaggs says that there can be no doubt that this was an instance of a traumatic aneurysm occurring in the interior of the humerus, and that it probably ruptured and became diffused when the patient suffered for the first time since his admission with severe pain in the shoulder.

5. Projectile Fracture of Bones of Extremities.—The authors summarize their observations as follows: From the surface of a divided or fractured bone exposed to infection, bacteria may penetrate to the deeper parts. In an untreated fracture, penetration is apparently unlimited. If the dead bone on the surface of the fracture is removed early, penetration is much reduced, and may not occur at all. Penetration, particularly of anaerobes, is greatly increased by reduction of the circulation through the injured bone. Penetration is increased by obstruction to drainage, either of the bone or of the soft parts. The order of frequency and power of penetration of the bacteria found is: (1) streptococcus; (2) staphylococcus; (3) anaerobes; (4) *B. coli*. The rate of penetration is at its maximum during the first few days. In the material examined, no difference in reaction to penetration has been noted between cancellous bone and the marrow of the shaft. Bruising—an invariable accompaniment of projectile fracture—does not appear to facilitate penetration if the surface layer of debris is removed and drainage established. In a septic fissure, growth of bacteria is progressive and may lead to infection of a distant part, for example, a joint. Dissemination of infection throughout a bone takes place by penetration from its walls.

7. Normal Markings Mistaken for Fracture.—This case is of interest in demonstrating that it is possible to mistake an unusually large nutrient artery in the ilium for a fracture of that bone; further, it brings out the fact that the nutrient arteries of the ilium, whatever their point of entry, invariably converge to a common meeting point which may be considered the true primary center of ossification of that bone.

British Medical Journal, London

November 10, II, No. 2967

- 8 Misplaced and Missing Organs. J. B. Sutton.—p. 607.
- 9 *Microscopic Examination of Brains of Two Men Dead of Commotio Cerebri (Shell Shock) without Visible External Injury. F. W. Mott.—p. 612.
- 10 Pathologic Findings in Nerves Following War Injuries. S. M. Cone.—p. 615.
- 11 *Three Cases of Melena Neonatorum Successfully Treated by Injection of Whole Blood or Blood Serum. R. Hutchison.—p. 617.

November 17, II, No. 2968

- 12 Medicine in England During the Reign of George III. A. Chaplin.—p. 637. To be continued.
- 13 *Relative Germicidal Efficiency of Antiseptics of Chlorin Group and Acriflavine and Other Dyes. H. D. Dakin and E. K. Dunham.—p. 641.
- 14 *Detection and Treatment with Emetin Bismuth Iodid of Amebic Dysentery Carriers among Cases of Irritable Heart. M. W. Jepps and J. C. Meakins.—p. 645.
- 15 Spontaneous Evacuation of Shrapnel Bullet in Lung by Expectoration. R. M. Leslie.—p. 648.

9. Cause of Death from Shell Shock.—This is said to be the first description that has been given which serves to

explain (1) sudden death in shell shock, and (2) the clinical symptoms which persist for some time after the commotion of the brain in nonfatal cases. The brain was extremely congested, and on each side of every superficial vessel there was an ecchymosis. There were a number of minute punctiform hemorrhages at the terminations of the smallest vessels on the surface of the brain. The whole brain was soft but not markedly edematous. The cerebrospinal fluid appeared to be blood tinged. There was considerable ecchymosis on each side of the great sinuses of the skull. There was no large hemorrhage found and no small intracerebral petechiae. There was no gross lesion of the viscera, which would have been a cause of death.

13. Germicidal Efficiency of Certain Antiseptics.—The main facts disclosed by Dakin and Dunham's series of experiments are as follows: (a) The rapid and complete disinfection brought about by solutions (one volume) of members of the chlorin group of antiseptics of the strength commonly used in the treatment of wounds, when added to heavily infected blood serum muscle extract mixture (two volumes). (b) Under similar circumstances, solutions of acriflavine, proflavine, brilliant green and malachite green failed to sterilize in six hours mixtures which the chlorin antiseptics sterilized completely in five minutes or less. The authors believe that the statements of Browning and his colleagues as to the relative germicidal efficiency of chloramin-T and other antiseptics of the chlorin group compared with brilliant green, malachite green, and acriflavine, are incorrect, and that their mode of testing the germicidal action of the substances studied by them leads to results which are radically misleading.

14. Detection of Amebic Dysentery Carriers.—Emetin bismuth iodid when given in a powder generally causes nausea and vomiting. In order to overcome these conditions three preparations of the drug were tried by Jepps and Meakins. These were experimental preparations made by three different firms, and were submitted to the authors for trial. They were all in tablet or pill form, and were either mixed or coated with some material supposedly insoluble in the stomach. In all, twenty-three courses of treatment were given with these preparations. In no case was nausea or vomiting produced, but in eight cases (35 per cent.) severe diarrhea and abdominal cramps occurred. Some looseness of the bowels was observed in all cases in which the drug appeared to have any action. Different measures of success were obtained with these different preparations. With the first preparation there were eight cures out of twelve patients treated, or 66 per cent. With the second there were no cures, while with the third there was only one cured out of four patients treated, or 25 per cent. Of the three preparations, the first was the only one which gave sufficiently good results to justify its use in preference to the drug given in powder. But even the proportion of cures with this preparation is not sufficiently high to warrant its general use. The objection to the use of emetin bismuth iodid in powder, given in a cachet or capsule, has been the occurrence of nausea and vomiting. The authors have treated eleven patients with cachets, and these symptoms occurred in all of them. The drug was given with a hot drink at 9 p. m., after the patient was in bed. The time of the vomiting after the drug was taken varied in different individuals.

It is evident that the nausea and vomiting occurs most frequently after the stomach is presumably empty. These symptoms fortunately did not persist during the whole course of treatment. The toxic symptoms disappeared after a time as if a tolerance had developed. Eleven cases were treated with emetin bismuth iodid in cachets of 3 grains each. Ten cases (91 per cent.) were cured after twelve daily doses. One patient who was not cured had previously resisted three courses with the first preparation. The results obtained with the drug administered by this method are much more encouraging than those obtained with any of the other preparations. All the patients treated were suffering from symptoms of irritable heart. Any possible effects of the removal of the *E. histolytica* infection on the symptoms of this condition were carefully looked for. Of the twenty cases which were cured, eleven (55 per cent.) showed a conspicuous

improvement, while nine (45 per cent.) showed little or none. The degree of improvement was determined by their increased ability to perform graduated exercises without untoward symptoms. Patients who, before treatment, showed severe symptoms after performing mild exercises could afterward accomplish the more advanced exercises with comparative ease. This confirms the previous conclusion that the removal of a coexisting infection may lead to the alleviation of symptoms of irritable heart.

Medical Journal of Australia, Sydney

October 27, II, No. 17

- 16 Parasyphilis. R. H. Marten.—p. 349.
- 17 Acute Encephalitis of Unknown Origin. T. H. R. Mathewson and O. Latham.—p. 352.

November 3, No. 18

- 18 Recent Advancement in Physiologic and Biochemical Technic. W. A. Osborne.—p. 369.
- 19 Study of Heart Disease. A. Lewers.—p. 371.
- 20 Experimental Study of Fever. J. L. Jona.—p. 373.

Archives des Maladies du Cœur, etc., Paris

October, X, No. 10, pp. 449-512

- 21 *Asynchronism of the Auricular Systoles. G. Etienne and J. Mondelange.—p. 449.
- 22 *Indications and Contraindications for Intravenous Injection of Strophanthus Derivatives. H. Vaquez and R. Lutembacher.—p. 461.
- 23 The Blood Changes in the Toxic Jaundice of Women Workers on Munitions in England. Wybauw.—p. 492.

21. The Interauricular Interval.—Etienne and Mondelange have been studying with cardiography the asynchronism between the auricle systoles. Their eighteen tracings confirm conclusively the interauricular interval in man as it has been established in the horse and dog. The cardiogram gives more correct findings in this matter than the electrocardiogram; it demonstrates that the effectual systole of the right auricle precedes the left systole.

22. Strophanthus Derivatives.—Vaquez and Lutembacher report extensive clinical study of the indications and contraindications for intravenous injection of strophanthus derivatives and of ouabain in particular. The latter is a very potent drug, but when used wrongly is dangerous; fatalities have been known to follow its use. Twelve clinical cases are described in detail with the tracings.

Archives de Médecine et de Pharm. Militaires, Paris

January, LXVII, No. 1, pp. 1-156

- 24 *War Fractures with Displacement of Bone. E. Delorme.—p. 1. Concluded in No. 2, p. 157.
- 25 *Antiseptics Specific for Certain Bacteria. K. Taylor.—p. 48.
- 26 War Wounds of the Skull. H. Bichelonne.—p. 61.
- 27 Shell Shock. G. Dumas and Delmas.—p. 69.
- 28 Hygiene in Munitions and other Factories. C. Lesieur.—p. 78.

February, No. 2, pp. 157-308

- 29 *The Duties of the "Technical Adjunct." Louste.—p. 221.
- 30 *Vaccination against Typhoid from the Ophthalmologist's Standpoint. F. de Lapersonne.—p. 236.
- 31 *Surgical Repair of External Genital Organs after War Wounds. J. de Sard.—p. 239.
- 32 *The First Devices to Aid the Amputated. Baudet.—p. 245.

24. War Fractures with Displacement of Bones.—Delorme is medical inspector general of the French army, and he here presents the results of research on cadavers with fractures and displacement of the stumps or of broken off portions. The differences between these war fractures and ordinary fractures are great as he shows for each of the large bones in turn, with illustrations. Certain general laws are apparent through all, and roentgenoscopy is constantly throwing new light on the subject.

25. Specificity of Antiseptics.—Taylor remarks that two years of observation of persisting infection in several thousand cases of war wounds have convinced him that this branch of medicine has made but little progress. Even today it is still impossible to say "This is the proper method to be followed in treating an infected wound." He attributes this to the scant attention hitherto paid to the individual characteristics of the different antiseptics in relation to the characteristics of the bacteria in the wound. We probably

will have to give up the hope of a general antiseptic; we must apply the specific antiseptic for the specific bacteria in the wound. His tabulation of the germ content week by week in different wounds with different bacteria predominating shows more streptococci, for instance, by the fifth week than were present the first week in wounds treated with cresol or with hypotonic salt solution. With the pyocyaneus, the figures the first and fifth weeks were respectively 50 and 60 in wounds treated with quinin; 33 and 55 with Dakin's solution; while, treated with acetic acid, the number of germs dropped from 35 the first week, 22 the second, 11 the third, to zero the fourth and fifth. With staphylococci, the figures under cresol were, the first week, 73 and 40 the fifth week; under Dakin's solution they were 77 the first and 40 the fourth week (fifth week not mentioned). With the aerogenes capsulatus, under dry dressings the figures were 2, 2, 3, 7 and 4 on successive weeks, while in the wounds dressed with quinin, from 20 the first week, the figures were constantly zero in the following weeks. These were the most striking findings in his experiments with all the various kinds of antiseptics used in the innumerable cases. The average with all other antiseptics, beside those specified above, showed a higher figure for the germs the fifth, in comparison to the first week, except in the case of the aerogenes capsulatus in which the figures were respectively 12, 7, 6, 7 and 1 on successive weeks.

29. **The Duties of the "Technical Adjunct."**—Louste refers to the general technical supervision of barracks, camps and cantonments and the troops themselves. The office of technical adjunct has been created for the purpose, as a kind of medical efficiency engineer. It presupposes the absolute confidence of the chief of the army medical department who entrusts him with full authority as his representative. It also presupposes the close collaboration and support of the commander of the forces. Louste is himself *adjoint technique* for the fourth district. When he entered on his duties he insisted on a general meeting of the staff at which he explained the importance of close collaboration between the military and the medical departments, the resources which the laboratories can furnish, and the necessity for uniform control, and of a constant and identical surveillance. He here presents his report on conditions in the barracks, camps, etc., with suggestions for improvement. Among the minor improvements which he has brought about, he mentions the great change for the better when the men were able to keep up a vegetable garden; the hundreds of pounds of lettuce, carrots, beans and cabbage thus raised at Laval gave the troops stationed there actual homelike food, not merely the army ration. In regard to drinking water, he says that the rule to boil the water cannot be applied at present on account of the scarcity of coal. Well cared for Chamberland filters are used where they are already on hand. Chlorination of the water seems to be the simplest method for purifying it for barracks and camps, but it must be in the charge of experts, provided with a double set of receptacles.

He remarks that in dealing with the local civilian authorities it should be a principle not to criticize a condition unless one has a simple and practical solution of the problem ready to propose. He deplores that in the education of army officers they are not given training in matters concerning the hygiene, physiology and health of the men in their charge. "Even with all the progress realized," he remarks, "the commanders of the forces are not always in close sympathy with the chiefs of the medical departments. If this regrettable gap could be filled up, the medical officer and the military officer would understand each other better, and close cooperation between the commanding officer and the medical department would be not only an official regulation and on the order of the day, but it would be a living reality, to the great benefit of the country which would find in the army a new source of life based on reciprocal confidence and esteem."

30. **The Eyes as Affected by Vaccination Against Typhoid.**—Summarized in the review of ophthalmology in 1917, abstract 37, p. 1914.

31. **Restorative Surgery of the Genital Organs.**—De Sard gives a profusely illustrated description of four cases in which

the external organs of procreation and urination were restored to more or less satisfactory aspect and functioning after destructive war wounds.

32. **The First Aids After Amputations.**—An illustration shows the simple device with which after amputation of the forearm, a fork, spoon or hook is fastened in a reinforced plaster cone, wound with gauze to form a cap which fits over the stump and is held in place by a strap buckled to a cushion on which the elbow rests. With various modifications of this principle the man can use his arm for numerous purposes. A similar temporary plaster dressing, with a lathe incorporated, can serve for the leg, letting the stump hang loose.

Archives Médicales Belges, Paris

October, LXX, No. 10, pp. 897-1000

33 *The First Dressing of a War Wound. H. Vincent.—p. 897.

34 *Reflex Paralysis and Contracture. M. Molhant.—p. 910.

35 *Anesthesia and War Surgery. D. Baruch.—p. 928.

36 *Foreign Bodies in the Brain. H. Burger.—p. 936.

33. **The First Dressing of a War Wound.**—Vincent insists that the interval before infection gets an actual start in a wound is shorter than most believe. Instead of eight or twelve hours, the damage is done in six or even four. He knows of cases of gas gangrene developing in six hours. In certain regions around Verdun, the perfringens was found in every wound. Crushing of tissues from one to eleven days after experimental inoculation of guinea-pigs with non-pathogenic perfringens was followed by development of gas gangrene. He cites further other data to sustain his plea for immediate sterilization of a war wound at the first dressing, especially when the wounded are coming in in large numbers. "When a man is wounded in war, moments are precious. Hours are worth days; hours are worth lives." In many years' experience in Madagascar, from 1894 on, and again in the present war, he has never found anything to equal the efficacy of calcium hypochlorite plus nine parts boric acid for prompt sterilization of wounds. Extensive research always brings him back to this mixture as more effectual than all others. The wound is powdered well with it, and it is insufflated into all the recesses and into seton wounds, running the nozzle of the atomizer deep into the wound. This dry powder is slowly dissolved by the secretions in the wound, taking three or four hours for this. This holds the germs in check, and the man reaches the field hospital with his wound in the same condition as when the wound was first dressed. "Merely to apply an aseptic dressing on the battlefield and at an advanced dressing station is too platonic for the formidable infections stalking the wounded. This dry powder treatment does not interfere in the least with whatever measures are to be taken later, when the man reaches the field hospital." His experience is confirming more and more the effectual sterilization realized by thus powdering the wound thick with a mixture of 10 parts of calcium hypochlorite to 90 parts boric acid passed through a No. 70 sieve.

34. **Reflex Paralysis and Contracture After War Wounds.**—Molhant presents evidence, from his experience at the special hospital for the nervous affections of the war, to the effect that so-called reflex paralysis and contracture are in reality usually the manifestation of a definite and irremediable organic injury. This injury is a terminal neuritis of the sensory nerves, but the manifestations deceptively simulate those of hysteria, and the latter may be superposed on the organic lesion. The symptoms may be of the hypertonic order: reflex irritability; or of the hypotonic order: reflex paralysis. He explains how the motor and sensory fibers are associated throughout except where they leave the spine, and at their terminals. Blocking of the peripheral nervous impulse at either of these points may generate motor disturbance of purely reflex origin, although the lesion which causes the blocking may involve the sensory fibers alone. The terminals of the deep sensory fibers are in the soft parts surrounding joints and in the periosteum. Injury of any of these injures the sensory terminals, and may irritate to excessive functioning or may paralyze. The paretic reflex may be manifested by paralysis or contracture, but the con-

tracture is due merely to excessive functioning of the antagonist muscles. Applying a tourniquet to the root of the limb abolishes the contracture, and we can see that the trouble is really a paralysis with the antagonists getting the upper hand. Instead of keeping these patients on in the hospitals indefinitely, trying to cure their "hysteria," the organic base of their affection should be recognized early and they should be fitted with prostheses and discharged from the ranks or given light duty. He devotes several pages to description of means by which these organic disturbances can be differentiated.

35. Anesthesia for the Wounded.—Baruch gives some tracings which show that the suffering induced by an operation is unconsciously perceived by the nerve centers notwithstanding deep chloroform narcosis; this is rendered evident by the immediate intense fluctuations in the blood pressure in the carotid artery. Under the same conditions, but with the trunk nerve blocked with novocain, the blood pressure was not modified. He agrees with those who maintain that the pain excitations transmitted to the nerve centers, especially to those in the bulb, are the effectual cause of operative shock. Faradization of the exposed sciatic nerve in the chloroformed dog will convince the most skeptical. Local anesthesia should be given the preference always when at all practicable, namely, infiltration or regional anesthesia. This blocks the nerve, sparing the nerve centers the strain from perception of the pain, while the anesthetics employed are in such weak solutions that they are free from toxic action and do not modify the functioning of the emunctories. Of equal importance is the fact that they leave intact the patient's capacity for reaction.

36. Foreign Bodies in the Brain.—The conclusions of this review of the present consensus of opinion in regard to management of projectiles in the brain are to the effect that the ventricles and the base of the brain must still be regarded as regions inaccessible to surgery. Otherwise, the majority seem to agree that cautious extraction of the projectile at once, through the passage made by its entrance, is the preferable procedure.

Napoleon used to say, "I do not believe in medicine, but I believe in Corvisart"—his physician. His definition of medicine has seldom been surpassed: *l'expérience chez un homme supérieur*. Burger reiterates that experience is a better guide than theory, and that although there are a certain number of men, apparently doing well, who for a year or two have been carrying a bullet, fragment of shell, or shrapnel ball in their brain and seem to tolerate it perfectly, yet the projectile remains always a constant menace for the health, besides the man's worry over its presence. Experience has further demonstrated that the extraction should be done at once. A secondary operation for an apparently well tolerated foreign body is not advised. The work should be done at the first operation, at the same time as all splinters of bone are removed.

Bulletin de l'Académie de Médecine, Paris

October 30, LXXVIII, No. 42, pp. 471-498

- 37 Némirovsky's Apparatus for Locating Projectiles in the Tissues. S. Pozzi.—p. 474. See Paris Letter, p. 1990.
- 38 The Epidemics of 1916 in France and the Colonies. Mosny and others.—p. 480.
- 39 Tetanus in Connection with Chilling of the Feet. H. Vincent.—p. 492. See Paris Letter.
- 40 Sulphur as Specific Treatment of Psoriasis. L. Bory.—p. 495.

Paris Médical

October 27, VII, No. 43, pp. 337-352

- 41 *Operative Treatment of Chronic Lesions of the Ascending Colon, etc. G. A. C. de Pury.—p. 337.
- 42 Electricity in Vocational Training of Disabled Soldiers. J. Larat and A. Billiard.—p. 344.
- 43 *Posterior Adenoiditis as Source of Meningitis, etc. G. Rosenthal and J. Cheville.—p. 348.
- 44 Apparatus for Extension of Fractured Humerus. Stern and Bentami.—p. 348.

41. Chronic Colitis.—De Pury deplors that too often it happens that chronic intestinal trouble is ascribed to the appendix alone. Appendicectomy without inspection of the

adjoining intestines is liable to leave the main source of trouble unmolested. Nine times in ten the cecum is diseased along with the appendix. Particularly important is the perityphlitis with dilatation of the cecum and chronic appendicitis, with more or less constriction of the angle of the colon just below the liver. It is at this angle that the inflammatory phenomena are most frequent and most pronounced, and adhesions most abundant. This is where the trouble starts which brings the appendicitis in its train, and it may set up cholecystitis, pancreatitis, duodenal or gastric ulcer and even disturb kidney functioning and favor development of tuberculous lesions in the kidneys or abdomen, and entail the whole series of gastro-intestinal atonies. Aside from the inflammatory phenomena on the part of the appendix, perityphlitis demands operative intervention whenever the symptomatic trilogy, pain, constipation and autointoxication, persist rebellious to systematic medical and dietetic measures.

The operation should aim to restore the regular open sewer throughout the bowel. The enlarged cecum forming a pocket where feces stagnate must be restored to normal size and shape; all adhesions along the small intestine and colon must be broken up, and any kink in the colon must be straightened out. He gives a detailed description with the roentgen findings in four typical cases of the kind. Conditions were restored to clinically normal by taking up lengthwise folds in the cecum until the lumen was reduced to normal size and shape. He reiterates that the stagnation of feces with secondary infection is always the primary trouble, starting the inflammation in the wall of the intestine, whence it is liable to spread in any direction, but almost inevitably it entails atony of the cecum which stretches, just as the bladder stretches when its wall becomes infected. With both, along with the atony, there is liable to be spasmodic stenosis. The insidious development of the whole trouble and the mildness of the symptoms at first are misleading, so that the nature of the trouble is not recognized. Courses of treatment for neurasthenia, dyspepsia, etc., give no relief, and not even appendicectomy. Uncontrollable vomiting after eating may occur from retrograde peristalsis on account of constricting adhesions or kinking of the bowel, usually both. Vomiting from retrograde peristalsis from this cause is not uncommon in young girls. The clinical picture deceptively simulates that from pylorospasm from dilatation of the stomach or gastric ulcer or stenosis of the pylorus or irritative dyspepsia. In most cases nothing but roentgenoscopy will permit the correct diagnosis. This alone will reveal that in many cases of neurasthenia, etc., the whole trouble is merely constipation from constriction or kinking of the colon, which renders it impossible for it to empty itself completely.

43. Posterior Adenoiditis.—Rosenthal and Cheville assert that further research and experiences have confirmed anew that the primary and fundamental seat of meningococcus infection is in the rhinopharynx, a posterior adenoiditis. But whatever its scientific and pathogenic importance, this primary lesion causes no pain and hence is overlooked. Smears from the rhinopharynx may give cultures and cell counts which throw light on many clinical cases of serious infection, and point the way for effectual treatment by sterilization of this primary focus.

Presse Médicale, Paris

November 1, XXV, No. 61, pp. 625-632

- 45 *Malarial Amnesia. H. de Brun.—p. 625.
- 46 Immediate Treatment of War Wounds of the Chest. L. Hayem.—p. 627.
- 47 Resection and Suture of the Intestines for War Wounds. J. Abadie.—p. 629.
- November 8, No. 62, pp. 633-644
- 48 *The Curability of Chronic Tuberculosis of the Kidneys. II. N. Hallé.—p. 633.
- 49 Talipes Equinus after War Wounds. M. Lance.—p. 635.
- 50 *Malignant Endocarditis of Slow Course. R. Debré.—p. 638.
- 51 *Intravenous Injections of Isotonic Sugar Solution in Treatment of Septicemia. G. Audain and F. Masmonteil.—p. 641.
- 52 Present Status of Ether-Oil Anesthesia by the Rectum. J. Luzoir.—p. 641.

45. Loss of Memory in Malaria.—De Brun of late has found amnesia one of the most characteristic features of malarial polyneuritic psychoses. Almost a third of the malaria patients

in his service at the Rueil hospital have more or less impairment of the memory. With a primary attack, the memory of that period may be permanently a complete blank. One of his patients had no remembrance of anything connected with his stay in the hospital and for several months thereafter. The malarial subject may also present retrograde amnesia, unable to remember certain periods in his previous life, possibly back into childhood. Some of the men have forgotten completely a foreign language which they spoke fluently before the malaria. Others have forgotten historical events and geography, or lost their knowledge of music or mathematics. Skilful electricians cannot recall the most elementary principles of physics and electricity, and are unable to instal the simplest electric device. Artisans have forgotten the uses and names of their tools.

The situation is aggravated further by fleeting phases of loss of memory for the ordinary acts and duties of life, amnesia for happenings since the sickness, inability to concentrate the attention. Some complain of headache and visual disturbances whenever they try to focus their attention on anything. They are unable to read with attention, and forget almost at once what they have read. One of the educated men was unable to count beyond ten. Sometimes they write and mail a letter and later in the day write and mail another just like it. They even forget whether or not they have had their meals. Some of the men have been sent to the guard-house for failing to do what they had been ordered to do. The dangers of such lapses of memory are peculiarly acute in the case of officers. The men acquired the malaria in the Saloniki region, and they do not stay long enough in the Rueil hospital for the ultimate outcome to be known.

48. Curability of Chronic Tuberculosis of the Kidney.—Hallé reiterates that removal of the tuberculous kidney usually leaves foci elsewhere in the body. The mortality in the first few years after the operation is still quite high. Pathologic anatomy has demonstrated that there are two forms of tuberculous processes in the kidneys, the closed parenchymatous process, which is spontaneously curable and relatively benign, and the open tuberculous pyelitic process which generally keeps up a progressive and destructive course. The process may be of the first type at first but finally merge into the second type. In the first type, early and active medical treatment would hasten the favorable outcome, but this type is rarely recognized. The second type, if the course is rapidly progressive, calls for nephrectomy at once, but if the course is more benign and slow, expectant treatment is justified, hoping for spontaneous retrogression which occasionally occurs. When an operation is required, nephrectomy is called for. Partial nephrectomy is futile unless for a closed parenchymatous process, and this does not require operative treatment at all.

50. Slow Malignant Endocarditis.—Debré remarks that this disease is not sufficiently known and often it is not even suspected. Even when the endocarditis is diagnosed, the physician fails to realize that the ups and downs slowly progress to an inevitably fatal outcome. It does not seem to be contagious, but series of cases have been known at a few points. The streptococcus responsible for it is not usually pathogenic. Possibly meteorologic conditions rouse it to virulence. It has been observed in children and at 52 and 53, but usually young adults are the victims. Nearly all have a history of acute articular rheumatism in childhood, entailing a chronic valvular trouble. Another constant finding is that some mild tonsillitis or laryngitis or attenuated genital infection has directly preceded the endocarditis lenta. This evidently exalts the virulence of the germ and favors its entrance into the blood stream. The loss of strength and flesh, the pallor, irregular fever and slight chills are generally ascribed to influenza. Some joint or joints may swell and a return of the articular rheumatism is surmised. This condition may keep up for weeks, and tuberculosis may be suspected or some blood disease. There is nothing to suggest active endocarditis until finally the tendency to purpura, enlargement of the spleen, the joint and valvular troubles and the discovery of the streptococcus in the blood stream aid in differentiating the disease. There may be periods of improvement, but the trend

is inexorably downward. The fatal termination is generally due to some embolic softening of the brain or cerebral hemorrhage from rupture of an aneurysm, or coronary embolism or gangrene of embolic origin. The disease may prove fatal in a few months or not until after two years.

51. Intravenous Sugar Solution in Septicemia.—Audian and Masmonteil state that their experience has been constantly favorable with intravenous injection of an isotonic solution of sugar in treatment of septicemia. Where the leukocytes numbered from 5,000 to 7,000 before the injection, afterward the count jumped at once to 25,000 in less than a half hour, and kept at this level for two or three hours, and even then did not decline below 16,000. The polynuclears formed 80 to 90 per cent. of this hyperleukocytosis. The reaction seems as intense as after injection of colloidal metals. The temperature runs up a little, with a chill, followed by sweating, like a malarial attack. Induced hyperleukocytosis is regarded by many as the only rational treatment of infections to date. The sugar solution, besides, provides nourishment and has a stimulating influence on the kidney cells, starting up diuresis. The solution must be isotonic: 47.6 per thousand with glucose; 103.5 per thousand with saccharose, or 108.9 per thousand with lactose. From 300 to 500 gm. have to be injected before the leukocyte reaction is realized, but on repetition in the graver cases they do not hesitate to inject 1,000 or 2,000 gm. during the day, fractioned. The leukocyte count is the guide; they inject enough to keep it about 25,000. A severe chill during the hour following the injection is sign that this limit has been reached. This treatment has proved very useful for the septicemia after war wounds. Sometimes two or three injections of 500 gm. will bring the temperature permanently to normal. In desperate cases the amounts can be larger than this and kept up for ten or twelve days or longer if necessary. They never noticed any untoward by-effects but found it necessary to keep up the treatment four or five days after defervescence. This method of treatment applies also to erysipelas, rheumatism, etc., and they are going to try it in infectious diseases.

Correspondenz-Blatt für Schweizer Aerzte, Basel

October 27, XLVII, No. 43, pp. 1425-1456

53 *Effect of Antipyretics on Fever Center. A. Lüthy.—p. 1425.

54 *Nitrobenzol not an Abortifacient. J. R. Spinner.—p. 1439.

November 3, No. 44, pp. 1457-1504

55 *Treatment of Diabetes. R. Stähelin.—p. 1457.

56 Tumors of Knee Joint Capsule. G. A. Guye.—p. 1474.

53. Effect of Antipyretics on Fever Center.—This communication from the Pharmacology Institute of the University of Zurich reports the results of research on the prolonged administration of antipyretics in fevers. With fever of bacterial origin, the drug does not seem to modify the reacting power of the temperature center. As soon as the drug is stopped, the temperature rises again proportional to the degree of the intoxication. On the other hand, if the rise is the result merely of functional irritation of the region of the fourth ventricle, regular administration of antipyretics materially reduces the excitability of the temperature center. This may aid in differentiating in dubious cases.

54. Nitrobenzol not an Abortifacient.—A number of cases of poisoning from nitrobenzol are on record in which the drug had been used to induce abortion. Some of them terminated fatally, as in a case described here by Spinner. But only one instance is known of abortion having been induced by this means alone, while seven deaths are known in the sixteen cases cited from the literature. The amounts taken in the fatal cases ranged from a tablespoonful or a swallow to 100 gm. In the one reported successful case the assumed pregnancy may not have actually existed. Cyanosis may be the first symptom, and the odor reveals the cause. Recoveries are on record after ingestion of 100 or 400 gm. The drug is an active poison for the blood, besides irritating and then paralyzing the nervous system.

55. Treatment of Diabetes.—Stähelin reiterates that it is actual malpractice to leave a patient with any sugar in his urine when by any means it is possible to banish it permanently. As long as there are even traces of sugar in the urine

there is more or less hyperglykemia, and hence always a menace of gangrene or carbuncle, besides the constant danger of the diabetes progressing to a severe form. By freeing the urine permanently of sugar, the tolerance for carbohydrates gradually increases. Determination of the amount of carbohydrates the patient can assimilate is a tedious matter for both patient and physician, but it is indispensable. The urine has to be measured and tested daily for the sugar content, and this kept up for several weeks. The patient has to be taught how to collect and measure the urine; he must have a collecting vessel and scales to weigh his food. Stähelin gives tables of the findings over a month or two in some typical cases on ordinary diet, on suspension of carbohydrates, and on their gradual resumption. Drugs have little influence on the glycosuria, and only in doses that do direct harm otherwise, but every day new proprietaries are advertised for diabetes, and not only diabetics but some physicians are misled by them. Tabulation of the findings day by day shows plainly that none do any good. If a liter of any kind of a decoction is drunk before retiring, the percentage of sugar in the night urine will certainly drop, but merely because so much water is being voided to dilute it. The patient is convinced that he has improved under the tea drinking, and frequently the physician shares his mistaken impression. The dangerous feature of this mistake is that the really important thing, the dietetic restrictions, is neglected in consequence. The careful working out of the dietetic measures and enforcing them, regardless of everything, usually improve the disturbance in the metabolism to an extent equivalent to a complete cure, and in any event increase the strength, and enable the patient to live for years or even decades in comparative health.

Gazzetta degli Ospedali e delle Cliniche, Milan

October 21, XXXVIII, No. 84, pp. 1121-1136

57 *Influence of Roentgen Rays on Malaria. A. Pais.—p. 1123.

October 25, No. 85, pp. 1137-1144

58 Removal of Polyp in Knee Joint. N. Federici.—p. 1137.

October 28, No. 86, pp. 1145-1160

59 Remuneration for Medical Certificates. E. Villa.—p. 1159.

57. **Roentgen Treatment of Malaria.**—Pais declares that roentgen treatment modifies essentially the course of malaria. Small doses in a first attack attenuate the disease, while large doses change the cycle of the fever. It seems as if the new generations of parasites display exalted virulence under the influence of the radiation. Chronic malaria rebellious to quinin may yield completely under the exposures, or the infection may be so modified that quinin may regain its potency. Among the fifty patients thus treated the disease seems to have been arrested in nearly all, and the spleen has subsided to its normal outlines.

Pediatria, Naples

March, XXV, No. 3, pp. 129-192

60 Abscess in Liver of Boy of Eight. R. Jemma.—p. 129.

61 *Cirrhosis of the Liver in Child with Inherited Syphilis. O. Pentagna.—p. 140.

62 Case of Cerebral Bilateral Flaccid Paralysis. R. Vaglio.—p. 151.

61. **Cirrhosis of the Liver in Child.**—The child was 2 years old when symptoms of cirrhosis of the liver developed and proved fatal in less than a year. The necropsy findings confirmed the assumption of inherited syphilis. Mercurial treatment came too late; the liver had been already irremediably damaged when the child was first seen.

Policlinico, Rome

October 21, XXIV, No. 43, pp. 1281-1304

63 *Diagnosis of Pulmonary Tuberculosis. A. Murri.—p. 1281.

64 *Serotherapy of Meningitis. A. Capogrossi.—p. 1287.

65 Improved Apparatus for Inducing Pneumothorax. E. Morelli.—p. 1292.

October, Surgical Section No. 10, pp. 393-432

66 *Splenectomy and Omentofixation in Banti's Disease. L. Losio.—p. 393.

67 *War Wounds of the Knee. G. L. Petrilli.—p. 401.

68 *Plastic Operations on the Esophagus. G. Razzaboni.—p. 417.

69 Malignant Edema without Gas Production. I. Scalone.—p. 425. Continuation.

63. **Diagnosis of Pulmonary Tuberculosis.**—Murri protests against a recent ruling by the authorities to the effect that suspects must go to the hospital for thorough examination. He declares that any one skilled in recognition of pulmonary tuberculosis can rely on the clinical findings, examination of the sputum and roentgenoscopy. Long study of the case is superfluous, as a rule.

64. **Serotherapy in Meningitis.**—Capogrossi relates that in twenty-five of his twenty-seven cases of meningococcus meningitis last year, he resorted to intraspinal serotherapy according to the usual technic. The two others were injected with their own serum. The prognosis can be regarded as favorable when the patient is young, and the cerebrospinal fluid is milky and under high pressure, with few germs, and these all intracellular. In such cases recovery is frequent after lumbar puncture alone; the organism seems able to generate its own antibodies under these conditions. The evidence seems to favor the assumption that the meningococci get early into the blood and linger there for some time. This and other data cited suggested the possibility that auto-serotherapy might prove effectual. He tried it in two cases in which the cerebrospinal fluid was so purulent and thick that it would not flow. About 7 c.c. of the man's own serum was injected intraspinally twice in one case, but the man died the third day. In the second case, 20 c.c. of the cerebrospinal fluid was evacuated and 10 c.c. of autoserum was injected. The fever subsided at once and within a week the cure was complete. The serum was obtained from 100 c.c. blood drawn from the elbow. It was kept on ice after clotting at room temperature. The autoserum was heated to body temperature before being injected. The venesection should be done at once as soon as the diagnosis is certain. When fresh antiserum is not available, this autoserum might answer the purpose. It certainly is a harmless procedure. In protracted cases, it might prove a valuable adjuvant, when there might be fear of anaphylaxis with continued use of the commercial antiserum. The blood in such cases has probably elaborated considerable amounts of spontaneous antibodies, and injecting them into the spinal canal places them just where they are needed.

66. **Operative Treatment in Banti's Disease.**—Losio reports a case which illustrates anew the benefits from splenectomy plus omentopexy, even in advanced cases of Banti's disease with cirrhosis of the liver. His patient was a woman of 58.

67. **War Wounds of the Knee.**—Petrilli relates that wounds of the knee have formed nearly 3 per cent. of the wounded in his service. The wound healed aseptically in 49.2 per cent. of the total 126 cases. In the much infected cases, he keeps the joint open, the exposed bones temporarily flexed and dislocated until the sepsis is conquered, the patient lying prone to facilitate draining, at least for the first few days.

68. **Plastic Operation on the Esophagus.**—Razzaboni gives an illustrated description of the results of his experiments on dogs. He resected through a subhyoid incision a portion of the wall of the upper esophagus, embracing about half its circumference, leaving a defect the size of an Italian penny. This defect was then closed with a flap taken from the rectus muscle in such a way that it included the aponeurosis, muscle fibers and peritoneum. Two of these flaps were prepared and placed in warm physiologic solution while the laparotomy incision was sutured. The flap was fastened to the wall of the esophagus with a marginal interrupted suture, done with the finest silk, the peritoneal surface facing the lumen. The second flap was then sutured over this, the peritoneal surface facing outward, the suture thread passing only through the outer layers of the esophagus wall. The eight dogs thus treated demonstrate the feasibility of the procedure. The continuity of the esophagus wall is restored and the stenosis left is not sufficient to prevent adequate feeding.

Anales de la Facultad de Medicina, Montevideo

August-September, II, No. 7-8, pp. 401-556

70 *Herpes Zoster. E. Boix.—p. 401.

71 *Traumatism in Psychiatry. S. C. Rossi.—p. 502.

72 *Pyelotomy. (La talla pílica.) L. A. Surraco.—p. 539.

73 *Indications for Evacuation of the Uterus in Severe Pneumonia. C. P. Colistro and J. C. Carlevaro.—p. 547.

70. Herpes Zoster.—Boix devotes a hundred pages to this exhaustive study of the nature and pathogenesis of zona with reports of a number of unusual cases. In one a four-day infant developed herpes zoster on the right side. In another a woman had intercostal zona a week or two before delivery and the child developed intercostal zona at the second month. This is the only instance of which he has knowledge that suggests possible direct contagion. He cites Pugliesi's case (1891) of general febrile herpes zoster in a young woman, also Boulland's case of bilateral zona complicated with generalized herpes, and Landouzy's case in a physician who has had 100 attacks of herpes since severe zona in his student days. These and other data cited justify the assumption that zona is not exclusively a nerve or skin disease but a combination of both. It is not a morbid entity but merely a clinical syndrome from the combination of the change in the nerve, which may be local or general, old or recent, and the infection, local or general, acute, subacute or chronic, the determining cause of the eruption. The nerve changes and infection may occur simultaneously, as is evident in certain cases of traumatic zona. The different forms of zona are merely different manifestations of the same morbid action, which requires for its production a transient or chronic change in the nerve and some infection which is far from specific although bearing the general designation of herpetic. The unicity of the zona syndrome seems beyond question. Among the cases reported is one in which the zona started in the eye and involved the two superior branches of the trigeminal nerve on the paralyzed side of a woman of 60 with inherited severe nervous taint. In another case the intercostal zona was from a nerve compressed by a diseased bronchial gland in a girl of 8 recently recovered from measles and whooping cough. The vesicles extended down on the fingers. In two other cases in children, inherited syphilis or abdominal tuberculosis evidently afforded a predisposition. In none of the four child cases mentioned was there any pain from the zona. The article is in French.

71. Traumatism in Psychiatry.—Rossi is chief of the national insane colony, and he here discusses whether it is possible for mental disease to develop from traumatism alone and whether mental disease after a traumatism differs from that of other origin. He analyzes what has been written on the subject and says that there can be no doubt that there are certain mental clinical pictures which do not need more etiology than a traumatism to explain them, whether the trauma affected the brain directly or not. In others the traumatism may have been merely the provocative cause, of secondary (although of decisive) importance. Traumatism should not be given a higher place in the clinic of the brain than in the clinic of other regions of the body. In respect to the medicolegal responsibility for the traumatism cause, experts should be guided by the general rules for common accidents.

Traumatism can be included in the etiology of mental affections as a determining, occasional or predisposing cause. When it is the determining cause, the symptoms induced are those of denutrition, inhibition or destruction, which induce the clinical pictures of neurasthenia, confusional states or simple demential conditions, according to the severity and the evolution of the traumatism. When the traumatism is merely the occasional cause, it may contribute to the flaring up of latent affections or induce, in association with the symptoms of the other affection, mental symptoms of another character. As a predisposing cause, the traumatism may induce organic lesions which in their healing or evolution, even silent and slow, may serve as an anatomic substratum for organic dementia in the future, or even possibly general progressive paralysis. The medicolegal expert should sift out from the clinical picture the extraneous elements, determine the relations between cause and effect, and draw the prognosis, estimating the degree of mental impairment particularly in relation to the subject's professional and other exigencies.

72. Advantages of Pyelotomy for Anuria.—Surraco has only one case to report, but the advantages of incision of the renal pelvis were striking here. The young woman had had anuria for five days from low obstruction of both ureters.

The condition was so critical that he made an incision into the renal pelvis without further delay. This permitted evacuation of urine better than if the ureter or the body of the kidney had been opened, while infection could be warded off more effectually and the fistula can be closed at any time with greater ease than when in the body of the kidney or the ureter.

73. Indications for Instrumental Delivery in Pneumonia.—Colistro and Carlevaro report two cases in which labor set in during severe pneumonia, and they hastened delivery with forceps. The results were so good that they advocate this systematically in grave bronchopneumonia and pneumonia instead of waiting for spontaneous delivery. The fetus is not exposed to greater danger from the forceps than from the mother's severe infectious disease if left waiting in the uterus. The mother's dyspnea, struggling heart, and fever place her in no condition to stand the stress of labor and delivery. They emphasize, however, that they refer merely to intervention without further danger in itself for the mother.

Cronica Medica, Lima, Peru

October, XXXIV, No. 652, pp. 355-394

- 74 *Spirochetosis Icterohemorrhagiae at Lima. J. Arce and R. E. Ribeyro.—p. 355.
- 75 Case of Syphilitic Meningomyelitis. E. Odriozola.—p. 361.
- 76 Present Status of Spirochetosis Icterohemorrhagiae. J. Arce.—p. 365.
- 77 Dissociated Jaundice and Cholemic States. H. Castañeda.—p. 375.

74. Icterohemorrhagic Spirochetosis in Peru.—Arce and Ribeyro report a case of what seemed to be Weil's disease in a Japanese who had been in Peru for eight years. He recovered in about a month under a sodium sulphate purge, quinin and tonics. At the eighteenth day of the disease guinea-pigs were injected with 5 or 6 c.c. of his urine, and they developed a similar hemorrhagic infectious jaundice, as also other guinea-pigs inoculated with scraps from their kidneys. The microscope further confirmed in the clinical case and in the animals the presence of the *Spirochaetae icterohemorrhagiae* of Inada and Ito. Their communication is dated Sept. 24, 1917, and they remark that so far as they know, it is the first case of the kind reported in America.

La Escuela Medico-Militar, Mexico

I, No. 2, pp. 1-16

- 78 *The Retina of the Mexican Axolotl. I. Ochoterena.—p. 2.
- 79 *Treatment of Cicatricial Ectropion. E. Ramirez.—p. 4.
- 80 Abdominal Hysteropexy. A. E. Vidales.—p. 7.
- 81 Leishman Ulcer in Chicle-Gum Collectors. E. Cervera.—p. 9.
- 82 Technic for Collecting Pathologic Material for Examination. E. Cervera.—p. 10. To be continued.
- 83 Postpartum Hemorrhage. R. Cravioto.—p. 13.
- 84 Intraspinal Injection of Anesthetics. V. J. Sanchez.—p. 15.

No. 3, pp. 1-22

- 85 *The Leukocyte Formula in Human Beings, Rabbits and Guinea-Pigs in the Valley of Mexico. F. Ocaranza.—p. 2.
- 86 *Technic for Disarticulation of the Hip Joint. D. Moreno.—p. 4.
- 87 Technic for Collecting Pathologic Products for Examination. E. Cervera.—p. 6. To be continued.
- 88 Gastro-Enterostomy in Mexico. J. Martinez y Gonzalez.—p. 9. To be continued.
- 89 Abuse of Dressings. L. H. Moro.—p. 20.
- 90 Intraspinal Cocain Anesthesia. J. Adalid y Castillo.—p. 21.

78. Research on Comparative Histology.—This study of the retina of a lizard-like amphibian found in the Lake of Mexico is accompanied by a large colored plate of the microscopic findings.

79. Cicatricial Ectropion.—Ramirez gives an illustrated description of the various technics in vogue for this purpose, and his own method. With this, two triangular flaps are cut, one below the eye and the other at the outer angle. These flaps are swung around to cover the defect, the result being merely a long curving linear scar.

85. The Leukocyte Count in Mexico.—This study of comparative physiology of the blood of persons and animals, acclimated in the valley of Mexico, disclosed a remarkable difference in the staining properties of the leukocytes as well as wide differences in the blood count. The figures are the averages from forty guinea-pigs, fourteen rabbits and large numbers of adults, of all trades and professions and of both sexes. In man the neutrophils predominated, form-

ing 51 per cent. of all the leukocytes, while in the guinea-pig the neutrophils and lymphocytes nearly balance each other. In the rabbit the lymphocytes outnumber the neutrophils nearly three to one, and the eosinophils formed 13 per cent. of the total leukocytes; in the guinea-pig, only 5 per cent.

86. **Disarticulation of the Hip Joint.**—Moreno's profusely illustrated article shows the various steps of the operation for this purpose as he applies it. There is no hemorrhage, as the muscle fibers are not severed but only separated from their attachments, as they run parallel to the straight incision. It slants from the posterior superior iliac spine to the upper margin of the greater trochanter. After detaching the tendons and pushing the muscle fibers apart, the head of the femur is dislocated and sawed off and the upper two thirds of the incision are sutured, the lower third drained. So far the operation has been simple. The whole is complete in less than twenty minutes. Then at once, or five or six days later, the limb is amputated. Hemorrhage is warded off by the assistant's fingers pressing on the vessels. This is a simple matter, as there is no bone left in the region. The whole amputation, being only in soft parts, takes but a few minutes—not over fifteen at most. There is no operative shock, no hemorrhage, and scarcely any crushing of the tissues. With this technic, he declares, disarticulation of the hip joint becomes practically a minor operation.

Prensa Médica Argentina, Buenos Aires

October 10, IV, No. 13, pp. 161-172

- 91 Operation on Sphenoidal Sinus by Endoseptal Route. E. V. Segura.—p. 163.
- 92 Interpretation of the Phenomena with Electric Stimulation of Nerve and Muscle Tissue. V. Tedeschi.—p. 164.
- 93 *Atypical Forms of Pneumonia in Young Children. J. P. Garrahan.—p. 168. Commenced in No. 12, p. 148.

93. **Atypical Pneumonia in Young Children.**—Garrahan mentions that in the recent unusual prevalence of pneumonia at Buenos Aires, a remarkable proportion of cases were encountered in infants less than a year old. There were three deaths, but extraneous causes could be incriminated for them. Roentgen examination has led to great progress in the management of pneumonia in young children. He found the right apex the site of the pneumonia in seventeen of his forty-one cases. In a number the onset of fever was accompanied by abdominal pains; in others, a pleural effusion dominated the scene. In one child of 2, in the third month of whooping cough, the pneumonia was accompanied with a comatose condition, with icy extremities. For four days this alarming syndrome was combated with mustard baths, oxygen, camphor, serum, epinephrin, etc. The pneumonia of the right apex was associated with an intense reaction on the part of the pleura, and the disease lasted seventeen days, but complete recovery then was prompt. The particulars of sixteen cases are given and the literature reviewed.

Semana Médica, Buenos Aires

September 20, XXIV, No. 38, pp. 329-354

- 94 Ancient and Modern Conceptions of Syphilis. D. Speroni.—p. 329.
- 95 *Management of Delivery with Contracted Pelvis in Infected Cases. J. A. Gabastou.—p. 332.
- 96 The Charitable Institutions of Buenos Aires. E. R. Coni.—p. 341. Continuation.
- 97 Identification of Certain Derivatives of Morphin. J. A. Sanchez.—p. 348. Continuation.

95. **Delivery with Contracted Pelvis.**—Gabastou discriminates between primiparas and multiparas in the infected cases of contracted pelvis. Pubiotomy, which might serve well for the latter, is contraindicated for primiparas, other conditions being equal. It is also contraindicated in case of varices on the genitals. With established and grave infection, extraperitoneal cesarean section is, of course, out of the question. The Porro operation is preferable when the fetus is viable.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

September 22, II, No. 12, pp. 1023-1114

- 98 Experimental Research. (Voor en tegen proeven op levende dieren. V.) G. van Rijnberk.—p. 1023.
- 99 *Importance of Superficial Tension of the Medium for Ferment Action and Catalysis. J. T. Groll.—p. 1029.

100 *Treatment of Purulent Arthritis of the Knee. J. C. van Vliet.—p. 1042.

101 *Digestibility of Bran Bread. M. Hindhede.—p. 1047.

102 *Reinfection with Syphilis. W. J. Bais.—p. 1052.

99. **Superficial Tension as Factor in Ferment Action.**—Groll writes from the physiology laboratory of the University of Amsterdam to relate much experimental and clinical research on biochemical topics. He discusses in particular the influence on solutions of the superficial tension of various substances and ferments. All the evidence testifies to the great importance of the superficial tension and the viscosity of the medium in modifying the action of ferments and the catalytic processes.

100. **Suppurating Process in the Knee.**—Van Vliet remarks that Opitz as late as April, 1915, advocated amputation at the first signs of suppuration in the knee. Hansing two months later reported eight deaths and nine amputations in twenty-three cases of the kind. The change for the better in the outcome of such cases is shown by Heddaeus' report, in Bruns' *Beiträge*, January, 1917, that he lost only one of seventy patients with suppurating arthritis in the knee and that sixty-three were left with a fairly functioning joint. He got the cases within a day or two after the injury, and after cleaning out the wound he rinsed with 3 per cent. phenol or neutral solution of chlorinated soda, and immobilized.

Later than the second day, no treatment can save the joint. Van Vliet in his work at the Mannheim and Heidelberg hospitals did not get the cases until they were a week or two old. Even at this late stage he obtained excellent results with limited resection and fixation on a wooden frame that held the knee partially flexed, a small gap in the frame directly under the knee allowing for free drainage and open treatment of the wound. The best results were obtained when the patella and the joint cartilages were removed. This ensures better draining and better consolidation later. Open treatment of the wound saves the patient much pain and discomfort, besides the economy in dressings.

101. **Digestibility of Whole Grain Bread.**—Hindhede reiterates that the normal persons whom he subjected to his extensive tests (mentioned recently in these columns) digested bran as well as a pig digests it and, when ground fine, they digested it even more completely than cattle digest it. Von Noorden has also become convinced by experiences during the war that whole grain flour is digestible. He is now even inclined to credit to the extensive use of bran-containing bread a large part of the success attained by the so-called drugless healers. Hindhede pleads therefore that bran should not be taken from people and fed to cattle under the present circumstances. By feeding grains to animals we get back in the form of food only about 20 per cent. of the value.

102. **Reinfection with Syphilis.**—Bais writes from Sumatra to tell of a case of recent primary syphilis treated with such success, the Wassermann reaction veering to normal, that the man returned a year later with a second unmistakable primary infection. This also was conquered within a few months, the same as before. The Wassermann reaction was still negative when reexamined nine months after this second infection. The tenth month he returned with his third primary infection. The spirochetes swarmed in the primary chancre each time. Neosalvarsan and mercury had been the treatment. In a second case of reinfection there was evidence that the man contracted the infection the second time from a woman he had himself infected at his first attack, thus the same strain of spirochetes was presumably responsible for both. Bais thinks that the publication of such cases of positive cure will lessen the tendency to neurasthenia in those acquiring the disease.

Hospitalstidende, Copenhagen

October 10, LX, No. 41, pp. 997-1020

- 103 *The Influence of Treatment of Syphilis on the Different Reactions in the Cerebrospinal Fluid. C. With.—p. 997. Commenced in No. 40, p. 973.

103. **Influence of Treatment on Reactions in Spinal Fluid in Syphilis.**—With analyzes and tabulates the findings in this line at the dermatologic service at the Copenhagen General Hospital.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXIX, No. 26

CHICAGO, ILLINOIS

DECEMBER 29, 1917

TRANSFUSION OF UNMODIFIED BLOOD

AN ANALYSIS OF ONE HUNDRED AND SIXTY-FIVE CASES

LESTER J. UNGER, M.A., M.D.

NEW YORK

The results of 165 transfusions performed by means of the simple technic¹ I described in 1915 have been so encouraging as to warrant a report. This paper will present (1) an analysis of the effects of transfusion on various clinical conditions; (2) a comparison between the use of unmodified and modified blood, and (3) a summary of the results of all the transfusions.

INDICATIONS FOR TRANSFUSION

The indications for transfusion are (1) hemorrhage; (2) diseases of the blood; (3) toxemias; (4) infections; (5) shock, and (6) general debility.

1. *Hemorrhage*.—This is one of the conditions in which blood transfusion is the ideal form of treatment. It serves not only to replace lost blood but also to check actual bleeding. In acute hemorrhages, the results are naturally more brilliant than in less fulminating bleeding.

The diseases in which hemorrhage served as the indication for the transfusion of blood fall into the following nine groups: (a) gastric or duodenal ulcer; (b) typhoid fever; (c) postoperative hemorrhage; (d) ectopic gestation; (e) uterine hemorrhage; (f) ulcerative colitis; (g) jaundice; (h) hemorrhages associated with blood diseases, and (i) miscellaneous cases.

(a) *Gastric or Duodenal Ulcer*: There were seven transfusions done in five cases of gastric or duodenal ulcer. The supposition that, owing to the rise in blood pressure following a transfusion, the bleeding in gastric ulcer will be increased seems to have no basis in point of fact.

All of the patients were in an extremely critical condition. One transfusion was sufficient to check the hemorrhage in four of the five patients, even though they were bleeding at the time the transfusion was performed. Three of the patients made a prompt and striking recovery. They were converted within a comparatively short time from moribund individuals to convalescents. Plans for operation were abandoned because of their return to perfect health. Two of the five patients died. Each received two transfusions. In one the first transfusion checked the hemorrhage and improved his condition to such an extent that an operation with a preliminary transfusion was resorted

to. The other patient was given two transfusions, neither of which succeeded in checking the hemorrhage. This was the only true failure in this group of cases.

(b) *Typhoid Fever*: Three transfusions were performed in two cases of typhoid fever because of complicating intestinal hemorrhage. In one of these, a patient of Dr. Evan M. Evans, transfusion of 1,200 c.c. checked the hemorrhage. During a subsequent relapse there was no recurrence of the bleeding, and the patient made a complete recovery. The other patient was on Dr. Libman's service at Mount Sinai Hospital. Although prompt improvement followed the introduction of 800 c.c. of blood, within a few hours she had another profuse hemorrhage. One thousand c.c. of blood were then given, but subsequent profuse hemorrhage proved fatal.

(c) *Postoperative Hemorrhage*: There were four cases of this kind. The hemorrhages followed gastro-enterostomy, cystoscopy and operations for cholecystitis and for osteomyelitis. All the patients were in a very critical condition, but following the introduction of the new blood they promptly made an uneventful recovery. The result in the patient in whom the bleeding followed gastro-enterostomy was very striking. Besides an immediate cessation of bleeding, the wild and increasing delirium entirely disappeared. Abnormal mental states varying from mild delusions to delirium frequently disappear in this way. These mental symptoms are due to anemia, and vanish when the hemoglobin and the number of red cells is increased.

(d) *Ectopic Gestation*: The three patients in this group were so desperately ill that immediate operation was deemed contraindicated. Transfusions changed the condition of all three so that surgical intervention was warranted. The lives of these three women were saved by the preliminary transfusions.

(e) *Uterine Hemorrhage*: Four transfusions were carried out in three cases of uterine hemorrhage. All the patients recovered. Two were saved from impending death. The transfusions were performed before the operation in order to replace the large quantity of blood lost. Two were instances of retained secundines and the third one of chorio-epithelioma. Two transfusions followed by a hysterectomy (by Dr. L. Druskin) were performed on the last patient referred to. She then made an uninterrupted recovery.

(f) *Ulcerative Colitis*: Three patients on whom six transfusions were performed had ulcerative colitis. All were greatly improved not only as regards their blood but in strength and appetite as well. In two the local condition at once began to respond to treatment. The third, in spite of three transfusions with attendant improvement in the general condition, obstinately

1. Unger, L. J.: A New Method of Syringe Transfusion, THE JOURNAL A. M. A., Feb. 13, 1915, p. 582; Recent Simplifications of the Syringe Method of Transfusion, Sept. 18, 1915, p. 1029.

resisted all local treatment. Transfusion for ulcerative colitis is of benefit, by increasing the patient's vitality and by rendering the local condition in the intestine more responsive to treatment. Repeated transfusions are usually necessary in this disease.

(g) Jaundice: Unfortunately this series does not include this condition. Transfusion should, however, be employed in cases of jaundice both to check active bleeding and as a prophylactic measure previous to operation when the coagulation time is considerably prolonged.

(h) Hemorrhage Associated with Blood Diseases: These cases are fully discussed under the general heading of diseases of the blood. In twenty-three the transfusions were given to check hemorrhage accompanying blood diseases. In eighteen it succeeded, while in five it failed. Four of these failures were in purpura hemorrhagica, and one in a case of melena neonatorum in which the patient was moribund. In four cases of leukemia, not included in the foregoing number, the bleeding was incidental, and transfusion was given not to check hemorrhage but for the underlying blood condition.

(i) Miscellaneous Cases: This group includes four cases and eleven transfusions. One patient had hema-

(a) Secondary Anemia: In one patient the anemia followed malaria; in another (an infant) it was associated with malnutrition. Both patients responded promptly, and made a perfect recovery.

(b) Pernicious Anemia: Twenty-three transfusions were performed in fifteen cases of pernicious anemia. The lives of five were saved as a direct result of the transfusions; five patients were greatly improved; the remaining five died within a comparatively short time. Some of these cases could not be followed sufficiently long to pass judgment on the length of time for which the patients were benefited. As a result of repeated transfusion, two have done well for a period of about two years, and another for a period of eight months. A fourth died after a remission lasting six months.

The results of transfusion in pernicious anemia are superior to those achieved by any other mode of therapy. Frequently it acts as a life-saving measure by initiating the onset of a remission. There is no evidence, however, to show that the disease can be permanently cured in this way. Nevertheless, by repeated transfusions, remissions can be effected and the lives of some patients made useful for years. In such cases, if possible, the same donor should successively be employed. The amount of blood does

not seem to be the determining cause of a remission. Small amounts have as often been of value as large amounts. When transfusion is successful, the marked increase in strength and appetite is very striking. It will relieve the anemia and the symptoms secondary to it—dyspnea, palpitation, mental symptoms, etc. In no instance did it lead to the secretion of hydrochloric acid by the stomach.

If transfusion is repeated because the first one failed

to bring on a remission, different donors should be employed until, if possible, the desired effect is achieved. In such cases, subsequent transfusion should be resorted to, however, before all that has been gained by the previous one has been lost. In certain cases, even this procedure is of no avail.

(c) Hemophilia: Eight transfusions were performed in seven cases of hemophilia. All the patients recovered. Five transfusions were life-saving measures. The bleeding was controlled by one transfusion in all but one case. This child, who was bleeding from a lacerated wound of the tongue, received an unmodified blood transfusion which controlled the hemorrhage for four days. A transfusion of citrated blood was then given, but did not control the bleeding. Within a week, two whole blood transfusions were performed, and these checked the hemorrhage. Two of our patients returned months later because of fresh hemorrhages.

Transfusion does not permanently cure the disease hemophilia. It is, however, practically a specific for the bleeding of hemophilia. It will succeed when other measures fail. Five of the patients were treated unsuccessfully with thromboplastin (Squibb), coagulen (Ciba), epinephrin, astringent solutions, citrated blood, subcutaneous injections of whole blood, and iodoform gauze packing. In four of the cases thus treated,

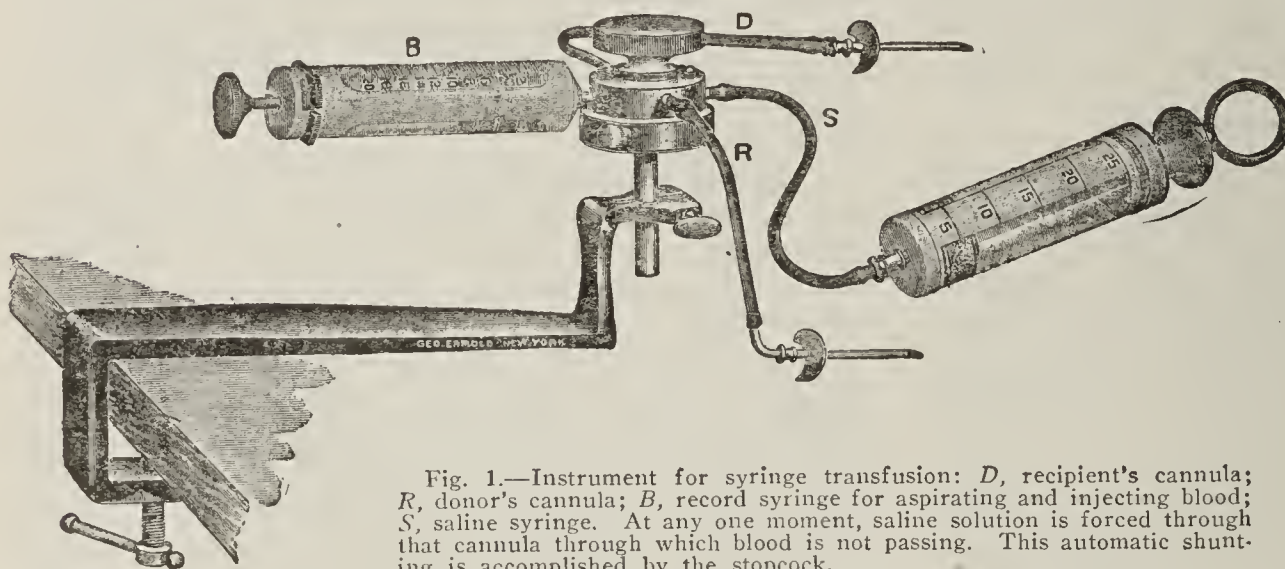


Fig. 1.—Instrument for syringe transfusion: D, recipient's cannula; R, donor's cannula; B, record syringe for aspirating and injecting blood; S, saline syringe. At any one moment, saline solution is forced through that cannula through which blood is not passing. This automatic shunting is accomplished by the stopcock.

temeses of unknown origin. Neither an operation nor a subsequent necropsy cleared up the diagnosis. Two had intestinal hemorrhage of unknown etiology. The fourth bled from multiple hereditary telangiectases. Some of these transfusions were life saving in character. In all, bleeding ultimately recurred, and repeated transfusions were necessary.

Summary: Sixty-two transfusions were done in forty-seven cases of hemorrhage. Twenty-four patients had acute or chronic hemorrhage. Nineteen, or 79 per cent., of these, recovered—twelve because of transfusion alone, seven as a result of transfusion and operation. In the latter cases the surgeon was unwilling to attempt any operative measures without a preliminary transfusion. In fifteen, or 62 per cent., the transfusion was a life-saving procedure.

Eighteen of the twenty-three patients with hemorrhage associated with blood diseases recovered. In fifteen, or 65 per cent., transfusion was a life-saving measure.

2. Diseases of the Blood.—The clinical conditions were: (a) secondary anemia; (b) pernicious anemia; (c) hemophilia; (d) purpura hemorrhagica; (e) leukemia; (f) bleeding of the new-born, and (g) miscellaneous (Banti's disease, von Jaksch's anemia and Henoch's purpura).

bleeding was stopped by one unmodified blood transfusion, while in one case two transfusions were required. In this connection it must, however, be remembered that transfusion is resorted to only in cases in which other measures have failed. Valuable time should not be wasted in attempts to control bleed-

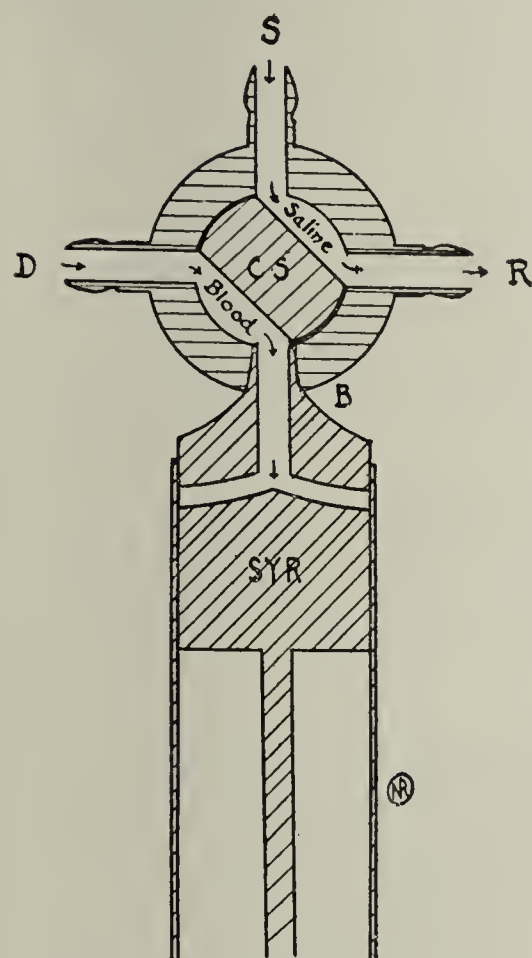


Fig. 2.—Donor's position: *D*, donor's outlet; *B*, blood outlet; *SYR*, blood syringe. Blood passes from donor's vein through *D*, and out at *B* into *SYR*. *S*, saline outlet; *R*, recipient's outlet. Saline solution is forced from saline syringe through *S*, out at *R*, into recipient's vein. *C S*, central stopper (rotates through an arc of 90 degrees).

cent. Eight months later when his nose again began to bleed, it was immediately packed with gauze soaked in thromboplastin and a transfusion at once performed. The hemorrhage was controlled before there was any great loss of blood.

(*d*) Purpura Hemorrhagica: Purpura hemorrhagica is a condition that one would expect to be favorably influenced by blood transfusion. The results of the six cases in this series were not, however, as good as we should hope for. In two of the cases the bleeding was controlled, in one it was not at all affected (epistaxis), and in three death ensued.

In the three fatal cases, the patients were in extremely poor condition and had the severest manifestations of purpura. All three had numerous petechiae, purpuric spots, hematomas and active bleeding, such as from the gums, nose, kidney and vagina. They all showed typical findings of purpura hemorrhagica—a secondary anemia, diminished blood platelet count, positive capillary resistance test, normal coagulation time, prolonged bleeding time, and positive puncture test. In one case the bleeding time was more than an hour; at this point the test was discontinued and the bleeding had to be controlled by pressure.

The paradoxical finding in purpura of a diminished platelet count with a normal coagulation time has recently been shown by Dr. Alfred F. Hess to be only apparent.² As a matter of fact, purpuric blood actually

has a normal amount of blood platelet material. This material exists in two forms—the visible platelets, and platelets that are in solution in the plasma. He believes that purpura hemorrhagica is caused by a toxin which not only dissolves blood platelets but may also injure the blood vessel walls, bringing about the other manifestations of the disease. Since in certain hemolytic diseases the toxin is thought to be associated with the spleen, he has suggested that in purpura, after preliminary transfusion, splenectomy be performed. This suggestion gains added force when we remember that following splenectomy there is an increase in blood platelets. In view of the marked fatality of some forms of this disease and the rather discouraging result from transfusion alone, or any other form of therapy in this type, this suggestion ought to be given a trial.

A child, aged 4 years, was known from his family history to be a hemophiliac. For a period of eleven days prior to being admitted to Dr. Koplik's service at Mount Sinai Hospital, packing with various astringent solutions and also coagulen were used to check bleeding from the nose. By this time the hemoglobin was 25 per cent., and the patient was in such a desperate condition that death seemed imminent. A transfusion of 400 c.c. of whole blood immediately checked the hemorrhage, and raised the hemoglobin to 50 per

cent. Eight months later when his nose again began to bleed, it was immediately packed with gauze soaked in thromboplastin and a transfusion at once performed. The hemorrhage was controlled before there was any great loss of blood.

(*e*) Leukemia: In six cases of acute lymphatic leukemia, thirteen transfusions were performed. Three cases were practically counterparts of one another, and occurred in adults. These patients were bleeding from a mucous membrane, and had petechial and purpuric spots, fever, marked secondary anemia, a typical leukemic white count, and negative blood cultures. One had enlarged glands, and two an enlarged spleen. The transfusions in all these cases raised the hemoglobin; increased the number of red blood cells; diminished the number of white cells, leaving the differential count practically unchanged; lowered the temperature; improved the general condition, and stopped the hemorrhages. But in all three, relapse soon occurred, bleeding recommenced, and the result was fatal.

One of these patients, who came from Dr. Alfred Meyer's service at Mount Sinai Hospital, was given a "substitutive transfusion." A phlebotomy of 500 c.c. was immediately followed by a transfusion of 1,000 c.c. A second phlebotomy of 600 c.c. was followed by a second transfusion of 1,000 c.c. from another donor. The benefit lasted for six days, when he became rapidly worse and died.

The other three cases were in children with subleukemic leukemia. These patients had fever, a profound anemia with a normal or diminished total number of leukocytes, but a high

percentage of lymphocytes. In one patient an attempt was made to influence the course of the disease by repeated transfusions. After each of eight transfusions, his general condition and anemia were

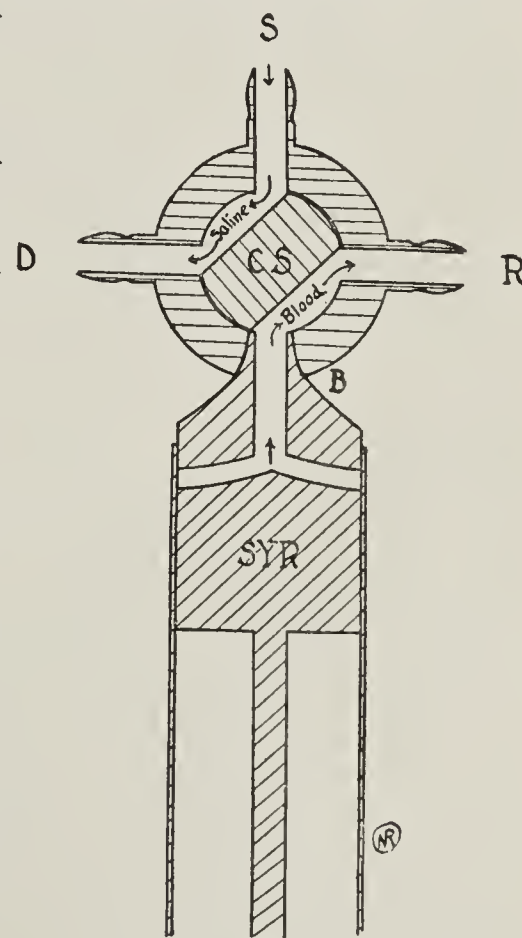


Fig. 3.—Recipient's position; *SYR*, blood syringe; *B*, blood outlet; *R*, recipient's outlet. Blood is forced out of *SYR* through *B*, out at *R*, into recipient's vein. *S*, saline outlet; *D*, donor's outlet. Saline solution is forced from saline syringe through *S* out at *D* into donor's vein. *C S*, central stopper.

improved. Soon, however, it became evident that no permanent impression on the disease was being made, but that it was merely being prolonged. I wish to emphasize the fact that one other patient was seen early in the disease, before the diagnosis of leukemia was made. The transfusions were given to overcome marked anemia. Although repeated transfusions sustained the hemoglobin, the white count became typical of leukemia. It is evident, therefore, that in acute lymphatic leukemia only a temporarily favorable

TABLE 1.—RESULTS OF TRANSFUSION FOR HEMORRHAGE

| Indication | Number of Transfusions | Number of Cases | Recoveries (Hemorrhage Checked) | | Deaths | |
|-------------------------------------|------------------------|-----------------|---------------------------------|-------------------|-----------------------|----------------|
| | | | Prognosis Bad; Life Saved | Prognosis Not Bad | Temporary Improvement | No Improvement |
| Gastric ulcer..... | 7 | 5 | 3 | 0 | 1 | 1 |
| Typhoid fever..... | 3 | 2 | 1 | 0 | 0 | 1 |
| Postoperative hemorrhage | 4 | 4 | 4 | 0 | 0 | 0 |
| Ulcerative colitis..... | 6 | 3 | 0 | 3 | 0 | 0 |
| Hemorrhage with blood diseases..... | 24 | 23 | 15 | 3 | 2 | 3* |
| Ectopic gestation..... | 3 | 3 | 3 | 0 | 0 | 0 |
| Uterine hemorrhage..... | 4 | 3 | 2 | 1 | 0 | 0 |
| Miscellaneous cases..... | 11 | 4 | 2 | 0 | 1 | 1 |
| | 62 | 47 | 30 | 7 | 4 | 6 |

* One of these patients is still alive, but the transfusion did not entirely check the hemorrhage.

effect can be secured by transfusion, even though we withdraw a large amount of blood by phlebotomy and make use of a massive transfusion from two donors, or employ repeated transfusions, in spite of carrying out such transfusions very early in the disease.

(f) Bleeding of the New-Born: In nine of the ten cases of this kind of bleeding, transfusion proved a life-saving measure. The one patient who died was moribund when the transfusion was started. In bleeding of the new-born, transfusion is a specific. An almost exsanguinated infant, too weak to cry and in a dying state, is immediately transformed into an apparently healthy, rosy and crying baby. As in hemophilia, it will save the lives of those who are not helped by subcutaneous injections of serum or blood. Temporizing by using less effective measures may cost the baby's life. This is especially true in cases of melena neonatorum, which are the most serious because we do not know just when the hemorrhage began or how much internal hemorrhage is taking place. Just as soon as the diagnosis of bleeding from the stomach or bowel of the new-born is made, transfusion should be performed. In cases of melena it is well to remember that because of the blood in the intestine, the stools may be tarry for one or two days after the transfusion, although the hemorrhage has stopped.

In one case the bleeding followed circumcision, and another patient bled from the cord. Eight bled from the bowel in addition to other hemorrhages from such sources as the stomach, kidney, vagina, hard palate or skin. The ages of the patients with melena varied from 32 hours to 6 days. The amount transfused varied from 80 to 150 c.c. No untoward reaction followed any of these transfusions. In every case the median basilic vein was used for the introduction of the blood. An incision from one-fourth to three-eighths inch long directly over the vein is sufficient even in the youngest child. The superior longitudinal sinus was not selected because of possible dangers asso-

ciated with its use, and because the median basilic vein affords a comparatively simple approach. If the inferior wall of the superior longitudinal sinus is accidentally perforated, there is real danger of injecting blood on the brain or of active hemorrhage occurring, especially as these patients have a hemorrhagic tendency. Using this route for aspirating blood for examination (syphilis, bacteremia) is quite another matter, particularly in nonhemorrhagic cases.

(g) Miscellaneous Cases: There were four cases of Banti's disease. All of these patients died. There was one patient with von Jaksch's anemia who was greatly improved after the transfusion, but whose ultimate welfare could not be followed, and one with Henoch's purpura, whose symptoms were relieved by transfusion.

Summary: In pernicious anemia, transfusion is of value and to be recommended, but can be expected to produce remissions in only about half of the cases. In hemophilia it can be relied on to stop the hemorrhage, but in no way to affect the course of the disease. In purpura it is much less reliable; in fact, recovery followed in only two of our six patients. In acute leukemia it is of but temporary benefit. In bleeding of the new-born it is a specific and essentially a life-saving measure.

3. *Toxemia*.—Transfusions have long been employed in a limited number of types of toxemia. It is in this group that we ought to enlarge the indications, especially in toxemias associated with acute infections, such as pneumonia and typhoid fever. A remarkable and unexpected result of transfusion in a case of toxemia of pregnancy ought to be followed by further attempts at combating this disease in this way. Transfusions were done for toxemias associated with: (a) pneumonia; (b) pyogenic infections; (c) coal gas poisoning; (d) morphin poisoning; (e) uremia; (f) scurvy, and (g) toxemia of pregnancy.

(a) Pneumonia: Four children with bronchopneumonia were transfused because of extreme toxemia. They were all in very poor condition at the time, but responded favorably and progressed to recovery.

TABLE 2.—RESULTS OF TRANSFUSION FOR BLOOD DISEASES

| Indication | Number of Transfusions | Number of Cases | Recoveries | | Deaths | |
|---------------------------|------------------------|-----------------|---------------------------|-------------------|-----------------------|----------------|
| | | | Bad Prognosis; Life Saved | Prognosis Not Bad | Temporary Improvement | No Improvement |
| Secondary anemia..... | 2 | 2 | 1 | 1 | 0 | 0 |
| Pernicious anemia..... | 23 | 15 | 5 | 5 | 4 | 1 |
| Hemophilia..... | 8 | 7 | 5 | 2 | 0 | 0 |
| Purpura hemorrhagica..... | 6 | 6 | 1 | 1 | 2 | 2 |
| Leukemia..... | 13 | 6 | 0 | 1 | 5 | 0 |
| Bleeding of new-born..... | 10 | 10 | 9 | 0 | 0 | 1 |
| Miscellaneous..... | 6 | 6 | 0 | 2 | 4 | 0 |
| Total..... | 68 | 52 | 21 | 12 | 15 | 4 |

(b) Pyogenic Infections with Extreme Toxemia: There were four patients: two had empyema pleurae, one had salpingitis and peritonitis, and one a subphrenic abscess. All were extremely toxic and died following temporary improvement.

(c) Coal Gas Poisoning: In the sole case of coal gas poisoning in this series, the patient had beginning pulmonary edema, and was moribund when seen. In fact, in order to keep him alive until transfusion could be performed, artificial respiration was employed. Although transfusion was preceded by phlebotomy, the result was fatal.

(d) *Morphin Poisoning*: Although no case of this type was treated, it is interesting to note that the effects of morphin given previous to some of the transfusions seemed to be lessened immediately thereafter.

(e) *Uremia*: All three patients with uremia were in a hopeless condition. Transfusion was followed by a transitory improvement in the course of the disease. Although this series includes no transfusions for diabetic coma, the results of others have been unsatisfactory.

(f) *Scurvy*: Although many consider this condition a deficiency disease, others believe it is due to a toxin, and therefore it has been included in this group. The one patient had subacute scurvy. Improvement was immediate and marked. A pulse of 180 and respiration of 60 (cardiorespiratory syndrome of Hess) were changed to 120 and 40, respectively. The inability to gain in weight that is characteristic of scurvy was overcome.

(g) *Toxemia of Pregnancy*: The one case of this type, a patient of Dr. Rongy, was deeply jaundiced, comatose and moribund. The toxemia was hepatic in origin. Transfusion was preceded by phlebotomy. The coma soon disappeared, but in spite of the fact that for a time the outcome seemed dubious, she made a complete recovery.

4. *Infections*.—These cases may be divided into two groups: (a) localized pyogenic infections, and (b) bacteremia.

(a) *Localized Pyogenic Infections*: In an effort to increase the patients' vitality and to overcome the infection, five patients with intractable suppurative processes were transfused. Three were greatly improved and went on to recovery. They suffered from pelvic abscess, multiple abscesses of the kidney, and pyarthrosis. All were also given surgical treatment. Two patients died, one of gas bacillus infection of the leg and one of pyelophlebitis. After each of the five transfusions given the latter patient, there was a period of temporary improvement.

(b) *Bacteremia*: Eleven transfusions were given ten patients with bacteremia. There were two cases of infective endocarditis, one of bacteremia following cholecystectomy, and seven of puerperal sepsis. In all there was an improvement of the general condition, and in some a cessation, for a short period, of the chills. The temporary benefit was followed by death. Perhaps, however, the bacteremia could be combated in some instances if immune donors were used in an attempt to establish a passive immunity.

5. *Shock*.—Transfusions were performed in three cases because of shock. Two were postoperative and one traumatic in origin.

One of these patients had been run over by a heavy automobile truck, sustaining a compound fracture of the humerus. As there was a possibility of internal hemorrhage from a ruptured spleen, transfusion and exploratory laparotomy were performed. It was then evident that the signs were those of profound shock and not hemorrhage. The patient made a complete and remarkable recovery. The second patient was transfused immediately after a splenectomy (Dr. Howard Lilienthal), and recovered. In the third case, shock was also postoperative in origin. Here, however, various drugs as well as an intravenous infusion of saline solution were employed before transfusion was resorted to. After a brief rally, the patient died.

It is interesting to note that the two patients who recovered were transfused almost immediately after shock became evident. It is possible that the time element is a deciding factor.

6. *General Debility*.—Transfusion as a supporting measure was employed (a) preliminary to operations, and (b) in debilitating diseases.

(a) *Preliminary to Operations*: There were six patients with carcinoma with such a severe grade of anemia that they were considered poor operative risks. Five had carcinoma of the stomach, and one carcinoma of the head of the pancreas. Four survived the operations, and two died. There is no doubt that transfusion lessened the postoperative mortality.

(b) *Debilitating Conditions*: The patients included in the preceding group suffered from debilitating diseases, but since they were in fair condition, operation was permissible. There were, however, fourteen other similar patients. Six had carcinoma, but were in such desperate straits that operation could not be thought of. They were transfused merely to improve their general condition and prolong their lives. Five were transfused as measures of last resort. All were moribund. The diagnoses were ulcerative colitis, syphilitic stricture of the jejunum, acute insufficiency of the liver, and pemphigus (two cases). Patients with interstitial nephritis, acute parenchymatous nephritis, and cirrhosis of the liver were improved by the transfusion, and were able to leave the hospital.

TECHNIC

All of the 165 transfusions were performed by the method previously reported.¹ This method utilizes the instrument described in the accompanying illustrations. The mechanical principle involved is the establishment of two channels by means of which a record syringe is automatically connected alternately with a vein of the donor and then with one of the recipient. At the same time that the record syringe is connected with the donor for the aspiration of blood, a syringe with saline solution is connected with the recipient, and vice versa. It is this immediate and continued flushing with salt solution of the channel through which blood is not passing that insures freedom from clotting.

The technic is as follows: Alongside the instrument, which has been fixed to a table, the arms of the patient and the donor are placed. The tubes leading from the instrument are connected to the cannulas after the latter have been inserted through the skin into the recipient's and the donor's veins. A record syringe is then inserted into the instrument, and blood is aspirated. When the syringe is filled, the stopcock is turned and the blood is injected. A continuous stream of saline solution is forced in a direction opposite to the flow of blood. This procedure is continued until the desired amount is transfused. By means of a spray, a stream of ether is played on the barrel of the record syringe while it is being filled with and emptied of blood in order to prevent clotting. In this way only one record syringe is required, regardless of the amount transfused.

COMPARISON BETWEEN THE USE OF UNMODIFIED AND MODIFIED BLOOD

One of the points of active interest in connection with transfusion is that of the relative merits of unmodified blood and of blood that has been modified by means of small amounts of sodium citrate. As

is well known, the latter method has recently gained considerable vogue, and, indeed, by some is claimed to render other methods of transfusion unnecessary. This is the view that has been recently stated by Bernheim.³ From my point of view, transfusion of unmodified blood cannot be so lightly set aside. It has been shown recently by Novy⁴ and DeKruif that blood acquires toxic properties in direct proportion to the path it travels toward coagulation. Even though it does not absolutely coagulate, processes take place within it, as soon as it is poured forth from the vessels, that change its nature and render it less suitable as a body fluid. These studies are new and as yet incompletely worked out. They seem to show, however, what *a priori* would seem to be most likely, that from a biologic point of view such a delicate tissue must be altered in the carrying out of a transfusion of citrated blood⁵ because of its considerable sojourn outside the body. From a clinical standpoint, this alteration is also evidenced. Frequently chill and fever and occasionally vomiting follows transfusion of citrated blood, while whole blood is only occasionally followed by fever, and a chill is the exception.⁶ I believe that for diseases in which blood is indicated for itself, that is, when it is required as a tissue, as in the various anemias, there can be no question as to the relative merits of unmodified blood which runs almost from vessel to vessel and of that which has remained for an indefinite length of time outside of the body. The transfusion of unmodified blood is the procedure of choice. It must be admitted, however, that the technic for giving citrated blood is simple, and that therefore in cases of hemorrhage, in which the purpose is not so much to supply normal for pathologic blood as to furnish the impoverished circulation with an adequate supply or to bring about cessation of hemorrhage, citrated blood may serve as a substitute.

SUMMARY OF RESULTS

In all, 165 transfusions were performed on 128 patients. These can be classified according to results as either recoveries or deaths.

1. *Recoveries.*—Seventy-one, or 55 per cent., of the patients recovered. They either had very bad prognoses and their lives were saved, or they had better prognoses and were definitely helped. The lives of forty-four, or 34 per cent., were saved by the transfusion. The vast majority of these had hemorrhages or diseases of the blood.

(a) Cases in Which Life Was Saved:⁷ Bleeding gastric or duodenal ulcer, 3; intestinal hemorrhage in typhoid fever, 1; postoperative hemorrhage, 4; ectopic gestation, 3; uterine hemorrhage, 2; intestinal hemorrhage of unknown origin, 2; profound secondary anemia following malaria, 1; pernicious anemia, 5; hemophilia, 5; purpura hemorrhagica, 1; bleeding of the new-born, 9; toxemia in pneumonia, 4; scurvy, 1; toxemia of pregnancy, 1; shock, 2.

(b) Cases in Which There Was Definite Benefit, but in Which the Transfusion Was Not a Life Saving Procedure: Ulcerative colitis, 3; uterine hemorrhage, 1; profound second-

dary anemia, 1; pernicious anemia, 5; hemophilia, 2; purpura hemorrhagica, 2; acute lymphatic leukemia, 1; von Jaksch's anemia, 1; Henoch's purpura, 1; profound anemia secondary to chronic suppuration, 3; carcinoma of stomach, 4; acute parenchymatous nephritis, 1; chronic interstitial nephritis, 1; hepatic cirrhosis, 1.

2. *Deaths.*—In eight patients there was no improvement, although from the nature of the disease a good result might have been expected. The deaths of the others were due to the underlying disease. Some were in such a condition that although little was expected of the transfusion, it was done as a measure of last resort. In the others, death was preceded by temporary improvement.

(a) Cases in Which a Good Result Might Have Been Expected: Bleeding gastric ulcer, 1; intestinal hemorrhage from typhoid fever, 1; hemorrhage from multiple hereditary telangiectases, 1; pernicious anemia, 1; purpura hemorrhagica, 2; bleeding of the new-born, 1; shock, 1.

(b) Cases in Which Death Was Due to the Underlying Disease: Gastric ulcer (the patient died following an extensive operation), 1; hematemesis of unknown etiology, 1; pernicious anemia, 4; purpura hemorrhagica, 1; acute leukemia, 5; Banti's disease, 4; empyema of the thorax, 2; acute salpingitis, 1; subphrenic abscess, 1; uremia, 3; coal gas poisoning, 1; pyelophlebitis, 1; gas bacillus infection, 1; infective endocarditis, 2; bacteremia following cholecystectomy, 1; puerperal sepsis, 7; carcinoma of stomach, 5; carcinoma of colon, 2; carcinoma of the head of the pancreas, 1; ulcerative colitis, 1; pemphigus, 2; syphilitic stricture of the jejunum, 1; acute hepatic insufficiency, 1.

TABLE 3.—SUMMARY OF RESULTS OF TRANSFUSION

| Indication | Number of Transfusions | Number of Cases | Recoveries | | Deaths | |
|-----------------------|------------------------|-----------------|---------------------------|-------------------|-----------------------|----------------|
| | | | Bad Prognosis; Life Saved | Prognosis Not Bad | Temporary Improvement | No Improvement |
| Hemorrhage..... | 38 | 24 | 15 | 4 | 2 | 3 |
| Blood diseases..... | 68 | 52 | 21 | 12 | 15 | 4* |
| Toxemias..... | 14 | 14 | 6 | 0 | 8 | 0 |
| Infections..... | 20 | 15 | 0 | 3 | 12 | 0 |
| Shock..... | 3 | 3 | 2 | 0 | 0 | 1 |
| General debility..... | 22 | 20 | 0 | 7 | 13 | 0 |
| Total..... | 165 | 128 | 44 | 26 | 50 | 8 |

* Although one of these patients did not die, the case is grouped here because little improvement followed transfusion.

CONCLUSIONS

1. The best results of transfusion were obtained in hemorrhage, diseases of the blood, toxemias and shock. In 88 per cent. of the cases of acute hemorrhage, bleeding was stopped by one transfusion. In pernicious anemia, remissions can be initiated. Repeated transfusions frequently bring on repeated remissions. If no remission results, transfusion with a different donor should be performed. For the hemorrhage of hemophilia, transfusion is practically a specific. It is dangerous to delay too long with palliative measures if active bleeding is present. In purpura, transfusion gives only moderately good results. In the severe cases, it would seem advisable to carry out the suggestion of splenectomy with preliminary transfusions. All attempts to influence acute leukemia failed. In bleeding of the new-born, transfusion is a specific. Especially in cases of melena, temporizing by using other methods is contraindicated. The median basilic vein can be used regardless of the baby's age, and is the route of choice.

3. Bernheim, B. M.: Sodium Citrate Blood Transfusion: A Comparison, *THE JOURNAL A. M. A.*, Aug. 4, 1917, p. 359.

4. Novy, F. G., and DeKruif, P. H.: Anaphylatoxin and Anaphylaxis, *THE JOURNAL A. M. A.*, May 26, 1917, p. 1524.

5. Lewisohn, Richard: Med. Rec., New York, Jan. 23, 1915. Weil, Richard: Sodium Citrate in the Transfusion of Blood, *THE JOURNAL A. M. A.*, Jan. 30, 1915, p. 425.

6. Of all the patients in this series, eleven had febrile reactions and two had chills. In two other cases, reactions were anaphylactic in nature, while in still another in which tests had been omitted it was due to hemolysis. Reference may also be made to Libman and Ottenberg: *Am. Jour. Med. Sc.*, 1915, 150, 36.

7. The figures refer to the number of patients treated by transfusion.

Transfusion, although employed in a comparatively small number of cases, has yielded encouraging results in toxemia associated with acute infections (e. g., pneumonia), toxemia of pregnancy, scurvy and shock. It seems to overcome shock if employed at the onset of the symptoms.

2. Transfusion is often of assistance in overcoming intractable suppurative processes and causing a marked increase in the vitality of the patient. In bacteremias, it has had practically no success. It is possible, however, that if immune donors were used the results might be better. Transfusion given preliminary to an operation will often so improve the patient's condition that the surgeon is justified in risking an operation. It will prolong the life of a patient suffering with a debilitating condition.

3. The syringe cannula method (requiring only one syringe) has proved a simple, efficient and dependable one for giving whole unmodified blood. The giving of unmodified blood is the method of choice when blood is required as a tissue (as in various anemias). When it is required to replenish impoverished circulation, citrated blood can serve as a substitute.

162 West Eighty-Fifth Street.

THE BIOLOGIC CLASSIFICATION IN PNEUMOCOCCIC INFECTIONS *

C. C. HARTMAN, M.D.

AND

G. R. LACY, M.D.

PITTSBURGH

This report is a summary of our results in classifying pneumococci according to their biologic differences. The material was obtained from patients admitted to the Allegheny General Hospital and from patients in Pittsburgh and its suburbs. The technic used was identical with that developed at the Rockefeller Institute and reported by Dochez and Gillespie,¹ Cole,² Avery³ and others. The pneumococci were isolated from the sputum. In many instances, blood cultures were also taken and, when other conditions were present or developed later, such as meningitis, empyema, lung abscess, acute otitis media and mastoiditis, cultures were taken from them. In several necropsies in which pneumonia was encountered, cultures were taken from the lung, the heart's blood and the obvious accompanying lesions. The purpose of these various cultures was to determine whether the cultures of pneumococci from various lesions in the body corresponded in regard to their biologic classification.

Five of the patients suffering from pneumonia of Group I were treated with the corresponding antiserum. Treatment was instituted late in four cases; one of these patients recovered. Two of the patients developed a meningitis and received the antiserum both intravenously and intrathecally. Blood cultures taken twenty-four hours after the administration of the serum were positive three times in one patient and twice in the other. Cultures of the spinal fluid after the administration of

the serum were also positive. The other recovery occurred in a laboratory worker accidentally infected while working with a very virulent organism of Group I. The onset was violent; and despite a rather hopeless outlook, the disease yielded in a decisive and gratifying manner to the early administration of the antiserum.

The accompanying table shows the number of patients studied (including the subjects of twelve necropsies), the incidence of the various groups of pneumococci, the mortality, etc. Those included in the group of "unclassified, streptococcus, etc." are those in whom the pneumococcus was not obtained or identified, or those in whom the culture proved to be streptococci.

INCIDENCE AND MORTALITY OF PNEUMOCOCCI

| Groups | Incidence | | Number of Deaths | Mortality, per Cent. | Remarks |
|--|-----------|-----------|------------------|----------------------|---|
| | Number | Per Cent. | | | |
| I | 41 | 41.4 | 15 | 36.5 | 5 treated with serum (3D-2R). 3 Subgroup II 2 mastoid — recovered |
| II | 29 | 29.3 | 10 | 34.5 | |
| III | 6 | 6.0 | 4 | 66.6 | |
| IV | 28 | 23.2 | 6 | 26.0 | |
| Unclassified, streptococcus, etc. | 13 | .... | 3 | 23.0 | |
| Total..... | 112 | | | | |
| Total without unclassified.. | 99 | .... | 35 | 35.3 | |

The incidence of the various groups of pneumococci apparently agrees quite closely with that found elsewhere (Cole²). There is some variation in the mortality, that in Group IV being high, but it is not great enough to preclude being evened up in a larger series.

Of ten blood cultures taken from those suffering from Group I infections, nine were positive. Of six taken in Group II, two were positive. The one taken in Group III was positive, and the three taken in Group IV were negative. Out of the nine Group I patients yielding positive blood cultures, six died, a mortality of 66.6 per cent. Three were treated with antiserum, one of whom recovered. In two patients of Group II yielding positive blood cultures, one died, and in four yielding negative cultures, three died. The one Group III patient yielding a positive blood culture died. Of the three in Group IV yielding negative cultures, one died. Of the twelve patients in all groups yielding positive blood cultures, eight died, a mortality of 66.6 per cent. Of eight cultures taken from the heart's blood at necropsy, six were positive, three of them belonging to Group I and one to each of the other three groups, and two were negative, belonging to Group II.

Cultures from ten pleural effusions yielded pneumococci classified thus: Group I, four times; Group II, four times, and Group IV, twice. Only one patient, whose infection was due to an organism of Group I, died.

In ten instances of meningitis, seven belonged to Group I, two to Group II, and one to Group IV.

From twenty-one patients, including the subjects of twelve necropsies, cultures were made from two or more sources. In all instances, the cultures of pneumococci thus obtained from each patient belonged to the same group.

* From the William H. Singer Memorial Research Laboratory.

1. Dochez, A. R., and Gillespie, L. J.: A Biologic Classification of Pneumococci by Means of Immunity Reactions, *THE JOURNAL A. M. A.*, Sept. 6, 1913, p. 727.

2. Cole, R. I.: *New York Med. Jour.*, 1915, **101**, 1, 58.

3. Avery, O. T.: *Jour. Exper. Med.*, 1915, **22**, 854.

In the course of our studies we observed a recurrence, or second infection, in two patients. The one had as his first infection a member of Group IV, and the other a member of Group II. In their second attack both suffered from infections belonging to Group I. The one was exposed to an infection with a Group I organism, because on two occasions of several days' duration he had occupied a bed adjacent to a patient suffering from an infection belonging to Group I. As to a similar exposure of the other, we are not certain, though he was in the same ward with patients infected with the other groups of pneumococci. Both recovered from both attacks.

SUMMARY

The foregoing report shows that the incidence of the various groups of pneumococci occurs in a similar ratio to that in the pneumonias elsewhere. The mortality is fairly comparable. When blood cultures are taken, those yielding positive results are more serious, though one would probably obtain many more positive cultures if they were taken daily. It would seem that most of the instances of meningitis are due to organisms of Group I. When numerous cultures are taken from several sources in the patient, these cultures invariably belong to a single group.

A UNIFORM AND GENERALLY APPLICABLE SYSTEM FOR REPORTING SURGICAL END-RESULTS

E. MAC D. STANTON, M.D.

Fellow of the American College of Surgeons

SCHENECTADY, N. Y.

The foundation of future progress in surgery must consist largely of a comprehensive understanding of the successes and failures of the past. In view of the fact that several million operations have been performed in this country alone during recent years, we should now have abundant data about the end-results of operations frequently performed. The lack of available end-result data in many important fields of surgery is little short of amazing.

A few years ago, the medical director of one of the life insurance companies undertook to determine the insurability of persons recovering from the commoner types of surgical kidneys. Out of 100 surgeons consulted, only eight were able to furnish data of any value on the subject, and the medical director was obliged to conclude that very few surgeons could make a definite statement, based on their own work, concerning the ultimate effect of their kidney operations on the comfort and duration of life of their patients.

At the lowest estimate, between 20,000 and 30,000 operations for exophthalmic goiter have been performed in this country during the past ten years. Yet, except for some fragmentary data on the subject of the operative mortality and general trend of the end-results obtained in several clinics in which special skill has been developed in handling these cases, the surgical profession itself is in almost complete ignorance as to the actual results obtained through this large number of operations for exophthalmic goiter. During the same period, there have been several hundred thousand operations on the gallbladder and ducts; yet up to June, 1917, surgeons have had no

really definite data to show the frequency of recurrences after these operations. No one knows the relative proportion of recurrences following cholecystostomy and cholecystectomy, and today the whole question of cholecystostomy versus cholecystectomy is debatable because the data to settle the question have not been collected. As a matter of fact, much of the literature of the past few years has been based on only the most meager and indefinite data. A similar lack of adequate end-result knowledge might be cited in many other fields of surgery.

Several reasons have been assigned for this lack of knowledge, such as the difficulty of keeping track of patients and the time and labor required to ascertain and record the results. My own end-result studies, carried on through a period of ten years, have convinced me that the chief reason for our present-day lack of end-result knowledge is that surgeons have not as yet devised a uniform and satisfactory system of reporting the data they have collected. Surgical literature is full of communications dealing in a general way with the subject of end-results, in which it is evident that authors possess considerable data which they despair of presenting in other than the most general terms.

Some time ago, I found that I had several thousand histories with end-result records extending over fairly adequate periods of time. But whereas these records had been collected with, let us say, one unit of energy on my part, when I came to study any one group of cases, it took several units of time and energy to put the data into form suitable for study and comparison. In some groups, it was quite impossible to classify the results according to the usual standards. Also I found that no two surgeons adopted the same standards in reporting their cases, so that it was impossible to compare small groups from different sources or to combine them into larger series, of greater statistical value.

As a rule, surgeons have attempted to state their end-results in terms such as "cured," "improved," "unimproved" or "dead." The trouble with this system is that in practice it is often quite impossible to assign a given case under any one head. As a typical example of the difficulties encountered, I will cite the following gallbladder case:

A man, aged 45, had typical gallstone attacks for twenty-five years. A cholecystostomy was performed, Nov. 10, 1908. The ducts were free; 1,675 stones were removed from the gallbladder. Seven years after this operation, the patient told me that he had never had a symptom of his old trouble, and felt ten years younger than he did before the operation. Seven years and five months after the operation, however, he again developed gallstone colics accompanied by jaundice which increased in frequency and severity until, eight years and four months after the first operation, he was again operated on and a large stone removed from the common duct.

It is obvious that this case does not fit under the heading "cured" or, for that matter, in any other group. It is also obvious that the only way to state the end-results of the first operation in this case is to use some statistical method which will give the first operation credit for a cure extending over seven years and five months, after which there was no further benefit from this operation. Thus far, this patient's history has been traced eight years and five months, during 88 per cent. of which time he was cured by the original cholecystostomy.

Similar difficulties occur with greater or less frequency in practically all fields of surgery. In cases of exophthalmic goiter it is practically impossible to state the end-results following operations in the terms usually employed by surgeons reporting end-results. Gallbladder and kidney cases are little, if any, better, and gynecologic cases present similar difficulties. When we seek the reason for the difficulties encountered in trying to state end-results in such simple terms as "cured" and "improved," it is evident that these terms are descriptive of the relative postoperative health at a given period of time only, whereas to give a true description of the postoperative health of the patient, extending over a period of months or years, the element of time must be included in the description. It is as illogical to attempt to measure the postoperative life in terms that ignore the time factor as it would be to attempt to measure a plot of ground in terms of one dimension.

All the major difficulties of presenting the end-results disappear if we tabulate the results in terms

hundred cases may be detailed on a page or two of a medical journal. To summarize an entire series of cases, it is only necessary to add the figures and strike the averages, and the results show at a glance the mean postoperative prognosis for the disease in question in the hands of the surgeon making the report.

The wealth of information conveyed by data summarized by this method is often surprising. For instance, a glance at the "years operated" column in the accompanying table reveals the fact that the surgeon reporting these cases did a number of cholecystotomies for noncalculous cholecystitis, but that this operation has not been popular with him in recent years. It also shows that lately he has been doing cholecystectomy in similar cases.

In conclusion, I wish to emphasize the fact that the plan for recording end-results as described in the foregoing is almost universally applicable to the summarizing of surgical end-results. If it were generally adopted by surgeons in reporting their results, then data from diverse sources would become available for

END-RESULTS FOLLOWING GALLBLADDER OPERATIONS

| Diagnosis | Operation | Operations | Years Operated | Average Years Operated | Years Traced | Average Years Traced | Cured | | Improved | | Unimproved | | Deaths | |
|-------------------|-----------------|------------|----------------|------------------------|--------------|----------------------|---------|-----------|----------|-----------|------------|-----------|---------|-----------|
| | | | | | | | Years | Per Cent. | Years | Per Cent. | Years | Per Cent. | Years | Per Cent. |
| Gallstones..... | Cholecystostomy | 42 | 190 1/12 | 4 6/12 | 121 1/12 | 2 9/12 | 87 3/12 | 72 | 23 3/12 | 19 | 7 4/12 | 6 | 3 4/12 | 3 |
| Gallstones..... | Cholecystectomy | 28 | 87 7/12 | 3 | 64 1/12 | 2 4/12 | 46 9/12 | 73 | 10 9/12 | 17 | 1 10/12 | 3 | 4 9/12 | 7 |
| Cholecystitis.... | Cholecystostomy | 13 | 88 2/12 | 6 9/12 | 51 | 3 11/12 | 9 10/12 | 19 | 21 2/12 | 41 | 20 | 40 | 0 | 0 |
| Cholecystitis.... | Cholecystectomy | 14 | 20 11/12 | 1 6/12 | 16 8/12 | 1 2/12 | 10 3/12 | 62 | 3 5/12 | 20 | 3 | 18 | 0 | 0 |
| Common duct.... | ..... | 3 | 5 3/12 | 1 8/12 | 5 1/12 | 1 8/12 | 1 | .. | ..... | .. | ..... | .. | 4 1/12 | ... |
| Totals..... | ..... | 100 | 392 | 3 11/12 | 257 11/12 | 2 7/12 | 58 6/12 | 60 | 58 6/12 | 22.6 | 32 2/12 | 12.4 | 12 2/12 | 5 |

of the periods of time for which the patients' histories have been traced after the operation, together with their state of health for the time periods. By this method, the "cured" column becomes "years cured," and the term "years" is added to the other divisions. It is also of advantage to add the headings "years operated" and "years traced," as illustrated in the accompanying table, which shows the results of tabulating 100 gallbladder cases by this method.

A statistical correction should be made for the cases in which the patients die immediately after operation. As their histories are traced up to the time of death, it would be obviously unfair to give them full time in the "years dead" column. The factor for correction here is the proportion of the total postoperative time for which surgeons have been able to trace their patients. On the assumption that they have been traced 80 per cent. of the total postoperative time, a patient dying at operation five years before is given 80 per cent. of this time, or four years, in the "years dead" column.

The advantages of this system of recording end-results are quite obvious. No matter how complicated the postoperative history, it may be readily subdivided and classified into the appropriate periods. It is not necessary for the surgeon to trace each case to the time of reporting his results. If he has lost track of his patients soon after operation, this fact is clearly shown by his figures, and the value of the data may be judged accordingly. Long series of cases may be reported individually, by the use of only a line to a case, so that the postoperative histories of several

the compilation of long series of cases and for the numerous comparative studies which are necessary if we are to determine the real factors making for success or failure in our work.

Illuminating Company Building.

Production of Vegetable Oils.—The war has made the production of all sorts of fats and oils highly important. Consul Charles L. Hoover at Sao Paulo, Brazil, in *Commerce Reports*, November 21, reports on the development of the vegetable oil industry in his district. Although a great deal of cotton has been raised in the state, until recently no cottonseed oil was produced, all of it used being imported from the United States. The manufacture of the oil has now begun, however, and several factories are in operation, oil of the highest quality being produced. Whereas in 1913 over 2 million pounds of oil was imported, in 1917 only two small shipments were brought in and the exports considerably exceeded the imports. Castor oil is another oil that is now being produced in that state. The castor bean grows wild and has been regarded as something of a pest, as it is hard to eradicate. Modern machinery is being bought in the United States for producing the oil in larger quantities. Linseed oil has heretofore been imported almost exclusively from England and Argentina. Preparations are now being made to produce this oil from the flaxseed, which is being extensively grown. Peanuts are also now being given attention as a source of oil. Several varieties of nuts found in the district are available for their oil. Among these are the cashew nut, the ucuba, which is said to be 60 per cent. vegetable tallow, and the babasu, which also contains 60 per cent. of oil. The babasu nut, it is said, will burn for half an hour if a match is touched to it. Its kernel is like copra, and it is excellent for soap making.

AN UNUSUAL CASE OF ACUTE
MYELOGENOUS LEUKEMIA

H. THEODORE SIMON, M.D.

AND

MAURICE S. ROSENTHAL, M.D.

NEW ORLEANS

The acute types of leukemias are often difficult or impossible of diagnosis. The descriptions of clinical and postmortem findings in acute myelogenous leukemia especially are so rare in the available literature that it was thought for a while that this type did not exist as a pathologic entity. As the case in question was diagnosed definitely only at the postmortem, we have considered the clinical progress of this disease worthy of record.

REPORT OF CASE

History.—Mrs. J. R. H., aged 35, white, domestic, was admitted to the service of Dr. B. A. Ledbetter, Oct. 8, 1916, complaining of "sore mouth and general weakness." There was nothing of significance in the family history. The patient had measles and whooping cough in childhood and typhoid fever one year before admission. She was married and had two children, both living and apparently well. She strenuously denied miscarriages, syphilis and leukorrhea. Until four months before, the patient had been in perfect health, doing housework and suffering no discomforts. About that time she first noticed that her gums were sore and swollen. She went to a dentist and had several teeth extracted. The gums seemed to heal, only again to become inflamed in a few weeks. Since then she had been gradually getting weaker, until a few days prior to admission, when she did not have sufficient strength to leave the bed. A loss of 15 or more pounds in the last month was noted. Her appetite was poor, and her bowels fairly regular. No vomiting nor expectoration of blood occurred. There was no rise in temperature and no pain, except from the teeth, and no cough.

Physical Examination.—The patient was poorly nourished and markedly anemic. The skin was of a sallow tint, dry and inelastic. The glands of the neck were enlarged. The teeth were badly kept, sordes was present, and there was marked pyorrhea. The teeth were loose and decayed, and several were missing. The tongue was dry and coated, and the mucous membranes were markedly anemic. The throat, nose, ears and heart were negative. The lungs showed a roughened breathing at each apex, but neither râles nor dulness. The abdomen was flaccid and relaxed. A large cicatricial scar from an old burn was noticed to the right of the umbilicus. The liver was not palpable. The spleen was much enlarged, extending to the midline and nearly as low as the umbilicus, and was rather hard and firm with a fairly sharp edge. The vaginal and rectal examination revealed nothing abnormal. The extremities and reflexes were negative.

Laboratory Reports.—There was a total leukocyte count of 83,330 per cubic millimeter, and a total erythrocyte count of 2,400,000 per cubic millimeter, with a hemoglobin of 30 per cent., making a color index of 0.62. Examination of the urine revealed a trace of albumin, but sugar, indican and acetone were not present. Microscopically, many fine and coarse granular casts, and a few pus cells were found. Both the original Wassermann test and the modifications were negative. Smears from the teeth revealed the *Endamoeba buccalis* in large numbers. A roentgenogram of the chest revealed very dense glands at the lung roots, with slight infiltration of both upper lobes.

Differential Blood Count: On examining a Wright stained blood smear, we were unable to agree on the type of mononuclear cell predominating. Some of the cells resembled myelocytes and others large lymphocytes. The cell in question was about the size of a myelocyte, but it had a nucleus that nearly filled its entirety, and showed only slight tendency to transition forms, and practically none of polymorphonucleation. The cytoplasm of these cells was finely granular with

a marked tendency to basophilic stain. Slides were submitted to such pathologists and hematologists as Drs. Bass, Couret, Duval, Johns, Langford and Weis. The reports were about equally divided between a diagnosis of myelogenous and acute lymphatic leukemia. By a personal letter dated October 16, to Dr. J. D. Weis, Dr. Richard C. Cabot of Boston reported as follows:

"I think the cells in your slides of blood are large lymphocytes. I do not think that they represent the older stem cells, ancestors of red cells and white cells alike, though, as you know, one often gets these stem cells in leukemia. Neither do I believe that they represent neutrophilic myelocytes of the bone marrow series. I think they are the ordinary large lymphocytes of normal blood. I believe the case is one of so-called lymphoid leukemia, without much of any anemia, apparently."

Treatment.—This consisted of stimulation with strychnin, brandy, digitalis and forced nourishment. The patient rapidly became weaker and had a temperature ranging from 99 to 100 F. October 20 (the eleventh day in the ward), we noticed that there was an enlargement of the entire superficial gland chains over the entire body, the individual glands being the size of split peas. October 22, the patient voided and defecated involuntarily and refused all nourishment, and at 4:35 a. m., October 23 (the fifteenth day after admission to the ward), the patient died.

BLOOD FINDINGS

| Date | Total Erythrocytic Count | Hemoglobin | Color Index | Total Leukocyte Count | Differential White Cell Blood Count (500 Count) | | | | |
|---------------|--------------------------|------------|-------------|-----------------------|---|-------------------------------|-------------|-------------|-------------------------|
| | | | | | Polymorphonuclear Neutrophils | Polymorphonuclear Eosinophils | Lymphocytes | Myeloblasts | Transitional Myelocytes |
| Oct. 9, 1916 | 2,400,000 | 30 | 0.62 | 83,330 | 7.8 | 1 | 5.2 | 78.8 | 7.2 |
| Oct. 14, 1916 | ..... | .. | .... | 217,707 | 9.4 | 0.8 | 3.6 | 75 | 11.2 |
| Oct. 17, 1916 | ..... | .. | .... | 312,000 | 4 | .. | 2 | 84.8 | 9.2 |
| Oct. 20, 1916 | 1,984,000 | .. | .... | 487,000 | 8 | 1 | 5.2 | 71.2 | 14.6 |
| Oct. 22, 1916 | 1,890,000 | 25 | 0.67 | 716,600 | 5.8 | 1.2 | 8 | 62 | 23 |

Necropsy Report.—The necropsy was held by Dr. C. W. Duval, Oct. 24, 1916, twenty-nine hours postmortem.

Body: The skin was of a light lemon yellow hue, especially marked on the face and neck. The anterior surface from the chin to the pubes was thickly studded with pin point and larger subcutaneous hemorrhages (petechiae). These punctate hemorrhages were most marked over the abdomen, and were bluish black on the abdomen, but of a purple hue in other locations. The superficial lymph nodes in the inguinal, axillary and cervical regions were enlarged and freely movable.

Peritoneal Cavity: The omentum was peppered with large and punctate hemorrhages. The serous covering of the viscera contained numerous petechiae, and the mesentery, more especially that of the small intestine, was diffusely hemorrhagic. There was, however, no free blood in the peritoneal cavity.

Heart: Four warty excrescences were noted on the mitral valve, the larger being approximately the size of a small almond. One of these excrescences in particular had a roughened outer surface, and in places it would appear as though bits had previously broken off.

Lungs: Both organs were voluminous and crepitant throughout.

Spleen: At the upper and lower poles, there were to be seen nodular masses that pushed out far above the general diameter of the spleen. On section, these nodules were found to be well defined areas of infarction (anemic variety). The smaller areas of infarction were surrounded by a well defined zone of hemorrhage. The spleen itself, on section, was coarsely granular and opaque (pyoid), and its surface was grayish red.

Liver: This organ was enlarged, and scattered throughout the parenchyma were numerous opaque nodules embedded in the substance, not sharply defined, and measuring from 2 to 5 cm. in diameter (myeloid tissue).

Pancreas: This organ was firm, distinctly lobulated, and of a lemon yellow color.

Gastro-Intestinal Tract: Throughout the entire tract the mucosa was diffusely hemorrhagic. There was, however, no free blood in the lumen. The mucosa of the ileum was dark slate gray, while the mucosa of the other portions of the small intestine was light purplish red. The lymph follicles of the intestine were somewhat enlarged.

Kidney and Bladder: The kidneys were of enormous size and pale. On section, their normal markings were poorly defined. The mucosa of the bladder revealed numerous punctate hemorrhages.

Spinal Cord: The meninges contained punctate hemorrhages.

Bone Marrow: This was taken from the middle of the femur, and it was of a chocolate brown color.

Diagnosis.—1. Anatomic: (a) acute myeloid leukemia; (b) acute ulcerative endocarditis, and (c) infarcts of the spleen.

2. Microscopic: (a) chronic interstitial and parenchymatous nephritis; (b) bronchopneumonia, and (c) typical myelogenous leukemia.

COMMENT

There could be no doubt that the diagnosis of a leukemia was correct, and with the short duration and markedly increased white cell count of 716,000 in fifteen days, a leukemia of the most acute or malignant type. At first, with such a total blood count, enlarged mediastinal glands and disputed differential blood picture, one was inclined to make a diagnosis of the lymphatic variety. Later, with the marked increase in the total white cells and the appearance of many transitional types of myelocytes, one was disposed to favor myelogenous leukemia; but the diagnosis was established definitely only by the bone marrow findings.

WEBER'S SYNDROME

WITH REPORT OF A CASE *

G. B. HASSIN, M.D.

Attending Neurologist, Cook County Hospital

CHICAGO

Weber's syndrome means, clinically, a complete or partial paralysis of the oculomotor nerve combined with a contralateral hemiplegia. Pathologically, it signifies some lesion of one of the cerebral peduncles (the crus cerebri). The practical value of this syndrome lies in the possibility of precisely locating a brain lesion, since the presence of Weber's syndrome is a sure evidence of involvement of a portion of the brain—the peduncular region—that so far has been absolutely inaccessible to operative interference.

Weber's syndrome will be complete and pronounced when that part of the peduncle is involved which is adjacent to the oculomotor nerve, that is, the inner portion. Otherwise, the oculomotor nerve may be spared, and then, in spite of the presence of a peduncular lesion, the syndrome will be lacking and will have no value as a sign of localization. Cases of this type have been reported by Andral, and by Pepper and Packard. As a rule, however, the peduncular lesion results in both oculomotor and pyramidal

tract involvement. It was described long before Weber's day. Thus, Mohr minutely reports this syndrome twenty-three years before Weber, and Green mentions it eleven years before Weber. In 1859, that is to say, four years before Weber's paper was published, Gubler, in speaking of paralysis alternans, describes a case of Luton in which a hemiplegia of the left side was associated with a right third nerve paralysis, as the result of a softening of the right cerebral peduncle. Yet none of these authors give so precise and complete a description as Weber, who in 1863 pointed out the anatomic, clinical and pathologic characteristics of a peduncular lesion, which Charcot in 1891 proposed to call the Weber syndrome. Weber's contribution was followed by a number of reports, some of which were purely clinical. In other words, they had not been substantiated by necropsies, as in Jelliffe's three cases and Zosin's case. Some of these reports represented a somewhat modified clinical picture.

To the modified type of Weber's syndrome belongs the so-called Benedikt syndrome in which the paralyzed side shows a tremor resembling that of paralysis agitans, chorea or athetosis and in which the lesion was found to be not so extensive in the peduncles as in the so-called tegmentum, the region above the latter (Canfield and Putnam, Mendel, Block and Marinisco, Charcot and Gilles de la Tourette, d'Astros, and Gierlich and Hirsch).

The study of the few pathologic reports pertaining to Weber's syndrome shows that this can be caused by softening (Mayor, Oyon, d'Astros), hemorrhages (Weber, Rickards, Leteinturier, Leube), posthemorrhagic cysts (Andral), tumors, as tubercles (Mohr, Green, Bouveret and Chapotot, Greiwe), gliomas (Sutton, Rosenthal, Pepper and Packard), sarcomas (Beck), new growths not identified (Callender, Sharkey, Touche), hydatid cysts (Du Camp), abscesses (Stiebel), and a revolver bullet (Guillain and Hauzel). Tumors were by far the most frequent cause of the peduncular lesion, especially tubercles and gliomas. A gliomatous growth was also found in the following case:

REPORT OF CASE

History.—A girl, aged 9 years, entered the Cook County Hospital, Sept. 8, 1916, in the surgical service of Dr. Morf. July 3 of the same year, that is to say, about nine weeks previously, she had suddenly been seized with vomiting, dizziness and a headache. The headache was so severe and continuous that it had caused her to cry out with pain. Two weeks after the onset of the disease, the mother noticed a drooping of the left upper eyelid which was followed six weeks later by weakness of the right arm and leg. In this condition she entered the hospital, with a ptosis of the left eyelid of seven weeks' duration, and a hemiplegia of the right side of one weeks' duration. The child had dysentery at the age of 3 and earache at the age of 4, but the mother could not tell whether there was a discharge from the ear. At the age of 7 the patient developed a kyphosis, though the records do not show its exact location. The father and mother, who are 37 and 36 years old, respectively, as well as three sisters and one brother, are all living and well.

Examination.—The left upper lid drooped, covering the major portion of the palpebral fissure. The patient could not raise it more than a quarter of an inch. The left eyeball did not move up or down or inward. The left pupil was dilated, and did not react to light or in accommodation. The left eye was turned outward, the external movements being the only ones remaining. The right corner of the mouth was slightly drooping, and the right arm and leg were totally paralyzed, revealing exaggerated reflexes as well as a positive Babinski

* Owing to lack of space, a rather complete list of references to the literature has been omitted. This will appear in the author's reprints, a copy of which will be sent by him on request.

sign, a positive Chaddock and a positive Oppenheim, but a negative Gordon reflex. The left side did not show any abnormalities. Sensibility was present on both sides. The fundi showed a bilateral papilledema. The heart, lungs, genitourinary organs, mentality, speech, urine, spinal fluid, pulse, respiration and temperature were normal. A roentgenogram of the skull did not show the presence of a tumor.

Thus, the examination revealed an external strabismus of the left eye, a total oculomotor paralysis of the same side, a contralateral hemiplegia with exaggerated reflexes, and a bilateral papilledema. It was a typical Weber syndrome caused, we thought, by a tumor of the left cerebral peduncle. As brain tumors in children are usually tubercles, a diagnosis of tubercle of the left cerebral peduncle was made.

Operation and Necropsy.—Dr. Morf thought it advisable to reduce the intracranial pressure by an operation in the left temporal region, which was done, Sept. 30, 1916, and was followed by the death of the patient two weeks later. The postmortem examination revealed a glioma that had completely destroyed on the left side the gyrus hippocampus, the cornu ammonis, the cerebral peduncle, and the left oculomotor nerve. It spread upward, involving the region of the tegmentum and part of the optic thalamus, and invading the pons and the medulla. The tumor spared the optic chiasm, the anterior perforated space, and the hemispheres, but caused total obliteration of the third ventricle, greatly reduced in volume the aqueduct of Sylvius and the fourth ventricle, and produced an enormous dilatation of the anterior horns of the lateral ventricles. Those portions of the tumor that involved the cornu ammonis, the peduncle, the optic thalamus and the pons were exceedingly vascular and hemorrhagic, while the portions that invaded the posterior portion of the pons and the medulla were less vascular and showed an enormous number of large, well-developed glia cells. The walls of the vessels, especially in the peduncular region, appeared greatly thickened and hypertrophied, and contained few glia cells. Hemorrhagic foci were numerous, covering the entire field of vision in some specimens. Thus, the glioma was very extensive and evidently started in the hippocampal gyrus, which revealed evidences of deeper destruction than any of the regions previously mentioned, with the possible exception of the left oculomotor nerve and the left cerebral peduncle.

COMMENT

A case of this type affords excellent opportunities for studying the function of the hippocampal region, in order to discover its possible relation to the functions of taste and smell, an investigation which, unfortunately, was not made in this case. The extensive involvement of the neighboring regions, as the optic thalamus, the pons, etc., did not show any clinical symptoms that were exclusively those of a Weber syndrome. In a case of Boinet, a glioma of the optic striate region pressed on the chiasm, the optic tract, the left cerebral peduncle, and the upper third and lateral half of the pons. Clinically there was a Weber syndrome with a bilateral ophthalmoplegia and pseudobulbar paralysis. Somewhat similar cases were reported by Mingazzini. One patient showed a "perioptopeduncular" tumor of sarcomatous origin, which started from the hypophysis, secondarily involving the optic thalamus and the peduncles. The clinical picture revealed involvement of all the nerves of the base of the brain, a tendency to fall to the right, and twitchings in the left arm.

These cases demonstrate that a tumor of the peduncular region may give symptoms not exclusively confined to Weber's syndrome, if the neighboring areas are involved. Yet, in our case the clinical picture was that of a purely classical Weber syndrome in spite of the involvement of the tegmentum when, as I have previously mentioned, there should have been a Benedikt syndrome, that is to say, tremor of the paralyzed

side combined with a contralateral oculomotor paralysis—symptoms which, in this case, were absent. They were also absent in the case of Greiwe, in which the tegmentum was totally destroyed by a tubercle. Another remarkable feature in our case was the patient's excellent mental condition, regardless of the fact that a large portion of the brain was totally destroyed. Absence of any mental symptoms was also observed by the majority of authors in cases of Weber's syndrome that were caused by softening or hemorrhages. In those patients in whom impairment of the intelligence was present, the symptoms could not possibly be ascribed, as d'Astros justly remarks, to the peduncular lesion itself; they should, he thinks, be ascribed rather to the accompanying cerebral arteritis or to syphilis.

31 North State Street.

UTERINE RUPTURE FOLLOWING ANTERIOR HYSTEROTOMY

ROSCOE R. KAHLE, PH.B., M.D.

Surgeon, Grant Hospital

COLUMBUS, OHIO

Spontaneous intraperitoneal rupture of the uterus during labor is, very fortunately, of rare occurrence. Contrary to early teaching, it occurs most frequently in multiparas. An impaired integrity of the uterine wall from repeated pregnancies is more frequently a causative factor than obstructed labor. This may well be borne in mind as, I believe, the popular notion would lead us to suspect this calamity more particularly in the presence of obstruction.

The vulnerable scar, following a cesarean section, operates strongly as a predisposing cause of uterine rupture. Indeed, the likelihood of a tear through the old scar has found expression in the dictum, "Once a cesarean, always a cesarean."

Recently, a surgical procedure, known as anterior hysterotomy, has been brought forward as an easy, safe and sane method of inspecting the interior of the uterus. To me it seems only easy. The following case report is convincing argument in favor of "cleaning up" a miscarriage case in the old-fashioned way:

REPORT OF CASE

History.—Mrs. C., aged 23, married four years, referred by Dr. W. D. Moccabee of Cardington, had a good family history, and she had always been well until a miscarriage at three months occurred in December, 1915. At this time, that hemorrhage following fetal expulsion might be arrested, the abdomen was opened, the uterus incised, and the offending placenta removed (a cesarean operation after delivery!). Operative recovery was prompt. Eighteen months later, the patient came to labor at full term. Pelvimetry bespoke ample pelvic measurements. The wise suggestion of her physician, that she enter a hospital for confinement, was rejected. Mild labor pains appeared irregularly for about forty-eight hours, after which they did not return. I saw the patient in consultation, Jan. 28, 1917. There had been no labor pains for several hours. Dr. Moccabee stated that he suspected uterine rupture through the old scar, although the symptoms were quite atypical. The pulse was rapid, but of good volume. Gastric dilatation was in evidence. There were no fetal heart sounds. Profound shock was absent, and the patient said she felt quite well. The uterus and fetus could not be separately palpated through the abdominal wall. The patient stated that she heard something crack and felt something give way about the time her pains stopped.

She was removed to Grant Hospital, where an anesthetic (ether) was administered, and, after the uterus had been explored to verify our diagnosis, abdominal section was made. The dead baby was removed from the peritoneal cavity, hysterectomy was rapidly performed, and a quart of physiologic sodium chlorid solution administered intravenously. An uninterrupted recovery supervened.

Specimen.—Examination of the uterus revealed that it had yielded at the old hysterotomy scar. This was not remarkable for however carefully the incised uterine wall may have been repaired, Nature frowned on the job. Muscular union was all but nil, the infolding endometrium approximating the peritoneum—an ugly rent, indeed.

SUMMARY

1. Anterior hysterotomy, in a child-bearing woman, is not an innocent procedure.
2. When uterine rupture occurs through scar tissue, prognosis is more favorable because there is less likelihood of severe hemorrhage.
3. The vulnerability of a cesarean scar makes it desirable for such patients to enter a well-equipped hospital for all future deliveries.

350 East State Street.

FROSTBITE AS A PREDISPOSING FACTOR IN CARCINOMA OF THE EAR

RICHARD L. SUTTON, M.D.

KANSAS CITY, MO.

Pusey has called attention to the important part played by long standing, dry seborrhea in the production of senile keratoses and similar precancerous lesions of the skin, and Heidingsfeld has shown that cicatricial tissue frequently serves as a starting point for cutaneous carcinoma.

The fact that areas of skin that have been subjected to frostbite, and especially to repeated frostbite, are abnormally susceptible to cancerous involvement has not, however, been sufficiently emphasized. The parts commonly involved are the ears, particularly the helixes, and the cheeks. The great frequency with which these areas are attacked can be appreciated only by a study of a considerable number of case histories. Of forty-six cases of seborrheic keratosis involving the ears and cheeks, examined during the twelve months elapsing Nov. 1, 1917, twenty-seven gave a history of frostbite. Of the twenty-seven, twenty-one presented one or more malignant growths on the affected areas. The majority of the seborrheic keratoses were of the keratoid type. Almost 90 per cent. of the carcinomas were of the basal cell variety. In three instances both the basal and squamous cell varieties were represented.

Judging from the result of my own observations, it appears that repeated exposure to very low temperatures tends also to reduce local resistance to the progress of the malignant growth, and thus becomes a factor in prognosis as well as in etiology.

The most important prophylactic measure is, of course, adequate protection of the parts commonly attacked. Should keratoses develop, the frequent application of an ointment containing small amounts (from 1 to 5 per cent.) of salicylic acid may be tried. In some instances, double this proportion of sulphur may also be advantageously added. In more advanced cases, suspiciously or frankly malignant, radium usually

serves admirably, and possesses the great advantage of leaving the skin in a practically normal condition.

In attacking squamous cell growths of the ear, and especially if the associated lymph nodes are involved, radical excision is, in my experience, the method of choice.

726 New Lathrop Building.

A STATISTICAL STUDY OF LEPROSY IN THE PHILIPPINE ISLANDS

FROM THE HISTORIES OF TEN THOUSAND CASES
ISOLATED IN THE CULION LEPER COLONY

OSWALD E. DENNEY, M.D., D.T.M.

Chief, Culion Leper Colony

CULION, P. I.

On the theory that facts of interest and of possible bearing on the transmission of leprosy might be obtained from a study of the personal histories of a large number of lepers, an investigation has been made of the "individual records" of each leper on his admission to the Culion Leper Colony.

The histories, which, of necessity, are very brief, contain, in addition to the name of the individual, the age, sex, nationality, race, birthplace, last place of residence, date of admission to the colony, marital relation, family contact history, probable duration of the disease, and a brief description of the physical condition of the patient at the time of admission.

TABLE 1.—AGE AT WHICH INFECTION IS ASSUMED TO
HAVE TAKEN PLACE

| Culion | | | Hawaii | | |
|-------------------|--------|-----------|------------|--------|-----------------|
| Ages | Number | Per Cent. | Ages | Number | Total Per Cent. |
| 1-5 | 70 | 0.72 | 1-5 | 8 | 0.75 |
| 6-15 | 2,335 | 24.30 | 6-10 | 56 | |
| | | | 11-15 | 163 | 219 20.69 |
| | | | 16-20 | 204 | |
| | | | 21-25 | 143 | |
| | | | 26-30 | 114 | |
| 16-35 | 4,888 | 50.87 | 31-35 | 79 | 540 51.04 |
| | | | 36-40 | 89 | |
| | | | 41-45 | 44 | |
| | | | 46-50 | 48 | |
| | | | 51-55 | 41 | |
| | | | 56-60 | 26 | |
| | | | 61-65 | 18 | |
| | | | 66-70 | 18 | |
| | | | 71-75 | 3 | |
| | | | 76-80 | 3 | |
| | | | 81-85 | 1 | 291 27.50 |
| 36 upwards | 2,316 | 24.10 | | | |
| Totals.... | 9,609 | 99.99 | | 1,058 | 99.98 |
| Not estimated.... | 816 | | | 2 | |
| | 10,425 | | | 1,060 | |

Since a large number of the lepers of the Philippine Islands have only a slight knowledge of the simplest principles of hygiene and sanitation, questions regarding their views of the possible source of their infection bring little, if any, information worthy of serious consideration.

Since we lack exact knowledge of the method of transmission of the disease, exact knowledge of the time at which infection takes place would be of great value in the study of individual cases. Table 1, showing the ages at which infection is assumed to have taken place, is only relatively correct, since the period of incubation of leprosy is unknown and therefore has not been considered. The figures are based on the time at which the first symptom of the disease was recognized.

The remarkable similarity between these figures and those obtained by McCoy¹ in the Hawaiian Islands war-

1. McCoy: A Statistical Study of Leprosy in Hawaii, Pub. Health Bull. 66, 1914.

rants their comparison at this point. The ages obtained from the Hawaiian statistics, it should be noted, are reckoned from the time of apprehension and not from the approximate date of infection.

Twenty-nine per cent. of the lepers segregated in Culion have given a definite history of previous contact with at least one leper relative. This percentage excludes a large margin of error, since it is a frequent occurrence for a leper on admission to give a negative family contact history. Then months or years later, a brother, sister, cousin or some other relative may be admitted as a leper in whom the existence of the disease was not suspected when the first relative was isolated.

In a study of the lepers giving a history of contact with only one leper relative, there were found certain significant facts about the distribution of the infection among the members of the families. They appear in Table 2.

TABLE 2.—DISTRIBUTION OF LEPROSY AMONG MEMBERS OF FAMILIES

| Relative Who Had Leprosy | Lepers | |
|--------------------------|--------|-----------|
| | No. | Per Cent. |
| Mother | 106 | 4.77 |
| Father | 145 | 6.53 |
| Son | 113 | 5.09 |
| Daughter | 58 | 2.61 |
| Brother | 546 | 24.57 |
| Sister | 245 | 11.02 |
| Nephew | 85 | 3.82 |
| Niece | 44 | 1.98 |
| Aunt | 79 | 3.55 |
| Uncle | 130 | 5.85 |
| Wife | 17 | 0.75 |
| Husband* | 23 | 1.03 |
| Grandfather | 5 | 0.22 |
| Grandmother | 6 | 0.27 |
| Grandson | 12 | 0.54 |
| Granddaughter | 5 | 0.22 |
| Son-in-law | 1 | 0.04 |
| Cousin | 602 | 27.05 |
| Total | 2,222 | 99.92 |

* As has already been explained, there is a definite and unavoidable error in these figures. Since they are based on the records of lepers isolated in Culion only, no allowance has been made for the leper relatives remaining alive or dead in the provinces. For example, seventeen wives and twenty-three husbands were lepers, the unaccounted-for wives dying before their husbands were isolated in Culion.

If these cases are viewed from another standpoint to show a possible relationship between sexes, the data given in Tables 3 and 4 are obtained.

TABLE 3.—CONTACT BETWEEN LIKE SEXES

| Persons Infected | No. | Per Cent. |
|-------------------------------------|-------|-----------|
| Mother and daughter | 81 | 4.48 |
| Father and son | 165 | 9.12 |
| Brother and brother | 398 | 22.00 |
| Sister and sister | 124 | 6.85 |
| Uncle and nephew | 144 | 7.96 |
| Aunt and niece | 60 | 3.32 |
| Grandfather and grandson | 9 | 0.49 |
| Grandmother and granddaughter | 6 | 0.33 |
| Cousins, like sexes | 117 | 6.47 |
| Total, like sexes | 1,104 | 61.02 |

TABLE 4.—CONTACT BETWEEN UNLIKE SEXES

| Persons Infected | No. | Per Cent. |
|--------------------------------------|-----|-----------|
| Mother and son | 106 | 5.85 |
| Father and daughter | 70 | 3.87 |
| Brother and sister | 269 | 14.87 |
| Uncle and niece | 60 | 3.32 |
| Aunt and nephew | 74 | 4.09 |
| Grandfather and granddaughter | 3 | 0.17 |
| Grandmother and grandson | 10 | 0.55 |
| Cousins, unlike sexes | 72 | 3.97 |
| Husband and wife | 40 | 2.21 |
| Son-in-law (and mother-in-law) | 1 | 0.05 |
| Total, unlike sexes | 705 | 38.95 |
| Cousins, sex contrast not known | 413 | |

Final total 2,222

If we assume, in these instances, that the disease has been transferred from leper to relative, nearly two thirds of the cases, exclusive of the cousins whose records failed to show the sex of the other infected cousin, are between relatives of like sexes. Notable is

the record of contact among brothers and among sisters, which shows 522 cases of the disease transferred presumably from brother to brother and from sister to sister, in contrast to 269 cases of assumed transmission from brother to sister, or vice versa.

Rearranging these tables in order that a comparison may be made with somewhat similar statistics from Hawaii, and abridging the Hawaiian table to show family contacts only, we obtain the data given in Table 5.

TABLE 5.—COMPARISON OF LEPROSY AMONG RELATIVES IN CULION AND HAWAII*

| | Culion | | Hawaii | |
|---------------------------|--------|-----------|--------|-----------|
| | No. | Per Cent. | No. | Per Cent. |
| Fathers or mothers | 251 | 11.30 | 117 | 37.02 |
| Grandparents | 11 | 0.49 | 6 | 1.82 |
| Grandchildren | 17 | 0.77 | 1 | 0.31 |
| Sisters or brothers | 791 | 35.61 | 102 | 32.27 |
| Sons or daughters | 171 | 7.69 | 12 | 3.79 |
| Uncles or aunts | 209 | 9.41 | 24 | 7.59 |
| Cousins | 602 | 27.10 | 18 | 5.69 |
| Nephews or nieces | 129 | 5.80 | 8 | 2.53 |
| Husbands or wives | 40 | 1.80 | 28 | 8.85 |
| Totals | 2,221 | 99.97 | 316 | 99.94 |

* The percentages are not from the original but are here calculated for convenience. The figures are subject to the error explained in the footnote to Table 2.

In addition to the lepers giving histories of contact with one leper relative, there were 182 families in which occurred infection of three or more members, distributed as shown in Table 6.

TABLE 6.—DISTRIBUTION OF FAMILIES IN WHICH LEPROSY OCCURRED IN THREE OR MORE MEMBERS

| Members of One Family Infected | No. of Instances |
|--------------------------------|------------------|
| 8 | 1 |
| 7 | 2 |
| 6 | 5 |
| 5 | 9 |
| 4 | 35 |
| 3 | 130 |

The distribution of infection among the members of the individual families is shown in Table 7, from which it will be seen that the most frequent cases of infection among relatives were among three cousins, this combination being recorded twenty-seven times. More than half of the individuals infected were brothers and sisters, of whom 130 gave histories of contact with ninety-seven leper parents or grandparents, while 196 brothers and sisters gave no history of contact with leper parents or grandparents. Eighty-five cousins gave histories of contact with leper cousins only.

Of the 10,425 lepers admitted to Culion, 3,674, or 34 per cent., were married before admission. Of the latter number only forty, or 1 per cent., represent instances in which both husband and wife were known to be lepers.

The distribution of the disease among the tribes is given in Table 8.

In the Philippine Islands, as elsewhere, leprosy more frequently affects the male than the female. Of those segregated in Culion, 66.7 per cent. have been of the male sex.

The admission records show that the attempt to separate the cases into types of disease has proved unsatisfactory, as some of the cases have been classified as "anesthetic" or "tubercular" from the most pronounced symptom only, while the description of the cases show them to be, in some cases, "mixed." The larger majority of the cases, however, have been "tubercular" or "nodular," with the "mixed" cases coming second in point of numbers.

On several occasions, when lepers in the provinces were collected for segregation, leper mothers were found who could make no arrangements for the care of their babies, in which cases the infants were brought to Culion. Of nine of these children isolated with their mothers, three have died, one has been returned to the provinces, and five remain in Culion. Four out of these five are lepers, having been exposed to infection for from seven to ten years.

| Tribes | No. | Approximate Percentage of the Tribe Population |
|---|--------------|--|
| Visayans | 5,338 | 0.17 |
| Tagalogs | 1,997 | 0.14 |
| Ilocanos | 1,547 | 0.19 |
| Bicolanos | 1,184 | 0.21 |
| Pampangos | 171 | 0.06 |
| Pangasinans | 100 | 0.01 |
| Members of small tribes and foreigners | 88 | |
| | <hr/> 10,425 | |

Hansen is said to have remarked, "There is hardly anything on earth, or between it and heaven, which has not been regarded as the cause of leprosy." While the

death, is 7.332 years. The longest duration of the disease of which authentic record was found is forty-eight years, the patient being a woman of 63 now living, who has spent eight years in Cullion.

mystery of the etiology of the disease has been solved by Hansen, practically every thing and condition has since been considered in an effort to demonstrate the transmitting agent.

Climatology.—Nothing obtained from this study has demonstrated that the local climatic conditions either predispose to the disease or directly affect the transmission.

Local Geographic Distribution.—While the great majority of the lepers have come from the seacoast, it must be understood that the population of the Philippine Islands is, to a large extent, distributed along the seacoast. The mountain tribes, in spite of their relative inaccessibility, are not free from the disease, several of them being represented in the colony.

Air and Dust.—While the histories taken do not consider the possibility of transmission by air and dust, it is not without significance that in the ten years since the opening of the Culion Leper Colony, only two employees of the colony have developed the disease. One of these is a Caucasian ecclesiastic who was pronounced a leper after five years of exposure, and the other, a Filipino laborer who was pronounced a leper at the end of a year's employment in the colony. The latter patient comes from an infected family, having a cousin who was a leper for several years previous to the laborer's isolation. The average number of non-leprous employees in the colony is 200, nearly thirty of whom have been on the reservation for ten years.

Food.—Rice and fish comprise a large proportion of the Filipino diet. As each member of the family partakes of a fare almost exactly similar to that of the other members, it is difficult to conceive of how one might be infected to the exclusion of other members of a frequently large family. It is therefore negatively concluded that neither the native diet, nor any particular article of food has any relation to the transmission of leprosy, aside from the general predisposition to disease which may accompany the ill-nourished condition of the bodies of many Filipinos.

Sexual Transmission.—The fact that but 1 per cent. of the consorts of married lepers have developed the disease would tend to show that the sexual act, as such, has little, if any, bearing on the transmission of leprosy.

By consideration, largely with negative statements, there have been eliminated from this discussion some of the more generally considered possible means of transmission of leprosy. There remain for consideration transmission through physical contact and through secondary parasites.

Physical Contact.—The large proportion of the cases of infection which have presumably been transmitted among brothers and sisters, or among cousins, would suggest physical contact as an important factor in the transmission of the disease. On the contrary, the relatively small percentage of transmission between parent and child, or the smaller percentage between husband and wife would suggest that even prolonged and intimate contact alone is not sufficient.

Secondary Parasites.—The bacillus of leprosy has, of itself, no known powers of penetration. It is therefore reasonable to believe that should it be transferred from person to person by a secondary parasite, this parasite must habitually implant the bacillus in a suitable place. One is then forced to exclude all parasites having no powers to penetrate the human skin, which is the part most likely to be habitually attacked.

The mosquito is physically capable of transplanting the bacillus of leprosy beneath the human skin. There

is, however, nothing in the life history of the mosquito to lead one to suspect that it would bite and infect with leprosy one member of the family, to the frequent exclusion of all others, or to select and infect brothers and sisters to the exclusion of other relatives. Nor does anything in the life history of the mosquito explain the presumed transmission of the infection between like sexes. By similar reasoning, flies, ticks, lice and bedbugs may be excluded as probable agents of transmission, provided each member of a household is similarly exposed to infestation.

The theoretically ideal transmitting agent, then, must have the ability to penetrate the human skin, to select by preference certain members of the family, brothers, sisters or cousins, and to transplant the bacillus preferably from one sex to a like sex. It also includes the element of physical contact.

CONCLUSIONS

1. One half of the cases of leprosy segregated in Culion have been diagnosed in adolescence.

2. Twenty-nine per cent. of the lepers gave definite histories of contact with leper relatives. No record has been made of contact with lepers other than relatives. It is probable that carefully taken histories would have revealed contact histories for all the lepers isolated, since the disease is widespread throughout the islands.

3. Thirty-five per cent. of those giving histories of contact with a single leper relative were sisters and brothers, 27 per cent. were cousins, while 11 per cent. were leper children and 7 per cent. leper parents.

4. In the occurrence of infection of two or more relatives, the majority of cases were among members of like sexes, the noteworthy exception being the number of mothers and sons infected in excess of the number of mothers and daughters.

5. Numerous records show multiple infection within families, spreading over one, two or three generations, more than half of the infected persons being brothers and sisters.

6. In 1 per cent. of the lepers who were married before admission to Culion, the infection was between husband and wife.

7. The male sex is more frequently infected.

8. The average duration of leprosy is 7.3 years.

9. Mortality among children born of leper parents is high. The incidence of infection among children living in the colony for from one to ten years is 10.4 per cent.

10. Infection of children born of parents, one of whom is a leper, and living among lepers for from seven to ten years, is 44 per cent.

11. From this study, nothing of importance, other than circumstantial evidence, has been learned regarding the transmission of leprosy.

Additions to Registration Area.—Maryland, Virginia and Kentucky have recently been added to the list of states in the Registration Area for births of the United States. Conscription and enlistment in the Army have shown the need for accurate birth statistics and have stimulated interest in this important matter. Tests by agents of the U. S. Census Bureau of the completeness of birth registration in Virginia and Kentucky gave a rating of over 90 per cent., which is the figure required for registration. Similar tests are being made in Indiana and New Jersey, with North Carolina, Ohio and Utah to follow, and within the next two years it is expected that the Registration Area will comprise at least two thirds of the population of the United States.

LEIOMYOMA OF THE APPENDIX

REPORT OF TWO CASES

LAURANCE D. REDWAY, M.D.

Pathologist, Pathologic Laboratory, the Roosevelt Hospital
NEW YORK

Both of these tumors were discovered in the course of a routine pathologic examination of the surgical specimens. In neither case was there any clinical evidence indicating or suggesting their presence.

REPORT OF CASES

CASE 1 (C-1184).—*Clinical Data.*—Mrs. S. B., aged 40, was admitted with symptoms of general pelvic inflammation.

Operation was performed the day following admittance, consisting of removal of the uterus, both tubes, one ovary, and the appendix. Recovery was uneventful.

Surgical Findings.—The uterus was distorted by the presence of many fibroids of all varieties, extending from the fundus to the cervix. The lumen was partially occluded by submucous fibroids and blood clot. Both tubes were swollen, the distal ends closed. The ovaries were cystic. The appendix was small. The distal end was kinked, the color, normal. The lumen was obliterated.

Pathologic Findings.—There were multiple fibromas of the uterus. No endometrium was seen. The tubes showed moderate chronic inflammatory reaction. Many small round cells were noted. The ovary was very fibrous, with numerous cysts. The lumen of the appendix had been entirely obliterated. The muscular coats showed some fibrosis, moderate in amount. There had been marked proliferation of the muscle tissue. This growth had progressed to the extent of obliterating the lumen. The mucosa had apparently suffered pressure atrophy to the extent shown in the illustration, except in isolated areas where it still persisted as the lining wall of small cysts.

CASE 2 (SA-2610).—*Clinical Data.*—Mrs. A. G., aged 36, was admitted complaining of pain in the right lower quadrant, of five months' duration. The onset was not acute. Recently, there had been pain in the left lower quadrant; menstruation was irregular; leukorrhea was present; there had been no pregnancies. Operation was followed by uneventful recovery.

Surgical Findings.—The uterus was normal in size and consistency, but was held downward, backward, and to the left by firm adhesions. The left tube was partially adherent to the back of the uterus, and was not enlarged or diseased.

The right tube and both ovaries apparently were normal. The appendix was found to be surrounded by many firm adhesions. It was enlarged, angulated 3 cm. from the tip, and the distal portion for about 1 cm. was constricted, firm, and paler than normal. On the opening of the peritoneal cavity through a median incision, the entire abdominal contents were found to be covered by a transparent, membranous veil, making it appear as though all the viscera were retroperitoneal.

Pathologic Findings.—Only the appendix was removed. This measured 3.5 cm. in length, by 0.75 cm. in diameter. The serous surface was grayish pink. The proximal end showed a patent lumen, partially necrotic, and sloughed mucosa, the submucosa heavily fibrosed, and showed many small round cells throughout, some thickening of the muscularis, and slight fibrosis of the serosa.

At the distal end there were observable some remains of

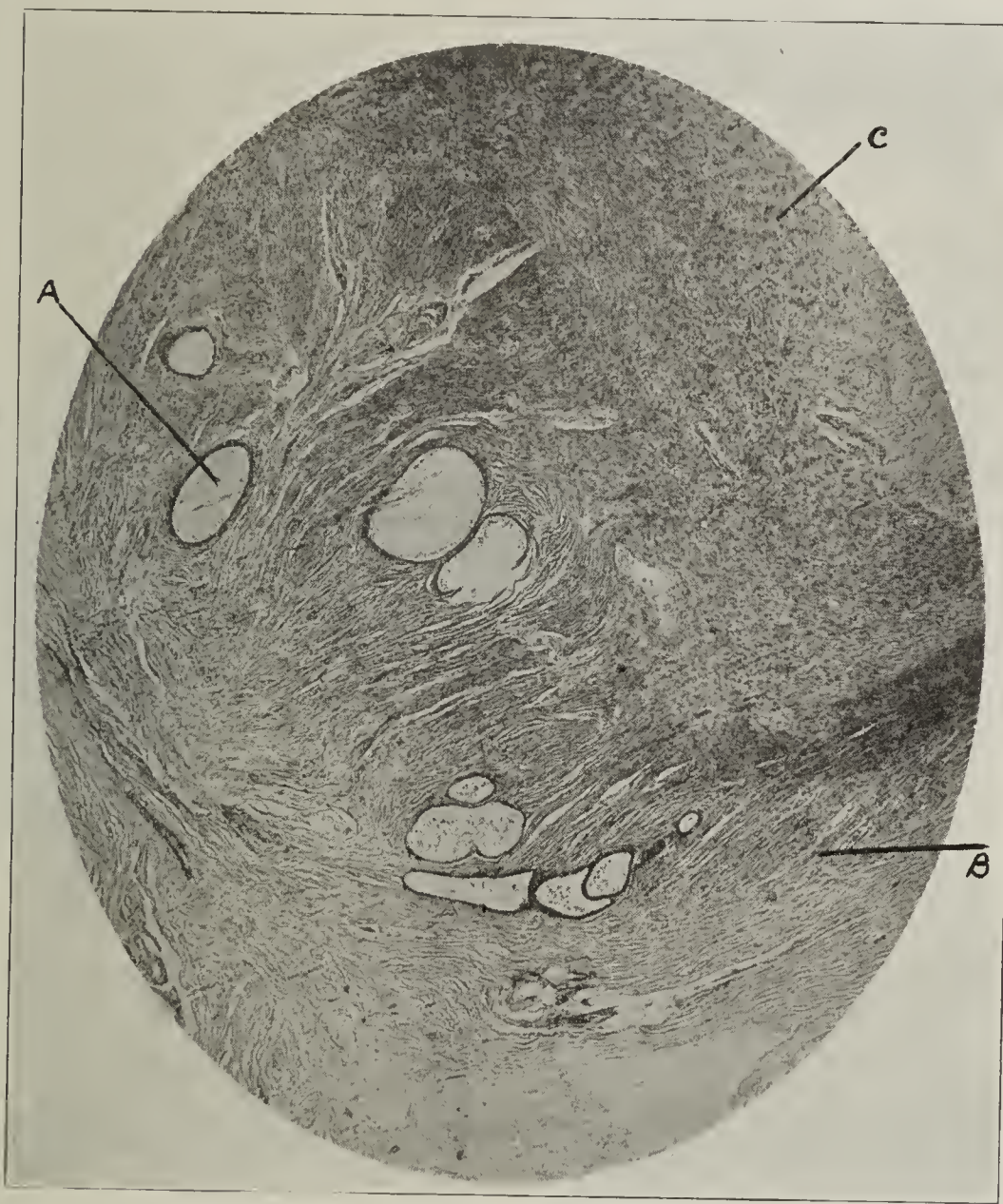
the original muscularis as such, but this had hypertrophied so that the mass of muscle tissue completely filled and obliterated the lumen. Van Gieson's stain revealed some fibrous growth, but the large bulk of the obliterating mass was smooth muscle tissue. The mucosa was not observed, and had probably undergone complete atrophy. The serosa was normal.

SUMMARY

Both patients were women, aged 36 and 40, respectively. The presence of uterine fibromas was noted in one, but not ascertained in the other. Both appendixes were removed, one as a routine surgical procedure, the other on clinical evidence of chronic inflammation. Microscopically both appendixes showed evidence of chronic inflammation of long standing, and

in both the seat of the tumor mass was in the extreme distal end. The pseudo-adenomatous condition of the one is interpreted as an intermediate stage in a process affecting the mucosa, and one which has gone on to complete obliteration in the other.

Ancient Prescribing.—Ancient Greek prescriptions were of a curious character, according to our present ideas. For instance, they directed that no medicine should be administered to a sick cow by a woman; they lauded cabbage as a cure for almost every ill; placed great stress on the number 3 and supposed medicines to be more active when 3 drams, 3 ounces or 3 times any quantity was given, and they at the same time directed the repetition of cabalistic words and incantations.—Wall, *The Prescription*.



Leiomyoma of appendix: A, remains of mucosa; B, muscle wall; C, tumor mass. Notice the arrangement of nuclei of the tumor, like columns of troops.

BRACHIAL NEURITIS AND SCIATICA

HUGH T. PATRICK, M.D.

Clinical Professor of Nervous and Mental Diseases, Northwestern
University Medical School

CHICAGO

A misapprehension as to the frequency of brachial neuritis and of sciatic neuritis or sciatica I believe



Fig. 1 (Case 1).—Arthritic side, showing free flexion of thigh.

to be quite general. At any rate, I do know that in the profession at large, as I meet it, the diagnosis of these diseases is made altogether too frequently.

BRACHIAL NEURITIS AND SHOULDER
ARTHRITIS

A careful review of my records (private practice) for the last ten years shows that, of the patients referred to me supposedly with brachial neuritis, only about one in ten really had it. Approximately four fifths were cases of arthritis of the shoulder joint. The other one tenth was made up of cases of bursitis, syphilis, neoplasm, cervical rib, postherpetic pain, osteomyelitis, cervical caries and cervical arthritis. Indeed, when a patient states that he has for some time been troubled with neuritis of the shoulder or arm, one is pretty safe in assuming that it is something else, probably arthritis.

Why should so many physicians have made an erroneous diagnosis of brachial neuritis? Principally, I think, on account of the relative prominence of pain,



Fig. 2 (Case 1).—Arthritic side; no Lasègue sign.

because this pain was not distinctly localized in the shoulder joint and probably because they did not sufficiently examine the patient. A careful examination seldom leaves one in doubt.

Neuritis is rare; the pain is constant, is influenced not at all or but little by passive movement of the

shoulder, and is generally influenced not greatly by active movement, though the patient moves the arm carefully. Ordinarily, the suffering is intense, such as never occurs in arthritis except in the worst cases, when the patient cannot move the joint at all. Intermittent, grumbling pain is very, very rarely that of neuritis. There is distinct, generally exquisite, tenderness of the cords of the brachial plexus or of the nerve trunks or of both. In some cases there is distinct though slight tactile anesthesia and sometimes surface hyperesthesia—more properly speaking hyperalgesia. Tingling or subjective numbness of fingers or forearm is frequent. The deep reflexes of the arm are diminished or lost. The disease is nearly always self limited. It lasts a few weeks or a few months (in bad cases from six to nine months), there is definite recovery, and it seldom recurs.

Arthritis of the shoulder, on the other hand, is very common, and the pain fluctuates more or less, even when very bad. In the less severe cases it is intermittent. Not only is it intermittent within the twenty-four hours, but the patient has his good and his bad days. Often the pain seems to be influenced by the weather, and for some reason it is apt to be more annoying at night. As before stated, often the pain is



Fig. 3 (Case 1).—Normal side; leg almost horizontal; that is, no Fabere sign.

not distinctly localized in the shoulder joint. In a great many cases it is felt chiefly *at about the insertion of the deltoid*. For this I have no adequate explanation, but I know that it is very misleading. More than once I have known it to lead to a diagnosis of osteomyelitis. Sometimes the pain is rather diffuse, radiating up into the neck and down the arm. This pain in the neck and down the arm I am quite sure is often due to concomitant arthritis of the cervical spine, the nerve roots being irritated where they pass out through the intervertebral foramina. In some cases of shoulder arthritis alone I have no doubt that the nerve trunks may be involved where they pass close to the joint.

The striking feature, however, of the arthritis cases is that in whatever part the pain may be felt, there are certain movements of the shoulder joint, active or passive, which cause pain. These are by no means always the same; but by all odds the most frequent is adduction of the humerus with retraction and internal rotation, the movement involved in crossing the forearms behind the back. Consequently the woman has difficulty in fastening her skirts and her waist behind, and the man in putting his hand into his hip pocket. Another good test movement is to extend the arm straight upward and then rotate it as if operating a screw driver. In the examination of such a case,

movements in different directions, with the arms in different positions, should be carried out against resistance. For instance, with the arms extended horizontally and parallel in front of the upright trunk, the hands are pushed toward each other, away from each other, upward and downward *against resistance*. With the arms extended sidewise, making a cross with the body, resistance movements are made upward, downward, forward and back, etc. One or more of these movements will be pretty sure to be painful, which would not be the case in mild neuritis. But it must be emphasized that in many cases of subacute and chronic arthritis, many movements or most movements are entirely painless. I have had a number of patients who could play golf with perfect freedom; and such exercises as hammering, sawing, rowing and sweeping may have no immediate influence on the pain. Likewise, in the chronic or subacute cases, local tenderness may be but slight or even absent. Of course in acute arthritis practically all movements of the joint are painful, and there is limitation of passive motion, neither of which conditions obtains in neuritis.

Of very considerable assistance in the diagnosis is the state of the deep reflexes. These are uniformly

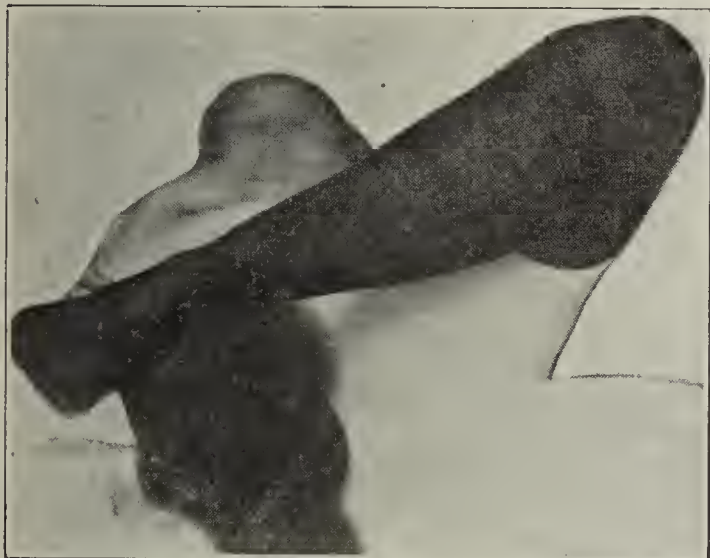


Fig. 4 (Case 1).—Arthritic side; knee cannot be normally depressed: fabere sign.

brisk, and sometimes considerably exaggerated. Even when the muscles are quite atrophic and the appearance of the arm would indicate loss of the deep reflexes, the wrist jerk and triceps jerk will be found to be quite lively, more so than those of the well side. The same, as a rule, applies to the scapular jerks.

Wasting of shoulder and arm muscles sometimes leads the observer astray. There seems to be a common feeling that atrophy means nerve trouble. Consequently wasted deltoid, biceps and triceps apparently lend color to the view that the shoulder pain is neuritic. Just how arthritis causes atrophy of muscles moving the affected joint is still matter for speculation; but the fact of its general presence is of daily observation. The atrophy may be very marked and the arthritis relatively mild. I once saw a boy with mild multiple arthritis in whom the muscular wasting was so obtrusive that the case was thought to be one of advanced progressive muscular atrophy. Indeed, I have known men high in the profession to be misled by this arthritic atrophy.

There are two more signs of value: signs, I regret to say, that seem to be infrequently looked for. These are fever and leukocytosis. In very mild and chronic cases they may not be found, but such are exceptional.

Repeated examinations, especially when the pain is at its worst, will nearly always show at one time or another (sometimes uniformly) a slight rise of temperature (from 99 to 100 F.) and a slight increase in



Fig. 5 (Case 1).—Same as Figure 3.

the leukocyte count (from 8,000 to 9,000 or 10,000, occasionally 12,000). These two signs naturally lead us toward the conclusion that the arthritis is of infectious origin, and this conclusion is supported by the fact that less obtrusive arthritis elsewhere can often be found. Even when the patient avers that he has no other trouble, painstaking inquiry and examination frequently will show that his statement is inaccurate. Other joints oftenest involved are the opposite shoulder and the articulations of the cervical spine. Perhaps next in order come the lumbar and the dorsal spine, the hip and the finger joints. Furthermore, it is not so very unusual to find a coexistent indurative headache or soreness and tenderness of the occipital or suboccipital region, troubles I believe to be almost invariably due to infection, the focus generally being somewhere in the head or the throat. Of like significance is tenderness of the trapezius or other neck muscles—a fairly frequent concomitant.



Fig. 6 (Case 1).—Same as Figure 4.

SCIATICA AND ARTHRITIS OF THE HIP

Thirty-odd years ago Dr. L. Putzel of New York called to my attention the frequent mistaking of chronic arthritis of the hip for sciatica. Since that time I have been interested in observing how much

more common is the arthritis than sciatica, and how frequently an erroneous diagnosis is made.¹ Outside of large charity hospitals I believe sciatica to be a relatively rare disease, while arthritis of the hip is one of the most common. This is no new assertion. Many years ago that wonderful observer Jonathan Hutchinson expressed the opinion that a certain number of cases of sciatic pain were due to "trouble in the joint." Since then similar statements have now and then been



Fig. 7 (Case 2).—Arthritic side; good flexion.

made, and recently the elder Bruce² has published a remarkable little book sustaining the thesis that the pathology of sciatica is "trouble in the hip joint." Inferentially he concludes that all sciatica is hip joint trouble. I cannot go so far as he because I am quite sure that occasionally one does see a true neuritis of the sciatic nerve or sacral plexus, and semioccasionally an example of neuralgic sciatica — or at least of sciatica in which the signs of neuritis, except pain, are absent.

Without touching on the reasons why arthritis leads to a diagnosis of sciatica, I shall simply mention a few signs and symptoms indicating the former and excluding the latter.

Sciatica, like brachial neuritis, causes no limitation of passive motion, with one notable exception — the Lasègue³ sign — whereas, arthritis of the hip is pretty sure to interfere with some movement or other. Especially is there one sign, so far as I know never present in sciatica, which is of great value in detecting arthritis of lower grades, but which I have not seen described.

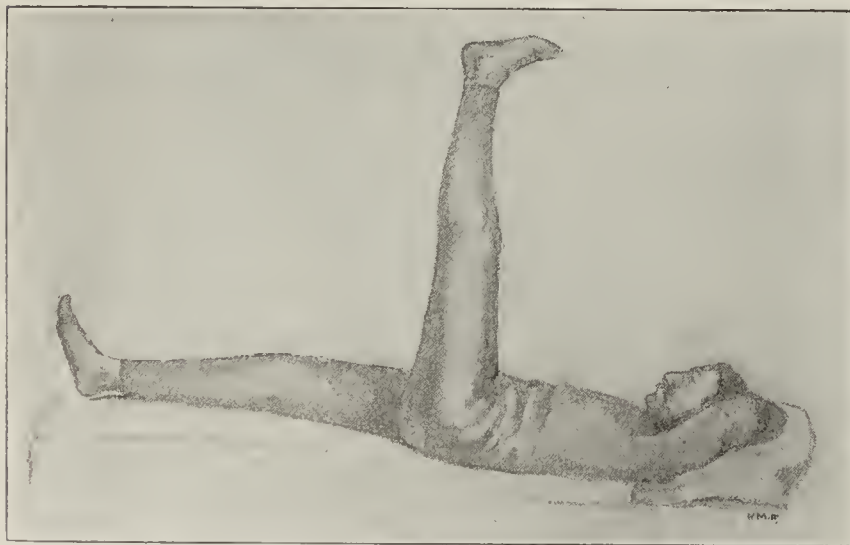


Fig. 8 (Case 2).—Arthritic side; no Lasègue sign.

For convenience of record I call it the *fabere* sign, the letters of the word standing for flexion, abduction,

external rotation and extension. With the patient supine on a level surface, the thigh is flexed and then the external malleolus or ankle is placed above the patella of the opposite extended leg. In bad cases even this maneuver cannot be executed without pain, but many patients do it easily. If, however, the knee is now depressed, the ankle maintaining its position above the opposite knee, the patient will complain of pain before the knee reaches the level easily attained in normal persons.⁴ This procedure involves, flexion, abduction, external rotation and then extension of the thigh, and will catch more cases of arthritis of the hip than any other test with which I am acquainted. Many of the patients have quite free motion of the joint, especially flexion, and in many of them it is not easy to detect any tenderness, though firm pressure with the point of the thumb over some part of the capsule may be much more painful than on the good side. Bruce thinks that the most frequent tender point is at the upper edge of the acetabulum. Heavy percussion of the sole, or the quick shoving of the head of the femur into the acetabulum, which is almost certain to cause pain in tuberculous hip joint disease,



Fig. 9 (Case 2).—Arthritic side; fabere sign; knee cannot be normally depressed.

generally fails to reveal anything in these nontuberculous cases. But rare indeed is the case which will not be detected by the test described above. In making the test, one must not be deceived by the patient's yielding to depression of the knee by tipping the pelvis. This he instinctively does to avoid pain. The pelvis must remain level.

Figures 1 to 6 illustrate a case in which a woman, aged 50, complained of pain about the left hip and from the hip to the knee (Case 1). She was sent to me by one of the best surgeons in the country with the statement, among others, that a careful examination, including roentgen-ray plates, showed nothing in the hip joint. But the case was one of arthritis of the hip and, incidentally, of the left knee. Figures 7, 8 and 9 are from another case of hip arthritis (Case 2). This patient had not only free and painless flexion of the thigh, but also good abduction and rotation; and yet in this test the knee would go no lower than the point indicated in Figure 9.

It goes without saying that other tests should be used as indicated in the shoulder cases: extension,

1. A number of times I have known the sciatic nerve to be injected or stretched when the trouble was in the joint.

2. Bruce, William: *Sciatica*, New York, 1913.

3. Very similar to Kernig's sign. With the knee well flexed, the thigh can be fully flexed without pain; but when, with the thigh thus flexed, an attempt is made to extend the leg, it cannot be got much beyond a right angle without causing pain.

4. If the soreness has all gone from the joint and only the relics of a previous arthritis are present, there will be no pain: only inability to bring the knee down to the normal point.

flexion, abduction, adduction, rotation, strong abduction with rotation, etc., *against resistance*.

As shoulder arthritis is often accompanied by a like condition of the cervical spine, so hip arthritis frequently is complicated by involvement of the lumbar spine, and probably of the fibrous structures overlying the sacrum.⁵ This may cause pain radiating down the extremity, thus assisting in the simulation of sciatica. Bruce believes that the pain down the leg is referred pain, like the pain in the knee of tuberculous hip disease.

If arthritis of the hip is present, naturally we would look for more or less muscular wasting. And this wasting, instead of being an embarrassment in the diagnosis, is an aid. Atrophy due to inflammation of the sciatic nerve of course involves all the muscles supplied by this nerve, no others, and probably the peripheral ones (leg muscles) more. The atrophy of hip arthritis, on the other hand, is found in the muscles that move the joint, especially, as Bruce has insisted, the gluteals. With the patient prone, a distinct flattening of the buttock often is apparent, and with the patient standing, a difference in the gluteal folds.

The other differential criteria distinguishing hip arthritis from sciatica may be taken over bodily from the shoulder cases. In neuritis of the sciatic nerve the Achilles jerk is diminished or lost, whereas in arthritis of the hip it is normal or, more frequently, increased. The knee jerk on the affected side is also nearly always increased. But in arthritis of the spine with considerable involvement of the nerves, these deep reflexes may be diminished.

Bruce⁶ says of sciatica, "I have rarely found the tender points of the books." I entirely agree with him. The first reason is that most of the cases are not sciatica. But even in this disease the classical points of Valleix are a delusion and a snare. In arthritis, more or less tenderness on the affected side is almost the rule.

How much of this is of organic origin and how much due to the hypersensitiveness of a long-suffering patient is not always easy to say. I know that in arthritis of the hip, if one firmly punches the gluteal point, the femoral point, the popliteal point and the submalleolar point, frequently one or more of them will be or seem to be tender. But if the examiner is not satisfied with this, and proceeds to punch other places, from the iliac crest to the heel, he will find muscular tenderness, joint tenderness, tendon or fascia tenderness, sometimes even periosteal tenderness, all of which has nothing to do with the sciatic nerve.

Concerning one striking sign or consequence of sciatica, I am in doubt. This is the high degree of scoliosis or lateral curvature sometimes observed. I do not know whether this can be caused by simple arthritis of the hip, but I think that it can.

25 East Washington Street.

TORULA IN MAN

REPORT OF A CASE WITH NECROPSY FINDINGS

PHILIP H. PIERSON, M.D.

SAN FRANCISCO

Torula is a form of yeast, producing lesions preferably in the central nervous system. These lesions macroscopically simulate tuberculosis, from which disease they must be differentiated as well as from lesions formed by coccidioides and blastomycetes. It is not my object in this paper to go deeply into the differential features of these three diseases but briefly to point

out the main differences and then present a case of torula infection in a man admitted to the San Francisco Hospital, September, 1916.

It is definitely agreed that coccidioidal granuloma and blastomycosis are two different diseases. Coccidioidal granuloma is a disease produced by an organism which sporulates but never buds in tissue. It varies greatly in size, having large forms up to 30 or 40 or even 80 microns in diameter producing many small ascospores which, in turn, escape from the capsule. It simulates tuberculosis in the type of its lesions and in the manner of spreading, principally by the lymphatics

and thence to the blood stream. It is largely confined to men in the San Joaquin Valley, California. It is nearly always fatal, as no treatment has been found that is of any benefit.

The organism of blastomycosis varies in size from 3 to 20 microns. It buds but never sporulates, the buds being from one-half to one-third the size of the parent cell. It grows to the size of the parent cell before reproducing itself. It produces nodules with or without caseation, and deep and superficial abscesses with polymorphonuclear leukocytosis. It may affect all organs, including, as a rule, the skin and the bones, and it is helped by iodids. On culture mediums both the blastomycetes and coccidioides grow mycelium sooner or later. The organism of coccidioidal granuloma also produces chlamydospores at the ends of the aerial hyphae in cultures.

Years ago torulae were found to have a marked pathogenic action in animals; but prior to this case there have been only six reported in man—two by Rusk, two by Stoddard and Cutler, and one each by

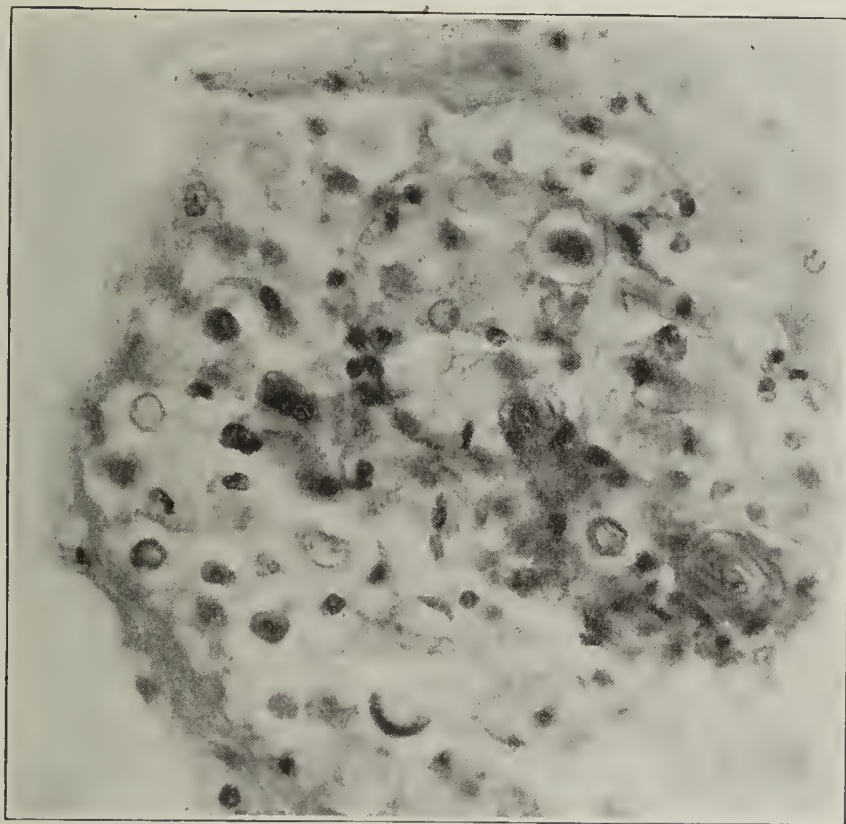


Fig. 1.—Low power view of lesion from cortex, several organisms seen with clear zone of gelatinous material surrounding them.

5. Cases thought to be lumbago with sciatica or alternation of these two affections are generally cases of arthritis of spine and hip or of the former alone.

6. Bruce, William: Sciatica, p. 11.

Türk and von Hansemann. *Torula* a pseudoyeast, is distinguished from the true yeast by its absence of endospore production under all circumstances, by the fact that it never produces mycelium, that it usually does not ferment sugars, and that it reproduces itself only by budding. It is also more pathogenic for animals than is the true yeast. The central nervous system is particularly susceptible to this organism, which, however, attacks other organs less often. The pathologic changes in the meninges show a chronic inflammatory reaction with areas of caseation like tuberculosis if the lesion is extensive. The organisms, which usually occur in cells, bud in the large vacuoles enclosing them and then, as a rule, destroy the cells. The size varies from 1 to 13 microns. Small organisms may bud, the daughter cell soon attaining the size of its parent. In the older stages the organism develops a resting stage, and there is definite evidence of healing. For this reason, we may believe that the disease, while always chronic, is not always fatal and healing does occur. It is quite possible that many cases exist but are not recognized because of the obscure nature of these healed lesions. The organism possesses a definite cell membrane which stains diffusely and easily with van Gieson's stain, methylene blue and hematoxylin. In the large forms, the protoplasm is not evident. In the medium-sized, it is often shrunk into an irregular shape and takes a diffuse red stain with differential droplets. In the small forms, it fills the organism and has dark staining masses. Around the organism there is always a clear

zone composed of gelatinous material. This is one of the characteristic features of the disease, for in coccidioides and blastomycosis there is no such solution of tissue. With or without caseation, nodules are formed composed of epithelioid cells, giant cells (often containing the organism) and lymphoid cells. Caseation occurs centrally, and apparently depends on the action of cell products. There are no collections of polymorphonuclear cells, and no bone or skin lesions. On culture mediums the original growth is most luxuriant on carbohydrate materials such as potato and agar or glucose agar, though scanty on blood serum. After animal inoculation, growth is more vigorous on blood serum, but better on the potato and glucose agar. Cultures continue to be viable even after years of disuse.

The localization of lesions in the nervous system is in the meninges, in the perivascular spaces, and in the brain substance by extension from these lesions. They have been found also in the choroid plexus, in the aqueduct of Sylvius, in and about the foramen of

Magendie, and in the basal ganglions, the internal capsule, the frontal lobes and the cerebellum. Thus it may be seen that these lesions, although very small, may cause symptoms of grave importance. There is seldom fever or increase of the white count. The optic nerve may become involved, or the choked disk may be secondary to other lesions. Infection probably takes place through the respiratory tract, although it may occur through the pharynx and esophagus. Organisms are taken up by giant and large mononuclear cells, within which they continue to live and multiply, finally destroying them and becoming free. In the brain, organisms are carried along the perivascular spaces, and lesions develop peripherally in the brain substance, chiefly by solution of tissue. This ameba-like action is not as easily performed in other organs, probably because of the greater resistance of their tissue as compared with that of the brain. So we may say that the organism works in two ways: (1) mechanically, in that its growth within cells causes pressure and finally destruction, and (2) chemically, as shown by the solution of tissue. By attacking the host in the central

nervous system, the organisms diminish the resistance of the patient even by small lesions critically placed.

It may be said that morphologically *torula* may be differentiated from coccidioides by its uniform size. It differs also in its method of reproduction, which is by budding rather than by spore formation. It resembles blastomycosis so far as the organism itself is concerned, but differs in its tissue reaction. Blastomycosis has a polymorphonuclear in-

filtration and no solution of tissue, while *torula* has this typical lysis of tissue and attracts mononuclears rather than polynuclears.¹

The report of this case, with the pathologic findings of Dr. Ophüls, follows.

History.—E. F., aged 57, laborer, single, was born in New York, resided in California forty-five years and entered the San Francisco Hospital, September, 1916, with the diagnosis, on admission, of "second degree burn of shoulder, and senile dementia." The family history was negative. The past history was also negative, except for the fact that he had had gonorrhea twice and a soft chancre. While shaving he suddenly and without warning fell to the right, burning his right shoulder on the heater for hot water. He was able to walk, and had no great inconvenience aside from the burn. This was all the history obtainable. The burn healed satisfactorily, and he was transferred to the medical service for

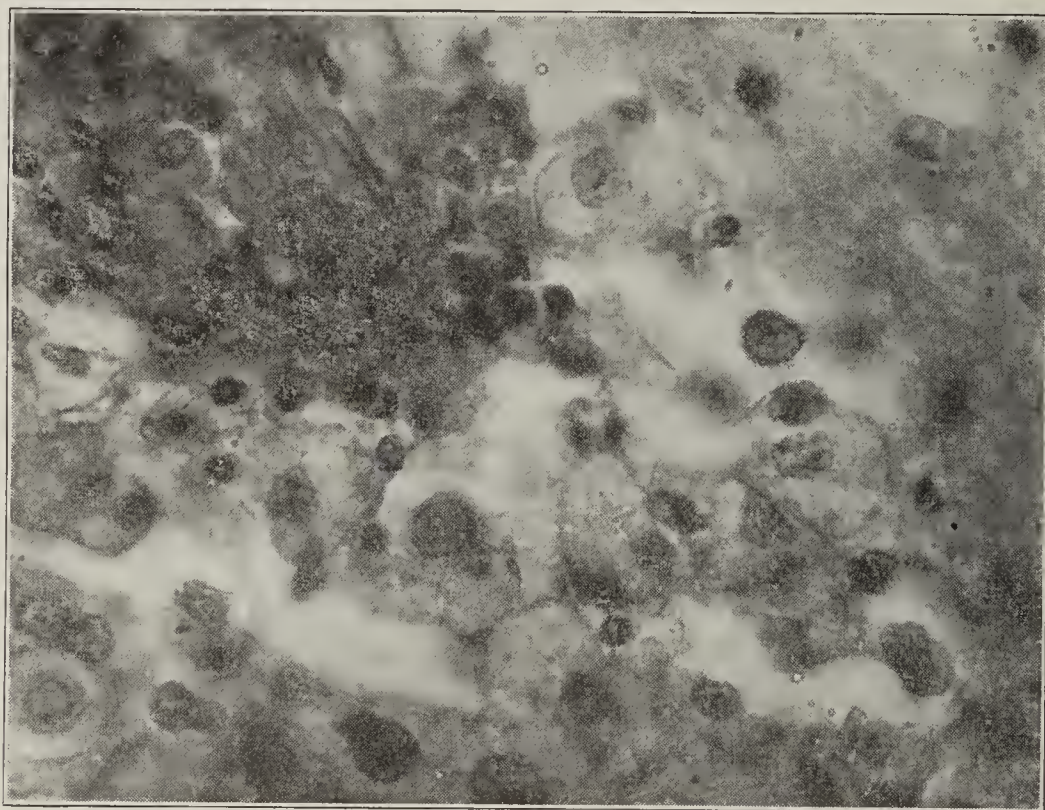


Fig. 2.—Same as Figure 1, under oil immersion. In left lower corner there is a very definite organism. The relative size of large mononuclear and plasma cells should be noted.

1. A very complete monograph on *torula*, which may be referred to for further data, is that by Stoddard and Cutler: *Torula Infection in Man*, Monograph 6, Rockefeller Institute for Medical Research, Jan. 31, 1916.

an examination of his mental condition. While in the hospital he was quiet, and seldom spoke to any one. At times he tore the dressing off the scalded arm and threw off the bed covers. His appetite was good, and he ate in a sensible fashion. At about the beginning of the third week, he forgot to put on his bath robe when going to the toilet, and seemed distressed when asked why he did this. A few days after the appearance of these symptoms, he developed an inability to grasp objects properly or at the first reach. He would grope past them into the air. When feeding himself, he could not find his mouth easily. This was followed by a tendency to stagger forward when walking, and an inability to articulate properly. October 11, he had to be restrained in bed.

Physical Examination.—The patient was a large, strong man, restless and irresponsible. Supra-orbital pressure elicited facial response which showed no paralysis of facial muscles. The eye movements were normal. The pupils were dilated with atropin. The tongue protruded in the median line. The heart was not enlarged, showed no murmurs, and was regular in rate, the pulmonic second sound being equal to the aortic second sound. The lungs were negative except for a few râles at the bases. The abdomen was negative, as were its normal reflexes. The extremities were negative. There was a markedly stiff neck and a positive neck sign. The left knee showed a slight jerk not observed in the right. There was no clonus or Babinski. The Kernig was positive. In the examination of the eye, the fundi were normal. The blood pressure was 160.

A lumbar puncture was made, October 17, and 15 c.c. of fluid were withdrawn. The fluid, under considerable pressure, was very yellow, clear and alkaline. The Noguchi and the Nonne reactions were positive. The cell count was 488 per cubic centimeter. The differential showed all lymphocytes. The Wassermann reaction was negative. The culture on the blood serum showed no growth.

October 18, the patient was much clearer mentally, and needed less restraint. His answers were still incoherent. His condition remained about the same. The blood Wassermann was anticomplementary.

October 30, the patient was considerably worse. Examination revealed a stiff neck, and a positive Kernig sign, but no paralysis. As a second lumbar puncture was bloody, no tests were done except a Wassermann, which was negative.

November 1, fundi were negative.

November 2, the patient died, after being incontinent for urine and feces for several days.

The temperature was never more than 97, except on one day when it was 101. The pulse was from 75 to 90, and the respirations were from 20 to 25. On the patient's entrance into the hospital, the white count was 7,600; on the day before death, 15,600. The urine was alkaline, and its specific gravity was 1.020. There was a trace of albumin but none of sugar. Sediment, epithelial cells and bacteria were present.

Pathologic Findings.—A postmortem examination, done at 4:30 p. m., revealed a moderate old cirrhosis of the liver, an old thrombosis of the portal vein, marked ascites, very marked enlargement of the spleen, and numerous old scars in the kidneys, with very marked arteriosclerosis of the branches of the renal artery. There were some old scars in the upper part of the lower lobe of the left lung, and some caseous areas in the peribronchial lymph nodes. There was present also a terminal bronchopneumonia. Examination of the central nervous system revealed a tense dura somewhat thickened. The pia mater on the convexity of the brain was somewhat edematous, and showed markedly diffuse thickening. The convolutions were slightly flattened, and the dura was adherent to the pia near the median line. The large arteries at the base of the brain showed marked thickening and sclerosis. The lateral ventricles contained about 30 c.c. of clear fluid. The choroid plexus was markedly thickened and congested, as was also the ependyma of the third and fourth ventricles. The venous sinuses at the base of the brain were normal. The dura mater of the cord was somewhat thickened, and there was very markedly diffuse conges-

tion and thickening of the pia over the entire cord. On the cut section, the cord showed a decided softening, and bulged over the cut surface. No bacteria were found in the brain or meninges.

Microscopic examination of the brain and cord revealed a marked cellular infiltration and fibrous thickening of the pia. In the pia there were numerous round encapsulated organisms resembling yeasts. Similar organisms were found in groups in the cortex of the brain, where they have caused a liquefaction of the brain tissue without much reaction. A culture taken from the cord was negative.

Microscopic examination of the peribronchial lymph glands showed numerous caseous areas and small cellular tubercles with large giant cells of the Langerhans type. In a few of these giant cells, small encapsulated organisms resembling yeasts were found.

Final Diagnosis.—This was cirrhosis of the liver; thrombosis of the portal vein; chronic splenitis; general arteriosclerosis; arteriosclerotic scars in the kidney; terminal bronchopneumonia, and torula infection of the lungs, peribronchial lymph glands, meninges and brain.

I am indebted to Dr. Ophüls for his help in determining the pathology of these tissues and to Dr. Blaisdell for the photographs.

516 Sutter Street.

THE TOXICITY OF NEODIARSENOL

ERWIN P. ZEISLER, M.D.

Instructor in Dermatology and Syphilology, Northwestern University
Medical School

CHICAGO

One of the recent substitutes for neosalvarsan is neodiarsenol, marketed by a Canadian firm. It is claimed to be suitable for intramuscular or intravenous injection in either dilute or concentrated solution. I have employed neodiarsenol in dosages of 0.6 and 0.75 gm. dissolved in from 10 to 15 c.c. of freshly distilled sterile water. The powder is of a somewhat darker yellow color than neosalvarsan, and is not so readily soluble. Even after prolonged shaking there may remain small undissolved particles, which necessitates filtration.

In a recent series of twenty intravenous injections given to fifteen dispensary and private patients in all stages of syphilis, I have noticed an unusually large percentage of reactions. Ten of the patients complained of varying degrees of nausea, vomiting, headache and fever for from twenty-four to forty-eight hours after the injection. One woman with a fresh syphilitic infection (roseola, adenopathy and a positive Wassermann reaction) five days after the administration of 0.6 gm. of neodiarsenol developed fever, headache, vertigo and incessant vomiting which lasted twelve hours. In the absence of any other explanation, I was forced to conclude that this was a late toxic manifestation, possibly an encephalitis. The patient recovered under rest in bed. Another patient in the midst of the injection complained of nausea, faintness and thoracic oppression, with marked flushing of the face. He was immediately given a hypodermic of epinephrin and was able to go home half an hour later. Another patient with symptoms of early tabes collapsed a few minutes after the injection, became extremely pallid, and his pulse became almost imperceptible. The immediate reaction in this case was most alarming, but fortunately he recovered. A very obese patient on account of technical difficulties received 0.6 gm. of neodiarsenol intramuscularly. The pain and local reaction were so intense as to require morphin injections for the next forty-eight hours.

are taken out and the cards reveal which patient or patients are to return that day for observation, treatment or operation, as the case may be. When a patient is cured, and the case closed, the card goes back to the permanent file; otherwise it continues running in the calendar file until completed. The subsequent notations when the card is filled are written on a plain card headed by name, rank, etc., and fastened to the original card.

Letter Form 2 is filled out and sent off at the same time the card form is started, that is, when the patient is discharged from the base hospital and returned to the care of his regimental surgeon. This letter form is also used on all subsequent visits to the base hospital by the patient, when it is desirable that he should return.

FORM 3

Base Hospital, Office of Genito-Urinary Service, Camp Lee, Va.

From: Chief of Genito-Urinary Service

To: Commanding Officer, Co. Regt.

Subject: Failure of patient to report.

1. Your attention is invited to the fact that

.....
Name Rank Co. Regt.
has not reported for on
19... .. M., as requested in letter to Regimental Surgeon
..... 19...
.....
Major, M. R. C.

Letter Form 3, it need hardly be mentioned, will be but rarely required. Its wording, however, will suggest the moment of its usefulness.

Forms 4, 5 and 6 work rather independently of those just described.

FORM 4

Base Hospital, Office of the Genito-Urinary Service, Camp Lee, Va.

From: Chief of Genito-Urinary Service

To: Regimental Surgeon

Subject: Control of infectious cases of venereal disease.

1. The enclosed forms in numerical sequence are for use in cases of venereal diseases under your care, and are self-explanatory.

2. These forms are to be used in all cases of venereal disease, which had occurred since the opening of this cantonment, and are to be continued in use in all subsequent cases.

3. These forms will be issued from this office in such numbers as you may require.

.....
Major, M. R. C.

These cards with return envelopes are sent (a small number of each) to each regimental surgeon, along with the letter of instruction as to their application.

The numbers of the cards and the surgeons they are sent to are first carefully noted in a book kept for that purpose, and all subsequent cards sent out are likewise kept track of, to be checked up, first when the examination is made and finally again when the cards come back.

It has seemed wise to have all patients with sexual infection in camp report to some one center, well equipped with laboratory facilities and specially trained men, and here pass that important final judgment as to whether the patient is free from infectiousness and can with safety be allowed to visit the civil community.

If the civil communities will do as much to protect the soldiers in this respect as the military is

doing to protect civil populations, they will do much not only toward shoring up their own social structures, but also toward shortening the war.

A brief study of these cards will make their function and significance plain, both as a check on the infectious

FORM 5

CAMP LEE, VA.

No.....

From Surgeon

To Commanding Officer Co. Regt.

You are hereby informed that
is infected with

Attention is invited to the C. of O. 1881-1915, Par. 92, subsection 3, page 214, which states that "while in the infectious stages the men should be confined strictly to the post."

The above soldier should not be given leave of absence from the reservation until, upon examination, no further evidence of infectiousness can be found, and the attached card is signed by surgeon of the Genito-Urinary Service.

This card is to be retained by Company Commander until card of examination is signed and returned to him, at which time he is requested to return both cards to the Genito-Urinary Service, Base Hospital.

.....

GENITO-URINARY SERVICE

No.....

BASE HOSPITAL, CAMP LEE, VA.

Name Rk. Co. Regt.

shows no further evidence of infectiousness from.....

....., and is discharged from

further treatment.

.....Major, M. R. C.

Base Hospital.....19 ,

Before any leave of absence can be obtained following above examination, this card is to be taken by the soldier to his Company Commander.

soldier, and as a complete record of all such cases in a camp taken from a different angle than are the present military reports.

It has been mentioned that the latter set of forms works rather independently of the former, and this is necessarily so, as a large proportion of sexually infected soldiers are cared for by their regimental surgeons and do not come to the base hospital at all; however, this plan of having every man come to one central bureau for his final examination is of much importance, as it not only brings the regimental surgeon and the base hospital surgeon into a closer and more purposeful cooperation in reaching a higher standard, but also increases the respect of the soldier

ENVELOP FORM 6

WAR DEPARTMENT

PENALTY FOR PRIVATE USE \$300.

From Commanding Officer

Co. Regt.

.....

Official Business.

For return of card No. XXX

To Chief of Genito-Urinary Service,
Base Hospital,
Camp Lee, Va.

in the vitally important subject of a sexually clean bill of health.

If what many are seeking to make us believe today is so, that there is more loss of service in the armies of our allies through sexual infections than through the usual wounds of war, then to the Medical Corps of our Army there comes a warning not to be lightly laid aside, and to the medical officer whose duty includes the care and control of sexual sickness there comes a singular responsibility, for in the manner of his doing, it may be that the balance of man power in the final struggle of this war shall be determined.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 29, 1917

THANK YOU

In response to the note in last week's issue of THE JOURNAL, a large number of remittances for Fellowship dues and subscriptions for the ensuing year have been received. No doubt at this time many are at the point of remitting. For the convenience of those who may have misplaced the slip enclosed in last week's issue, another is inserted in this number. Those who have already remitted will of course ignore the slip in this issue.

RECENT WORK ON GASEOUS GANGRENE

Recent investigations have added greatly to our knowledge of gaseous gangrene. To determine whether the conditions currently designated as gaseous gangrene are associated with the same or with different bacteria, Weinberg and Seguin¹ made an exhaustive bacteriologic study of ninety-one cases of gangrene. They found anaerobic bacteria in the wound in every case, occasionally just a single anaerobic species, occasionally several anaerobes in association; but in the majority of the cases several different anaerobes and aerobes were present. This result might be taken to indicate that no one bacterium plays a predominant rôle in the development of gaseous gangrene, and consequently that the outlook for a specific treatment based on a definite and constant etiology is not promising. It is highly significant, however, that the most common anaerobe by far in this series, being present in two thirds of the cases, was *Bacillus welchii*, also called the gas bacillus, or *B. perfringens*, as the French call it. Next in frequency came a bacillus which is called *Bacillus oedematiens*, and then the *vibrio septique* of Pasteur, or the bacillus of malignant edema. Probably these two organisms are closely related. In the cases with abundant gas production, extensive crepitation, bronzing of the skin, etc., that is, the classical form of gaseous gangrene, *B. welchii* was the dominating organism, while *B. oedematiens* (bacillus of malignant edema) predominated in certain toxic

cases with progressive edema; but cases of mixed infection with both these bacilli were observed also. The investigations of Weinberg and Seguin emphasize, consequently, that in gaseous gangrene, that serious complication of war wounds, *B. welchii* is by far the most important organism. Injured muscle, exposure of bone marrow and interference with the circulation on account of arterial injury, tight splints and casts are conditions that favor the growth of this bacillus, infection with which is bound to occur with great frequency because it is in the soil and on the skin and clothes of the soldiers, especially those in the trenches. Laying wounds open and cleansing them thoroughly, removing all foreign materials and damaged tissue, naturally will cut short many cases; while in many others the invasion of the bacilli and the resulting general intoxication rapidly pass beyond arrest and cure even by the most skilful and thorough local treatment, and demand new and more subtle methods.

Probably the decisive step toward finding one such method already has been taken. Weinberg and Seguin¹ urge the use of antitoxic serums which they have prepared against the three most important anaerobes concerned in gaseous gangrene, but we as yet know practically nothing of principles and methods they have followed in developing these serums. In earlier communications, Weinberg² states that antitoxic serums have been secured from the horse against *B. oedematiens* and *vibrio septique*, and antibacterial serum against *B. welchii* (*B. perfringens*); but no exact description of the methods used is given. In the meantime, Bull and Pritchett,³ whose work has been discussed in these columns before, laid a sound experimental basis for antitoxic serum treatment of infections with *B. welchii* by showing that when this bacillus is grown in broth with sterile rabbit muscle a typical toxin is produced, which in the guinea-pig causes symptoms typical of the infection, and which in suitable animals evokes the elaboration of a specific antitoxin with both protective and curative properties under experimental conditions. The discovery that *B. welchii* produces a true toxin places it in the same group as *B. diphtheriae*, *B. tetani* and *B. botulinus*. DeKruif, Adams and Ireland,⁴ as well as Bull,⁵ find that the toxin produced by various strains of *B. welchii* is neutralized by the same antitoxin, which would indicate that if the natural infection can be influenced by antitoxic serum, one and the same toxin may serve as the antigen in the process of immunization. DeKruif and Bollman⁶ further show that acid plays no part in the intoxication produced by *B. welchii*, as asserted by earlier workers, and thus support the view

1. Weinberg and Seguin: Etudes sur la gangrene gazeuse, Ann. de l'Inst. Pasteur, 1917, **31**, 442.

2. Weinberg: Proc. Roy. Soc., 1916, **9** (occasional lectures), 119.

3. Bull and Pritchett: Jour. Exper. Med., 1917, **26**, 119.

4. DeKruif, Adams and Ireland: Jour. Infect. Dis., 1917, **21**, 580.

5. Bull, C. G.: Jour. Exper. Med., 1917, **26**, 603.

6. DeKruif and Bollman: Jour. Infect. Dis., 1917, **21**, 588.

of Bull and Pritchett, that a true toxin is the essential factor in the general intoxication.

From the foregoing it appears that *B. welchii* is a toxicogenic bacterium, and that it is the most important bacterium concerned in so-called gaseous gangrene; that other anaerobic bacteria, the mechanism of the infection with which we do not understand as well, may also be concerned, and that the stage is now set for the treatment of gaseous gangrene with anti-toxic serum. The outcome will be watched with much interest.

THE CEREBROSIDS OF THE BODY

Only a few years have passed since the so-called lipoids were regarded as essentially characteristic of nervous tissue, from which some of them were first prepared in amounts adequate for careful study. Subsequent investigation demonstrated a far more widespread distribution of these fatlike organic substances in tissue of the most diverse sort, in both the animal and the plant kingdoms. The lipoids, or at least representatives of this somewhat heterogeneous group of compounds, are today looked on as important constituents of living cells in general; and they appear to play a prominent part in the structure and function of the cell membranes. Their physical properties are quite unlike that of the ordinary water-soluble components of tissues; and the unique character of their chemical composition suggests important functions of a chemical nature, whatever they may be.

Among the lipoids the phosphatids, a group including lecithin and kephalin, have received the most attention. The assumed and possible relations of these substances to various physiologic and pathologic phenomena have frequently been discussed in *THE JOURNAL*. Only recently kephalin has come into unanticipated prominence, owing to its presumable rôle in the reaction of blood coagulation.¹ Lecithin is being brought into relation to the metabolism of the fats, especially through the researches of Bloor. Cholesterol, long familiar as a conspicuous constituent of the brain and a component of gallstones, likewise has acquired a new prominence in connection with the blood. Less well known is that group of lipoids to which the designation of cerebroside has been given. The pioneer worker on this type of substances was Thudichum,² who assumed the existence in brain tissue of at least two different compounds characterized by yielding, on decomposition, the sugar galactose together with a nitrogenous base, sphingosin, and a higher fatty acid.

Thus the names of two cerebroside, phrenosin and cerasin, entered the literature of physiologic chemistry in connection with the study of the composition of

the brain. Phrenosin yields cerebronic acid, whereas, from cerasin, lignoceric acid has been obtained. Not only have the cerebroside now been found in other organs than the nervous system, but there appears to be an identity of these lipid substances in the several tissues, just as has been found true of other lipoids. Levene and West³ have lately demonstrated that the cerebroside in egg yolk, the liver and the kidney seem to be identical with those obtained from the nerve tissue. They yield the same sugar, galactose, the same base, sphingosin, and the same fatty acids, lignoceric and cerebronic. It is not certain whether the two cerebroside, phrenosin and cerasin, occur in the same proportions in nerve tissue and in the various other organs. This uncertainty applies, however, to every other individual lipid. It is quite possible, as Levene and West remind us, that the proportions of the lipoids vary with the variation of the organ. Certainly it represents a distinct step in advance to have more intimate knowledge of the chemical compounds with which the performances of our body cells are inevitably concerned. Metabolism, immunity, heredity are merely words that express in an as yet indefinable way the chemical manifestations bound up with the performance of compounds at present unidentified—possibly the very substances that these newer lipid researches have helped to elucidate. Studies in this field are attended with enormous difficulty; they should be encouraged all the more because of the great promise which the successful invasion into its secrets holds out.

URIC ACID AND GOUT

It would be impolitic and essentially wrong, Otto von Fürth⁴ wrote a few years ago in relation to gout, simply to ignore whatever judicious objective observers have found appropriate after decades of study, merely because no theoretical explanation has been found. It should never be forgotten that the observations of the practitioner may be true and the theories may be false, and that a judicious natural scientist generally values the former more than he does the latter. Unfortunately, objective observation, especially in the treatment of chronic internal affections, is endless and difficult; and for that very reason this has been and will be at all times and among all people the favorite field for both scientific and unscientific charlatanry.

Assuredly, therefore, we need to secure the attainable scientific facts regarding gout, and particularly its much discussed relation to uric acid, with which it has been prominently associated ever since Garrod's studies in 1848. Garrod's contention, that the bloody of gouty persons is characteristically richer in uric acid than is the circulating medium of normal persons, long ago

1. The Hemostatic Action of Kephalin, editorial *THE JOURNAL*, A. M. A., Nov. 4, 1916, p. 1373.

2. Thudichum, J. L. W.: *Physiological Chemistry of the Brain*, London, 1884.

3. Levene, P. A., and West, C. J.: *Cerebroside, V, Cerebroside of the Kidney, Liver, and Egg Yolk*, *Jour. Biol. Chem.*, 1917, **31**, 649.

4. Von Fürth, Otto: *Chemistry of Metabolism*, translated by A. J. Smith, Philadelphia, 1916, p. 193.

awakened inquiry as to the cause of this phenomenon. The accuracy of the observations might well have been debated up to a few years ago, when microchemical methods of analysis greatly simplified the determination of the facts with comparative ease on a larger number of patients. At present it seems to be agreed that the gouty show an increase of uric acid in the blood. The latest report⁵ in this field, reviewing the situation, concludes that on statistical evidence more than 3 mg. of uric acid per hundred c.c. of blood, with the patient on a purin-free diet, is a symptom of gout, but is not a diagnostic sign of the disease.

Is this increase of uric acid in the blood of gouty patients to be ascribed to either an increased entrance or a diminished escape of the material? At present there is little reason for postulating an increased genesis of uric acid in gout, although such a theory was popular a few years ago. There can be no question, however, of occasional delayed excretion of uric acid by the gouty. It was quite natural, therefore, to correlate the uric acid stagnation with defective renal function. When no clear indications were discernible, a "latent" nephritis was sometimes postulated in explanation of the "gouty diathesis." Today the possibility of applying functional tests to the kidney makes a vague explanation of this sort scarcely justifiable. It is not easy to distinguish cause and effect in the alleged association of gout and nephritis. In their investigations at the Peter Bent Brigham Hospital in Boston, McClure and Pratt have become convinced, like others before them, that although in the majority of gouty patients there are increased amounts of uric acid in the blood, a large percentage do not have markedly increased quantities of other nonprotein nitrogenous substances in their blood when on a purin-free diet. Indeed, they categorically state that a marked retention of nonprotein nitrogen is not frequent in gout.

It was to be expected that considerable light might be thrown on the meaning of the augmented uric acid in the blood if the fate of exogenous purin-yielding foods in gouty subjects could be ascertained. Human patients alone suffice for this purpose, since, in the common laboratory animals, in contrast with man, uric acid is further oxidized in the body. McClure and Pratt have followed the effects of injections of uric acid, and of the ingestion of purin-forming products, in man. Their results, along with previously known facts, indicate that in normal and nongouty as well as in gouty persons there is great variability in the quantity and in the duration of exogenous uric acid excretion. For this reason, they say, a diminished or a protracted exogenous uric acid output most probably results from factors other than disturbances in the purin intermediary metabolism. If this is not true, then derangements in purin metabolism are so

common that their importance in the etiology of any diseased condition is problematic.

If the failure to eliminate exogenous uric acid promptly is not peculiar to gout, though it would appear to occur more frequently in gouty than in nongouty persons, we may assume, with the Boston investigators, that the acid enters the body tissues in some way, since it is not known to be destroyed in the body. For the moment, in attempting to make a diagnosis it is perhaps preferable to depend on the analysis of the blood rather than on the failure to excrete exogenous uric acid promptly.

CREATINURIA

The excretion of creatin in the urine is a phenomenon now generally recognized to occur at times in normal persons. The intake of a very large quantity of creatin may lead to some elimination of this compound; but creatinuria occurs in healthy persons under conditions that are not referable to such a cause. Normal men do not excrete creatin through the kidneys under usual conditions of diet. Normal children, however, are now recognized to excrete creatin commonly during the period of adolescence. This was demonstrated in this country several years ago by W. C. Rose¹ at Yale University and verified by Folin and Denis² at the Harvard Medical School. Subsequently Krause³ showed that the younger the child, the less its ability to retain creatin administered by the mouth. These observations have been puzzling to the physiologist and have led to a variety of hypotheses as to the unexpectedly unlike behavior of the juvenile and the adult organism, respectively, in the matter of spontaneous creatinuria. The problem was seemingly further complicated by the statement of Krause⁴ that the urine of normal women frequently contains small amounts of creatin. This creatinuria, according to Krause, is associated with the sexual cycle, and is always present after menstruation; and while in some individuals it may disappear during the intermenstrual period, in others it persists.

The facts regarding creatinuria in children remain unchallenged. With respect to the possibility in women, Mary S. Rose⁵ has reinvestigated the subject quite extensively over longer periods of time on a number of adult women. She reports that the creatin output of women is very irregular, and no definite relationship between creatin and creatinin has been demonstrated. There is no clearly defined connection between the creatin output and the sexual cycle. Creatin tends to disappear at the onset of menstruation and to reappear shortly afterward, but it may do the same at other times also.

5. McClure, C. W., and Pratt, J. H.: A Study of Uric Acid in Gout, *Arch. Int. Med.*, October, 1917, p. 481.

1. Rose, W. C.: *Jour. Biol. Chem.*, 1911-1912, **10**, 265.
2. Folin, O., and Denis, W.: *Jour. Biol. Chem.*, 1912, **11**, 253.
3. Krause, R. A.: *Quart. Jour. Exper. Physiol.*, 1914, **7**, 87.
4. Krause, R. A.: *Quart. Jour. Exper. Physiol.*, 1911, **4**, 293.
5. Rose, Mary S.: Creatinuria in Women, *Jour. Biol. Chem.*, 1917, **32**, 1.

In previous issues of *THE JOURNAL* we have discussed the current hypotheses regarding creatin and creatinin excretion. The theories that creatinuria is an accompaniment of inadequate carbohydrate metabolism induced either by dietary deficiencies or by disease, or that it is a consequence of a condition of acidosis, have been found inadequate to explain all cases in which creatin is excreted. More recently the reference of creatin elimination to a high level of protein metabolism has been revived as a working hypothesis. Thus Denis⁶ found that forced protein feeding induces creatinuria in certain cases of hyperthyroidism, whereas a low protein diet produces a creatin-free urine. She has reported similar results also from varying the protein intake of children.

Denis and Minot⁷ found it possible, in experiments on two normal women, to cause creatin excretion by feeding a high protein (creatin-free) diet, and to cause the creatinuria so produced to disappear by the consumption of a low protein diet. In two men to whom a similar experimental procedure was applied, Denis and Minot were unable to produce creatin excretion even when a sufficient amount of protein was consumed to cause the urinary nitrogen to rise to 34.5 gm. per day.

This contrast in the apparent behavior of normal men and women toward the same diets, with respect to the creatin output, argues for some distinct difference in their metabolic capacities. There are, however, apparent conflicts in the data available. In her observations on women, Rose⁸ found not only that creatin is excreted on diets liberal in carbohydrate and causing no acidosis, but also that the excretion is not definitely influenced by the amount of protein in the diet. She therefore inclines to the view, to quote her own words, that creatin is constantly being formed in relatively large amounts and is normally for the most part either utilized or destroyed; that the adult man can metabolize considerable amounts, while the child's powers are much weaker, so that creatin in the latter represents a balance between formation and destruction; and that women occupy a position intermediate between men and children, being able to metabolize most if not all of the creatin that they may produce, the amount fluctuating with perhaps a variety of conditions. Without venturing any more detailed hypothesis, Denis and Minot repeat the suggestion that the ease with which creatinuria can be induced in normal women may be due to their relative lack of muscular development as compared with that of man. No explanation yet offered will permit a satisfactory interpretation of the now available facts; but the way to an understanding is unquestionably being made more easy by the increasing number of observations under well controlled conditions of diet.

Current Comment

EXPLOITING CHICAGO'S FOREIGN BORN

Four years ago the *Chicago Tribune* published a series of articles dealing with practically every advertising quack in the city of Chicago. In preparing the series it assigned to some of its reporters the task of investigating the local quack industry, and the reporters performed their tasks well. As a result of the light turned on this business, those English-language newspapers of Chicago that had heretofore offered a welcome haven to the quacks threw out this entire line of advertising—and kept it out. Quackery, however, was not dead in Chicago. One by one the fakers came back and adapted themselves, as quacks will, to the changed conditions. Chicago has a tremendously large foreign population, and is publication headquarters for a great many foreign-language newspapers. These the quacks patronized—and the papers have, apparently, been willing accomplices. Now the *Tribune* is publishing a second series of articles on the quacks. As in the previous campaign, a reporter has been paying visits to the various quacks, this time in the rôle of a foreign-born citizen. History is repeating itself. It remains to be seen whether the foreign-language press of Chicago can be shamed into the same action that some English-language newspapers took four years ago. If they can, the more blatant quacks of Chicago will have received a body blow, for only with the connivance of newspapers can these scoundrels ply their trade. The foreign-language press of the country professes to stand as champion of the foreign-born Americans. If this attitude is not a pretense, their course in the present matter is clear.

ULTRAVIOLET LIGHT AND BACTERIA

To understand something of the action of ultraviolet light in contrast with ordinary spectral light in relation to living structures, it must be borne in mind that the greater number of the constituents of living cells are colorless, that is, they do not absorb rays of the wave length of visible light. As many of them absorb ultraviolet light, however, the possibility of effects on living cells is thereby afforded. Sunburn (erythema solare) is a familiar illustration of inflammation due to the effect of ultraviolet light on the skin. Severe conjunctivitis also is caused by this agency, unless the eyes are protected by spectacles that are impermeable to the short waves. This danger is appreciated in electric welding, in which the arc spectrum of iron sends out the ultraviolet rays. The effects of this form of light do not extend far into more complex organisms because the absorbing power of protoplasm for ultraviolet rays is very considerable. When a better opportunity for penetration is given, as in small organisms like bacteria, a destructive effect is readily manifested. Hertel showed this in 1905; and subsequently Henri and his co-workers in Paris extended our knowledge of what has been called the abiotic action of ultraviolet light. Usually the microorganisms have been exposed in the presence of nutrient culture mediums in order that the destructive

6. Denis, W.: *Jour. Biol. Chem.*, 1917, **30**, 47.

7. Denis, W., and Minot, A. S.: *The Production of Creatinuria in Normal Adults*, *Jour. Biol. Chem.*, 1917, **31**, 561.

effects might be studied. These evidently offer considerable protection against ultraviolet rays.¹ At the Henry Phipps Institute of the University of Pennsylvania, Newcomer² has recently found that when the micro-organisms are suspended in water the baneful effect of the rays is far more obvious. Exposures to iron, zinc and copper sparks were tested. The killing power of ultraviolet light, in the case of typhoid bacilli studied by Newcomer, begins to decrease at about 2,800 Ångström units; and in the spectral region where the sun's rays begin, the sensitivity is practically nil. Typhoid bacilli unprotected by absorbent mediums are about one two-hundredth as sensitive to ultraviolet light of wave lengths from 2,100 to 2,800 Ångström units as is the photographic plate.

CHANGES IN THE PURGED INTESTINE

The postoperative lethargy of the bowel, the nausea and the apparent inertia of intestinal movement following a laparotomy form a picture familiar to every clinician. This sluggishness with its attendant gas pains, vomiting, etc., is one of the prominent symptoms of distress that usually persists for a time after operations, and challenges the efforts of the physician directed toward its relief. As a preliminary to operative procedures, it is a widespread custom to prepare the patient by purging. The staff of the George Williams Hooper Foundation for Medical Research at the University of California Medical School has made a direct test of the physiologic effect of purgation on the condition of the bowel³. It seemed reasonable to suppose, they state, that if purgatives have either a tonic or a depressant effect on the intestine, these effects should be demonstrable in excised segments beating in a suitable medium. Furthermore, if the treatment with purgatives should happen to leave some region of the intestine more fatigued or more irritable than others, the orderly progress of peristaltic phenomena might be interrupted. Alvarez and Taylor, who conducted the experiments on animals, thus state their findings:

The well purged rabbit is likely to be apathetic and to look sick. Its bowel is full of gas and fluid, and the mesenteric circulation is disturbed. Excised segments beat poorly and irregularly in Locke's solution, and they fatigue quickly. They respond poorly to drugs. Some parts of the bowel are abnormally irritable, while others fail to respond at all to powerful stimuli. This unevenness in the gradient of muscular forces must interfere with the steady progress of food through the gut; and it probably favors the production of colic and gas pains.

Calomel and cascara did not seem to poison or fatigue the segments of the intestine, as did castor oil, magnesium sulphate and jalap. The investigators conclude on the basis of their experimentation with animals that it is not wise to purge shortly before an operation in which the bowel must stand drying, handling, cutting and sewing. The surgeon may well give some heed to this suggestion, at any rate to the

extent of carefully weighing the reputed advantages of preoperative purgation against the detriment suggested by these studies.

PHENOLSULPHONEPHTHALEIN IN DIAGNOSIS OF DISEASE OF THE CENTRAL NERVOUS SYSTEM

Until quite recently, the textbooks have been singularly reticent about the functions of the cerebrospinal fluid. It has long been known that there may be an exchange of constituents between the cerebral sinuses and the blood stream; but the paths of transference have been a subject of some uncertainty. The debate has in part hinged about the question as to whether the spinal fluid is merely a sort of lymph bathing the nervous tissues and directly communicating with the rest of the lymphatic system, or whether it represents a secretion of special character and different origin. In any event, it is well understood that foreign water-soluble substances introduced into the cerebrospinal fluid find their way into the general circulation, from which they can subsequently be excreted by the kidneys. Thus Dandy and Blackfan¹ showed that phenolsulphonephthalein, which has been used widely as a test of renal function, is harmless when injected into the subarachnoid space, and appears in the urine in normal infants in from four to ten minutes. They employed the test pigment in a study of hydrocephalus. It has more recently been employed by Mehrtens and West² at the Leland Stanford Junior University School of Medicine, to determine, if possible, whether there might be some disturbance in the excretion of phenolsulphonephthalein in diseases of the central nervous system other than hydrocephalus. One naturally thinks in this connection of disease characterized by meningeal inflammation. Thickening and edema are common involvements of the vascular system and membranes of the nervous system. The California investigators have found that phenolsulphonephthalein injected into the subarachnoid space in normal persons appears in the urine in ten minutes or less. Diseases of the central nervous system, especially when involving the meninges, produce a lengthening of the appearance time to as much as seventy minutes in some cases. This delay cannot be accounted for by disease of the kidneys, or by the reduction of the phenolsulphonephthalein in the spinal fluid. In syphilis a lengthening of the appearance time may be produced before any other evidence of central nervous system involvement has appeared. An example is afforded by clinical tabetics, who furnish meager pathologic findings through examination of the spinal fluid, yet may exhibit a great delay in the excretion of the dye. Admitting that advanced general arteriosclerosis may be a factor in causing the delay in some instances, the method indicated is nevertheless of considerable significance in a diagnostic way because it may facilitate detection of organic disease when the ordinary spinal fluid findings are negative or incomplete.

1. Browning, H. C., and Russ, S.: *Proc. Roy. Soc. London (B)*, 1917, **90**, 33.

2. Newcomer, H. S.: *The Abiotic Action of Ultraviolet Light*, *Jour. Exper. Med.*, 1917, **26**, 841.

3. Alvarez, W. C., and Taylor, F. B.: *Changes in Rhythmicity, Irritability and Tone in the Purged Intestine*, *Jour. Pharmacol. and Exper. Therap.*, 1917, **10**, 365.

1. Dandy, W. E., and Blackfan, K. D.: *Internal Hydrocephalus*, *Am. Jour. Dis. Child.*, December, 1914, p. 406.

2. Mehrtens, H. G., and West, H. F.: *The Absorption of Phenolsulphonephthalein from the Subarachnoid Space in Diseases of the Central Nervous System*, *Arch. Int. Med.*, October, 1917, p. 575.

Medical Mobilization and the War

NAVAL DENTAL RESERVE FORCE FULL

The Surgeon-General of the Navy announces that the Navy's needs, so far as dentists in the Naval Reserve force are concerned, are more than satisfied, and that no applications are receiving favorable consideration at present.

RED CROSS COMMISSION ON WAY TO ITALY

The permanent Red Cross Commission for Italy, which is to take over the relief work begun by Major Murphy, has sailed for that country. Robert P. Perkins, New York, is in charge of the commission, and Dr. Joseph Collins, New York, is one of the members. Major Murphy has cabled that it has been necessary to place contracts which have practically used up the \$250,000 which the Red Cross appropriated for relief work in Italy, and has requested an additional \$250,000. He states that there is a great deal of work to be done, as the German successes in Italy involved the destruction of many military hospitals.

COMMITTEE VISITS ITALY

On the recommendation of Surgeon-General Bradley, General Pershing appointed a committee to study hospital conditions, surgical treatment and sanitary medicine in Italy. The committee consisted of the following members: Majors Angus McLean, George E. McKean and Harry N. Torrey. Lieut. Bror H. Larsson accompanied the expedition as secretary, and Capt. James W. Inches represented the American Red Cross. Permission for this investigation was obtained through the Italian military authorities, and was granted for fourteen days.

NEWS OF THE CANTONMENTS

Thirty-Fourth Division, Camp Cody, Deming, N. M.

DEC. 21, 1917.

RED CROSS

This organization was authorized by Act of Congress in January, 1905, to be a "medium of communication between the people of the United States and their Army. . . . No volunteer aid from any society or association will therefore be accepted for the Army of the United States except through the American National Red Cross."

An office and store room has been established at each of the large camps for the purpose of adding in any possible way to the comfort and happiness of the men, and of helping with supplies prepared in advance for any emergency that may arise. If needed, these supplies are given freely through the division surgeon without any charge, request being made by the Red Cross merely for a receipt, which can be used as a voucher in connection with the return of property made by the local representative. Such donations are made for enlisted men only, officers being able to provide for themselves. But the War Department has looked so carefully after the needs of soldiers that thus far its forethought has prevented any considerable requirement on the Red Cross, whose watchful representative has usually been able to find very few needs left uncared for.

Mr. Edwin H. Brown of Minneapolis is the representative at Camp Cody, and like all other field directors his services are given without salary or remuneration from any source. No agent of the Red Cross at this camp is in receipt of any salary. Through this office there have been received to date and for the most part distributed 4,785 woolen sweaters; 4,705 woolen wristlets; 2,304 woolen mufflers; 2,598 woolen socks; 43 woolen helmets; 1,000 goggles; a Pathé phonograph to the base hospital; 65 clinical thermometers, and an electric heater to the base hospital.

At this season a particularly grateful function of this "medium of communication between the people of the United States and their Army" is the distribution of Christmas packets. Enough have come from the homes of America to provide one for each man, carrying not only its own cheer into the camp Christmas, but also the home love and ideals, which are the foundation of American character and strength.

SCHOOLS, MEDICAL DEPARTMENT

Four of these are now in operation. 1. The school for medical officers. The program for December follows:

SCHOOL FOR MEDICAL OFFICERS, 34TH DIVISION

| Dec. | 2 p. m. | 3 p. m. | 7 p. m. | 8 p. m. |
|------|---|--|--|---|
| 3 | ..... | ..... | Examination | Examination |
| 4 | Examination | Examination | ..... | ..... |
| 5 | ..... | ..... | Examination | Work of the Med. Dept. in France, Lieutenant Ramel, French Army |
| 6 | Field problem, directed by Captain Milne | Field problem, directed by Captain Milne | ..... | ..... |
| 7 | Field hospital, internal organization, Major Knott | Care of animals, Lieut.-Colonel McGee, 135th Infantry | ..... | ..... |
| 10 | ..... | ..... | Work of the M.D. on the West front, Captain Landale, British Army | Tactical use of infantry, Colonel Mollison, 136th Infantry |
| 11 | Field hospitals, their equipment and use, Major Knott | ..... | ..... | ..... |
| 12 | ..... | ..... | Tactical use of field artillery, Major Oakes, 59th Artillery Brigade | Tactical use of Engineer corps, Colonel Schulz, 109th Engineers |
| 13 | Field problem, directed by Captain Milne | ..... | ..... | ..... |
| 14 | Shell shock, Captain Phillips | Work of ophthalmologist in the Army, Captain Covington | ..... | ..... |
| 17 | ..... | ..... | Desiderata in treatment, regimental aid station, Major Prudden | Desiderata in treatment at dressing station, Lieutenant Stolz |
| 18 | Desiderata in treatment at field hospital, Captain Milne | Desiderata in treatment at base hospital, Major Davis | ..... | ..... |
| 19 | ..... | ..... | Tuberculosis: diagnosis and treatment, Major Bullock | Pneumonia in the Army, Captain Duncan |
| 20 | Field problem, directed by Captain Milne | ..... | ..... | ..... |
| 21 | Meningitis, Lieutenant D'Alton | Tonsillitis and rheumatism, Major Bigelow | ..... | ..... |
| 26 | ..... | ..... | Gas defense, Lieutenant Hickok | Burns, Major Thomas |
| 27 | ..... | ..... | Recent advances in military hygiene, Major Fagan | Cardiovascular disease in Army, Captain Carter |
| 28 | Field problem, directed by Captain Milne | ..... | ..... | ..... |
| 31 | Cardiovascular disease in the Army, continued, Captain Carter | Exanthems, Major Pederson | ..... | ..... |

2. The school for officers of the Dental Corps meets for two hours, five days weekly. Lieut. Mortimer Sanderson, D. C., U. S. Army, is supervising dental surgeon of the division, and Lieut. J. J. Ogden, D. R. C., from Memphis, Tenn., is assistant dental surgeon. Thirty officers of the Dental Reserve Corps constitute the staff, and work in the base hospital and in the infirmaries of the various regiments constituting the division.

3. The school for noncommissioned officers of the Medical Department is just concluding a six weeks' course, which will be continued by the medical officers of each of the various organizations.

4. The school for gas defense. This is conducted by Lieut. Asa L. Hickok, M. R. C., from Meshoppen, Pa., and Lieut. C. N. Austin, S. C., Oak Park, Ill.

A gas house has been established, gas masks are provided, and arrangements are made so that every one in the division will learn the measures of defense necessary to meet this German method of making war.

**Eighty-Fourth Division, Camp Zachary Taylor,
Louisville, Ky.**

DEC. 24, 1917.

CHRISTMAS

Christmas and New Years furloughs at Camp Zachary Taylor did not total more than 2,500 men. Much disappointment was felt when it was announced that only 5 per cent. of the command could be furloughed. Many of the Louisville soldiers found it impossible to get leave to visit their homes on Christmas day. But they found much of good cheer at the camp. The sympathetic public gave liberally toward the Christmas celebration and every man was remembered. Comfort bags, sweaters, socks, tobacco, and many acceptable gifts of all descriptions were given the men.

Among the organizations which have been prominent in arranging for Christmas celebration at the camp are the Camp Service Committee of the Red Cross and the Louisville Committee of National League for Women's Service. These organizations particularly took care of seventeen noncontagious wards at the base hospital in which 950 Christmas presents were distributed.

ADDRESSES

Col. John H. Allen, December 19, addressed the regular December meeting of the Jefferson County Dental Society. Colonel Allen has been very active in having the division equipped with proper dental apparatus, and an ample number of men for taking care of the mouths of every one.

CENSORSHIP

Brigade-General Carleton has placed a ban on indiscriminate writing in the camp. Officers and men may write for publications but their products must be censored by the division intelligence officer. Society editors of papers have been asked not to use their social columns for announcing the departure of officers from the camp or from their homes to other training stations. Only that news which is thought desirable by the division intelligence officer will be given to the press; all other general information is to be withheld.

FOOD CONSERVATION

Use of sugar and lard has been limited at the camp. Organization commanders have been instructed to have coffee prepared in their organizations sweetened before serving to the men, and they will use a maximum of 7 ounces of sugar to each gallon of coffee. In baking not more than 1 pound of sugar and 1 pound of lard will be used with each 100 pounds of flour.

HEALTH OF THE COMMAND

To controvert the false rumors which have been going the rounds regarding the health of the troops, the official records show that since the base hospital was established at the camp 3,684 patients have been treated, and only twenty-eight deaths have occurred, two of which were suicides. Weekly reports from the office of the Surgeon-General at Washington prove that the mortality list and sickness of this command is less than those of other cantonments and camps in the country. From the press, relatives and friends of the soldiers have been warned not to place any credence in the malicious rumors that are being spread, and to assist the government authorities in apprehending those circulating them by reporting the identity of such persons.

Capt. P. J. Stewart, M. R. C., of Paducah, Ky., in charge of the surgical wards at the base hospital, has just been promoted to the rank of major.

It is reported that upward of 3,000 enlisted men from Jefferson and Columbus barracks will be sent to the Lincoln Division before January 1. These men enlisted before December 15, the last day of enlistment according to the last ruling of the provost-general. Fourteen thousand men are included in the outstanding 35 per cent. No definite word has been received as yet regarding their coming. The present strength of the camp is 25,000 men, with accommodations for 44,000 men.

Surgeon-General Gorgas has been expected at Camp Zachary Taylor for the past two weeks. Quite a stir was caused at the base hospital when a telephone call was received for Miss Gallagher, the head nurse, during her temporary absence from the camp. When asked who was talking the reply came back, "General Gorgas."

The Three Hundred and Thirty-Sixth Infantry (composed of Louisville men) and the Three Hundred and Thirty-Fifth Infantry (composed of southern Indiana men) have at last been released from measles quarantine.

ARMY AMBULANCE WORK

All Louisville was shocked to learn of the terrible Louisville and Nashville Railroad wreck, December 20, but thrilled over the prompt assistance rendered the wounded by the ambulance companies from Camp Zachary Taylor. Forty-seven people were killed and as many injured.

Col. John H. Allen, division surgeon, was lecturing before the Louisville Dental Society when he learned of the accident. He immediately communicated with the commanding general of the camp, who gave permission that the ambulance companies be ordered to the scene. At 10:10 p. m., Colonel Allen communicated the order to Major Fletcher, commanding officer of the ambulance companies, to at once report to SS. Mary and Elizabeth Hospital, with its complete medical equipment, including twelve motor ambulances and a personnel of more than fifty men and twenty medical officers.

Within eighteen minutes after the order was received the first ambulance was leaving Camp Zachary Taylor for the scene. The order came after taps, and the officers and men were aroused by messengers who communicated the orders silently through the camp without causing the slightest confusion.

The ambulance companies were from Omaha and Flint, Mich.

The conduct of the soldiers was praised by all who witnessed it, as they rendered valuable aid to the injured. Especially noticeable was the way the injured were handed from the cars through the windows on stretchers without the slightest confusion.

Eighty-Ninth Division, Camp Funston, Fort Riley, Kan.

DEC. 18, 1917.

Lieut.-Col. J. L. Shepard, the division surgeon of the Eighty-Ninth Division, is in the East on a short leave of absence, during which time he intends to visit some of the other cantonments and come back through Washington, D. C. Lieut.-Col. Frank Weed is acting division surgeon during his absence.

The following promotions have occurred in this division since its organization until date: F. W. Weed, major, M. C., to lieutenant-colonel, M. C.; Capt. C. S. McGinnis, G. W. Newell, B. Ffoulkes, J. D. Bartlett and R. H. Meade to be majors; Lieuts. C. K. Barclay, W. L. Hall, O. L. Garlinghouse, L. E. Toney, C. C. Johnson, L. G. Harney, W. T. Cullion, P. K. Sauer, B. C. Dorset, F. M. Manson, J. G. Janney, W. B. Heagerty, C. E. Jenkins, C. Powers, Samuel Adams, G. E. Eggloff, C. M. Fuson, W. C. Kent, A. E. Davenport, D. D. Gill, J. H. Kirkham and W. A. Beckemeyer to be captains.

**DISEASE CONDITIONS AMONG TROOPS
IN THE UNITED STATES****Extracts from Telegraphic Reports Received in the Office
of the Surgeon-General for the Week Ending**

Dec. 14, 1917

1. Total strength of troops in United States as reported.....1,001,318
Annual admission rate per 1,000 (disease only)..... 1,729.7
Non-effective rate (all divisions) 43
2. National Guard, strength (divisions in United States)..... 367,153
Annual admission rate per 1,000 all divisions (disease only) 1,757.7
Non-effective rate all divisions (all causes) 48.6
Divisions showing admission rate for disease higher than average:
Camps Bowie, Kearny, Doniphan, Cody, Wheeler and Shelby.
Divisions showing non-effective rate all causes higher than average:
Camps Bowie, Kearny, Wheeler, Beauregard, Shelby, Cody and Doniphan.
3. National Army, strength (divisions in United States)..... 440,833
Annual admission rate per 1,000 all divisions (disease only) 1,887.5
Non-effective rate all divisions (all causes) 40.4
Divisions showing admission rate for diseases higher than average:
Camps Travis, Pike, Zachary Taylor, Funston, Dodge and Dix.
Divisions showing non-effective rate all causes higher than average:
Camps Funston, Travis, Pike, Dodge, Zachary Taylor, Jackson, Lee and Lewis.
4. Venereal Disease:
Annual admission rate Regulars in United States 69.7
Annual admission rate National Guard (divisions in U. S.).. 44.6
Annual admission rate National Army (divisions in U. S.).. 74.3
National Guard divisions having rate above average: Camps Logan, Wheeler, Sevier, Bowie, Doniphan, Wadsworth, Hancock and Shelby.
National Army divisions having rate above average: Camps Dix, Upton, Jackson, Lee, Travis and Dodge.
5. Number of cases of pneumonia 611
Highest number in any one division (36th) 114
Number of cases of meningitis 86
Highest number in any one division (81st) 30

6. NEW CASES OF SPECIAL DISEASES REPORTED DURING
THE WEEK ENDING DEC. 14, 1917

| Division | Pneumonia | Dysentery | Malaria | Venereal | Paratyphoid | Typhoid | Measles | Meningitis | Scarlet fever | Deaths | Strength of Command |
|----------------------|-----------|-----------|---------|----------|-------------|---------|---------|------------|---------------|--------|---------------------|
| 27th, Wadsworth... | 2 | ... | ... | 36 | .. | .. | 12 | .. | .. | 2 | 31,246 |
| 28th, Hancock..... | 1 | ... | ... | 28 | .. | .. | 2 | 1 | .. | 1 | 30,373 |
| 29th, McClellan..... | ... | ... | ... | 13 | .. | .. | 15 | 1 | .. | 0 | 26,915 |
| 30th, Sevier..... | 20 | ... | ... | 36 | .. | .. | 42 | 6 | .. | 16 | 27,066 |
| 31st, Wheeler..... | 51 | ... | 3 | 30 | .. | .. | 8 | 1 | .. | 21 | 22,418 |
| 32d, MacArthur.... | 5 | ... | ... | 10 | .. | .. | 62 | .. | 2 | 1 | 27,036 |
| 33d, Logan..... | 4 | ... | 1 | 40 | .. | .. | 36 | .. | .. | 1 | 26,957 |
| 34th, Cody..... | 42 | ... | ... | 11 | .. | .. | 116 | 1 | 1 | 7 | 25,466 |
| 35th, Doniphan.... | 22 | ... | 1 | 31 | .. | .. | 237 | 6 | 5 | 12 | 25,335 |
| 36th, Bowie..... | 114 | ... | ... | 34 | .. | .. | 36 | 9 | .. | 61 | 25,971 |
| 37th, Sheridan.... | 1 | ... | ... | 4 | .. | .. | 26 | .. | .. | 1 | 23,948 |
| 38th, Shelby..... | 17 | ... | 2 | 24 | .. | .. | 107 | .. | .. | 17 | 27,220 |
| 39th, Beauregard... | 10 | ... | 5 | 16 | .. | .. | 29 | 3 | .. | 22 | 23,097 |
| 40th, Kearny..... | 5 | ... | ... | 12 | .. | .. | 330 | 2 | 1 | 3 | 24,105 |
| 76th, Devens..... | 4 | ... | ... | 24 | .. | .. | 45 | .. | .. | 1 | 27,821 |
| 77th, Upton..... | 2 | ... | ... | 91 | .. | .. | 10 | .. | .. | 0 | 30,712 |
| 78th, Dix..... | 5 | ... | ... | 87 | .. | .. | 9 | .. | 2 | 1 | 19,635 |
| 79th, Meade..... | 6 | ... | ... | 41 | .. | .. | 68 | 4 | 1 | 0 | 33,762 |
| 80th, Lec..... | 16 | ... | ... | 75 | .. | .. | 127 | .. | .. | 2 | 32,771 |
| 81st, Jackson..... | 37 | ... | 1 | 46 | .. | .. | 91 | 30 | .. | 27 | 18,276 |
| 82d, Gordon..... | 9 | ... | ... | 23 | .. | .. | 74 | 1 | .. | 2 | 38,573 |
| 83d, Sherman..... | 53 | ... | ... | 37 | .. | .. | 19 | 5 | .. | 5 | 32,596 |
| 84th, Taylor..... | 4 | 1 | ... | 26 | .. | .. | 130 | 5 | .. | 7 | 22,818 |
| 85th, Custer..... | 6 | .. | ... | 22 | .. | .. | 75 | 2 | .. | 1 | 24,124 |
| 86th, Grant..... | 6 | .. | 1 | 5 | .. | .. | 37 | .. | .. | 1 | 21,892 |
| 87th, Pike..... | 54 | 1 | 3 | 22 | .. | .. | 714 | 2 | 79 | 15 | 29,754 |
| 88th, Dodge..... | 5 | ... | ... | 34 | .. | .. | 36 | .. | 4 | 3 | 15,767 |
| 89th, Funston..... | 6 | ... | 2 | 9 | .. | .. | 289 | 6 | .. | 13 | 26,113 |
| 90th, Travis..... | 77 | ... | ... | 65 | .. | .. | 526 | .. | .. | 15 | 29,640 |
| 91st, Lewis..... | 4 | ... | ... | 23 | .. | .. | 1 | 1 | 4 | 4 | 36,579 |

7. ANNUAL RATE PER THOUSAND FOR SPECIAL DISEASES

| | Regulars, U. S. Army, in U. S. only, 1916 | Regulars in U. S., Week Ending Dec. 14, 1917 | National Guard, All Camps, Week Ending Dec. 14, 1917 | National Army, All Camps, Week Ending Dec. 14, 1917 |
|--------------------|--|---|---|--|
| Pneumonia..... | 2.59 | 6.8 | 41.6 | 34.6 |
| Dysentery..... | 3.97 | 2.6 | 0.0 | 0.2 |
| Malaria..... | 12.52 | 1.3 | 1.7 | 0.8 |
| Venereal..... | 91.00 | 69.7 | 44.6 | 74.3 |
| Paratyphoid..... | 0.31 | 0.0 | 0.0 | 0.0 |
| Typhoid..... | 0.21 | 0.3 | 0.0 | 0.0 |
| Measles..... | 20.29 | 38.6 | 149.8 | 265.5 |
| Meningitis..... | 0.29 | 0.0 | 4.2 | 6.6 |
| Scarlet fever..... | 0.59 | 6.5 | 1.1 | 10.6 |

ORDERS TO OFFICERS OF THE
MEDICAL CORPS

To Washington, D. C., General Engineering Depot, for duty, and on completion to return to his proper station, Lieut. EDGAR A. BOCK.

To Camp Grant, Rockford, Ill., and report in person to the commanding general, for duty, Major GARFIELD L. McKINNEY.

To Washington, D. C., and report to the Surgeon-General of the Army for instruction, Col. ALLEN M. SMITH.

To Camp Sherman, Chillicothe, Ohio, to deliver a course of lectures on camp sanitation, and on completion to return to his proper station, Capt. J. GILMORE.

To Washington, D. C., and report to the Surgeon-General of the Army for consultation, and on completion to return to his proper station, Major THOMAS D. WOODSON.

To Camp Devens, Ayer, Mass., Camp Upton, L. I., N. Y., Camp Dix, Wrightstown, N. J., to inspect the work of tuberculosis boards, and on completion to his proper station, Col. GEORGE K. BUSHNELL.

To Camp Sevier, Greenville, S. C., to report in person to the commanding general, Thirtieth Division, for duty, Lieut. HENRY T. SCHIFFLEY.

To Camp Travis, San Antonio, Texas, Camp Doniphan, Fort Sill, Okla., Camp Bowie, Fort Worth, Texas, Camp Arthur, Waco, Texas, Camp Logan, Houston, Texas, Camp Cody, Deming, N. M., to inspect the laboratory service with special reference to its adequacy for the necessary board of health work in the control of epidemic diseases, and on completion to his proper station, Major CLARENCE J. COLE.

To New York City, for temporary duty pertaining to the assembling of the branch of the Division of Finances and Supplies for the Medical Department, and on completion to return to his proper station, Col. HENRY D. SNYDER.

To Fort Oglethorpe, and report in person to the commandant, Medical Officers' Training Camp, Camp Greenleaf, for the purpose of organizing and commanding Hospital Train No. 3, Major LAMPHEAR W. WEBB, Jr.

To Fort Benjamin Harrison, Ind., and report in person to the commanding officer of that post for the purpose of commanding Hospital Train No. 2, Major ALEXANDER W. WILLIAMS.

To Fort Benjamin Harrison, Ind., and report in person to the commanding officer of that post for the purpose of commanding Hospital Train No. 3, Major HARRY N. KERNS.

To Fort Benjamin Harrison, Ind., and report in person to the commanding officer of that post for the purpose of commanding Hospital Train No. 4, Major LEOPOLD MITCHELL.

To Camp Sherman, Chillicothe, Ohio, for temporary duty, and on completion to his proper station, Major EARL H. BURNS.

To Washington, D. C., and report in person to the Surgeon General of the Army for consultation, and on completion to return to his proper station, Lieut.-Col. THOMAS L. RHOADS.

To Camp Doniphan, Fort Sill, Okla., to inspect, and on completion to his proper station, Col. DEANE C. HOWARD.

To Newport News, Va., and report in person to the commanding general, Provisional Division, for duty as division surgeon, Lieut.-Col. LARUS D. CARTER.

To Camp MacArthur, Waco, Texas, and report in person to the commanding general, Thirty-Second Division, for duty in connection with the organization and training of the Medical Department, and on completion to Camp Logan, Major SAMUEL S. CREIGHTON.

To Hoboken, N. J., and report in person to the commanding general, for duty, Major CHARLES T. KING.

To Richmond, Va., to deliver sixteen lectures on Military Surgery and Medicine, at the Medical College of Virginia, and on completion to his proper station, Col. LOUIS J. LA GARDE.

To Camp Devens, Ayer, Mass., and report in person to the commanding general, for duty, Lieut. JOHN S. C. FIELDON, JR.

To Fort Oglethorpe, and report in person to the commandant, Medical Officers Training Camp, Camp Greenleaf, for duty, Lieut. CLARENCE P. BAXTER.

To Camp Jackson, Columbia, S. C., to make special sanitary inspection, and on completion to his proper station, Lieut.-Col. EDWARD B. VEDDER.

To New York City, Rockefeller Institute, for instruction, and on completion to his proper station, Lieut. EDWARD W. DOUGLAS.

ORDERS TO OFFICERS OF THE MEDICAL
RESERVE CORPS

Alabama

To Camp Bowie, Fort Worth, Texas, base hospital, Lieut. CHARLTON S. HARRIS, Birmingham; from Birmingham, Lieut. LEO C. WOODS, Birmingham.

To Camp Devens, Ayer, Mass., base hospital, from Boston, Lieut. HENRY W. GRADY, Birmingham.

To Camp Doniphan, Fort Sill, Okla., base hospital, Lieut. WILLIAM N. BEDDOW, Birmingham.

To Camp Jackson, Columbia, S. C., base hospital, Lieut. LUTHER E. WILSON, Birmingham.

To Camp Sherman, Chillicothe, Ohio, for duty, from Fort Oglethorpe, Lieut. HARRY R. COGBURN, Bayou LaBatre.

To Fort Oglethorpe for instruction, Lieut. ROBERT F. FENNELL, Guntersville; from University of Pennsylvania, Philadelphia, Lieut. JAMES L. BOWMAN, Union Springs.

To Philadelphia, Pa., for intensive training, Lieut. TOOMBS LAWRENCE, Tuscaloosa.

Arizona

To Camp Pike, Rockford, Ill., to examine the command for mental and nervous diseases, from Ann Arbor, Mich., Capt. HARRY R. CARSON, Phoenix.

Arkansas

To Camp Cody, Deming, N. M., base hospital, from Fort Riley, Lieut. SYLVESTER DOGGETT, Bradford.

To Camp Hancock, Augusta, Ga., motor mechanic regiments, from Montgomery, Ala., Lieut. WYLIE R. FELTS, Judsonia.

To Camp McClellan, Anniston, Ala., for duty, from Fort Oglethorpe, Lieut. ALBERT W. RYE, London.

To Camp Pike, Little Rock, Ark., base hospital, Lieut. ALEXANDER E. HARRIS, Little Rock.

To Fort Oglethorpe, for instruction, from Washington University, St. Louis, Lieut. JAMES W. BUTTS, Helena.

To New York City, New York Post-Graduate Medical School, for instruction in urology and dermatology, from Fort Oglethorpe, Lieut. ARLEY D. CATHEY, Wilson.

California

To Baltimore, Md., Johns Hopkins School, for duty, from Camp Meade, Lieut. PAUL WEGSFORTH, San Diego.

To Camp Bowie, Fort Worth, Texas, to examine the command for mental and nervous diseases, from Camp Lee, Petersburg, Major JAMES R. MOORE, Los Angeles.

To Camp Lewis, American Lake, Washington, D. C., base hospital, Major DUDLEY FULTON, Los Angeles.

To Fort Douglas, Utah, for duty, Lieut. LOUIS N. ANDERSON, Inglewood.

To Fort Oglethorpe, for instruction, from New York City, Lieut. ORAL B. BOLIBAUGH, Los Angeles.

To Fort Riley, for instruction, Major WILLIAM W. ROBLEE, Riverside.

To Hoboken, N. J., base hospital, No. 30, from New York City, Major ALANSON WEEKS, San Francisco.

To Los Angeles, Calif., for orthopedic instruction, Lieut. GUY L. KAY, Wilmington.

To Minneapolis, Minn., University of Minnesota, for duty, Capt. EDWARD C. MOORE, Los Angeles.

To his home and honorably discharged on account of being physically disqualified for active service, from Fort McPherson, Ga., Capt. JOHN R. WALKER, Fresno.

Colorado

To Camp Custer, Battle Creek, Mich., for duty, from Fort Riley, Lieut. ARTHUR J. HOLMQUIST, Denver.

To Fort Riley, for instruction, Capt. CHARLES E. ELLIOTT, Victor.

To Indianapolis, Ind., for duty, from Fort Sill, Okla., Lieut. WILLIAM W. JONES, Denver.

To San Antonio, Tex., Aviation School, Kelly Field, from Aviation School, Mt. Clemens, Mich., Lieut. JOHN W. THOMPSON, Pueblo.

Connecticut

To Camp Bowie, Fort Worth, Tex., base hospital, from New York City, Capt. OTTO G. WIEDMAN, Hartford.

To Camp Cody, Deming, N. M., base hospital, Lieut. MARK T. SHEEHAN, Wallingford; from Fort Riley, Lieut. JAMES M. MURPHY, Hartford.

To Camp Gordon, Atlanta, Ga., base hospital, Lieut. DANIEL W. PORTER, New Haven.

To Camp Jackson, Columbia, S. C., base hospital, from Fort Oglethorpe, Lieut. RALPH A. RICHARDSON, Bristol.

To Camp Lee, Petersburg, Va., base hospital, from Boston, Lieut. FREDERICK K. HERPEL, Hartford.

To Camp McClellan, Aniston, Ala., for duty, from Fort Oglethorpe, Lieut. LEVERNE HOLMES, Manchester.

To Camp Meade, Annapolis Junction, Md., to examine the command for tuberculosis, from Walter Reed General Hospital, Lieut. ELLIOTT H. METCALF, Rockville.

To Fort Oglethorpe, for instruction, Lieuts. DWALD E. OLESON, Bridgeport; WINDSOR F. REARDON, Hartford.

To Washington, D. C., for duty, Capt. JOHN H. ROSE, Hartford.

Delaware

To Camp Hancock, Augusta, Ga., motor mechanic regiments, from Montgomery, Ala., Lieut. BRUCE H. BEELER, Wilmington.

District of Columbia

To Camp Devens, Ayer, Mass., base hospital, from Boston, Lieuts. BURGH S. BURNET, EDWARD B. MACON, Washington.

To Camp Meade, base hospital, from Philadelphia, Lieut. JOEL A. TILTON, Washington.

To Camp Travis, Fort Sam Houston, Texas, base hospital, Capt. FREDERICK D. OWSLEY, Washington.

To Fort McPherson, Ga., Base Hospital No. 13, from Harvard Medical School, Lieut. JOHN R. DeVELLING, Washington.

To Fort Oglethorpe, for instruction, from Chicago, Lieut. GRAFTON D. TOWNSHEND, Washington, from New York City; Lieut. JAMES H. ALLEN, for duty, Lieut. JAMES A. CAHILL, Jr., Washington.

Florida

To New York City, Base Hospital No. 116, from Fort Oglethorpe, Lieut. JOHN HALLIDAY, Tampa.

Georgia

To Camp Bowie, Fort Worth, Tex., base hospital, from Tallapoosa, Ga., Lieut. LEMUEL J. JOHNS, Tallapoosa.

To Camp Cody, Deming, N. M., base hospital, Lieut. CLAUD T. KEY, Atlanta.

To Camp Hancock, Augusta, Ga., motor mechanic regiments, from Montgomery, Ala., Lieut. JOHN M. BEGGS, Paro.

To Camp Jackson, Columbia, S. C., base hospital, Major Stewart R. Roberts, Atlanta; from Atlanta, Ga., Lieut. ALLEN H. BUNCE, Atlanta.

To Camp Joseph E. Johnston, Jacksonville, Fla., base hospital, Lieut. ANDREW L. WEST, Macon.

To Camp Lee, Petersburg, Va., base hospital, from Philadelphia, Lieut. EVERARD A. WILCOX, Augusta.

To Camp Sherman, Chillicothe, Ohio, for duty, from Fort Oglethorpe, Lieut. SAMUEL W. HARTWELL, New Sharon.

To Camp Taylor, Louisville, Ky., for duty, from Fort Oglethorpe, Lieut. RICHARD BINION, Sparta.

To Fort Oglethorpe, Hospital Train No. 28, from Fort Oglethorpe, Lieut. ROBERT H. McDONALD, Bullockville; for instruction, Lieut. HUGH K. PHILLIPS, Santee; from New York City, Lieut. HUGH I. BATTEY, Atlanta.

To Lake Charles, La., Signal Aviation School, Gerstner Field, from Aviation Mobilization Camp, Montgomery, Ala., Lieut. EARL K. LAZENBY, Camak.

To Philadelphia, Pa., for intensive training, Lieut. MALCOLM D. CLAYTON, Milledgeville.

Illinois

To Ann Arbor, Mich., for intensive training in his specialty, Lieuts. JAMES K. POLLOCK, Elgin; WALTER C. COOK, Peoria.

To Army Medical School, for duty, Lieut. HARRY T. SWANSON, Chicago.

To Brooklyn, N. Y., First Cavalry Armory, for duty, from New York City, Lieut. MARCUS H. HOBART, Chicago.

To Camp Custer, Battle Creek, Mich., for duty, from Fort Riley, Lieut. GEORGE W. STEELY, Louisville.

To Camp Doniphan, Fort Sill, Okla., base hospital, Lieut. CLIFFORD WELLS, Chicago.

To Camp Gordon, Atlanta, Ga., base hospital, from Fort Oglethorpe, Capt. JOHN R. HOWE, Peotone.

To Camp Kearny, Linda Vista, Calif., for duty, from Fort Sill, Lieut. THOMAS S. GREEN, Chicago.

To Camp Lee, Petersburg, Va., base hospital, from Boston, Lieut. HARVEY E. WEBB, Chicago.

To Camp Logan, Houston, Texas, base hospital, from Camp Logan, Lieut. WALTER D. HALL, Chicago; for duty, from Camp Logan, Lieut. THOMAS J. RIACH, Kankakee.

To Camp McClellan, Aniston, Ala., for duty, from Fort Oglethorpe, Lieut. WILLIAM S. BROWN, Cairo.

To Camp Meade, Md., base hospital, from Philadelphia, Lieut. SAMUEL B. CARY, Cairo.

To Camp Sherman, Chillicothe, Ohio, for duty, from Fort Oglethorpe, Lieut. HERMAN C. TIETZE, West Salem.

To Fort McHenry, Md., for temporary duty, from Fort Oglethorpe, Lieut. ROBERT S. SALK, Chicago.

To Fort McPherson, Ga., base hospital, from Camp Lee, Lieut. WILSON K. DYER, Kankakee.

To Fort Oglethorpe, for duty, Lieut. LOUIS C. SENDEL, Columbia; for instruction, Lieuts. JOHN G. FROST, PERRE A. STEELE, Chicago; EVANDER D. TAYLOR, E. Moline; from Philadelphia, Lieut. MANDEL A. I. COHEN, Chicago; Hospital Train No. 28, from Fort Oglethorpe, Lieut. ALFRED C. WENDT, Chicago.

To Fort Riley, for instruction, Capt. HALL WHITTAKER, Mound City; Lieuts. THEODORE F. BUTZOW, OSCAR CLEFF, Chicago; ALONZO M. EDWARDS, Marion; from Chicago, Lieut. ORLANDO F. SCOTT, Chicago; Evacuation Hospital No. 1, for duty, from Fort Riley, Lieut. ALEXANDER S. ROCHESTER, Chicago.

To New York City, for instruction in orthopedic surgery, Lieut. IRWIN H. CUTLER, Chicago.

To Philadelphia, Pa., for intensive training, Capt. ROMNEY M. RITCHEY, Elgin.

To San Antonio, Tex., Aviation School, Kelly Field, from Mt. Clemens, Mich., Lieut. HARRY E. BROWN, Peoria.

To Washington, D. C., to report to the Surgeon-General for instruction, and upon completion to Camp Joseph E. Johnston, Jacksonville, Fla., to examine the command for mental and nervous diseases, from Fort Sheridan, Capt. CHARLES RICKSHER, Kankakee; St. Elizabeth's Hospital, from Fort Sheridan, Lieut. WALTER A. FORD, Kankakee.

To his home and honorably discharged on account of being physically disqualified for active service, Fort Oglethorpe, Lieut. GEORGE L. RATHBUN, Galesburg.

To his home and the inactive list, from Fort Riley, Lieut. EDWARD A. CORCORAN, Chicago.

Indiana

To Camp McClellan, Aniston, Ala., for duty, from Fort Oglethorpe, Lieut. JOHN J. CONNELLY, Rockville.

To Camp Meade, base hospital, from Boston, Lieut. HASKETT L. CONNER, Indianapolis.

To Chickamauga Park, Ga., Reorganization Camp, from Columbus, Ohio, Lieut. CLAUDE D. HOLMES, Indianapolis.

To Fort McHenry, Md., for temporary duty, from Allentown, Lieut. CLIFFORD R. HOY, Syracuse.

To Fort McPherson, Ga., Hospital Unit "1," from Fort Oglethorpe, Lieut. CLARENCE L. BOCK, Kokomo.

To Fort Oglethorpe, for instruction, from Fort McPherson, Lieut. JOHN M. LEE, Indianapolis.

To Lake Charles, La., Signal Corps, Aviation School, Gerstner Field, from Montgomery, Ala., Lieut. JULES L. BIERACH, Salem.

To Newport News, Va., for duty, from Fort Snelling, Minn., Lieut. KENNETH L. CRAFT, Indianapolis.

To New York City, for intensive training, Capt. WILLIAM W. SICHELBERGER, Evansville.

To his home and honorably discharged from Fort Oglethorpe, Lieut. BROES S. HORNE, Gas City.

Iowa

To Boston, Mass., Harvard Medical School, for instruction in orthopedic surgery, Capt. EDWIN E. HOBBY, Iowa City.

To Camp Cody, Deming, N. M., base hospital, from Fort Riley, Lieut. GEORGE J. WENZLICK, Iowa City.

To Camp Doniphan, Fort Sill, Okla., to examine the command for mental and nervous diseases, from Camp Doniphan, Capt. THOMAS J. HELDT, Cedar Rapids; for duty, from Fort Riley, Lieut. RAYMOND A. SEILER, Blainstown.

To Camp Joseph E. Johnston, base hospital, from Fort Riley, Lieut. SYDNER D. MAIDEN, Council Bluffs.

To Camp Lewis, American Lake, Wash., for duty, from Fort Riley, Lieut. WILLIAM H. THOMAS, McGregor.

To Camp Shelby, Hattiesburg, Miss., to examine the command for mental and nervous diseases, from Washington, D. C., Lieut. PERCY B. BATTEY, Independence.

To Dayton, Ohio, Wilbur Wright Station, Aviation Supply Depot, McCook Field, from Montgomery, Ala., Lieut. ROSCOE D. TAYLOR, Spencer.

To Fairfield, Iowa, for duty, from Fort Riley, Lieut. ROY A. McGUIRE, Brighton; Jefferson County Hospital, Lieut. FRANK R. MEHLER, New London.

To Fort Oglethorpe, for instruction, Capt. CHARLES F. SMITH, Des Moines; from Camp Dodge, Capt. FRANCIS LA PISANA, Des Moines; from Philadelphia, Lieuts. THOMAS E. THOMSEN, Charter Oak; THOMAS R. GITTENS, Iowa City.

To Fort Riley, for instruction, Lieut. ELMER P. WEITH, Clinton; Evacuation Hospital No. 1, for duty, from Fort Riley, Lieut. LEO E. SHAFER, Walcott.

To Philadelphia, Pa., for intensive training, Capt. SAMUEL C. LINDSAY, Independence; Lieut. FISHER B. E. MILLER, Cherokee.

To his home and honorably discharged on account of being physically disqualified for active service, from Fort Riley, Lieut. THOMAS W. KING, Maloy.

Kansas

- To Camp Cody*, Deming, N. M., base hospital, from Fort Riley, Lieut. BEN H. DAY, Hugoton.
- To Camp Hancock*, Augusta, Ga., motor mechanic regiments, from Montgomery, Ala., Lieut. THOMAS S. VENARD, Ness City.
- To Camp Lewis*, American Lake, Wash., for duty, from Fort Riley, Lieut. ODUS LISTON, Hudson.
- To Camp McClellan*, Anniston, Ala., for duty, from Fort Oglethorpe, Lieut. GEORGE W. POTTS, New Lancaster.
- To Fort Leavenworth, Kan.*, for duty, from Fort Riley, Lieut. MATTHEW H. KEEFER, Kansas City.
- To Fort Riley*, for duty, from Camp Funston, Lieut. LEONIDAS T. BROWN, Spearville; for instruction, Lieut. BOYD E. EYE, Talmage.
- To Newport News, Va.*, to re-examine troops for tuberculosis, from Camp Meade, Lieut. JACOB H. HALDEMAN, Paola.

Kentucky

- To Camp Cody*, Deming, N. M., base hospital, Lieut. HARRY E. McCORD, Ludlow.
- To Camp Custer*, Battle Creek, Mich., for duty, from Fort Riley, Lieuts. THEODORE SALLEE, Covington; OVERTON H. SAVAGE, Jackson; EUGENE F. BEARD, Lexington.
- To Camp Hancock*, Augusta, Ga., motor mechanic regiments, from Montgomery, Ala., Lieut. ROBERT A. IRVIN, Clay City.
- To Fort Oglethorpe*, for instruction, Capt. BENJAMIN D. CHOATS, Louisville; Lieuts. MARK E. CALDWELL, ROBERT C. FLEMING, SAMUEL E. STANLEY, Louisville.
- To Rockefeller Institute*, for instruction, and on completion to Fort Oglethorpe, for instruction, Capt. STEPHEN C. McCOY, Louisville.
- To Washington, D. C.*, for conference with the Surgeon-General, from Bowling Green, Major ARTHUR T. McCORMACK, Bowling Green; from American University, Washington, D. C., Lieut. FLOYD K. FOLEY, Central City.

Louisiana

- To Camp Cody*, Deming, N. M., base hospital, from Fort Riley, Lieut. HENRY W. A. LEE, Baton Rouge.
- To Fort Oglethorpe*, for instruction, Lieut. ALBERT C. JACKSON, New Orleans.
- To Newport News, Va.*, to re-examine the troops for tuberculosis, from Camp Meade, Lieut. DELANE S. CALHOUN, Ruston.

Maryland

- To Albany, N. Y.*, for duty, Lieut. DANIEL G. SMITH, Baltimore.
- To Boston, Mass.*, for duty, and on completion to his proper station, Major JAMES BORDLEY, Baltimore.
- To Camp Lee*, Petersburg, Va., base hospital, from Boston, Lieut. ARTHUR M. BACON, Baltimore.
- To Camp Meade*, Admiral, Md., base hospital, Lieut. BENJAMIN B. BRUMBAUGH, Denton.
- To Camp Sheridan*, Montgomery, Ala., base hospital, Capt. HENRY C. REIK, Baltimore.
- To Fort Oglethorpe*, for instruction, Lieuts. JOSEPH SALAN, HOWARD H. STANSBURY, Baltimore; from duty as a private at Camp Meade, Lieut. MAURICE FELDMAN, Baltimore; from Fort Sam Houston, Lieut. NATHAN WINSLOW, Baltimore; from New York City, Lieut. ALLEN D. LAZENBY.
- To New York City*, New York Post-Graduate Medical School, for instruction in urology and dermatology, Lieut. AUSTIN H. WOOD, Baltimore.

Maine

- To Camp Lee*, Petersburg, Va., for duty, from Camp Lee, Lieut. DUDLEY D. KALLOCK, Portland.
- To Camp Meade, Md.*, base hospital, from Boston, Lieut. HAROLD D. ROGERS, Hampden.
- To Fort Oglethorpe*, for instruction, Lieut. ARTHUR H. PARCHER, Ellsworth.
- To Newport News, Va.*, for duty, from Fort Oglethorpe, Capt. ADELBERT F. WILLIAMS, Phippsburg; Lieut. GILMAN H. CLOUGH, Dexter.

Massachusetts

- To Ann Arbor, Mich.*, for intensive training in his specialty, Lieut. CHARLES E. RODERICK, Raynham Center.
- To Boston, Mass.*, for intensive training in his specialty, from Camp Devens, Capt. DOUGLAS A. THOM, Worcester; from duty as a private at Camp Devens, Lieut. FRANCIS S. CALDICOTT; Harvard Medical School, for instruction in orthopedic surgery, Lieut. ROBERT J. COOK, Boston.
- To Brooklyn, N. Y.*, for duty, from Boston, Capt. DOUGLAS A. THOM, Worcester.
- To Camp Devens*, Ayer, Mass., base hospital, from Boston, Lieut. OTTIS L. GRAHAM, Boston; from Plattsburg, Lieut. WILLIAM F. RYAN, Lowell.
- To Camp Dix*, Wrightstown, N. J., Camp Upton, L. I., N. Y., Camp Devens, Ayer, Mass., to inspect and on completion to his proper station, Major ELLIOTT G. BRACKETT, Boston.
- To Camp Hancock*, Augusta, Ga., motor mechanic regiments, from Aviation Mobilization Camp, Ala., Capt. CHARLES DUDLEY, Kingston.
- To Camp Jackson*, Columbia, S. C., base hospital, Lieut. GUY McM. PARKHURST, Cambridge.
- To Camp McClellan*, Anniston, Ala., to examine the command for nervous and mental diseases, from Camp McClellan, Capt. DONALD R. GILFILLAN, Worcester; from duty, from Fort Oglethorpe, Lieut. LOUIS I. SKIRBALL, Revere.
- To Camp Mills*, Garden City, L. I., N. Y., for duty, from Boston, Capt. ROBERT F. SOUTHER, Boston.

- To Camp Sheridan*, Montgomery, Ala., base hospital, Lieut. JAMES A. KEENAN, Roslindale.
- To Camp Wadsworth*, Spartansburg, S. C., base hospital, from Camp McArthur, Capt. GEORGE D. HENDERSON, JR., Holyoke.
- To Fort Oglethorpe*, for instruction, Lieuts. REUBEN L. LEVERTON, Boston; ARTHUR GANLEY, Methuen; JOHN M. CLAFFY, Springfield; JOSEPH J. SKIRBALL, Revere; from Boston, Lieut. JOHN B. WEBSTER, New Bedford; from New York City, Lieut. ALFRED A. FENTON, Norwood.
- To New York City*, for duty, Lieut. GEORGE D. PACKARD, JR., Boston; for intensive training, Lieut. APPLETON H. PIERCE, Leominster; for instruction in urology and dermatology, Lieut. EVERETT A. MERRILL, Lynn.
- To Philadelphia, New York City, Boston*, to standardize courses in orthopedic surgery, and on completion to his proper station, Capt. ALEXANDER S. BEGG, Boston.

Mexico

- To Fort Oglethorpe*, for instruction, from New York City, Lieut. OTTO R. BROWN, Tampico, Tamaulipas.

Michigan

- To Camp Cody*, N. M., base hospital, from Ann Arbor, Major FREDERICK H. NEWBERRY, Detroit.
- To Camp Custer*, Battle Creek, Mich., base hospital, from Camp Custer, Capt. ORTON H. CLARK, Kalamazoo.
- To Camp Hancock*, Augusta, Ga., motor mechanic regiments, from Montgomery, Ala., Lieut. WILLIAM H. MEDDAUGH, Sandcreek.
- To Camp McClellan*, Anniston, Ala., to examine the command for nervous and mental diseases, from Camp McClellan, Lieut. ARTHUR R. TIMME, Detroit.
- To Camp Shelby*, Hattiesburg, Miss., to examine the command for mental and nervous diseases, from Camp Shelby, Lieut. RAY S. MORRISH, Flint.
- To Fort Oglethorpe*, for instruction, from Camp Jackson, Capt. FREDERICK W. BAESLACK, Detroit; from St. Louis, Capt. WILLIAM C. McCUTCHEON, Cassopolis.
- To Fort Riley*, for instruction, from Camp Custer, Mich., Lieut. SPENCER VAN BARNUM, Coloma; for instruction, Lieut. EDWIN H. CHAUNCEY, St. Albion.
- To New York, N. Y., Chicago, Ill., Covington, Ky.*, for inspection and perfection of roentgen-ray apparatus, and on completion to his proper station, Major JAMES T. CASE, Battle Creek; New York Post-Graduate Medical School, for instruction in urology and dermatology, Lieut. DAUNE W. CRANKSHAW, Lawrence.
- To San Antonio, Texas*, Aviation School, Kelly Field, for duty, from Mount Clemens, Capt. HOWARD W. STUCH, Allegan.

Minnesota

- To Camp Hancock*, Augusta, Ga., motor mechanic regiments, from Montgomery, Ala., Lieut. BENJAMIN W. KELLY, Aitkin.
- To Camp Sheridan*, Montgomery, Ala., to examine the command to eliminate the mentally unfit, from Camp Sheridan, Lieut. WALTER I. LILLIE, Rochester.
- To Fort Oglethorpe*, for instruction, from St. Louis, Capt. OLIVER E. STEWART, Briceyn; from Philadelphia, Lieut. ADOLPH M. HANSON, Faribault.
- To Philadelphia, Pa.*, for intensive training, Lieut. EDWARD J. ENGBERG, St. Paul.
- To Rochester, Minn.*, Mayo Clinic, for intensive instruction in anesthesia and surgery, Major EDWARD S. JUDD, Rochester.
- To Rockefeller Institute*, New York City, for instruction, and on completion to Hoboken, N. J., for temporary duty, from Fort Oglethorpe, Lieut. CLIFFORD C. LECK, Austin.

Mississippi

- To Camp Bowie*, Fort Worth, Texas, base hospital, Lieut. HUGH C. DONSON, Vicksburg.
- To Camp McClellan*, Anniston, Ala., base hospital, from Fort Oglethorpe, Lieut. JOHN S. ADAMS, Bay St. Louis.
- To Philadelphia, Pa.*, for intensive training in his specialty, Lieut. THOMAS G. CLEVELAND, Meridian.
- To Rochester, N. Y.*, for duty, from Boston, Lieut. EGBERT H. WESSON, New Albany.

Missouri

- To Arcadia, Fla.*, Signal Corps, Aviation School, Dorr Field, for duty, from Montgomery, Ala., Lieut. FRANCIS X. HARTIGAN, St. Joseph.
- To Army Medical School*, Washington, D. C., for duty, from Fort Clark, Lieut. CHARLES R. OZIAS, Kansas City.
- To Austin, Texas*, Aviation Section, Signal Corps, for duty, from Montgomery, Ala., Lieut. JOHN H. TIMBERMAN, Marston.
- To Camp Cody*, Deming, N. M., base hospital, Lieut. JOHN L. TIERNEY, St. Louis.
- To Camp Custer*, Battle Creek, Mich., for duty, from Fort Riley, Lieut. JOHN A. CORN, Amoret.
- To Camp Green*, Charlotte, N. C., for duty, from Fort Oglethorpe, Lieut. ROBERT R. CUTLER, Berger.
- To Camp Hancock*, Augusta, Ga., motor mechanic regiments, from Montgomery, Ala., Lieuts. EDWARD C. WITTWER, Mountain Grove; FRANK HEDGES, Pattonsburg.
- To Camp McClellan*, Anniston, Ala., to examine the command for nervous and mental diseases, from Camp McClellan, Lieut. CHARLES H. BURDICK, St. Louis.
- To Fort Oglethorpe*, for instruction, from Boston, Lieut. LEE H. WINEMILLER, Farley.
- To Fort Riley*, for instruction, Lieuts. EDWIN C. FUNSCH and REUBEN H. WILLIAMS, St. Louis.

To *Milwaukee, Wis.*, Light Horse Squadron Armory, for duty, from Harvard Medical School, Lieut. NOBLE D. McCORMACK, St. Louis.

To *New York City*, for duty, and on completion to his proper station, Major HANAU W. LOEB, St. Louis; for instruction in orthopedic surgery, from Camp Doniphan, Capt. JOHN P. BEESON, South West City.

To *Philadelphia*, Chicago and St. Louis, to give instructions in oral and plastic surgery, and to Camp Taylor, Louisville, Ky., and Camp Sherman, Chillicothe, Ohio, for inspection and instruction, and on completion to his proper station, Major VILRAY P. BLAIR, St. Louis; for instruction in orthopedic surgery, Capt. RALPH E. NIODRINGHAUS, St. Louis; for intensive training, Capt. WILLIAM A. EDLER, Lieut. CHARLES H. SHUMAKER, St. Louis.

Montana

To *Camp Grant*, Rockford, Ill., base hospital, Capt. ALBERT F. LONGEWAY, Great Falls.

To *Camp Lewis*, American Lake, Wash., for duty, from Fort Riley, BIGELOW P. BLACKSTONE, Lindsay.

To *Camp McClellan*, Anniston, Ala., for duty, from Fort Oglethorpe, Lieuts. JOSEPH C. DENNEY, Clydepark; CHARLES B. FLEISCHMANN, Froid; STACY T. NOLAND, Warm Springs.

To *Fort Riley*, for instruction, Capt. THOMAS A. MacKENZIE, Stacey.

Nebraska

To *Camp Hancock*, Augusta, Ga., motor mechanic regiments, from Montgomery, Ala., Lieut. IRVIN C. MUNGER, Lincoln.

To *Fort Riley*, for instruction, Lieut. ROBERT C. PERSON, Omaha.

To *Newport News, Va.*, to reexamine the troops for tuberculosis, from Camp Meade, Md., Lieut. WILLIAM N. ANDERSON, Omaha.

Nevada

To *Camp Custer*, Battle Creek, Mich., for duty, from Fort Riley, Capt. LAWRENCE R. KNORR, Paradise Valley.

To *Camp Hancock*, Augusta, Ga., motor mechanic regiments, from Montgomery, Ala., Lieut. WILLIAM L. HOWELL, Gardnerville.

New Hampshire

To *Camp Wheeler*, Macon, Ga., for duty, from Fort Clarke, Major GEORGE V. FISKE, Manchester.

To *Fort Oglethorpe*, for instruction, Lieut. RALPH S. PERKINS, Exeter.

New Jersey

To *Camp Doniphan*, Fort Sill, Okla., base hospital, from Fort Oglethorpe, Lieut. FREDERIC H. THORNE, Greystone Park.

To *Camp Lee*, Petersburg, Va., base hospital, from Boston, Lieut. CHARLES E. BRENN, Camden.

To *Camp McClellan*, Anniston, Ala., for duty, from Fort Oglethorpe, Lieut. WILLIAM D. SAYRE, Red Bank.

To *Camp Meade*, Admiral, Md., for duty, from Fort Myer, Capt. ROBERT E. SOULE, Newark.

To *Camp Taylor*, Louisville, Ky., for duty, from Fort Oglethorpe, Lieut. JOSEPH BINDER, Jersey City.

To *New York City*, New York Post-Graduate Medical School, for instruction in urology and dermatology, Lieut. CHARLES RICH, Newark; from Fort Oglethorpe, Lieut. EDWARD GUION, Atlantic City.

New Mexico

To *Columbus*, for the special examination of tuberculosis, from Camp Wheeler, Lieut. ORIN J. WHITCOMB, Raton.

New York

To *Albany*, for duty, Major ARTHUR W. ELTING, Capt. LEMUEL W. GORHAM, Albany; CHARLES C. McMULLEN, Schenectady; Lieuts. CLARENCE F. GRAHAM, Albany; JOHN L. EDWARDS, Hudson.

To *Army Medical School*, Washington, D. C., for duty, from Camp Lee, Lieut. BENJAMIN J. SLATER, Rochester.

To *Buffalo*, Aviation Section, Signal Corps, as medical member of examining board and recruiting officer, Lieut. EDWARD F. MEISTER, Buffalo.

To *Camp Bowie*, Fort Worth, Texas, base hospital, Lieut. JOSEPH M. LINETT, Blackwell's Island; base hospital, Lieut. ROBERT L. LEVY, New York; to examine the command for mental and nervous diseases, from Camp Lee, Lieuts. SAMUEL W. HAUSMAN, Ogdensburg; WILLIAM G. DICKINSON, Oneonta.

To *Camp Custer*, Battle Creek, Mich., for duty, from Fort Riley, Lieut. WILLIAM J. JACOBS, Carthage; in base hospital, from Boston, Lieut. WILLIAM T. SHIELDS, Troy.

To *Camp Devens*, Ayer, Mass., base hospital, from Fort Ethan Allen, Vt., Capt. EDWARD G. CLIFTON, New York; from Plattsburg, Capt. WILMARTH S. BUCK, Plattsburg; from Boston, Lieuts. ARTHUR H. NYLEN, Brooklyn; CORNELIUS A. DENEHY, New York.

To *Camp Dix*, Wrightstown, N. J., for inspection, and on completion to his proper station, Capt. ALEC N. THOMSON, Brooklyn.

To *Camp Doniphan*, Fort Sill, Okla., to examine the command for mental and nervous diseases, from Camp Mills, Lieut. WARD W. MILLIAS, Rome.

To *Camp Gordon*, Atlanta, Ga., base hospital, from Fort Oglethorpe, Capt. JOSEPH MUIR, New York.

To *Camp Hancock*, Augusta, Ga., motor mechanic regiments, from Montgomery, Ala., Capt. CHARLES E. LONG, Buffalo; EDGAR S. BULLIS, Glen Falls; GUSTAVUS C. DARLINGTON, New York.

To *Camp Lee*, Petersburg, Va., base hospital, from Boston, Lieut. JOHN W. McKEEVER, Newburgh; from Philadelphia, Lieut. CARL C. YOUNT, New York.

To *Camp McClellan*, Anniston, Ala., for duty, from Fort Oglethorpe, Lieut. HARRY O. ZAMKIN, New York.

To *Camp Meade*, Md., base hospital, from Boston, Lieut. EDMUND B. SPAETH, Elmira.

To *Camp Pike*, Little Rock, Ark., base hospital, from Plattsburg Barracks, Lieut. HAROLD A. BENSON, Kings Park.

To *Camp Sevier*, Greenville, S. C., for duty, from Fort Riley, Major ANDREW McFARLANE, Albany; base hospital, Capt. EMIL ALTMAN, JOHN A. McCAFFERTY, New York.

To *Camp Taylor*, Louisville, Ky., for duty, from Fort Oglethorpe, Lieut. CONRAD A. RISSBERGER, Albany.

To *Camp Upton*, L. I., N. Y., base hospital, from Philadelphia, Lieut. GEORGE G. McELVARE, New York.

To *Ebertz Field*, Lonoke, Ark., for duty, from Montgomery, Ala., Lieut. PERRY L. HELMICK, New York.

To *Fort McPherson*, Ga., Hospital Unit B, Lieuts. SAMUEL D. BELL, JOHN C. MUTH, Yonkers.

To *Fort Oglethorpe*, for instruction, from New York City, Capt. KARL OSTERHAUS, Brooklyn; LEO B. MEYER, New York; Lieut. ANDREW W. MAHONEY, New York; for instruction, Lieuts. HAROLD M. WEINBERG, RAPHAEL WOLFE, Brooklyn; ARTHUR C. SMITH, Elmira; EDWARD A. FLYNN, ALEXANDER W. JACOBS, EDMOND H. O'DONNELL, ARTHUR W. URAN, New York City.

To *Fort Porter*, N. Y., Hospital Unit F., Lieut. FRANCIS J. HALEY, Buffalo; General Hospital No. 4, from Fort Niagara, Lieut. WILLIAM R. SEARS, New York.

To *Fort Riley*, Kan.; Camp Funston, Fort Riley, Kan.; Medical Officers' Training Camp, Fort Riley, Kan.; Fort Des Moines, Iowa; Camp Dodge, Des Moines, Iowa, base hospitals, and on completion to his proper station, Major PEARCE BAILEY, New York.

To *Hoboken*, N. J., for duty, from Camp McArthur, Major DANIEL A. SINCLAIR, New York; from Plattsburg Barracks, N. Y., Lieut. ISADORE SEFF, New York.

To *Montgomery*, Ala., Signal Corps, Aviation School, Taylor Field, for duty, from Montgomery, Ala., Lieut. MAX DOORIN, New York.

To *New York City*, Post-Graduate Medical School, for instruction in urology and dermatology, Capt. CLAYTON K. HASKELL, Rochester; from Fort Oglethorpe, Lieut. WILLIAM H. GOLDSTEIN, New York; for duty, Lieuts. FREDERICK C. FREED, JOSEPH L. McEVITT, ARTHUR M. REICH, New York; from Camp Jackson, Lieut. JOSEPH S. BALDWIN, Brooklyn; Medical Supply Depot for duty, Lieut. HENRY W. HAYNES, New York.

To *Philadelphia*, Pa., Aviation Section, Signal Corps, University of Pennsylvania, and on completion to *San Antonio*, Texas, U. S. Aviation School, Kelly Field, from Mineola, Capt. DONALD T. McPHAIL, New York; for temporary duty and on completion to *San Antonio*, Texas, from Fort Ethan Allen, Capt. JOHN D. GULICK, Schenectady; for intensive training in his specialty, Lieut. THOMAS H. RAINES, East View.

To *report to Washington*, D. C., for temporary duty, and on completion to his proper station, from Army Medical School, Lieut. WALTER G. FOX, Fort Plain; from Fort Myer, Lieut. ABRAHAM L. LOWENTHAL, New York.

To *Rockefeller Institute*, for instruction, and on completion to *Fort McHenry*, Md., for temporary duty, from Allentown, Pa., Capt. EDWARD DOWDLE, Oswego; from New York City, Capt. EDWIN G. RAMSDALL, White Plains; Camp Upton, for temporary duty in base hospital, from Fort Oglethorpe, Lieut. HENRY R. KUTIL, New York; for instruction in laboratory work, and on completion to Army Medical School, for duty, Lieut. WALTER S. BENNETT, Glen Falls.

To *Washington*, D. C., for instruction, Lieut. JAMES B. MURPHY, New York.

To *his home* and honorably discharged, from Fort Oglethorpe, Lieut. FRANK P. IVES, New York.

North Carolina

To *Fort Oglethorpe*, for instruction, from duty as a private at Camp Jackson, Lieut. HOLMAN BERNARD, Pinnacle.

To *Philadelphia* and *Pittsburgh*, Pa.; *Cleveland*, Ohio; *Detroit* and *Battle Creek*, Mich.; *Chicago* and *Rockford*, Ill.; *Minneapolis*, Minn.; *Des Moines*, Iowa; *Omaha*, Neb.; *Fort Riley*, Kan.; *Kansas City* and *St. Louis*, Mo.; *Indianapolis*, Ind.; *Louisville*, Ky.; *Cincinnati* and *Chillicothe*, Ohio, to examine applicants for the A. S., S. C., and on completion to his proper station, from Washington, D. C., Major R. LEWIS, Raleigh.

To *his home* and honorably discharged, from Camp Wadsworth, Lieut. MARVIN L. SMOOT, Fayetteville.

Ohio

To *Camp Cody*, Deming, N. M., base hospital, Lieuts. WILLIAM F. MILLHON, Columbus; VIRGIL J. FRUTH, Fostoria.

To *Camp Doniphan*, Fort Sill, Okla., to examine the command for mental and nervous diseases, from Camp Mills, Lieut. JOHN C. GEORGE, Dayton.

To *Camp Kearney*, Linda Vista, Calif., for duty, from Camp Bowie, Lieut. VICTOR R. SMALL, Columbus.

To *Camp Meade*, Md., base hospital, from Philadelphia, Lieut. ALLEN N. WISELEY, Ada.

To *Fort Oglethorpe*, for instruction, Lieut. HARRY E. WOODBURY, Akron.

To *New York City*, Post-Graduate Medical School, for instruction in urology and dermatology, Lieut. LAWRENCE D. MILLER, Toledo.

To *Philadelphia*, Pa., for training in his specialty, from Camp Grene, Lieut. HOWARD H. DAVIS, Cleveland.

To *Rockefeller Institute*, N. Y., for instruction, and on completion to *Camp Upton*, L. I., N. Y., base hospital, from Fort Oglethorpe, Lieut. CARROLL H. SKEEN, Senecaville.

To his home and honorably discharged, from Camp Taylor, Capt. ELIJAH W. TIDD, Stockdale.

Oklahoma

To Camp Custer, Battle Creek, Mich., for duty, from Fort Riley, Lieuts. JOHN V. ATHEY, Bartlesville; FRANK A. FANNIN, Stigler.

To Fort Oglethorpe, for instruction, Capt. JOHN C. MAHR, Oklahoma City; from Philadelphia, Lieut. DAVY L. GARRETT, Altus.

To Fort Riley, for instruction, Lieuts. JOSEPH H. STOPLER, Muskogee; EARL L. YEAKEL, Norman.

To Lake Charles, La., Signal Corps, Aviation School, Gerstner Field, from Montgomery, Ala., Lieut. JAMES R. BOST, Cashion.

To his home and honorably discharged, on account of being physically disqualified for active service, from Fort Oglethorpe, Lieut. LOUIS C. KUYRKENDALL, McAlester.

Pennsylvania

To Camp Bowie, Fort Worth, Texas, base hospital, Lieut. FRED D. REYNOLDS, Pittsburgh.

To Camp Cody, Deming, N. M., base hospital, from Fort Oglethorpe, Lieut. ANDREW J. W. HANDWORK, Altoona.

To Camp Devens, Ayer, Mass., base hospital, from Camp Devens, Capt. DANIEL M. HOYT, Philadelphia; from Boston, Lieuts. HENRY C. DOOLING, Norwood Station; ALBERT W. GREENWELL, Philadelphia.

To Camp Doniphan, Fort Sill, Okla., base hospital, from Chickamauga Park, Lieut. JOSEPH D. ARONSON, Philadelphia.

To Camp Grant, Rockford, Ill., base hospital, from Camp Grant, Lieut. ALLEN H. MOORE, Philadelphia.

To Camp Hancock, Augusta, Ga., motor mechanic regiments, from Montgomery, Ala., Lieut. ALBON E. FICHTNER, Conemaugh.

To Camp Logan, Houston, Texas, for duty, from Fort Clarke, Texas, Capt. CAREY J. VAUX, Pittsburgh.

To Camp Meade, Md., for duty, Capt. WILLIAM F. McLAUGHLIN, Philadelphia; base hospital, from Philadelphia, Lieut. LOUIS H. MAYER, Johnstown.

To Camp Pike, Little Rock, Ark., base hospital, from Army Medical School, Lieut. SOLOMON F. HOGE, Philadelphia.

To Camp Sherman, Chillicothe, Ohio, for duty, from Fort Oglethorpe, Lieut. JESSE B. HOWE, Erie.

To Camp Wheeler, Macon, Ga., base hospital, from Camp Wheeler, Lieut. JOHN H. STEARNS, Delaware Water Gap.

To Fort McHenry, Md., for temporary duty, from Allentown, Pa., Lieut. ALEXANDER D. FERGUSON, Eddystone.

To Fort Oglethorpe, for instruction, Lieuts. SAMUEL A. KAMERER, Ellsworth; FRANCIS M. S. SCHAM, Johnstown; JOHN D. DONNELEY, Philadelphia; from Boston, Lieut. SUMNER C. SIMPSON, Pittsburgh; from New York City, Lieut. PHILIP J. LUKENS, Jr., Philadelphia; from Philadelphia, Lieuts. GEORGE H. FAGGERT, FRANK G. MURPHY, Philadelphia; Hospital Train No. 27, from Fort Oglethorpe, Lieut. HOWARD C. HEILMAN, Pittsburgh.

To Newport News, Va., to reexamine the troops for tuberculosis, from Camp Meade, Lieut. WILLIAM H. HERR, Lancaster.

To New York City, for intensive training, Lieut. DAVID B. HAWKINS, Curwensville; Post-Graduate Medical School, for instruction in urology and dermatology, Lieut. DAVID P. McCUNE, Jr., McKeesport.

To Philadelphia, for duty, Major CHARLES F. HASSAN, Philadelphia; for instruction in traumatic surgery and fractures, Major EDWARD MARTIN, Philadelphia; for intensive training, Capt. WILLIAM W. RICHARDSON, Mercer.

To Pittsburgh, Hospital Unit "L," Allegheny General Hospital, from Camp Hancock, Major WALTER A. DEARTH, Pittsburgh.

To Takoma Park, D. C., for duty, from New York City, Lieut. CHARLES E. YOHO, Pittsburgh.

To Washington, D. C., for a conference and on completion to his proper station, from Evans Institute, Philadelphia, Capt. CARLTON N. RUSSELL, Philadelphia, Camp American University, for duty, from Fort Oglethorpe, Lieut. WILLIAM J. HARRISON, Philadelphia.

To his home and honorably discharged, from Camp Bowie, Capt. JOSIAH T. BUNTING, Philadelphia; from Camp Green, Lieut. WILLIAM F. McANALLY, Philadelphia; from Camp Jackson, Lieut. CLARENCE W. LURTING, Pittsburgh.

Rhode Island

To Camp Kearney, Linda Vista, Calif., base hospital, from Camp Kearny, Lieut. JOHN P. JONES, Wakefield.

South Carolina

To Camp Sherman, Chillicothe, Ohio, for duty, from Fort Oglethorpe, Lieut. JOHN M. BEARDEN, Lawrence.

To Fort McHenry, Md., for temporary duty, from Allentown, Pa., Lieut. JOHN R. BOLINE, Columbia.

To Fort Oglethorpe, for instruction, Lieut. LEWIS M. GRIFFITH, Columbia.

Honorably discharged on account of being physically disqualified for active service, Lieut. ARTHUR D. MORGAN, North.

South Dakota

To his home and honorably discharged on account of being physically disqualified for active service, Lieut. ALBERT S. RIDER, Flandreau.

Tennessee

To Austin, Texas, for duty, from Everman, Texas, Lieut. FLEMING J. O'CONNER, Jackson.

To Camp Bowie, Fort Worth, Texas, to examine the command for mental and nervous diseases, from Camp Lee, Lieut. HOWARD M. FRANCISCO, Nashville.

To Camp Sherman, Chillicothe, Ohio, for duty, from Fort Oglethorpe, Lieut. JOHN S. MILLER, Callierville.

To Fort Barrancas, Fla., for duty, from Camp Shelby, Lieut. DANIEL B. CLIFFE, Franklin.

To Fort Oglethorpe, for instruction, Lieuts. ELLIS LER. WILKINS, Dyersburg; ROBERT E. SULLIVAN, Nashville; Hospital Train No. 22, from Fort Oglethorpe, Lieut. EMMETT E. BROWN, Nashville.

Texas

To Army Medical School, for duty, from Fort Clark, Lieut. LEVY S. JOHNSON, Richmond.

To Camp Lewis, American Lake, Wash., for duty, from Camp McArthur, Lieut. JAMES J. JOHNSON, Sulphur Springs.

To Camp McClellan, Anniston, Ala., for duty, from Fort Oglethorpe, Capt. JESSE L. WOMACK, Lolita.

To Fort Oglethorpe, Evacuation Hospital No. 6, from Fort Oglethorpe, Lieut. BENJAMIN F. LARGENT, McKinney; for instruction, Lieuts. NEWELL W. ATKINSON, Alice; EDWARD W. TISDALE, Clyde; JAMES A. SHACKELFORD, Thurber; from Boston, Lieut. ROBERT L. HOWELL, Snyder.

To Indianapolis, for duty, and on completion to return to his proper station, Major JOHN B. McLEAN, Fort Worth.

To Rockefeller Institute, for instruction and on completion to Camp Upton, L. I., N. Y., base hospital, from Fort Oglethorpe, Lieut. THOMAS R. SEALY, Santa Anna.

To South San Antonio, Texas, Kelly Field, in connection with the Physical Examining Unit, Capt. TARLETON F. MOORE, Galveston.

To Washington, D. C., Camp American University, from Fort Oglethorpe, Lieut. DAVID C. WILLIAMS, Post.

Utah

To Camp Lewis, American Lake, Wash., for duty, from Fort Riley, Capt. CHAUNCEY M. BENEDICT, Salt Lake City.

Vermont

To Fort Oglethorpe, for instruction, Lieut. GEORGE C. RUBLEE, Hardwick.

To Philadelphia, for temporary duty and on completion to San Antonio, Texas, from Fort Ethan Allen, Lieut. ARTHUR L. LARNER, Burlington.

Virginia

To Camp Devens, Ayer, Mass., for duty, from Fort Sill, Major CHARLES A. BROWN, Dillwyn; base hospital, from Boston, Lieut. PERCY E. DUGGINS, Norfolk.

To Camp Jackson, Columbia, S. C., base hospital, from Fort Oglethorpe, Lieut. QUINTUS H. BARNEY, Richmond.

To Camp Lewis, American Lake, Wash., for duty, from Fort Riley, Lieut. WILLIAM E. BROWN, Catawaba Sanatorium.

To Camp Pike, Little Rock, Ark., base hospital, from Philadelphia, Capt. HOWARD FLETCHER, Fairfax.

To Camp Wadsworth, Spartanburg, S. C., base hospital, from Fort Oglethorpe, Lieut. MAURICE A. SELINGER, City Point.

To Fort Oglethorpe, for instruction, Lieuts. FRANK W. LEWIS, Merattica; CHARLES E. LLEWELLYN, Richmond.

To Newport News, Va., for duty, Capt. SAMUEL A. RIDDICK, Smithfield.

To Rockefeller Institute, for instruction, and on completion to Takoma Park, D. C., for temporary duty, from Fort Oglethorpe, WILSON H. DRIVER, Norfolk.

Washington

To Camp Lewis, American Lake, Wash., for duty, from Camp Bowie, Capt. ISAAC W. POWELL, Bellingham.

Honorably discharged on account of holding commission in the National Guard, Capt. JOHN B. KINNE, Aberdeen.

West Virginia

To Camp McClellan, Anniston, Ala., for duty, from Fort Oglethorpe, Lieut. HARVEY C. POWELL, Morgantown.

To Fort McHenry, Md., for temporary duty, from Allentown, Pa., Lieut. MARTIN L. SOWERS, Bluefield.

To Fort Oglethorpe, for instruction, from Fort Ethan Allen, Lieut. HARRY D. LAW, Conings.

To New York City, for intensive training in his specialty, Lieut. ROSS DODSON, Spencer.

Wisconsin

To Arcadia, Fla., Signal Corps, Aviation School, Carlstrom Field, from Montgomery, Ala., Lieut. RAYMOND A. HEBRON, Cataract.

To Camp Cody, Deming, N. M., base hospital, from Fort Riley, Lieuts. EZRA J. MITCHELL, Brodhead; CLARK O. DECKER, Crandon; HARRY E. GILLETTE, Packwaukee; HARRY C. MCCARTHY, Richland Center.

To Camp Devens, Ayer, Mass., to examine the command in mental and nervous diseases, from New York City, Lieut. CHARLES C. ROWLEY, Winnebago.

To Camp Hancock, Augusta, Ga., motor mechanic regiments, from Montgomery, Ala., Lieuts. ALBERT H. KULIG, Dodge; CHARLES M. PEARSON, Ogema; EDWARD P. EVANS, South Milwaukee.

To Camp McClellan, Anniston, Ala., for duty, from Fort Oglethorpe, Lieut. WILLIAM E. ALLEN, Sun Prairie.

To Dayton, Ohio, Wilbur Wright Station, Aviation General Supply Depot, McCook Field, from Montgomery, Ala., Lieut. ATHOL H. WEDGE, Waupun.

To Fort Leavenworth, Kan., for duty, from Fort Riley, Lieut. FRANKLIN M. HAWLEY, Bayfield.

To Fort Riley, base hospital, Lieut. ABRAHAM B. SCHWARTZ, Milwaukee.

To Fort Slocum, N. Y., for duty, from Neurological Institute, N. Y., Lieut. SMILEY BLANTON, Madison.

To Great Lakes, Ill., to observe construction, organization, equipment and administration of the hospital at the Naval Training Station, and on completion to return to his proper station, Major NELSON M. BLACK, Milwaukee.

To Philadelphia, for instruction in orthopedic surgery, Lieut. BERNARD O. BENDIXEN, Kewaskum.

Honorably discharged on account of being physically disqualified, Capt. GUSTAF R. EGELAND, Sturgeon Bay.

CORRECTION

Under "Orders to Officers of the Medical Reserve Corps" in the issue of November 3:

Lieut. JOHN D. MILLER, of Little Falls, N. Y., instead of Cincinnati, O., was ordered to Camp Grant, Rockford, Ill., for duty with the 35th Engineers.

Issue of December 15: Lieut. HERBERT L. WILLIAMS, Auburn, Me., instead of Bartonville, Ill., was ordered to Camp Gordon, Atlanta, from Fort Oglethorpe.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

FLORIDA

Addition to Hospital.—The addition to the Lee County Hospital, Fort Myers, is practically completed, giving the institution six new rooms, four of which have already been furnished.

New Officers.—Escambia County Medical Society, at Pensacola, December 11: president, Dr. L. de Blocker, Pensacola; vice president, Dr. William D. Nobles; secretary, Dr. Fritz A. Brink, and treasurer, Dr. Walter C. Payne, all of Pensacola.—Hillsborough County Medical Society, at Tampa, December 4: president, Dr. Reuel A. Fly; vice president, Dr. Leland F. Carlton; secretary, Dr. Gilbert H. Hodgson, and treasurer, Dr. Jesse J. Saxton, all of Tampa.—Du Val County Medical Association, at Jacksonville, December 4: president, Dr. Frederick J. Waas; vice president, Dr. William E. Ross, and secretary-treasurer, Dr. Elmo D. French, all of Jacksonville.

GEORGIA

New Sanatorium Building.—Advertisement has been made by the board of trustees of the Georgia State Sanatorium, Milledgeville, for proposals for the construction of a sanatorium building.

New General Hospital.—The Military Hospital at Fort McPherson, Atlanta, has been changed from a base hospital to a general hospital. The new hospital will remain in command of Col. Thomas S. Bratton.

New Officers.—Randolph County Medical Society at Cuthbert, December 11: president, Dr. John L. Shephard, Carnegie; vice president, Dr. Thomas F. Harper, Coleman, and secretary-treasurer, Dr. George Y. Moore, Cuthbert.

Public Health Service Furnishes Health Officers.—P. A. Surg. Charles L. Williams, U. S. P. H. S., is to become health officer of Macon. Dr. Charles Wardell Stiles, U. S. P. H. S., has arrived in Augusta to take charge of the health situation in the zone contiguous to Camp Hancock.

Personal.—Dr. Craig Barrow, Savannah, has been appointed chief surgeon of the Central Georgia Railroad and Ocean Steamship Company, succeeding Dr. William W. Owens, deceased. Dr. Barrow has appointed Dr. Lawrence Lee as assistant surgeon.—Dr. Roger C. Swint has been appointed clinical director of the State Sanatorium, Milledgeville, succeeding Dr. Edward M. Green, resigned to accept the superintendency of the Pennsylvania State Sanatorium.

ILLINOIS

Chicago

Fire in Fraternity House.—Medical students were routed from bed, December 17, when the Phi Rho Sigma fraternity house of Northwestern University caught fire. The damage to the building was estimated at \$500.

Dispensary Moves.—The Army Dispensary formerly in the Federal Building was moved, December 22, to its new quarters at 820 Michigan Boulevard Building. Major Samuel C. Stanton, M. R. C., is in command and has as his assistants, Capt. Albert H. Rober, M. R. C., and Lieuts. Claude H. Ogden, M. R. C., Roy R. Haley, M. R. C., and Charles B. Gibson, M. R. C.

Society of Internal Medicine.—At the twentieth regular meeting of the Chicago Society of Internal Medicine, December 17, the program included papers by Dr. Lewis J. Pollock and William Cluney on "Vital Stains and Central Nervous System"; by Dr. Arthur F. Beifeld on "An Etiologic Phase of Pernicious Anemia," and by Drs. Rollin T. Woodyatt and William D. Sansum, on "Treatment of Mercuric Chlorid Poisoning: An Experimental Study."

INDIANA

Physicians Win Suit.—In the damage suit for \$25,000 brought against Drs. James H. Fargher and Orlando L. Sutherland, La Porte, in which the defendants were charged with failing properly to set a fracture of the ribs, a verdict was rendered in the St. Joseph circuit court, December 14, in favor of the physicians.

Personal.—Dr. Sterling P. Hoffmann, Bluffton, is ill with smallpox.—Dr. J. Rilus Eastman, Indianapolis, spoke before the Madison County Medical Society, November 27, on "War Surgery."—Dr. Rose Alexander Bowers, Michigan City, has been appointed a member of the staff of the Mayo Clinic, Rochester, Minn.—Dr. Edward J. McOscar, Fort Wayne, was awarded the first prize for the best paper read at the annual meeting of the Pennsylvania Railway Surgeons' Association.

Smallpox.—The state board of health will, it is expected, soon take drastic action to check the spread of smallpox in the state. The board of health of Indianapolis has already initiated such action, and requires that all children be vaccinated.—During November, ninety cases of smallpox were reported in Indianapolis, and during the first ten days in December, sixty-five additional cases were reported.—The health authorities of Fort Wayne believe that they have the smallpox epidemic under control.—A number of cases of smallpox are said to have developed at Grabbill.

IOWA

Field Hospital Unit Mustered.—The field hospital unit was mustered in at Iowa City, December 8, under command of Major Francis L. Love, Iowa City.

Personal.—Dr. Frank W. Lee, Riceville, fell to the bottom of his silo chute, December 10, sustaining severe injuries.—Capt. Daniel J. McCarthy, Davenport, is in charge of the second Red Cross Hospital, opened at Jassy, Roumania, December 4.

New Officers.—Dubuque County Medical Society, at its annual meeting, December 11, in Dubuque, elected the following officers: president, Dr. Joseph H. Schrup; vice presidents, Drs. Frank W. Meyers, Dubuque, and Hierstein, Dyersville; secretary, Dr. Clarence E. Lynn, and treasurer, Dr. Henry M. Pahlas, Dubuque.

Hospital Items.—At a meeting of the authorities of Grinnell College with the Women's Club of the city, the plans for a detention hospital for contagious diseases were endorsed, and a committee was appointed to secure the funds for the erection.—Miss Lottie Heywood has been placed temporarily in charge of the Eleanor Moore Hospital, Boone.—Two wards and a number of private rooms have been added to the Anamosa Hospital, which now has accommodation for twenty patients.

MARYLAND

Personal.—Capt. Clement A. Penrose, Baltimore, has returned from a four months' visit to London, Paris, and the trenches in France and Flanders, commissioned to make an investigation of sanitary conditions.—Dr. Archibald C. Harrison, who holds a commission as major in the University of Maryland Hospital Unit, has returned to his home in Baltimore, after spending several week in Virginia, recuperating from a serious operation.

Memorial to Dr. Chambers.—In the main operating room at the Mercy Hospital, an impressive bronze tablet of the late Dr. John W. Chambers has been erected as a memorial to him by the Alumni Association of the College of Physicians and Surgeons. The tablet is a medallion portrait of Dr. Chambers, and is the work of Maxwell Miller, the local

sculptor. There were no formal exercises at the unveiling of the memorial, which was private, and in the presence of the members of Dr. Chambers' family, with Sisters of Mercy and the resident staff of the hospital.

MASSACHUSETTS

Whooping Cough Hospital.—What is said to be the first hospital in the United States devoted to pertussis was opened, December 7, in one of the buildings of the west department of the City Hospital.

Federal Hospital on Long Island.—It is announced that Long Island, Boston Harbor, will be taken by the federal government for hospital purposes. The mayor of Boston will use the \$1,300,000 realized by the sale to build 500 cottages for the sick and poor now on the island.

Work of Women on Battlefields.—Dr. Rosalie Slaughter Morton, New York, chairman of the war service committee of the Woman's National Medical Association, was a guest of honor at a dinner of the Women's National City Club, Boston, December 5. Dr. Morton described the work of women in the battlefields and hospitals of France, Belgium and Serbia.

Addition to Hospital.—The Municipal Council of Haverhill has appropriated \$70,000 for the erection and equipment of an addition to the Glen Gale Hospital. The plans provide for a two-story brick structure to be erected in the rear of the present hospital, increasing its capacity from fifty to 100 patients. It is also proposed to establish a general medical dispensary and outpatient department at the hospital.

Personal.—Dr. Wallace C. Keith, Brockton, was installed as grand master of the Grand Council of Masons at the annual meeting in Boston, December 10.—Dr. Halbert C. Hubbard, Worcester, has been appointed assistant physician to the State Sanatorium, Rutland.—Drs. M. Victor Safford, Honore Van De Velde and Benjamin A. Graves, Boston, were deputized by the mayor to go to Halifax, N. S., and give such aid as they could to the people of the afflicted city.

MONTANA

Smallpox.—In Butte and Silver Bow counties there are said to be 150 cases of smallpox, many of which are of the most malignant type, and compulsory vaccination is suggested by the authorities.

Personal.—Dr. Arthur Morrow, Kalispell, has been named as physician of Flathead County and health officer of Kalispell.—Dr. Max W. Barbour has been appointed health officer of Helena, succeeding Dr. Ellis A. Johnston, resigned.

NEW JERSEY

Personal.—Dr. John J. Broderick has been appointed surgeon of the police department of Jersey City.—Lieut. James H. Haines, M. R. C., Haddon Heights, is reported to be seriously ill with measles at Camp Pike.

Loyalty Meeting.—A patriotic meeting of the physicians of Trenton and their families was held, December 13, at which Dr. William W. Keen, Philadelphia, and Major Charles A. E. Codman, M. R. C., U. S. Army, Philadelphia, delivered addresses, and Major Henry D. Jump, Philadelphia, presented moving pictures of war conditions abroad and of cantonments in this country.

Clinic for Syphilis.—In compliance with a resolution adopted recently by the Morris County Medical Society that, "If possible, at least three hospitals in the county establish a clinic for the treatment of syphilis or specific blood disorders," the board of managers of the New Jersey State Hospital at Morris Plains at its recent annual meeting authorized the establishment of such a clinic at this hospital. Through the liberality of private concerns, the necessary drugs are to be provided without expense to the hospital or state.

NEW YORK

Offers Estate for Convalescent Home.—Froh Heim Farms, the 5,000-acre country estate of the late Grant B. Schley, New York, has been offered by his heirs to the government for a home for convalescent soldiers.

Vassar to Train Nurses.—A committee of the trustees of Vassar College has been appointed to work out plans for a school for the intensive training of registered nurses. In cooperation with the committee on nursing of the Council on National Defense it is also planned to hold a summer conference of Red Cross home service workers, and to establish

a normal institute under the auspices of the American Red Cross.

Medical Military Aid.—The American Medical Military Aid Association was incorporated in New York, December 15. The purpose of the association is "To give voluntary medical aid and voluntary assistance to the dependent families of men enlisted in the United States Army and Navy." The directors are Drs. John Ernest Gignoux, Wolff Freudenthal, Mary L. E. Daly McLean, Freeman F. Wood, Isadore L. Hill and Robert Emery Brennan, Mrs. Florence Eno Graves and Mr. Willis G. Nash, all of New York.

New York City

The Flint Estate.—The estate of the late Dr. Austin Flint, who died, Sept. 21, 1915, has been appraised at \$144,518 gross. It is to be divided between his two sons and a grandson.

Tuberculosis Hospital Admission Bureau Moves.—The Hospital Admission Bureau, which is maintained jointly by the department of health and the Department of Public Charities, has removed from First Avenue near Twenty-Fifth Street to 145 Worth Street, where it will be more easily accessible and where larger quarters have been secured.

Pneumonia Continues to Increase.—While New York is not suffering from an epidemic of pneumonia, the disease has been unusually prevalent not only in the city but throughout the state, and both the city and state health departments have been keeping before the public the fact that pneumonia is an infectious and communicable disease and one that is to a large extent avoidable if proper precautions are taken. For the week ended December 14 there were, out of 1,443 fatalities, 263 due to pneumonia; for the preceding week, out of 1,417 deaths, 220 were caused by pneumonia. The average number of deaths from pneumonia for this time of year in this city is about 200. While there is usually an increase in the number of deaths from respiratory diseases as the winter progresses, this year the increase began earlier and has continued at a much higher rate than usual.

Personal.—Dr. Thomas Darlington, formerly health commissioner in New York, has been engaged permanently as sanitary commissioner of the American International Ship Building Co.—Dr. Walter J. O'Connell of the Buschwich Hospital was seriously injured in a collision between an ambulance of the hospital and a street car, December 10.—As a result of a competitive examination for the position of chief medical examiner of New York, Dr. Otto H. Schultze, pathologist to the district attorney, and Drs. Charles Norris and Douglas Symmers of the pathologic laboratories of the Bellevue Hospital have qualified for the position. The new examiner takes the place formerly held by the coroner.—Drs. Burr B. Mosher, John Osborn Polak, Sylvester J. McNamara, Jaques C. Rushmore, Henry M. Mills and Henry M. Moses, all of Brooklyn, has been appointed councilors of the Long Island College Hospital Alumni Association.

OHIO

Smallpox in Toledo.—Smallpox is reported to be unusually prevalent in Toledo. It is stated that there are approximately 20,000 unvaccinated children in public schools.

Academy Election.—At the annual meeting of the Muskingum County Academy of Medicine, held in Zanesville, December 12, Dr. Leroy F. Long was elected president; Dr. William F. Sealover, vice president, and Dr. Oren I. Dusthimer, secretary-treasurer.

Personal.—Dr. Edward Herbst, Columbus, who is about to retire as a member of the board of education, took the highest rank in the recent civil service examination for city physician.—Dr. Rush R. Richison, Yellow Springs, assumed his new duties as superintendent of the District Tuberculosis Hospital, Springfield, December 21.—Dr. Edward J. Schwartz, for fifteen years health officer of Salem, has resigned to accept the position of director of communicable diseases in the state department of health.

PENNSYLVANIA

Personal.—Dr. W. Edgar Holland, Fayetteville, has been elected physician to the Franklin County Home, succeeding Dr. John K. Gordon, Chambersburg.—Dr. Mary Janet Alexander, Chester, has resigned to take up work as a medical missionary in India.—Dr. Jesse Cope Green, a well known dentist of West Chester celebrated his 100th birthday anniversary, December 13.—Dr. Oliver C. Heffner, Pottstown, received severe burns of the face and hands while pouring an antifreezing solution into his automobile.—Dr.

Edward L. Davis, Berwick, has been appointed coroner for Columbia County, to succeed Dr. William H. Hoffa, deceased.

Philadelphia

Personal.—Lieut. Hugh Cotter Boyle, formerly of the British Ambulance Corps No. 17, with the rank of regimental surgeon, and later transferred to the Second Durham Infantry, was severely wounded in action in France, December 7. Dr. Boyle served for a year as an intern in the Samaritan Hospital, and practiced in this city until last May.—Dr. Samuel G. Dixon was reelected, for the twenty-second consecutive time, president of the Academy of Natural Science at the annual meeting, December 18.

TEXAS

Free Clinic.—The health department of Amarillo has established a free clinic at the Amarillo Hospital, which will be held for two hours each week for the benefit of indigent patients.

Hospital for Tuberculous Negroes.—The health department of Dallas has asked the county commissioners' court to appropriate a sum of money for the construction of a hospital to be used for the treatment of negroes suffering from tuberculosis.

North Texas Physicians Meet.—At the seventy-sixth semi-annual meeting of the North Texas Medical Association, held in Dallas, December 11 and 12, the following officers were elected: president, Dr. H. Leslie Moore, Dallas; vice president, Dr. Sidney J. Wilson, Fort Worth; secretary, Dr. David L. Bettison, Dallas, and treasurer, Dr. Martin L. Wilbanks, Greenville. A committee was appointed to petition congressmen and senators to eliminate that portion of Section 2120, of the Emergency War Revenue Act, which provides a professional tax of an additional 8 per cent.

State Health Board Notes.—A meeting of the state board of health was held at Laredo, December 10, to discuss the work of the present year, and outline plans for the coming year, and to consider the Mexican border quarantine service and other matters of public importance.—Dr. David E. Rouse, epidemiologist to the Ohio State Board of Health, and director of Red Cross Unit No. 12, Chillicothe, Ohio, has been appointed field director by the state board of health.—Dr. Albert H. Braden, Beaumont, has been appointed a field director by the state board of health, and will have charge of the work in McLellan County.

WASHINGTON

New Health Officer, Chemist and Bacteriologist for Tacoma.—Dr. Hilbrand J. Hards has been appointed health officer of Tacoma, succeeding Dr. Jonathan E. Henry, resigned, to take effect, January 18.

New County Officers.—At the meeting of the Whatcom County Medical Association, held in Bellingham, December 10, the following officers were elected: president, Dr. Edward W. Stimpson; vice presidents, Drs. Carl C. Hills, Albert M. Dawson and Newton W. Wear; secretary, Dr. Orville E. Beebe, and treasurer, Dr. Frank J. Van Kirk, all of Bellingham.

GENERAL

Rutland Railway Surgeons Elect Officers.—At the annual meeting of the Rutland Railway Surgeons' Association, held in Burlington, Vt., December 13, the following officers were elected: president, Dr. James M. Hackett, Champlain, N. Y.; vice president, Dr. Joel B. Woodhull, North Bennington, Vt., and secretary-treasurer, Dr. Stanton S. Eddy, Middlebury, Vt.

Bequests and Donations.—The following bequests and donations have recently been announced:

Building fund of the People's Hospital, New York, a donation of \$5,000 from Louis Koenberg, and \$3,000, the proceeds of a theatrical benefit.

King Edward's Hospital Fund, London, a donation of \$175,000 from Viscount Astor.

Provident Hospital, a contribution of \$1,000 in cash by negroes of the city.

New Officers for Southwestern Association.—At the fourth annual meeting of the Southwestern Medical and Surgical Association, held in Albuquerque, N. M., December 7 and 8, the following officers were elected: president, Dr. Percy G. Cornish, Albuquerque, N. M.; vice presidents, Drs. W. Warner Watkins, Phoenix, Ariz., and Charles G. Duncan, Socorro, N. M., and secretary-treasurer, Dr. John R. Van Atta, Albuquerque. El Paso was selected as the next place of meeting.

Mary Pemberton Nourse Fund for Public Health Study.—The Mary Pemberton Nourse Fund for Public Health Study has been established by the class of 1914 of Vassar College in memory of Mary Nourse of that class, who dedicated herself to the cause of public health, but whose aim was cut short of realization. This fund is established for the purpose of offering a fellowship to young women who desire to devote themselves to the important work of public health, and is recommended for consideration by Julia C. Lathrop, chief of the Children's Bureau, United States Department of Labor; Dr. William H. Howell of Johns Hopkins University, School of Hygiene and Public Health, and Henry N. MacCracken, president of Vassar College. The sum at the disposal of the class is to be increased until the income from it will provide opportunity for continued and valuable work in this field. An appeal is now being sent out for gifts of money, and especially of Liberty Bonds, to bring the sum up to the required amount. Coupon bonds and contributions may be sent to the chairman, Katherine Taylor, 330 Webster Avenue, Chicago.

PARIS LETTER

PARIS, Nov. 29, 1917.

Surgery of Nerve Trunks

At one of the recent sessions of the Société de chirurgie de Paris, Dr. Chevrier, hospital surgeon, presented an interesting communication on the technic of the repair of injured nerve trunks. The operation may consist of a liberation, a total suture or a partial suture of the nerve. Chevrier never approaches the nerve at the level of the lesion, but always either above or below, always working without instruments so as not to contuse the nerve; next, he frees it of its coverings; then he scarifies the surface with the point of a bistoury, and, finally, he ensheaths it in amniotic membrane. For total suture, it is convenient, as a preliminary step, to mobilize the nerve for quite a stretch above and below, which favors the bringing together of the nerve ends after the resection. The resection must be extensive enough to obtain a nerve end of the same appearance as is obtained after cutting a normal nerve. Experience has taught Chevrier that he must resect a little more than the hard, indurated mass in the old cases, and a little less than this in the recent cases. The section should be made with a thin, sharp bistoury, not with scissors, because they crush or bruise the nerve. Chevrier makes the section perpendicular to the nerve axis in both stumps. The circular surfaces thus obtained lend themselves to better placing of the suture, and reduce to a minimum the possibility of displacement of the axis cylinder. The suture should aim to be an exact circumferential approximation of the nerve stumps. Chevrier places separate sutures of catgut, including the neurilemma and the most superficial part of the nerve. He puts in many sutures, separated by forceps arranged in order. It is important that when these sutures are tightened the nerve ends are brought together without crushing or bruising. If the nerve ends are not brought in contact by this procedure, the threads are tightened by twisting the ends, going over them in turn several times. The coaptation of the nerve ends may be facilitated by lessening the tension on the nerve itself: flexing the leg for the nerves of the thigh, flexing the forearm to relieve the tension on the median and the radial nerves; extending and adducting to ease up on the ulnar.

PARTIAL SUTURE

In the case of partial suture, the difficulties are found in the resection. It is important that the principle of removing the whole of the indurated fibrous mass must be respected, and that is a difficult matter. By being too conservative, this fundamental principle is not observed. Hence partial resections give results inferior to those obtained with total suture. If the case is one which apparently does not lend itself to a complete resection of the indurated fibrous mass, a resection is nevertheless preferable to a partial suture, even though some normal fibers have to be cut, because a perfect total suture will certainly be followed by regeneration. With this reservation, resection preliminary to partial suture can be effected in several different ways; it may be cuniform, trapezoid or rectangular. The last mentioned is the one preferred by Chevrier, because it gives better approximation. The suturing is done at separate points, but the immediate result does not look so well as that obtained from total suture, because of the hump formed by the sound part of the nerve that has been left intact. The suture completed, the union is wrapped in amniotic membrane.

AFTER-CARE AND OUTCOME

Chevrier insists on the importance of complete asepsis in the performance and after-care of this operation. When the extremity has been placed in an abnormal position for the purpose of lessening the tension on the nerve, it is kept in such a position on an average for three weeks; then it is gradually returned to its normal position. He has never seen a case where the abnormal position became permanent. This technic has yielded the best results; for example: Chevrier's personal experiences in the cases involving the external popliteal nerve are as follows: two liberations, reviewed and followed, have both been cures. Of six total sutures, two were not followed beyond the fourth month, but there is every reason to hope that the result in these cases is a good one. The remaining four cases have been followed and reexamined. They were all cured with complete return of motion.

WALTHER'S TECHNIC

Dr. Walther, assistant professor at the Faculté de médecine de Paris, and surgeon of the hospitals, speaking of the liberation of nerves, said that it is not always possible to accomplish this without the use of instruments as, for instance, when the nerve is included in a mass of thick, fibrous tissue. For some time it has been his practice to effect such liberation with a small, blunt tenotome, used on the flat. As concerns nerve suture, to avoid the turning back of the nerve fibers, which may result from too accurate apposition of the nerve ends, he has followed a method of impacting the nerve ends, hollowing out one end and rounding off the other, so that all the parts of the nerve, especially the central, will be in contact without pressure. He directed attention to a very important question, namely, that of the indication for operation as determined during the operating. Chevrier is guided by the results of electric exploration of nerve function, which is all very well, but when the result is negative, one cannot draw any conclusions as to the nature of the interruption of nerve function; one does not know whether the axis cylinders are embedded in the cicatrix and thus are blocked, or whether they have forced their way through the cicatrix and have penetrated the lower end of the nerve. All that a negative result shows is that the nerve fibers have been completely destroyed. It only remains to determine the position of the lesion and the consistency of the fibrous mass, to decide on the operation to be performed. If there is present a large fibrous mass, well isolated, encapsulated, as it were, a neuroma or a glioma, Walther believes that it is well to remove it, endeavoring, by means of a longitudinal incision, to shell it out, observing all precautions not to bruise or crush the tissues of the nerve embedded in it. When it is a case of diffuse induration, enucleation is out of the question; the only choice is between total resection with suture of the two ends or conservation of the trunk with its cicatricial tissue. In any event, it is convenient to perform the last mentioned operation only if medical treatment, carried on for many months, has failed to show any improvement in the condition of the nerve.

Dr. Quénu, clinical professor of surgery at the Faculté de médecine de Paris, also stated that it is impossible, in certain cases, to know just what part the cicatricial tissue plays; it is wrong to say that this tissue must be removed in every case, especially when such removal would necessitate making extensive resection.

CHAPUT'S TECHNIC

Dr. Chaput, surgeon of the hospitals of Paris, believes that nerve suture can be done by a technic more simple than that of Chevrier. He recommends suture of the neurilemma as being logical in principle, although difficult of execution, because of the possible hernia of the nerve fibers. The conditions for success in nerve suture depend always on the technic employed, local conditions and the general state of the patient. From the point of view of technic, Chaput prefers simple catgut, which is less irritating than silk or chromic catgut. Few sutures should be taken, and they should be placed as near the edge of the nerve as possible so as to avoid the turning back or overlapping of the nerve ends. These sutures should not be drawn tight: the two nerve ends should merely be in contact, and not too closely in contact either, for the postoperative congestion increases the compression of the nerve tissue, and even though the suture is not tight, it brings the ends in contact. Finally, the sutured nerve should not rest on a hard bed, such as bone, but on an interposed muscular bed. The general state of the patient is also of very great importance. First, the age.

The operation is not a success in the old; it is much more successful in the young. Alcoholics, syphilitics, those suffering from intoxications, tuberculosis, kidney, liver or heart disease or arteriosclerosis, are in very poor condition for nerve suture, and it is among these that failures are observed most often.

LONDON LETTER

LONDON, Nov. 27, 1917.

The War

VITAL STATISTICS

In his presidential address to the Royal Statistical Society, Sir Bernard Mallet, the registrar-general of births, marriages and deaths, referred to the overwhelming importance of the whole question of racial advance or decline, on which the fate of nations so largely depends, and to the damage that the present struggle must inflict on this and other nations. Dealing with the effect of war on marriages, he said that the number of marriages increased steadily from 260,544 in 1909 to 286,583 in 1913, and that this increase was continued in the first two quarters of 1914. Although the increase in the latter half of 1914 was smaller than that in the earlier half, during the second, third and fourth quarters of 1915 and the first quarter of 1916 a sudden and abnormal rise occurred, and war marriages swelled the totals until they reached "record" heights. Thereafter the increase in marriages continued, but with diminished force, and by the third quarter of 1916 the number had fallen below the average. Crudely stated, he declared that the war has resulted in 200,000 people being married between August, 1914, and June, 1917, who in the ordinary course would not have married. The marriage rate for 1915 was the highest recorded, 19.4; the previous maximum, 17.9, was in 1853.

With reference to the marriage statistics in belligerent countries, he said that in Hungary the effect of the war had been that more than 600,000 people who in the ordinary course would have married had not done so. In Prussia, Bavaria, Saxony, Hesse, Hamburg and Bremen, six states containing more than 80 per cent. of the German population, the total number of marriages in 1913 was 434,103, and in 1914 the number was 392,053, a decrease of nearly 10 per cent., in spite of a great number of war marriages during the first month of the war. From figures available, in Saxony, compared with the last year of peace, the decrease was about 35 per cent., in Hamburg 24.5 per cent., in Bremen 37.6 per cent., and in Berlin 21.6 per cent., and he presumed that the decrease in the country was greater than in the town.

Comparing the statistics, the president said that the very notable difference was not difficult to account for. In Germany the whole population of military age was mobilized; in England war marriages were stimulated by generous allowances and pensions. On the introduction of compulsory service, larger numbers of men of marriageable age were fighting abroad, and the conditions were beginning to approach those of the Germans, the influence of which could be seen in the birth rate, although the comparison was wholly in favor of this country.

The loss of potential lives to the belligerent countries by the decrease in the numbers of children was, perhaps, the most important effect produced by the war on vital statistics. It was first felt at the end of April, 1915, and it would continue until nine months after the termination of hostilities and demobilization was more or less completed. In England and Wales, in the three years 1911-1913, the decrease in the births amounted to 4.2 per cent. in numbers as compared with 1908-1910, and represented a birth rate of 6.3. In Germany the decrease had been much more rapid of late years; the decline was 5 per cent. in numbers and 9 per cent. in rate, and in Hungary 1.1 and 3.5. From these figures it was apparent that the United Kingdom had suffered far less than had Germany in this vitally important point. The United Kingdom lost by the fall in births over 500,000 potential lives, approximately 10,000 per million of the population. Germany lost in the same period 2,600,000 approximately 40,000 per million. Hungary lost 1,500,000, approximately 40,000 per million. At the outbreak of war, the population of the central empires was about two and a half times as great as that of the United Kingdom; their losses of births had apparently been ten times as great. The poorer classes in this country had never experienced more favorable conditions, but the Germans, if all indications were to be believed, had suffered to such an extent as to affect seriously the general health of the population.

As regards infant mortality, the rate during 1914-1916 had been lower both in the United Kingdom and in Germany

than in any previous period of like duration; but the summer mortality in 1917 appeared to have been extraordinarily high in several German cities in spite of the great organized efforts to save infant life, and the German rate all through remained at about 50 per cent. higher than in this country. The rate recorded in the United Kingdom in 1916 was the lowest on record. In speaking of the deaths during the period of the war, Sir Bernard Mallet distinguished between civilians and members of the armed forces. Generally there was a marked rise in civilian deaths in 1915, followed by a fall to below prewar numbers in 1916. One cause of the decrease was the restrictions in the output of alcoholic liquors.

FOOD CONTROL: BAN ON SALE OF CREAM

New orders have been issued by the food controller. The use of cream is prohibited except for the purpose of making butter or for consumption by invalids, young children, or other persons on a physician's order. The order has been issued to conserve as much full milk as possible, and because the use of cream has been chiefly a luxury.

Another order prohibits the use by brewers of any saccharin substance other than solid glucose or the invert or other product of low-grade sucrose polarizing not over 89 degrees, and from which not less than 40 per cent. of its weight has already been extracted in the form of grocery crystal sugar, honey, sugar or syrup. Brewers are, however, permitted to use their existing stocks or any sugar that was in transit to them, at the date of the order, from the manufacturers. The quantity of such saccharin substance that brewers are permitted to use is not more than 40 per cent. of the quantity used by them in the year 1915.

THE SURGICAL TREATMENT OF DISABLED MEN

In a lecture delivered at the Royal Institute of Public Health, Col. Sir Robert Jones, inspector of military orthopedics, said that wounded and disabled men form a serious proportion of the population, and must be helped to remain an economic part of the man power of the nation and not mere helpless dependents. Fully 50 per cent. of the wounded in this war suffered from injuries which either are or may become physical disabilities, the treatment of which is orthopedic. There are now a large number of orthopedic centers started or on the point of being started all over the country, providing accommodation for from 1,400 to 1,800 men each, completely equipped. They consist of special departments, each directed by specially trained surgeons. The heads of these departments hold consultations in doubtful cases. Sir Robert Jones defined orthopedics in relation to military surgery as the treatment by operation, by manipulation, by construction and by reeducation, of disabilities to arms and legs arising from injury or disease. The orthopedics of war he divided into preventive and corrective. Owing to the fact that most gunshot wounds are already septic when the wounded reach surgeons at the front, their energies are taxed by the effort to save life, and many patients reach England with various types of deformity and considerable shortening of the limb. The first duty of the orthopedic surgeon is to consider how the limb—a fractured thigh, for instance—may be lengthened, and lateral deflection, which produces almost complete loss of function of the limb in walking, remedied. When the patient has been made to walk with an apparatus that prevents fresh shortening of the limb, he is only improved, not cured; he is therefore retained in the orthopedic center until his joints become supple and his muscles are developed by intensive methods, including special forms of electric massage and exercises. Again, in the case of a stiff wrist or stiff elbow with, perhaps, loss of part of one of the bones of the forearm, the surgeon first mobilizes the joints, and then, if need be, grafts a piece of shin bone into the arm, the patient being kept in the hospital until the function of the arm is well on the way to restoration. In cases of nerve injury, it is necessary first to mobilize the joints and afterward to operate by nerve suture or tendon transplantation. In the case of a man with a helpless flail hand, certain muscles, which can be spared in the front of the forearm, are attached to paralyzed tendons; in three months the patient may be able to raise his hand. Another military orthopedic problem is to decide, when the elbow-joint, for instance, must be stiff, what is the best position in which to fix it. Usually a stiff elbow fixed at a suitable angle is better than a weak joint; but men engaged in certain trades find a movable though weak elbow more useful than a stiff joint. A great change in the morale of the men in orthopedic centers has been brought about by the progress of military orthopedics. At first they had grounds for fearing that if they accepted treatment designed for partial or complete restoration of function, their

pensions would be reduced. Now the mental attitude of the patient is altered by the fact that pensions are based on physical disability without reference to earning power, and that there are penalties in the form of reductions if treatment is refused. Men are now open to the persuasion of the hospital staff and of cured comrades; they derive direct benefit, mental and physical, from curative workshops. The governing principle of curative work is that voluntary movements are of infinitely greater value than passive movements. When the vast installations of Zander instruments and the way they are employed are considered, Sir Robert Jones considers it amazing that more tragedies do not take place. One gentle movement in every direction of a stiff elbow might overcome adhesions; to repeat the movements in a machine only endangers the tissues by direct irritation. Exercises practiced in curative workshops are of two kinds, direct and indirect. The ingenuity of the instructor is shown in devising direct curative work suitable to each case; but the indirect method is often the best. For example, when a man with a stiff ankle is set to plane or saw wood, he unconsciously uses the ankle as he becomes interested in the work his hands are doing. Again, if a man with stiff fingers who cannot hold any tool is given something to do with the other hand, the crippled hand will come to the rescue in a difficulty and soon become useful. Owing to the control that surgeons at the front have obtained over gas gangrene and sepsis, the number of amputations is diminishing. Further expansion of orthopedic centers has been authorized with the object of getting patients directly from the front in order that the occurrence of deformity may be anticipated.

A man discharged from the army to civil life passes under the care of the Ministry of Pensions, which possesses great responsibilities and great powers for good. It cannot compel a pensioner to undergo training, but it can bring pressure to bear on him, for if treatment short of operation is refused, the pension is reduced, while bonuses are given to men who train, and, if they are married, a separate allowance. Many pensioners will require treatment for two or more years, but it can be carried on while they work or train. Patients discharged from orthopedic centers to civil life fall into two groups, Orthopedic A, consisting of the partially disabled who require further treatment of an orthopedic kind, and Orthopedic B, who require a certain amount of treatment of a general kind. The orthopedic centers supply to the first class a ticket giving a note of the patient's condition, with suggestions to the pension authorities as to the treatment required.

A Ten Months' Child: A Physician's Divorce Case

The old question of the possibility of ten months' gestation, and the consequent one of the legitimacy of a child when connubial intercourse last took place at the beginning of that period, have been fought out again in the law courts. The case is important because it brought to light the experience of our leading obstetricians on the point—a kind of up-to-date symposium. The petitioner, a captain in the Army Medical Corps, sought to divorce his wife on the grounds of adultery. The marriage took place, June 17, 1915. Neither he nor his wife desired to have children till the war was over. Dec. 19, 1915, they cohabited for the last time before he left for Egypt, but, the petitioner alleged, under circumstances that prevented pregnancy. The wife went to her brother in the country at a house where three officers were staying. Then she went to stay with some friend, and menstruated there. Jan. 19, 1916, she went to her father's house, and the suggestion was that between her stay at the last place and coming to her father she committed adultery with an unknown man. March 10, 1916, she underwent an operation for appendicitis, when it was found that she was pregnant. March 20, she wrote to her husband informing him of the fact. He replied that her statement was absurd, that he was a physician and was convinced that nothing of the kind could ever have happened. Oct. 22, 1916, she gave birth to a child of normal period. Between her husband's leaving England and the birth of the child, 307 days elapsed. The following expert evidence was given for the husband: Dr. H. R. Spencer, obstetric physician to University College Hospital, said that he had known a case of gestation of 307 days from what he had been told was the last day of menstruation. He did not think that the husband in this case could possibly be the father. The operation could not have tended to prolong gestation. Dr. Griffith, obstetric physician to St. Bartholomew's Hospital, said that in protracted gestation the labor would be slow; but he admitted that he had known cases of ten months' children with normal delivery. For the respondent, Dr. Philips, obstetric physician to King's College Hos-

pital, said that he had experience of three cases, one of 298 days, the second of 306 days, and the third of 308 days, in each of which the husband had left the country for these periods. It was not impossible to have a ten months' child. In her evidence the petitioner said that her menstrual period ended December 18, and that she had proper intercourse with the petitioner, December 19. The judge (Mr. Justice Horridge) said that he believed the respondent, and that the case was one of protracted gestation. He therefore gave judgment in her favor.

Marriages

CHARLES NORTHMORE STURTEVANT, M.D., Frankford, Philadelphia, to Miss Martha Irvine of Mercersburg, Pa., at Frankford, December 8.

LIEUT. KENNETH ALLEN PHELPS, M. R. C., U. S. Army, West Point, N. Y., to Miss Ora Shaffner of Burlington, N. C., December 5.

LIEUT. EMERY BOWERS NEFF, M. C., U. S. Army, Fort Ringgold, Texas, to Miss Ruth Heath of Houston, Texas, November 27.

LIEUT. SAMUEL L. WADLEY, M. R. C., U. S. Army, to Miss Bertha Elizabeth Rahm, both of Memphis, Tenn., December 5.

MARVIN H. PORTERFIELD, M.D., Martinsburg, W. Va., to Miss Catherine E. MacLuckie of Frostburg, Md., November 6.

S. MURRAY HOUTZ, M.D., to Mrs. Grace M. Moist, both of West Berwick, Pa., at Beach Haven, Pa., October 23.

HENRY ERNEST RICKETTS, M.D., Belleville, N. J., to Miss Mary T. McCue of Newark, N. J., November 17.

FRANCIS STEPHEN CALDICOTT, M.D., Woburn, Mass., to Miss Helena Stanfield of Louisville, Ky., recently.

SAMUEL DUNCAN CAMERON, M.D., to Miss Laura Brouillard, both of North Yakima, Wash., October 25.

SMITH ELY JELLIFFE, M.D., to Miss Bee Dobson, both of New York City, December 3.

GEORGE CRESSWELL DAVIS, M.D., to Miss Nelle Bound, both of Milton, Pa., December 1.

JESSE CARROLL COGGINS, M.D., to Miss Mabel McCahan, both of Baltimore, December 8.

JAMES A. KIERNAN, M.D., Chicago, to Miss Grace Cole of Alton, Ill., December 10.

Deaths

Everett James McKnight, M.D., a member of the Board of Trustees of the American Medical Association, died suddenly at his home in Hartford, Conn., December 25, from angina pectoris. Dr. McKnight was born June 12, 1855, in Ellington, Conn., and was graduated from Yale University with the degree of A.B. in the class of 1876. After a year of study in Yale Medical School he entered the College of Physicians and Surgeons in the City of New York, from which he was graduated in 1879. Since that time he has practiced in Hartford and East Hartford, specializing in surgery, and at the time of his death was in active service on the staff of the Hartford Hospital. He was an enthusiastic Yale man, and made the arrangements for the first intercollegiate football game between Yale and Harvard. His alma mater gave him the degree of A.M. in 1907. He served as president of the Connecticut State Medical Society in 1907-1908, and of the Hartford Medical Society in 1914. He represented the town of East Hartford in the General Assembly in 1893, and was chairman of the committees on fisheries and public health.

His official connection with the American Medical Association commenced in 1908, when he was elected a member of the House of Delegates and continued until his election to the Board of Trustees in 1916. His last official work for the Association was as a member of the War Committee, regarding the appointment of advisory boards for the new selective draft.

One of his associates pays him this tribute: "We all put work on him, from the government down to his humblest friend, because he was so capable; then we put more work on him because he was so willing. He worked for others until the last minute." Dr. McKnight was an earnest and con-

scientious worker, with a humanitarian interest in his fellow men. When he gave himself to a cause he labored with complete devotion to its accomplishment.

Edward Mathew Hanson, M.D., Keokuk, Iowa; Keokuk (Iowa) Medical College, 1892; aged 49; a Fellow of the American Medical Association, and a specialist on diseases of the eye, ear, nose and throat; professor of electrotherapeutics in Keokuk Medical College of Physicians and Surgeons; eye, ear, nose and throat surgeon to Graham Hospital, Keokuk; who had been suffering from a nervous breakdown; died at the home of his cousin in St. Louis, December 11, from the effects of carbolic acid, self-administered, it is believed, with suicidal intent.

Charles H. North, M.D., Dannemora, N. Y.; University of Buffalo, N. Y., 1898; aged 49; a member of the Medical Society of the State of New York, and American Medico-Psychological Association; who entered the state service after graduation as assistant physician at the Matteawan Hospital for Insane Criminals, was transferred to the Dannemora State Hospital for Insane Felons, on its opening in 1900, and was made superintendent of the institution in 1904; was stabbed and almost instantly killed by an insane inmate, December 12.

Capt. Zotique Rousseau, M. R. C., U. S. Army, Troy, N. Y.; Laval University, Quebec, 1869; aged 71; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York, and for several terms president of the Rensselaer County Medical Society; on duty at Watervliet Arsenal; for more than forty years attending physician at the Troy Hospital; physician to the Home of the Aged Poor, and for the House of the Good Shepherd; died at his home, December 6, from pneumonia.

Jesse Snodgrass, M.D., Kenton, Ohio; Bellevue Hospital Medical College, 1867; aged 77; formerly a Fellow of the American Medical Association; a member and once assistant secretary of the Ohio State Medical Association; at one time president of the Northwestern Ohio Medical Association; a specialist on diseases of the eye, ear, nose and throat; assistant surgeon of the Eighth Tennessee Volunteer Infantry during the Civil War; who underwent operation several months ago, died at his home, December 8.

Orran George Cilley, M.D., Boston; Dartmouth Medical School, Hanover, N. H., 1868; aged 77; for several years coroner; from 1873 to 1879, surgeon of the First Squadron Cavalry, M. V. M.; surgeon-general of Massachusetts in 1883, under Governor Benjamin F. Butler; for four years physician to the Charles Street Jail; died at his home, December 9.

Albert Stone Gray, M.D., Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1887; College of Physicians and Surgeons, Chicago, 1889; aged 53; for several years a contributor of articles on health topics to the daily press; died in St. Luke's Hospital, Chicago, December 17, from anemia.

John Royer Laughlin, M.D., Hagerstown, Md.; George Washington University, Washington, D. C., 1906; aged 45; formerly a Fellow of the American Medical Association; a member of the Medical and Chirurgical Faculty of Maryland; died in Hallendale, Fla., December 14, from arteriosclerosis.

Charles Francis House, M.D., Painesville, Ohio; Long Island College Hospital, Brooklyn, 1874; aged 69; formerly a Fellow of the American Medical Association; for several terms president of the Lake County (Ohio) Medical Society; died at his home, December 12, from a nervous breakdown.

Charles S. Payne, M.D., Liberty, N. Y.; University of Buffalo, N. Y., 1884; aged 57; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; died at his home, December 12, from cerebral hemorrhage.

Amos H. Helm, M.D., New Providence, Pa.; Jefferson Medical College, 1868; aged 72; a member of the Medical Society of the State of Pennsylvania; for forty years a school director; died suddenly from heart disease, December 10, while shoveling snow in his yard.

Andrew W. Tracy, M.D., Meriden, Conn.; McGill University, Montreal, 1873; aged 71; a member of the Connecticut State Medical Society; mayor of Meriden in 1892, and a member of the city council for two terms; died at his home, December 10.

Guido L. Stempel, Macedonia, Iowa (license, Iowa, years of practice, 1886); aged 82; formerly a member of the Iowa State Medical Society; a well known naturalist and collector of birds and butterflies; died at his home, December 13, from nephritis.

R. M. Montgomery, M.D., Hazlehurst, Ga.; Medical College of the State of South Carolina, Charleston, 1897; aged 52; a member of the Medical Association of Georgia; died in a sanatorium in Hazlehurst, December 2, from acute gastritis.

John Heard Ford, M.D., Vinton, La.; Louisville (Ky.) Medical College, 1893; aged 48; a member of the Louisiana State Medical Association; died at his home, August 2, from tumor of the brain, four weeks after a surgical operation.

Murdoch Chisholm, M.D., Halifax, N. S.; McGill University, Montreal, 1879; L.R.C.P. (Lond.), 1886; professor of clinical surgery in Dalhousie University, Halifax; was killed in the explosion which devastated Halifax, December 6.

Simon Elston Hooper, M.D., West Branch, Mich.; Western University, London, Ont., 1890; aged 54; a Fellow of the American Medical Association; died at his home, November 30, from septicemia, due, it is said, to pyorrhea.

John P. Logan, Dewitt, Mo. (license, Missouri, 1883); aged 63; for forty-two years a practitioner; formerly a member of the Missouri State Medical Association; died in St. Joseph's Hospital, Kansas City, December 4.

Albert Leroy Ward, M.D., Bement, Ill.; Chicago Homeopathic Medical College, 1899; aged 47; formerly a member of the Illinois State Medical Society; died in Decatur, Ill., September 21, from typhoid fever.

Richard Wallopie Kent, M.D., San Francisco; New York University, New York City, 1886; surgeon in the Pacific Mail Steamship Company's service; died in Calcutta, India, September 30.

Andrew Kamerling, M.D., Buffalo; University of Buffalo, 1866; aged 78; formerly a member of the Medical Society of the State of New York; died at his home, about December 6.

Adelaide Lambert, M.D., New Haven, Conn.; Boston University School of Medicine, 1884; aged 64; a member of the Connecticut State Medical Society; died recently at her home.

James Henry Knight, M.D., Morgantown, Ind.; Bellevue Hospital Medical College, 1875; formerly an assistant surgeon in the United States Army; died at his home, December 4.

Anseel McKinstry Whitbeck, M.D., Brooklyn; aged 81; a practitioner since 1859; died at the home of his daughter in Brooklyn, December 4, from senile debility.

William Caldwell Stevens, M.D., Worcester, Mass.; Harvard Medical School, 1883; aged 62; a Fellow of the Massachusetts Medical Society; died at his home, October 17.

S. A. Reasons, M.D., Waldo, Ark.; Memphis (Tenn.) Hospital Medical College, 1894; aged 49; also a druggist; died in a hospital in Little Rock, Ark., December 5.

Samuel Hastings Brown, M.D., Philadelphia; Hahnemann Medical College, Philadelphia, 1869; aged 72; died at his home, November 21, from cerebral hemorrhage.

Frank Marion Foote, M.D., Marshall, Mich.; University of Michigan, Ann Arbor, 1884; aged 56; died at his home, October 28, from pulmonary tuberculosis.

Frank B. Black, M.D., Gilboa, Ohio; Eclectic Medical Institute, Cincinnati, 1886; aged 65; died in a hospital in Cincinnati, December 5, from typhoid fever.

John Calvin Cummings, M.D., Harrisburg, Pa.; University of Maryland, Baltimore, 1884; aged 63; died at his home, November 6, from cerebral hemorrhage.

Joseph H. Matthews, M.D., Lollie, Ark.; University of Arkansas, Little Rock, 1893; aged 48; died at the home of his niece in Conway, Ark., December 6.

B. F. Zeller, M.D., Union City, Ind.; Medical College of Ohio, Cincinnati, 1875; aged 72; a veteran of the Civil War; died at his home, November 29.

Ira N. Noland, M.D., Cleveland; Western Reserve University, Cleveland, 1892; aged 73; a veteran of the Civil War; died at his home, December 2.

John A. Blaydes, M.D., Hot Springs, Ark.; Transylvania University, Lexington, Ky., 1857; aged 83; died at his home, August 18, from pneumonia.

William H. King, M.D., Derry, Pa.; Jefferson Medical College, 1870; aged 68; died in the Columbia Hospital, Wilkesburg, Pa., December 5.

Wilbur F. Curtis, M.D., Chicago; Bennett Medical College, Chicago, 1890; aged 63; died at his home, December 9, from heart disease.

Lewis A. Lee, M.D., Conyers, Ga.; Atlanta (Ga.) Medical College, 1878; aged 60; died in a sanatorium in Atlanta, December 5.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

NOSTRUMS IN RETROSPECT

A Review of Worthless or Unscientific Proprietary Mixtures Previously Criticized

[FOREWORD.—The article that follows is the third¹ of a series written primarily for the purpose of reviewing the findings of the Council on Pharmacy and Chemistry on certain unscientific or worthless proprietary mixtures. Although the preparations which will be taken up in this series have been extensively dealt with in previous reports, the fact that they are still widely advertised and sold indicates the need of further publicity. The series is written by a man who is thoroughly conversant with the work of the Council on Pharmacy and Chemistry and can speak authoritatively on questions dealing with the actions of drugs in the treatment of disease.]

[ARTICLE III]

PEPTO-MANGAN

S. Q. Lapius, M.D.

It would be interesting, and even instructive, to know how many educated physicians, if any, are now prescribing Pepto-Mangan (Gude): Interesting as indicating the number who have neglected to avail themselves of the work of the Council on Pharmacy and Chemistry, especially the earlier work; instructive in that it would show how many are still prescribing by the rule of thumb, and who are taking their therapeutic instructions from purely commercial sources instead of striving to learn how to choose those drugs that are most effective in the treatment of disease.

It has been pointed out many times in the pages of THE JOURNAL that many nostrums are advertised first to physicians, and that after physicians have served as the unpaid agents of the manufacturers in introducing the preparations, their exploitation is then commonly continued by means of advertisements in the public press. This plan has been followed successfully in so many cases that we have now come to look on it as the regular course. It is in keeping with this rule that we find Pepto-Mangan now advertised in the public press, the physician having served the manufacturer's purpose.

DISCARDED THEORIES OF IRON MEDICATION

It will be recalled that many years ago the theory was held that hydrogen sulphid (sulphuretted hydrogen) interfered with the absorption of the iron of the food, and that the administration of medicinal iron prevented this interference by neutralizing the hydrogen sulphid (sulphuretted hydrogen). It was only a short step to argue that manganese might replace the medicinal iron in combining with the hydrogen sulphid, permitting the food iron to be absorbed, and it was held that only food iron could be utilized in the formation of hemoglobin.

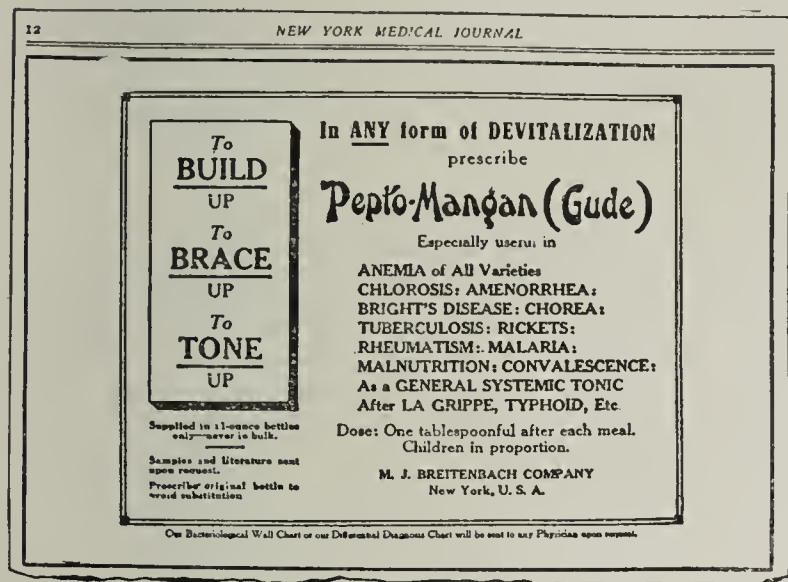
It is hardly necessary to remind the reader that this theory rests on numerous fallacies. There is no hydrogen sulphid worth mentioning in the small intestine where iron is absorbed; food-iron cannot be utilized directly in the formation of hemoglobin but must be broken into simple forms for absorption; and, further, inorganic iron, such as ferrous carbonate, serves the purpose admirably where iron is indicated. With the acceptance of these well-established facts all possible excuse for the therapeutic employment of Pepto-Mangan in place of iron vanished, but as plain and simple as this fact is, the unnecessary and expensive Pepto-Mangan continues

1. The previous articles of the series are "Bell-ans," THE JOURNAL, Nov. 24, 1917; "Anasarcin and Anedemin," THE JOURNAL, Dec. 8, 1917.

to be prescribed by physicians who will not take the slight trouble to investigate the claims for this nostrum.

FALSE AND MISLEADING CLAIMS

That there is not merely a difference of opinion on the part of the exploiters and the Council, but that actual misrepresentation has been employed in the exploitation of this nostrum to physicians has been shown on more than one occasion. About twelve years ago the M. J. Breitenbach Com-



From the *New York Medical Journal*.

pany, the proprietors of Pepto-Mangan, claimed that the report of the Commission that had been appointed for the investigation of anemia in Porto Rico "would alone suffice to establish Pepto-Mangan at once as the foremost hematinic known." Examination of the report showed that the Commission made no such claims; on the contrary the Commission protested against this misrepresentation. (*THE JOURNAL A. M. A.*, Oct. 7, 1905, p. 1099.)

Undaunted by this exposure of their methods, the Breitenbach Company later sent out a statement of results purporting to have been obtained by one Mateo M. Gillen, in the treatment of infantile anemia on Randall's Island in New York City. At the instance of *THE JOURNAL* the hospital records in these cases were examined, and it was found that the pretended report was little more than a tissue of falsehood. (*THE JOURNAL A. M. A.*, April 6, 1907, p. 1197.)

About two years ago the Council reported that while the statements just referred to were no longer made, they had never been definitely admitted by the Breitenbach Company to be erroneous, and that Pepto-Mangan was then being exploited to the public indirectly. (Council Reports, 1914, p. 121.)

We reproduce an advertisement that has been appearing weekly in the *New York Medical Journal* for several months. One can only suppose that this advertisement was intended to mislead physicians, and it would be an insult to the intelligence of the average reader to attempt any detailed discussion of it, but enough has been said to show how misleading the statements are. One should note particularly the advice—old as the nostrum business itself—contained in the advertisement, to prescribe an original bottle. The reason for such advice is simple. Experience has shown that when original bottles are dispensed patients soon learn to buy the nostrum without consulting the physician, for they shrewdly suspect that he knows no more about the preparation than they, and that he gets his information from precisely the same sources that are available to them. They are obviously right. In truth, the physician who prescribes Pepto-Mangan as a hematinic shows ignorance of the most rudimentary facts of iron-therapy, and the intelligent patient soon perceives his limitations.

THE PROBLEM OF IRON THERAPY

The investigation of the problems of iron therapy and its utilization in the formation of hemoglobin forms one of the most brilliant chapters in pharmacologic research, and there is no better established fact in therapeutics than that any

organic or inorganic preparation of iron that does not irritate the stomach may be employed effectively when the administration of iron is indicated. "Useful Drugs" contains a list of iron preparations that are suitable for all conditions which call for iron, and the clinician may rest assured that he will never have occasion to go outside of that list to prescribe any substitute.

As a matter of fact, it seems probable that the very number of available iron preparations has served to cause confusion, thus affording an opportunity for the nostrum maker to introduce his superfluous compounds. It may be difficult at times to select the preparation of iron best suited to the individual patient and it is this difficulty that has led the clinician to listen to the seductive claims made for the various pretended substitutes for iron. One should approach the question of choosing the proper form of iron for therapeutic use with the recognition of the fact that there is no such thing as a substitute for iron in the formation of hemoglobin, that there are no ideal forms of iron other than those found in the foodstuffs. Further, the clinician cannot avoid the disadvantages inherent in all forms of iron that he can prescribe, and he must therefore seek that which seems best suited for the individual patient.

Bunge estimated the amounts of iron present in various foods and a table based on this, and other data, is given in "Pharmacology of Useful Drugs" (published by the American Medical Association). Ordinary foods in an ample diet contain enough iron to supply the normal daily loss, which amounts to only a few milligrams, but many persons who have poor appetites take an insufficient amount of iron in their food and become anemic. In such cases the additional iron required can be supplied best by adding spinach, eggs, apples, or other iron-rich food to the dietary.

SOME IRON COMBINATIONS

William Hunter discusses the subject of anemia and its treatment at considerable length in the "Index of Treatment,"

A newspaper advertisement of Pepto-Mangan.

Ed. 6, pp. 17-37, and gives many prescriptions containing iron for use under different conditions, and while it is unnecessary to reproduce all of these here, a few may be given in order to suggest suitable methods of prescribing iron when it cannot be given in sufficient amounts in the food.

In chlorosis Hunter advises that that form of iron which experience has shown to be least disturbing to the patient's

stomach should be used, and he suggests separate stomachic mixtures to be used simultaneously not mixed with the iron itself. Where constipation exists—and this is a very common accompaniment of chlorosis—he gives the following aperient iron combination:

| | |
|--|--------|
| Ferrous sulphate | gr. iv |
| Magnesium sulphate | ʒ i |
| Aromatic sulphuric acid | m vii |
| Tincture of ginger | m x |
| Compound infusion of gentian (B. P.) q. s., ad | ʒ i |

This, constituting a single dose, is to be taken twice daily—at 11 a. m. and 6 p. m. A little compound tincture of gentian and water may be used in place of the compound infusion of the British Pharmacopeia. He modifies this somewhat as occasion demands by using sodium sulphate and adding bicarbonate of sodium (which converts the sulphate of iron into ferrous carbonate) and adds 10 minims of spirit of chloroform to act as a stomachic.

Hunter also suggests the use of pills of aloes and iron in place of the above mixture, and when constipation has been corrected the aloes may be omitted and the pill of ferrous carbonate alone may be used for the iron. Hunter's comment regarding this pill is: "very satisfactory."

The same form of iron is available in the compound iron mixture, formerly official, which Hunter says is exceedingly good. In this country the compound solution of iron and ammonium acetate, Basham's mixture, so called, has long enjoyed a wide reputation as causing very little disturbance of the stomach, and the homely tincture of ferric chlorid is probably useful in a large majority of cases in which the stomach is not especially irritable.

We may say with assurance that one of the forms suggested here will suffice for practically every case in which it is necessary to reinforce the amount of iron available in the food by some pharmaceutical preparation. If these do not satisfy your requirements consult a really competent pharmacist and enlist his aid in devising a mixture especially suited to your individual patient.

Correspondence

THE ROENTGEN RAY IN TREATMENT OF EPILEPTIC SUBJECTS OF STATUS LYMPHATICUS

To the Editor:—In Bellevue Hospital the diagnosis of status lymphaticus by simple inspection of the body is frequently made, both in the wards and in the necropsy room—in the latter place without the clinical history and before proceeding with the systematic examination of the viscera. In the male, the configuration of the body in status lymphaticus is of the female type—the face is beardless or nearly so, and the axillary and other hairs are scanty, the skin is smooth and of an unusually delicate texture, the pubic hairs are sharply defined in a transverse direction, the waist is slender and sloping, and the thighs are gracefully arched both laterally and anteriorly. In the female, the diagnosis is rather more difficult, and rests largely on features that are only an accentuation of those normally encountered, namely, the thin, delicate skin, the narrow waist and the arched thighs, together with the small axillary pads and the scanty growth of hair on them.

In the psychopathic pavilion at Bellevue Hospital, it has been noted by Dr. Karpas that many epileptics present the external peculiarities of status lymphaticus; and it is a well known clinical fact that epileptic seizures not uncommonly cease at or about the age of puberty, in other words, at a period when the thymus undergoes involution. Ohlmacher has pointed out the resemblance between epileptic seizures and the symptoms that sometimes precede sudden death in subjects of status lymphaticus. In the pathologic laboratories at Bellevue Hospital I have often had occasion to observe the presence of myriads of acute necroses in the lymphoid tissues in subjects suddenly dead with all the physical attributes of

status lymphaticus, and have advanced the theory (*American Journal of Diseases of Children*, 1917, **14**, 463) that these necroses represent the structural expression of sensitization of the tissues to toxic nucleoproteins, and that the convulsive seizures in certain epileptics and sudden death in other subjects of status lymphaticus are of the nature of anaphylactic phenomena.

I should appreciate an opportunity, through the medium of *THE JOURNAL*, to direct the attention of radiologists to these facts and to suggest that epileptics with the external configuration of status lymphaticus be systematically subjected to radiation, particularly in the region of the thymus, the spleen and the intestine. The several groups of superficial lymph nodes are not commonly enlarged in status lymphaticus, and are apparently negligible from this standpoint.

It is of interest to observe that many soldiers, exposed to the terrifying vicissitudes of trench life, have been invalided to France and England with symptoms of exophthalmic goiter varying in intensity from simple tremor and tachycardia to the fully developed picture; that almost every subject of exophthalmic goiter examined postmortem reveals hyperplasia and persistence of the thymus, together with the other anatomic features of status lymphaticus, and, finally, that the British radiologists have reported remarkable results in exophthalmic goiter in returned soldiers who have been exposed to radiation of the thyroid gland (White, C. P., and Hernaman-Johnson, F.: *Lancet*, London, 1916, **1**, 78. Stoney, F. A.: *Ibid.*, 1916, **1**, 777). In these circumstances it is possible, I think, that the anatomically related thymus has come in for a share of radiation, and that improvement is to be traced partly to this effect.

At all events, the use of the roentgen ray is known to discourage the proliferation of lymphoid tissues, and its employment in epileptic subjects of status lymphaticus appears to be a procedure justified by anatomic considerations.

DOUGLAS SYMMERS, M.D., New York.
Assistant Director of Laboratories, Bellevue and Allied Hospitals.

CHARCOT'S OPINION AND CRITICISM OF GERMAN MEDICINE

To the Editor:—Ten years after Sedan and thirty-three before the present war, the great French physician Charcot in his "Lectures on Senile Diseases," page 20, indulges in comment on French, German and English medicine that is perhaps more striking now than when it was written. It will probably be interesting to the 20,000 physicians who have already volunteered in the medical service of our country.

The pride of the Frenchman in Laennec and the stethoscope is evident. The slow waking up of the German to modern scientific medicine, and the influence of Schönlein, of purpura fame, and of Rokitansky is charmingly described. The keen terseness of the French is evident when he refers to "the science from beyond the Rhine." In the last two paragraphs he accuses Virchow of abusing "the word science in order to excite German minds for the sake of a narrow patriotism." His contrast of "the exclusive and illiberal ideas of the Prussian savant" with "the grand words of one of England's greatest physicians" is striking. The Englishman is Graves, of exophthalmic goiter fame. My copy of Charcot was issued by the New Sydenham Society in 1881, translation by Tuke.

"But, some will say, what use are these big words and grand ideas? Have the scientific tendencies about which you make so much fuss had a beneficial influence on the practice of the art? Do you cure more patients than they cured of old? These, gentlemen, are very indiscreet questions, and might easily be thrown back at our adversaries. Let it suffice to reply, with an honored teacher, that art without science is not slow to degenerate into routine [Béhier]. That hackneyed skepticism, which people so willingly oppose to all progress of the human mind, is a comfortable pillow for lazy heads; but the period in which we live allows no time for falling asleep.

"To put in its true light the happy influence which scientific tendencies may have on the advance of medicine, I need only

recall to you the remarkable transformation which in the course of the last twenty years this science has undergone in a neighboring country to ours, in Germany. Let us transport ourselves a moment across the frontier, and go back in thought toward the year 1830. At that time Schelling and his audacious 'Philosophy of Nature' reigned absolute masters over German minds. The fashion was for poetic points of view and transcendental conceptions, while a physician allowed himself in a treatise on mucous fever seriously to compare a blood corpuscle to the terrestrial globe, because both are round, flattened at the poles, and possess a central nucleus surrounded by an atmosphere [H. Horn].

"During this time medicine was thus reduced to a deplorable condition. Although they possessed translations of the chief pathological works recently published in France and England, yet the progress long accomplished in these two countries remained as though it had never taken place, for none of them understood its importance. An accurate local diagnosis was never made either in hospital or in private practice. In more than one German university the stethoscope was almost unknown; if anybody happened to come across one of these instruments he examined it with a sort of infantile curiosity, or received with unfavorable jokes those eccentric individuals who, by means of this bit of wood, professed to hear unheard of things. Besides, most chest and heart diseases, as well as chronic skin affections, formed an almost unexplored territory. And when they began to talk of the French it was only to ridicule, this time with more show of justice, the curious mania which made them look on all diseases as inflammations [Wunderlich].

"Things remained thus till near 1840. Then began the work of regeneration (chiefly through Schönlein's influence) by the introduction of the French methods into clinical work. Then it was the turn of morbid anatomy, brilliantly represented at Vienna by Rokitansky. But already Müller had appeared in physiology, and soon created morbid histology, which was long to remain an almost exclusively German science.

"Gentlemen, you know the rest. The German universities presented the spectacle, new to them, of an unheard of, almost feverish, activity; and you are not ignorant that this fever for work, which does not yet seem near extinction, has already produced more than one work of fundamental importance.

"For more than ten years this great intellectual movement remained almost unnoticed in France. From time to time some foreseeing observer tried to draw public attention to it; but there was general indifference to struggle against, and, whilst everything was astir in Germany, we in France were occupied with other matters. At last the day has come, and it is understood that a great power has arisen in our vicinity, so that we shall have in future to reckon with the science from beyond the Rhine. [This lecture was given in 1867.]

"By a very natural reaction people soon got to think extravagantly of the tendencies they had at first opposed; and whilst in France we are perhaps too much inclined nowadays to think nothing of other than German work, our neighbors, drunk with success, seem persuaded that for the future the empire of Science belongs to them. Gentlemen, we must know how to allow something to the inebriation of such a triumph. Yet it is not without regret that we have recently seen an eminent man confound the rights conferred on him by his high position as a savant with the political mandate entrusted to his charge by the electors of Berlin, and abuse the word science in order to excite German minds for the sake of a narrow patriotism [in allusion to a discourse of Virchow's at the Congress of German Naturalists, September, 1865]. Nobody should forget that science owns no country and is the property of no race. With the exclusive and illiberal ideas of the Prussian savant, we will contrast the grand words of one of England's greatest physicians [Graves].

"The empire of reason, extending from the old to the new world, from Europe to the antipodes, has encircled the earth; the sun never sets on her dominions—individuals must rest, but the collective intelligence of the species never sleeps."

STEWART R. ROBERTS, S.M., M.D., Atlanta, Ga.

Major, M. R. C.

Relations Between Cancer and Diabetes.—An exchange quotes an article by H. Strauss in the *Deutsche medizinische Wochenschrift*, No. 39, to the effect that among 140 diabetic patients he found a history of cancer in the mother in sixteen and in the father in three. This seems to suggest, he says, that cancer in the parents predisposes to diabetes.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

- ALABAMA: Montgomery, Jan. 8. Chairman, Dr. S. W. Welch, Montgomery.
- COLORADO: Denver, Jan. 8. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
- DISTRICT OF COLUMBIA: Washington, Jan. 8. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.
- HAWAII: Honolulu, Jan. 10-13. Sec., Dr. G. A. Batten, Box 375, Honolulu.
- INDIANA: Indianapolis, Jan. 8-10. Sec., Dr. W. T. Gott, 84 State House, Indianapolis.
- MINNESOTA: St. Paul, Jan. 2-4. Sec., Dr. Thomas McDavitt, 741 Lowry Bldg., St. Paul.
- NATIONAL BOARD OF MEDICAL EXAMINERS: New York City, Jan. 9-17. Sec., Dr. J. S. Rodman, 310 Real Estate Bldg., Broad and Chestnut Sts., Philadelphia.
- NEW MEXICO: Sante Fe, Jan. 14. Sec., Dr. R. K. McClanahan, East Las Vegas.
- NEW YORK: Albany, Buffalo, New York City and Syracuse, Jan. 29-Feb. 1. Sec., Dr. W. J. Denno, Education Bldg., Albany.
- NORTH DAKOTA: Grand Forks, Jan. 1. Sec., Dr. G. M. Williamson, Grand Forks.
- OKLAHOMA: Oklahoma City, Jan. 8-9. Sec., Dr. J. J. Williams, Weatherford.
- OREGON: Portland, Jan. 1. Sec., Dr. Herbert S. Nichols, Portland.
- PENNSYLVANIA: Philadelphia, Jan. 8-10. Sec., Nathan C. Schaeffer, State Capitol, Harrisburg.
- RHODE ISLAND: Providence, Jan. 3. Sec., Dr. B. U. Richards, State House, Providence.
- SOUTH DAKOTA: Pierre, Jan. 8. Sec., Dr. P. B. Jenkins, Waubay.
- UTAH: Salt Lake City, Jan. 7-8. Cor. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.
- WASHINGTON: Spokane, Jan. 1. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.
- WISCONSIN: Madison, Jan. 14. Sec., Dr. J. M. Dodd, 220 E. Second St., Ashland.
- WYOMING: Laramie, Feb. 6-8. Sec., Dr. H. E. McCallum, Laramie.

Minnesota August and October Examinations

Dr. Thomas McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examinations held at Minneapolis, Aug. 22-24 and Oct. 2-4, 1917. The examinations covered 18 subjects and included 80 questions. An average of 75 per cent. was required to pass. Eleven candidates were examined, all of whom passed. Eight candidates were licensed through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|-------------------|------------|-----------|
| College of Physicians and Surgeons, Chicago..... | (1896) | | 76 |
| Indiana University | (1917) | | 87 |
| Johns Hopkins University (1914) 89; (1916) 88, 93; (1917) 84, | | | 88 |
| Harvard University | (1913) 90; (1917) | | 88 |
| University of Michigan Medical School..... | (1904) | | 78 |
| University of Minnesota | (1918*) | | 85 |

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|--|------------------------------|------------|------------------|
| College of Physicians and Surgeons, Chicago | (1900) | | Iowa |
| Hahnemann Medical Coll. and Hospital of Chicago .. | (1906) | | Illinois |
| Northwestern University | (1914) | | S. Dakota |
| Tulane University of Louisiana | (1910) | | Louisiana |
| St. Louis University | (1915) | | Missouri |
| Cincinnati College of Medicine and Surgery | (1877) | | Ohio |
| Marquette University | (1915,2) | | Wisconsin |

* A year's internship in an approved hospital is required for graduation from the University of Minnesota Medical School, but only completion of a four-year medical course is required for licensure in Minnesota.

North Dakota July Examination

Dr. G. M. Williamson, secretary of the North Dakota State Board of Medical Examiners, reports the oral, practical and written examination held at Grand Forks, July 3-6, 1917. The examination covered 13 subjects and included 110 questions. An average of 75 per cent. was required to pass. Of the 3 candidates examined, 2 passed and 1 failed. Seven candidates were licensed through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|--------|------------|-----------|
| Chicago College of Medicine and Surgery | (1916) | | 77.5 |
| University of Minnesota | (1916) | | 80.5 |

| College | FAILED | Year Grad. | Per Cent. |
|---|------------------------------|------------------|------------------|
| University of Michigan Medical School | (1911) | | 68.8 |
| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
| Bennett Medical College | (1910) | Nebraska; (1912) | Illinois |
| Rush Medical College | (1886) | | Indiana |

| | | |
|---|--------|-----------|
| University of Michigan Medical School..... | (1911) | Michigan |
| Minneapolis College of Physicians and Surgeons..... | (1911) | Minnesota |
| University of Minnesota | (1914) | Minnesota |
| St. Louis University | (1915) | Minnesota |

Medicolegal

Book Notices

ELEMENTS OF FIELD HYGIENE AND SANITATION. By Joseph H. Ford, B.S., A.M., M.D., Colonel, Medical Corps, U. S. Army. Approved for Publication by the Surgeon-General, U. S. Army. Cloth. Price, \$1.25 net. Pp. 248, with 152 illustrations. Philadelphia: P. Blakiston's Son & Co., 1917.

This manual, which is one of the many approved for publication by the Surgeon-General, concerns the principles involved in keeping troops healthy. After a brief introductory chapter, the author discusses personal hygiene, the march, camps, water, the mess, camp diseases, and illustrative regulations. The section on personal hygiene is modern in its point of view, giving special attention, as do all of the chapters, to the experiences of Pershing's expedition into Mexico and of the warring nations abroad in the present war. Perhaps a little too much space is devoted to the numerous methods for getting rid of lice, some six or eight methods being described, which would seem to indicate that none is satisfactory. The section devoted to the march is quite brief, but every sentence is practical and important. The most extensive portion of the book is that devoted to the camp. This is fully illustrated by pictures and diagrams of actual camps in various expeditions, and it takes up questions of choice of camp sites, shelter, disposal of waste, care of foodstuffs, bathing facilities, latrines, incinerators, etc. The chapter on camp diseases is also brief but accurate and practical. The book is based largely on methods practiced in our own Army, and frequent reference is made to special orders and regulations that have been issued at various times by the Surgeon-General's Office. The officer who studies this book and supplements his knowledge by securing the regulations referred to will find himself excellently equipped for rendering his duties satisfactorily.

DISEASES OF THE CHEST AND THE PRINCIPLES OF PHYSICAL DIAGNOSIS. By George William Norris, A.B., M.D., Assistant Professor of Medicine in the University of Pennsylvania, and Henry R. M. Landis, A.B., M.D., Assistant Professor of Medicine in the University of Pennsylvania. With a Chapter on the Electrocardiograph in Heart Disease by Edward B. Krumbhaar, Ph.D., M.D., Assistant Professor of Research Medicine in the University of Pennsylvania. Cloth. Price, \$7 net. Pp. 782, with 413 illustrations. Philadelphia: W. B. Saunders Company, 1917.

In the first 250 pages, the examination of the lungs and the examination of the circulatory system are considered. The principles underlying physical examination are especially emphasized. Technic and interpretation of signs are also clearly set forth. The third part (pp. 257-759) is taken up with the clinical features of chest diseases. The topics are treated briefly, with emphasis laid on physical signs and the underlying morbid anatomy. The subject of treatment is omitted. The especial feature of the work is the stress placed on the principles underlying physical diagnosis. To this end diagrams, drawings and photographs illustrating normal and pathologic anatomy are fully utilized. Most of these are of surpassing excellence. Those of frozen sections are wonderfully instructive, and if carefully studied will be of material help to student or practitioner in clearing up the meaning of physical signs that otherwise he might accept solely on authority. Krumbhaar has a brief but good chapter on the electrocardiograph. We might wish that the roentgen ray as a means of diagnosis had received a little fuller consideration. And we wish that some one would explain why the unclosed septum of the ventricles in congenital heart disease is so often called "imperforate," as it is by our authors. Are we wrong in thinking it is a plain misuse of the term? One might question the advisability of making a classroom textbook of this work for beginners in the study of physical diagnosis. But for the more advanced student, the hospital intern, or the practitioner who desires to perfect himself in this art, it should be a most stimulating and helpful book.

Cannot Pay Experts for Examining Defendants

(*State vs. Weeks* (N. H.), 101 Atl. R. 35)

The Supreme Court of New Hampshire, in overruling exceptions to an order disallowing a claim against the county for the fees of experts employed to examine the defendant, who was indicted for murder and the defense of insanity suggested, says that the case appeared to be one of new impression. No precedent has been found for the course here urged in behalf of the defendant; the proposition being that the public should pay the expenses incurred by the defendant outside of court in the preparation of his defense. Of course there can be no common-law authority for such an order. It required legislative action to give the defendant the rights he would have in a civil cause. It is manifest that a right so acquired cannot be extended so as to include a privilege or right never known to the common law, and in no way created by any statute. The statute governing the rights of persons charged with the more serious crimes was revised in 1901, and again amended in 1907. The subject has evidently received careful legislative consideration, and there is nothing in any of the statutes which have been enacted which gives color to the idea that authority has been conferred to charge the public with the expenses incurred by the defendant in preparing for trial, except so far as counsel fees and those for travel and attendance of witnesses are concerned. It was urged by the state in argument that the statute providing that "all legal costs attending the arrest, examination, or conveyance of an offender, except when directed or approved in writing by the counsel of the state, or county commissioners, shall be paid by the complainant" was applicable to this claim, and that it must be disallowed because its incurrence had not been previously authorized by the state's counsel. But that statute has no application to the claim here presented. It relates solely to expenses incurred in prosecutions for alleged crimes, and has nothing to do with the regulation of allowances to or on behalf of defendants. The state's contention that the court has no power to allow this claim is sound. But the reason for this result is that no such authority has been conferred on the court, and not that the consent of the state's counsel is essential.

Misbranding of a "Remedy"

(*Simpson vs. United States* (U. S.), 241 Fed. R. 841)

The United States Circuit Court of Appeals, Sixth Circuit, affirms a conviction of defendant Simpson of violating the Food and Drugs Act as amended in 1912 by the interstate shipment of certain drugs alleged to have been misbranded in that the label of the carton or package containing the drug, as well as a circular therein, contained false and fraudulent statements regarding the curative or therapeutic effect of the drugs. The court says, among other things, that the information charged that the shipment was made by the defendant "trading as Dr. C. M. Simpson's Medical Institute," and that the name of the article given on the label of the carton was "Dr. C. M. Simpson's Cerebro-Spinal Nerve Compound." The natural construction would be that it was the defendant whose knowledge and reckless and wanton disregard of the truth was intended to be charged. The court also thinks the information should fairly be interpreted to mean that the misrepresentations were intended to accompany the bottles into the hands of the consumers. It alleged that the shipment consisted of "certain packages," and that the packages contained the circular or pamphlet later described therein; that one of the alleged misrepresentations appeared "on the label of the carton aforesaid," and that the other was "included in the circular or pamphlet aforesaid." It is matter of common knowledge that proprietary medicines in bottles are usually sold to the consumer in cartons, and that the latter usually contain circulars or other advertising matter. The court was not impressed with the suggestion

that the circular was charged to have been inside "the article of drugs."

The defendant's compound was not only represented generally to be a valuable remedy for the treatment of all diseases "resulting from diseases of the brain, spinal cord and medulla oblongata, and the nerves given off from each," "a remarkable discovery for the treatment of all nervous diseases," but also a "remarkable discovery for heart troubles," as well as a "most valuable remedy for nervous prostration, mania, melancholia and neurasthenia." There was substantial testimony from competent medical witnesses that there is no remedy applicable to all the diseases mentioned; that medical science and medical experience furnish no support for the broad claims made for the defendant's remedy; that "there is no one medicine that will prove a valuable remedy for all" the diseases enumerated. There was further substantial testimony from competent witnesses that bromids, which constitute a prominent ingredient in the defendant's remedy, are sedative in their nature and, in ordinary doses, not stimulating; that while thus helpful in quieting an exalted or excited state of the nerves, as in many cases, including some cases of mania, they are not only not helpful, but are positively injurious, in depressed conditions, as in melancholia; that there is no one remedy for all spinal diseases, or for all cases of neurasthenia, or heart trouble, or for all cases of melancholia or of mania; that some diseases of the heart require sedatives, others stimulants, etc.; that the defendant's compound was dangerous to intrust to the hands of a layman. The defendant's proposition that the presence of ammonium carbonate neutralized the effect of the bromids as depressants was denied by medical witnesses for the government. True, it appeared that bromids are beneficial, at least as a palliative in quieting the nerves and inducing sleep, in ordinary cases of nervous excitability, and there was testimony on the part of the defense that several persons had received benefit, indeed, many of them claimed to have been cured, by the use of the defendant's remedy; but such testimony, at the most, bore only on the question of fact whether the alleged representations were, as made, false and fraudulent. There was still room for a conclusion that substantial mischief resided in the claim of a universally efficacious remedy for the numerous and widely prevalent maladies in question; for the term "remedy" must at least imply a curative tendency, although not, of course, guaranteeing a cure.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Minneapolis, Dec. 27-29.

American Physiological Society, Minneapolis, Dec. 27-29.

Society of American Bacteriologists, Washington, D. C., Dec. 27-29.

SOUTHERN MEDICAL ASSOCIATION

Eleventh Annual Meeting, held at Memphis, Tenn., Nov. 12-15, 1917

(Concluded from page 2144)

The Normal College as a Factor in the Dissemination of Public Health Knowledge in the South

DR. U. F. JONES, Hattiesburg, Miss.: The normal schools are among the few largest factors in the educational scheme of this country. The normal school is not doing justice in training its teachers in health work unless it has a clinic for the diagnosis of such defects as they will constantly find in their own schoolrooms.

Oral Sepsis and the Anemias

DR. M. L. GRAVES, Galveston, Texas: Anemia constitutes but one of the numerous clinical manifestations of sepsis or infection, whether it originates in the mouth or elsewhere. It is a fairly constant symptom in all the grave infections, and to a more moderate extent in the less severe ones. Sufficient is known at present to entitle us to more than a suspicion that William Hunter was correct in believing that

pernicious or infective anemia should be laid at the door of mouth infection. In one case, infected teeth were removed; the patient made such rapid and marked improvement that he has resumed a laborious occupation, with the appearance of health and a blood exhibit approximating the normal. Cases of secondary anemia, associated with arthritic disease, have responded but poorly to blood tonics, such as iron. One case, in a recent experience, responded rapidly to an autogenous vaccine made from the removed tonsils containing abscesses, and the symptoms have improved in a notable way, while resistant to all other treatments, including anti-streptococcic serums and stock vaccines. These experiences have led me to the belief that mouth infections are frequently the cause of acute and chronic illnesses, with or without anemia, and to the insistence that every focus of infection be removed in the effort to restore health.

Oral Sepsis and Arthritis

DR. J. HEYWARD GIBBES, Columbia, S. C.: A proper investigation of the gingivae, teeth and alveolar processes must include roentgenographic studies. The important relationship of chronic pyogenic infections to a large group of the arthropathies has been conclusively demonstrated, and the first step in the management of these cases should consist in a systematic search for foci of infection. No one portal of entry for infecting micro-organisms should be allowed to obscure the importance of investigating all possible sources of infection.

Oral Sepsis and the Cardiovascular System

DR. ALEXANDER G. BROWN, Richmond, Va.: Focal infection of the mouth, chronic alveolar abscess, chronic pericementitis, acute and chronic infection of tonsils and other oral, nasal and other cavities adjacent, produce serious, grievous and dangerous diseases of the heart, endocarditis, myocarditis, pericarditis and pancarditis.

Relation of Oral Sepsis to the Nervous System

DR. E. BATES BLOCK, Atlanta, Ga.: I have under my care several epilepsy patients in whom pyorrhea alveolaris or apical abscesses existed, and no other cause for epilepsy could be found after carrying out the usual methods of investigation. In view of the absence of other discoverable causes and the results obtained, I was inclined to think these cases due to this focal infection.

Relation of Chronic Infection to Thyroid Deficiency

DR. HARVEY G. BECK, Baltimore: Glandular insufficiency is of common occurrence, and is frequently overlooked. Chronic infections are almost invariably associated with glandular syndromes. These infections are usually focal in character, and seem to occur with the same relative frequency in insufficiency of the thyroid, pituitary, gonads and suprarenal. Rheumatism shows a special tendency to involvement of the thyroid. In seventy-eight of the 100 cases in my series at the time of examination, the patients suffered with chronic infections, mostly focal in character; ninety-four either showed evidence or gave a history of infection antedating the onset of symptoms. In several instances, well marked symptoms of thyroid deficiency developed after protracted acute fevers. Symptoms appeared in two cases following typhoid; one, malaria; one, puerperal infection, and one, repeated attacks of rheumatic fever. Oral sepsis and inflammatory diseases of the gallbladder and appendix play an important part in the relation of chronic focal disease and hypothyroidism, comprising 63 per cent. of the 255 infections present in the series. The remaining 37 per cent. form a miscellaneous group, and include among others pelvic infection, pyelitis, arthritis, amebic dysentery, anal fistula, syphilis and tuberculosis. Oral sepsis embracing tonsillitis, root abscesses, pyorrhea, sinusitis, etc., represents 36 per cent. of the total infections, and occurred in fifty-six of the cases. Chronic appendicitis was observed in thirty-two cases, and cholecystitis and cholelithiasis in twenty-four. In several instances, symptoms of both appendicitis and cholecystitis existed in the same individual.

The Wild Rats of the Southern States as Carriers of *Spirochaeta Icterohemorrhagiae*

DRS. JAMES W. JOBLING and A. A. EGGSTEIN, Nashville, Tenn.: Published in THE JOURNAL, Nov. 24, 1917, p. 1787.

Classification and Treatment of the Acute Diarrheal Diseases in Infancy

DR. JOHN L. MORSE, Boston: Diarrhea from an excess of fat in an artificial food is not at all uncommon. When the disturbance is a mild one, the stools are not much changed in color, but contain many small, soft curds and some mucus, and are somewhat more acid in odor and reaction than usual. Sometimes they are gray and shiny, and in other instances, when there is an excess of neutral fat, they are creamy in consistency and color. Sometimes they look like curdled milk. In other instances they are bright yellow and have an oily appearance. They are seldom green, unless there is also a disturbance in the digestion of sugar. In the worst cases, they are watery, strongly acid, and cause marked irritation of the buttocks. When this happens, the fat is in combination with the alkaline salts, especially sodium. As the result, there is a considerable loss of alkaline salts in the stools. A relative acidosis is thus produced, with an excess of ammonia in the urine. The symptoms of acid intoxication may then develop. A high fever is not uncommon in these severe cases. The prognosis depends on the severity of the symptoms, but is in general good, unless there is a marked acid intoxication. The treatment consists in the complete elimination of fat from the food. In most instances it is advisable to give a cathartic in the beginning, and to starve for from twelve to twenty-four hours. In the cases with acid intoxication, sodium bicarbonate should be given in some way and a food containing considerable amounts of sugar, preferably in the form of glucose or maltose. In the less severe cases, protein is usually well tolerated; and the caloric value of the food, which is much reduced by the withdrawal of the fat, can be made up by increasing the amount of carbohydrates. Fat can usually be cautiously added again in a few days. How rapidly it can be added can be determined only by observation of the symptoms, and examination of the stools.

Diarrhea is more often due to an excessive protein in human milk than to an excess of either fat or lactose. The protein is most likely to be excessive in the early days of lactation, and at the time of menstruation. An excess of protein may also be due to excitement, anxiety and nervousness, or to fatigue or lack of exercise. The diarrhea is usually not serious. The baby is ordinarily not very sick, and the temperature is but little, if at all, elevated. The stools are loose or watery, and often contain fat curds as the result of the increased peristalsis and the consequent interference with absorption. The stools are usually brownish yellow, but may be green. They often contain mucus. The odor is not characteristic; the reaction is alkaline or feebly acid. They are not irritating to the skin.

The most important element in the treatment of infectious diarrhea is the diet. The character of the diet depends on the variety of the micro-organism that is causing the disease. These micro-organisms can be divided, as far as the determination of the diet to be used is concerned, into two groups: (1) the various forms of the dysentery bacillus and the other organisms, except the gas bacillus, which cause the disease, and (2) the gas bacillus and allied organisms. The other organisms, although of many different varieties, are grouped with the dysentery bacilli, because as regards their growth and the production of toxic substances from protein and carbohydrate mediums, they behave in the same way.

Malaria in Infants

DR. MORGAN SMITH, Little Rock, Ark.: Malarial infection is less frequent in the infant than in the child or adult, because of the vigilance on the part of the mother to protect her baby from the bites of all insects. The treatment of malaria in the infant does not differ from that employed in the child or the adult.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

December, XIV, No. 6

- 1 *Diagnosis of Age of Fetus by Roentgenograms. J. H. Hess, Chicago.—p. 397.
- 2 *Internal Hydrocephalus. W. E. Dandy and K. D. Blackfan, Baltimore.—p. 424.
- 3 *Survey of Juvenile Delinquents. H. K. Faber and A. J. Ritter, San Francisco.—p. 444.
- 4 *Cause of Sudden Death in Status Lymphaticus. D. Symmers, New York.—p. 463.
- 5 Treatment of Eight Cases of Secondary Anemia in Infants by Blood Transfusion. C. G. Kerley, New York.—p. 470.

1. **Roentgenograms and Age of Fetus.**—Hess is convinced that the roentgenographic method of determining the age of the fetus is more reliable than determination of age based on length and other measurements, since osseous development is more regular and offers many more factors for consideration. In the early months more accurate determination is possible than in the later months.

2. **Internal Hydrocephalus.**—Twenty-six cases of internal hydrocephalus were studied by Dandy and Blackfan, fifteen of the obstructive and eleven of the communicating variety, by means of intraventricular and intraspinal injections of phenolsulphonephthalein.

Postmortem examinations demonstrated an obstruction in every case in which an obstruction had been shown clinically by this test. The obstruction may be a congenital malformation or inflammatory process or tumor, and occur at any part of the ventricular system, but usually at the aqueduct of Sylvius or the foramina of Luschka and Magendie. Hydrocephalus results because the fluid is mechanically prevented from passing from the ventricles, where the fluid forms, to the subarachnoid space, where it is normally absorbed, and where only it can be absorbed. Obstructive and communicating hydrocephalus are essentially the same, and in reality all are due to obstruction. In the obstructive variety the obstruction is in the ventricular system; in the communicating variety the obstruction is in the subarachnoid space. Obstructive hydrocephalus may, by operation or spontaneously, change to communicating hydrocephalus, or the reverse may occur spontaneously. Careful studies with the phenolsulphonephthalein test will indicate these possibilities. The authors are convinced that the surgical treatment of internal hydrocephalus has now a definite anatomic basis and hopeful prospects.

3. **Juvenile Delinquents.**—Faber and Ritter's survey is of 110 juvenile offenders. The physical findings are, on the whole, those of neglected hygiene, secondary in most cases to poverty. The mental findings show that of the boys studied 43.6 per cent. were normal, 25.5 per cent. dull normal, 17 per cent. borderline, 9.6 per cent. morons, and 4.3 per cent. imbeciles. The authors believe that for the normal boys improved environment, improved personal hygiene, and better general education would have made useful citizenship possible. The first indication is obviously to separate the normals and dull normals from the rest, to keep the borderline cases under observation, with careful and systematic attempts to education in order to determine and develop latent ability; and finally to segregate promptly those who are beyond question feeble-minded. The authors prefer the Yerkes-Bridges-Point Scale to the Binet-Simon tests. They claim greater accuracy for the former.

4. **Sudden Death in Status Lymphaticus.**—Symmers says that among the first 4,000 necropsies at Bellevue Hospital, status lymphaticus was encountered in 249 subjects, or in 6.2 per cent.; 118 examples of status lymphaticus were encountered; 89 cases belonged to the recessive type; 42 were borderline cases. Of the 118 cases of straightforward status lymphaticus, the thymus was enlarged in every case. The faucial tonsils were enlarged 61 times; the lingual tonsils 58 times; the pharyngeal lymphoid follicles 45 times; Peyer's patches and the solitary follicles 105 times; axillary nodes 11 times;

inguinal nodes 12 times, and the cervical nodes 15 times. The spleen was small or normal in size in 68 cases; the malpighian follicles were hyperplastic 101 times. Of 89 cases of recessive status lymphaticus the thymus was weighable 19 times, and the average was 18 gm. In the remaining 70 cases the thymus was completely replaced by fat. The faucial tonsils were hyperplastic 25 times; the lingual tonsils 32 times, and the pharyngeal tonsils 19 times. Peyer's patches were atrophied 61 times; solitary follicles 37 times. The splenic follicles were enlarged 37 times and atrophied 39 times. The spleen was normal or small in size in 52 cases (71 per cent.).

According to Symmers, sudden death in status lymphaticus may be occasioned, first, by an anaphylactic reaction due to sensitization of the body by a specific nucleoprotein formed in the lymph nodes as the result of necrosis of numbers of germinal follicles. Before the so-called anaphylactic incubation period has expired the tissues are again subjected to the action of the same protein formed in the same type of tissue in response to an apparently trivial injury, and, in this way, the anaphylactic reaction is completed. Second, spontaneous rupture of an hypoplastic cerebral vessel, or rupture following apparently trivial injury, the deficiency in the vessel wall being most noticeable in the muscular coat.

Boston Medical and Surgical Journal

December 6, CLXXVII, No. 23

- 6 *Radioactive Substances in Treatment of Malignant Disease. W. Duane, Boston.—p. 787.
- 7 Orthoarteriotomy (New Form of Pharmacodynamic Energy). C. J. Enebuske, Sater, Sweden.—p. 799.
- 8 *Tendon Suture. T. W. Harmer, Boston.—p. 808.
- 9 *Testing and Recording Vasomotor Reflexes of Skin. E. A. Tracy, Boston.—p. 810.
- 10 Speech Correction—New Medical Study and Educational Movement. W. B. Swift, Boston.—p. 811.

6. Radioactive Substances in Treatment of Malignant Disease.—Over 500 new cases of malignant disease a year are seen at the Huntington Hospital, almost all of which receive treatment with radioactive substances. In some cases, very satisfactory results have been obtained, giving what may be called apparent cures. In others, marked alleviation has been observed, with prolongation of life and increased comfort; and in other cases still, no benefit, and possibly added discomfort, may have been produced. Duane's paper contains a detailed statement of methods employed in preparing the radioactive substances, of the methods of measuring the dosage, and of the general principles on which the character of the treatment is determined; a description of the scientific principles employed in the preparation of the applicators and of the instruments for measuring their radioactivity, and a brief statement of the kinds of cases in which the various methods are used and the dosages actually employed.

8. Tendon Suture.—Harmer uses silk and overcasts the lateral margins of both ends of a divided tendon. The overcasting starts about the width of the tendon or a little more back from the point of division, and comprises several whippings about the side of the tendon down to the line of division, each loop including somewhat less than one-quarter of the circumference of the tendon. When a tendon is ready to be brought together, each end then carries two stitches and each stitch two ends. The two parts of the tendon are now brought together and the two suture-ends nearest the line of division on one side are tied. The two pairs of stitch-ends on the other side are then similarly tied. The long ends so tied alongside the tendon seem to serve as lateral splints.

9. Method of Testing Vasomotor Reflexes of Skin.—In a normal person, when the skin is lightly stroked (with a pressure of about 2 ounces) there appears on the stroked surface a brief deepening of the skin tint lasting up to eight or twelve seconds, and then a white streak appears that lasts for a couple of minutes. The blood vessels in the stroked area dilate and then contract. In each case tested four tests are made: 1. The skin of the left side of the face is stroked, and the length of time the reflex vasodilatation lasts and the time it takes the reflex vasoconstriction to appear is noted; this is done with the aid of a stop-watch. The length of time the vasoconstriction lasts is also noted. 2. The same is done

for the right side of the face. 3. The left forearm, on the palmar surface, an inch or so from the wrist, is similarly stroked. The time the vasoconstriction appears and its duration are noted. 4. The same is done for the right forearm. A study of the reactions in normal and diseased individuals has led to important findings of use in diagnosis.

Cleveland Medical Journal

November, XVI, No. 11

- 11 Utilitarian Construction of Living Things and Medical Student. T. L. Patterson, Kingston, Canada.—p. 707.
- 12 Tracheal Displacement and Compression in Intrathoracic Disease. V. C. Rowland, Cleveland.—p. 715.
- 13 Spontaneous Explosion of Artificial Eyes. R. B. Metz, Cleveland.—p. 719.
- 14 Extracts from Paris' Pharmacologia. T. Sollmann, Cleveland.—p. 721.
- 15 Nitrous Oxid and Oxygen Analgesia in Operations on Ear, Nose and Throat. S. H. Large, Cleveland.—p. 725.

Florida Medical Association Journal, Jacksonville

November, IV, No. 5

- 16 Tuberculosis Problem. R. H. McGinnis, Jacksonville.—p. 127.
- 17 Electricity and Vibration in Gastro-Intestinal Affections. G. M. Niles, Atlanta, Ga.—p. 130.
- 18 Case of Maculo-Anesthetic Leprosy. J. L. K. Smith, Jacksonville.—p. 134.

Georgia Medical Association Journal, Augusta

November, VII, No. 7

- 19 Renal Surgery. E. G. Jones, Atlanta.—p. 131.

Journal of Nervous and Mental Disease, Lancaster, Pa.

November, XLVI, No. 5

- 20 *Three Cases of Chronic Progressive Lenticular Degeneration, with Mental Deterioration. J. J. Thomas, Boston.—p. 321.
- 21 Dispensary Work in Diseases of Nervous System. S. E. Jelliffe, New York.—p. 333.
- 22 *Brain Tumor in Case Clinically Considered to Be Paresis. L. G. Lowrey, Boston.—p. 347.
- 23 *Dilatation of Lateral Ventricles as Common Brain Lesion in Epilepsy. D. A. Thom, Palmer, Mass.—p. 355.

20. Chronic Progressive Lenticular Degeneration.—The cases reported by Thomas comprise three children in one family, similarly affected, thus showing the familial character of Wilson's disease, with no discoverable heredity. These cases differ in several essential points from those reported by Wilson, first in the character of the tremor, the absence of fixed spastic smile, the dysphagia, and especially in the evidence of the affection of the pyramidal tracts. There was also no evidence of any affection of the liver so far as could be determined. In some respects these cases much more closely resemble multiple sclerosis, yet there are various and important reasons for rejecting this view. First, the distinctly familial character of these cases with three children out of six in one family affected, and a fourth probably beginning to show the characteristic signs, which are so similar that even the parents now have grown to expect the appearance of the symptoms as the children approach the age of 8 years. Then the absence of nystagmus and changes in the eyegrounds, and the steady progressiveness of the disease, the absence of remissions in the symptoms, and most important of all, the mental deterioration must be considered. These cases resemble those described under the title of pseudosclerosis. They showed no pigmentation of the skin or cornea, no epileptiform attacks, no enlargement or diminution in size of the liver, and were distinctly familial in character.

22. Brain Tumor Clinically Considered to Be Paresis.—Lowrey presents a study of a case of glioma involving the third and posterior portion of the lateral ventricles and the corpus callosum. The case was diagnosed as paresis but no evidence of paresis was found in the microscopic study of the cortex.

23. Dilatation of Lateral Ventricles as Brain Lesion in Epilepsy.—Since January, 1913, Thom has collected the brains of 75 epileptic subjects, the results of 82 consecutive postmortem examinations; 57 of this group presented gross brain lesions; 31 of these 57 cases presented cortical lesions as well as dilated ventricles; 16 showed lesions of the cortex alone, while the remaining 14, with a normal looking cortex, had dilated lateral ventricles. Of the entire 43 cases reveal-

ing cortical lesions, the hind portion of the brain was by far the most frequently affected, especially the occipital lobes. The convolutional shrinkage in this region was often marked, and the appearance was that of an acquired condition rather than one of congenital origin. Next in order of frequency was the general cerebral gliosis, where the entire cerebrum appeared to be involved. Softenings were noted only six times, once being general, the other five times being focalized. There were 29 cases of well defined sclerosis of the basilar and cerebral vessels. Gliosis and atrophy of one hemisphere alone was noted in 8 cases, equally divided between the two hemispheres. In the dilated ventricle group were 41 cases; 27 of the brains in this group also had abnormalities of the cortex. The remaining 14 cases with dilated ventricles, where the cortex of the brain was not grossly abnormal but where the ventricular dilatation was of such a degree as to leave no doubt of its abnormality, raises the question in Thom's mind as to whether lesions affecting primarily the white matter may not be a factor in the production of epilepsy.

Southwestern Medicine, El Paso, Texas

November, I, No. 11

- 24 Medical Supervision of Industrial Employees. G. H. Fitzgerald, Bisbee, Ariz.—p. 12.
- 25 Pellagra. W. Howe, Las Vegas, N. M.—p. 15.
- 26 Treatment of Acute Bronchopneumonia in Children. C. A. Reinemund, El Paso.—p. 21.
- 27 Vital Statistics. C. Wilbur.—p. 26.
- 28 Tuberculosis and Asthma. O. H. Brown, Phoenix, Ariz.—p. 31.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Dublin Journal of Medical Science

August, CXLIV, No. 548

- 1 Conservation of Youth. E. Wooton.—p. 73.
- 2 Maternity and Child Welfare in Dublin County Borough. E. G. A. Webb.—p. 86.
- 3 Case of Melena and Hematemesis Neonatorum. B. Solomons.—p. 97.

September, No. 549

- 4 Summary of Surgical Technic in Nerve Lesions of Modern Warfare. C. G. Cumston.—p. 137.
- 5 Wassermann Test as Means of Estimating Prevalence of Syphilis in Community. G. R. Darling.—p. 147.
- 6 *Pathologic Report of Rotunda Hospital for Two Years Ending Oct. 31, 1916. R. J. Rowlette.—p. 152.

October, No. 550

- 7 Shell Shock. F. C. Purscr.—p. 201.
- 8 Early Diagnosis of Venereal Disease and Laboratory Aids to Successful Treatment. J. McCullagh.—p. 212.

6. **Pathologic Report of Rotunda Hospital.**—Rowlette's report covers a period of two years, from Nov. 1, 1914, to Oct. 31, 1916. Curettings and other fragments removed for purposes of diagnosis were examined on 222 occasions. One case of tuberculous endometritis was encountered, associated with tuberculosis of the tubes. The great majority of curettings (114 out of 138) showed definite glandular changes, varying from moderate increase in number to considerable hypertrophy, with invagination of epithelium, and in eighteen cases, formation of cysts. Twenty-two cases of malignant disease of the uterus were dealt with by operation. Of these cases, fifteen were epithelioma of the cervix, and one adenocarcinoma of the cervix, three adenocarcinoma of the body, two sarcoma of the body, and one chorionepithelioma. Sixty-three cases of myoma were examined. In twenty-six secondary changes other than fibrosis, which is almost always present, had occurred. Of forty-one cases of salpingitis examined, only seven were tuberculous. Of forty-eight cysts of the ovary, four were dermoids, eight syphilitic cysts, twenty-four smooth walled cystadenoma, and thirteen papillary cysts, eight of which gave histologic evidence of malignancy. Three solid tumors of the ovary came under examination, of which number two were carcinomas, and the other was a fibroma.

Journal of Tropical Medicine and Hygiene, London

November 1, XX, No. 21

- 9 Some Peculiar Bodies in Blood of Certain African Snakes. J. E. L. Johnston.—p. 241.
- 10 Etiology of Craw-Craw (Nodular Dermatitis). A. Pijper.—p. 242.

November 15, No. 22

- 11 Two Unusual Cases of Filariasis in North Queensland. A. Breinl and H. Priestley.—p. 253.
- 12 Value of Salvarsan in Relapsing Fever and Malaria. W. L. Peacock.—p. 254.

Lancet, London

November 17, II, No. 4916

- 13 Value and Limitations of Sanatorium Treatment. T. D. Lister.—p. 739.
- 14 *Tartar Emetic in Treatment of Malaria. A. W. Falconer and A. G. Anderson.—p. 743.
- 15 *Mortality from Postcholeraic Uremia. L. Rogers.—p. 745.
- 16 Epitheliomatous Neoplasms of Dorsal Aspect of Hand. C. G. Cumston.—p. 746.
- 17 Case of Twin Pregnancy with One Macerated Fetus. J. B. Hellier.—p. 748.
- 18 Case of Congenital Angioma of Tongue. F. M. Hughes.—p. 749.
- 19 Perfusion of Heart with Nicotin. D. T. Barry.—p. 759.

14. **Tartar Emetic in Treatment of Malaria.**—Eight cases were treated intravenously with tartar emetic. They include infections both with benign and malignant tertian parasites. The tartar emetic was used in a 2 per cent. solution, to which 0.5 per cent. phenol was added to preserve its sterility. Of these eight cases there were two mixed infections, one subtertian malaria and five benign tertian malaria, three of which showed gametocytes. Of the two mixed infections, the crescents disappeared in both cases, the benign tertian parasites persisting in one and disappearing in the other. In the subtertian crescent infections the crescents disappeared after three injections of tartar emetic. In spite of the disappearance of the crescents the patient had three typical clinical attacks of malaria, though the parasites could not be demonstrated again in the peripheral blood stream. Of the five benign tertian infections, in none did the parasites disappear from the blood stream till large doses of quinin had been administered. In the three patients in which gametocytes were seen, in two the gametocytes were not found subsequent to the tartar emetic treatment; in the other patient the gametocytes persisted. Neither in the subtertian cases, nor in the benign tertian cases, was any marked clinical improvement noted, and in the benign tertian cases the tartar emetic did not appear to exert any effect whatever on the parasites.

15. **Mortality from Postcholeraic Uremia.**—Rogers records a 70 per cent. reduction in the mortality through the intravenous injections of sodium bicarbonate. Two solutions are now used. The first is the hypertonic saline, which Rogers has given with much success in well over 1,000 cases during the last ten years. It consists of 120 grains of sodium chlorid with 4 grains of calcium chlorid to a pint of sterile water. For several years now Rogers has omitted the potassium chlorid of Ringer's fluid, as some physiologists regard this as an unnecessary and possibly depressant addition, and the increasingly favorable results obtained in recent years show that it is certainly not required. The second, or alkaline solution, contains 60 grains of sodium chlorid and 160 grains (2 per cent.) of sodium bicarbonate, and is thus also a hypertonic fluid. To avoid decomposition of the bicarbonate on boiling, the chlorid solution is sterilized before the bicarbonate is added, and the latter sterilized in packets in an autoclave and subsequently added.

In patients admitted early without prolonged suppression of urine the hypertonic sodium chlorid solution only is used at the first transfusion, the quantity being regulated by the specific gravity of the blood. If the case is sufficiently severe to require further intravenous injections, at each subsequent transfusion 1 pint of the alkaline solution is first given and followed by the hypertonic chlorid solution in the quantity indicated by the specific gravity of the blood. In patients admitted late with suppression of urine for twelve hours or more the alkaline solution is given at the first injection as well. Moreover, it is used in all cholera patients with deficient urinary secretion without much concentration of the blood as shown by the specific gravity, in which the normal saline was formerly advised by Rogers. As long as the specific gravity of the blood is not much below the normal, such as not less than 1,050, a pint of the alkaline solution can always be safely given intravenously for deficient secretion of urine. In addition, this solution is now used in the place of normal saline by the bowel when formerly advised.

Archives des Maladies de l'Appareil Digestif, etc., Paris

September, IX, No. 6, pp. 297-360

- 20 Mathieu and the Pathology of the Digestive Apparatus. J. C. Roux.—p. 297.
- 21 *Hypertrophic Stenosis of the Pylorus in Adult. L. Urrutia. p. 333.
- 22 *Dyspepsia After Loss of Teeth. A. Mollière.—p. 337.
- 23 *Stomach Disturbances in the Gassed. E. Agasse-Lafont and J. C. Roux.—p. 341.

21. **Stenosis of the Hypertrophied Pylorus in Adult.**—The woman of 43 had eight children and had always been well until the last year. The assumption of cancer at the pylorus was sustained by occult blood in the stools. Several ascarides were found at the resection operation but nothing to suggest malignant disease. Urrutia believes that the helminthiasis must have been responsible for the occult blood.

22. **Dyspepsia after Loss of Teeth.**—Mollière provides at the regiment infirmary a special diet for men without teeth. It is planned so it will not hurt the gums and yet will keep up the habit of mastication. The vegetables, etc., are cooked extra thoroughly but are not mashed. The meat is given in the form of meat juice or finely chopped meat. As men with defective or no teeth do not masticate normally, there is not the normal stimulus for secretion of saliva. To remedy this he adds condiments in moderate amounts to the food: pepper, salt, thyme, laurel and onions.

23. **Injury of the Stomach in the Gassed.**—Lafont and Roux give the details of five cases in which gassed soldiers suffered from the stomach the next day, vomiting after each meal for several days and then developing all the symptoms of gastric erosion or ulcer. One man vomited blood on two occasions. Another had melena and the erosion seemed to be in the duodenum. Gastro-enterostomy was done in this case and all symptoms subsided. No operation was attempted in the other cases, and only partial improvement has been noted to date under strict courses of treatment as for gastric ulcer. The gas was of the "weeping gas" type.

Archives de Médecine et de Pharmacie Militaires

March, LXVII, No. 3, pp. 309-452

- 24 *Flying Base Hospital. (Nouveau type de formation chirurgicale mobile.) L. Plisson.—p. 309.
- 25 Indications for Different Types of Artificial Legs. M. Séron.—p. 353.
- 26 *Identification of the Dead in War. L. Bosredon.—p. 369.

24. **Flying Base Hospital.**—Plisson's system of interchangeable automobile units to constitute a base hospital that can be enlarged or reduced at need and moved rapidly by its own power to points where it is needed at different times, was described recently in THE JOURNAL, page 1914. The complete details of equipment, etc., are described here, with illustrations.

26. **Identification Tags.**—Bosredon comments on the large number of "missing" in each of the belligerent armies. This testifies that the present methods of identification of the dead have not proved efficient. He describes the various methods that have been adopted and some that have been discarded. In Italy, since 1915, the soldiers have been wearing a hinged metal tag that contains a folded paper with full identification details. The two small sheets of metal thus form a case suspended by holes at the outer end. The Austrians use a similar double metal tag. Russian soldiers carry no provision for identification. The Belgian army insists on conveying all cadavers to the rear, each division having a morgue with special vehicle. This permits identification at leisure. Bosredon has devised a wrist tag and already thousands have been distributed to the soldiers. It consists of a small metal plate with name and other details stamped on it in duplicate, above and below, with a line of perforations between. This permits the lower half to be torn off for identification purposes, while leaving the other half permanently on the cadaver. It is fastened to the wrist with a light metal chain and rivet. The details regarded as indispensable are the name and the year of enrolment on one side of the tag; the number of the recruiting office and the number given the recruit are on the back of the tag. The tags already in use can be utilized by adding the wrist chain.

Paris Médical

November 3, VII, No. 44, pp. 353-388

- 27 Malaria in French Forces in Macedonia. P. Carnot.—p. 353; E. Marchoux.—p. 360.
- 28 Technic for Examination of Blood in Malaria.—L. Tribondeau.—p. 364.
- 29 *Initial Symptoms of Malaria. Mauban.—p. 368.
- 30 Technic for Giving Quinin in Malaria. C. Garin.—p. 373.
- 31 Arsenic in Malaria. P. Carnot.—p. 379.

November 10, No. 45, pp. 389-404

- 32 Cardiovascular Disturbances in the Gassed. J. Parisot and L. Tixier.—p. 389.
- 33 *Epidemic of Scurvy. P. Harvier.—p. 394.
- 34 Thorium Sulphate in Intestinal Infections. Fenestre and Gérard.—p. 398.
- 35 *Verrucous Lesions Simulating Verrucous Tuberculosis. H. Gougerot.—p. 399.

29. **Initial Symptoms of Malaria.**—This entire issue of the *Paris Médical* is devoted to diseases of exotic origin, malaria in particular. Mauban analyzes the findings in seventy-two cases of primary malaria in August in Macedonia, commenting especially on the sudden severe onset. The weakness was so extreme in all but one case that the men had to lie down where they were, too weak even to fire their gun to call attention to their sudden sickness. Bronchitis with spasmodic coughing was almost the rule, notwithstanding the warm weather, as an early manifestation of the malaria. In 75 per cent. of his cases the eyes were bloodshot and tender, in addition to the ordinary symptoms of malarial infection.

33. **Epidemic of Scurvy.**—Harvier describes the scurvy he has encountered in soldiers who have been unable to get any fresh vegetables for periods of from four to six months. He sought out the camp from which these men came, and found 184 excused from duty on account of "abscess," "lymphangitis," "rheumatism" or other diagnosis, but at a glance he recognized scurvy in all. Ranging the other men in two rows, he passed along inspecting the gums of each, and in almost 20 per cent. he found the gingivitis of scurvy. Fully 95 per cent. of the body of 817 men had had scurvy.

35. **Verrucous Nontuberculous Skin Lesions.**—The importance of the verrucous epidermitis which Gougerot describes lies in its deceptive resemblance to verrucous tuberculous affections. Only the absence of antecedents, the multiple onset and rapid development distinguish it at first, but it usually heals at once under treatment with dressings impregnated with a 1:30 solution of resorcin, followed by paste of yellow oxid of mercury.

Presse Médicale, Paris

October 18, XXV, No. 58, pp. 597-604

- 36 *Stiff Ankle. Ducroquet.—p. 597.
- 37 Treatment of Imported Malaria. A. Manaud.—p. 599.

October 22, No. 59, pp. 605-616

- 38 *Tachyphylaxis. H. Busquet.—p. 605.
- 39 Quadrant Hemianopsia and the Cortical Center for Vision. A. Monbrun.—p. 607.
- 40 Plantar Paralysis. L. Moreau.—p. 609.
- 41 Technic for Laminectomy. E. Girou.—p. 610.
- 42 *Urine Test for Typhoid. H. Diacono.—p. 611.

36. **Stiff Ankle.**—Ducroquet gives a profusely illustrated review of the disturbances in the gait with ankylosed ankle.

38. **Tachyphylaxis.**—This term was coined to express the rapid immunization conferred by injection of a small preliminary dose. The immunization is complete in a few minutes, so that injection then of a large amount does not have the action that it would have had if the preliminary small dose had not been injected. Busquet reports experimental research in this line. Attempting to apply the conclusions to man, he was unable to detect any immunizing action from a preliminary small dose of colloidal metals. In animals, the tachyphylaxis was marked with certain drugs used by intravenous injection in the clinic. It was also evident in man with sodium nucleinate, chaulmoogra oil and the arsenobenzenes. A small preparatory dose of either of these enabled a large dose, given a few minutes later, to be tolerated without the reaction inevitable otherwise. The data already acquired justify the application of this principle of an immunizing preliminary dose in transfusion of defibrinated blood in case of hemorrhage; also with intravenous injection of organ extracts in cases of glandular insufficiency.

42. **Diagnosis of Typhoid from the Urine.**—Diacono's test is based on determination of the precipito-agglutinable substances in the urine under the influence of typhoid antiserum. He uses a set of test tubes with 20 c.c. urine, one containing normal urine. To each tube is added from 0.1 to 0.5 c.c. or 1 c.c. of typhoid antiserum. After incubation at 37 C. for three or four hours, a flaky sediment is apparent in the positive cases while the control tube keeps clear. The urine must not be filtered. A trace of salt added to the urine hastens the precipitation.

Progrès Médical, Paris

November 3, XXXII, No. 44, pp. 369-376

43 *Protection for Soldier's Heart. Filderman and Bonnette.—p. 369.

44 Rapidly Fatal Addison's Disease in Course of Tuberculous Pleurisy. J. Tapie.—p. 371.

43. **Protecting Devices for the Soldier.**—Fildermann and Bonnette remark that the weight and clumsiness of a really protecting cuirass forbid its use to date, but that there is every reason for some light device to protect the heart. This is a peculiarly vulnerable region as there is no natural protection here, while the slightest wound of the heart may prove fatal. They suggest, until something better can be devised, to have a thin sheet of metal, about 2 mm. thick, sewed between the coat and its lining over the heart region. It could reach to the collar of the coat and lie just outside of the buttonholes. Suitable dimensions would be 15 cm. in height by 13 at the base, the part near the shoulder slanting from the neck outward, leaving the outer straight edge at the base only 6 cm. A sheet of metal of the kind need not weigh more than 250 gm.

Correspondenz-Blatt für Schweizer Aerzte, Basel

November 10, XLVII, No. 45, pp. 1505-1536

45 *The Developmental Cycle of the *Bothriocephalus latus*. C. Janicki and F. Rosen.—p. 1505.

46 Avirulent Diphtheria-Like Bacilli. J. L. Burekhardt.—p. 1517.

47 *Roentgen Treatment of Disease of the Nails. L. Merian.—p. 1521.

45. **Development Cycle of *Bothriocephalus*.**—The research here reported has supplied the missing link in the development of the *Bothriocephalus latus* L. The larvae are eaten by the *Cyclops strenuus* and *Diaptomus gracilis*. These form the intermediate link, and as they are eaten by fishes, the parasite finds its way to man, dog and cat, and the cycle starts anew. Each of the five phases of the cycle may take up to three or four weeks. The work was done at the laboratories of the Universities of Lausanne and Neuchâtel.

47. **Disease of the Nails.**—Merian gives illustrations before and after roentgen treatment of slow pathologic processes in the matrix of the nails—onychia, usually traceable to some solution of continuity in the skin nearby. The results were excellent, the nail returning to normal without the disfigurement usual after such processes. One to three exposures answered the purpose. A single exposure proved effectual for one tuberculous process of the kind which had persisted for two years rebellious to various measures, including curetting and heliotherapy. The aspect of the thumb now seems quite normal. With psoriasis and eczema, he exposes the skin around to the usual eczema dose, but gives the nail matrix the deep dose, from 3 to 8 H, in one sitting.

Riforma Medica, Naples

October 13, XXXIII, No. 41, pp. 973-992

48 *To Free Convalescents of Typhoid Bacteria. L. Preti.—p. 973.

49 Dissociated Cortical Paralysis After War Wound and Localizations of Motor and Sensory Functioning. E. Salkind.—p. 974.

48. **Treatment of Bacilli Carriers.**—Preti noticed that the serum of patients convalescing from typhoid never contained agglutinins in any proportion when typhoid bacilli could still be found in their stools. This suggested that by artificially increasing the agglutinins it might be possible to free the men from the bacilli. He consequently gave a small injection of antityphoid vaccine. There was always a pronounced general reaction, and the typhoid bacilli disappeared from the stools thereafter. Although his experience is limited, the unfailing success justifies trials of this means of curing carriers of typhoid and possibly of other germs.

Rivista Critica di Clinica Medica, Florence

October 20, XVIII, No. 42, pp. 409-420

50 *Nervous and Functional Disordered Action of the Heart in Soldiers. N. Pende.—p. 409. Commenced in No. 38, p. 365.

51 Big Abdomen in Soldiers. S. Pisani.—p. 412. Continuation.

50. **Disordered Heart Action in Soldiers.**—Pende has found that all the purely nervous and functional heart disturbances which he has encountered in soldiers can be roughly classified in four groups: those with indications of excessive thyroid functioning; those with vagotonia; those whose hearts are not well developed and strong; those with symptoms deceptively simulating myocarditis. When the case can be ranged in one of these classes, the indications for treatment are apparent at once. For the thyroid group, bland local radiotherapy of the thyroid and galvanization of the thyroid and cervical sympathetics might be tried, supplemented by pluri-glandular organotherapy. Or pituitary treatment might counteract the thyroid, or minute regulating doses of thyroïdin. He warns, however, that even at the best—when myasthenia cordis can be excluded—the heart in these cases may become suddenly strikingly disordered, with crises of depression which might prove dangerous in active military service. There may be some infectious factor along with the excessive thyroid functioning—Simmonds, Faha and others have recently demonstrated degenerative lesions in the myocardium of persons who had had exophthalmic goiter during life.

The men with myasthenia cordis should be given only light duty not calling for muscular effort. The vagotonic type of disordered heart action gives the best prognosis; treatment should consist in moral suasion, diversion, graduated exercises, good food and fresh air and mild hydrotherapy. In his fourth group, the adynamic, pseudomyocarditis cases, hospital treatment and psychotherapy do not have the slightest effect. The men can be given specialist neurologic treatment for a time, but the best plan is to send them home at once on a long furlough.

Hospitalstidende, Copenhagen

October 17, LX, No. 42, pp. 1021-1048

52 *Trichinosis in Denmark. J. Fibiger.—p. 1021.

52. **Trichinosis in Denmark.**—Fibiger reiterates that the meat from even one hog with trichinae is liable to start an extensive epidemic, as occurred at Hedersleben where 337 persons were affected and 101 died. The measures for control of trichinosis in Denmark have shown their efficiency in late years not only in the great reduction of cases in man but also in the reduced infestation of dogs and cats with trichinae, which they acquire from swine and rats. Rats become infested from the hog most frequently of all. In 1904-1905 more than 3 per cent. of the necropsies at Copenhagen's public hospitals showed the presence of trichinae; in 1910 the proportion was only 0.6 per cent. The meat control inspection revealed from six to nine hogs with trichinae in 1911-1913; thirteen in 1914 but only one in 1915. During the two latter years however, 693 sides of salted meat imported from America were found to contain the trichina.

Ugeskrift for Læger, Copenhagen

October 18, LXXIX, No. 42, pp. 1715-1740

53 *Mastoid Operation Fatalities. G. V. T. Borries.—p. 1715.

54 Length of Sanatorium Courses. O. Helms.—p. 1721.

October 25, No. 43, pp. 1741-1776

55 Treatment of Scabies. L. Nielsen.—p. 1741.

53. **Mastoid Operation Fatalities.**—Borries relates that during the last ten years 1,108 mastoid operations have been performed in Mygind's service at Copenhagen, and 10.7 per cent. of the patients died. The ages ranged from 2 months to 76 years. In only fourteen of the total 119 deaths was the operation in itself probably responsible for the fatal outcome. This mortality, corrected, amounts to only 1 per cent. of the total 1,108 operations. In fourteen other cases, serious post-operative complications developed, but the patients recovered. The danger of complications does not seem to be any greater with total than with simple mastoid operations, but if meningitis does occur it is liable to be more serious with the total operation.

JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT, JULY-DECEMBER, 1917

The following journals have been abstracted in the Current Literature Department of THE JOURNAL during the past six months. Any of the foreign journals, except those starred, will be lent by THE JOURNAL to subscribers in the United States and to Fellows of the American Medical Association for a period not exceeding three days. Only one journal may be borrowed at a time. Requests for periodicals should be addressed to the Library of the American Medical Association and six cents in stamps should be enclosed. This covers the average expense of mailing a journal. Domestic journals can be obtained by sending the approximate amount direct to the respective publishers. Thus most of the journals indexed are accessible to the general practitioner, no matter where he may be located.

- Acta Scholae medicinalis universitatis imperialis in Kioto. Irregular. 1.50 yen. Tokyo.
- American Journal of Anatomy. Bi-m. \$7.50. 36th St. and Woodland Ave., Philadelphia.
- American Journal of Diseases of Children. M. \$3. American Medical Association, 535 N. Dearborn St., Chicago.
- American Journal of Insanity. Q. \$5. Johns Hopkins Press, Baltimore.
- American Journal of the Medical Sciences. M. \$5. Lea & Febiger, 706 Sansom St., Philadelphia.
- American Journal of Obstetrics and Diseases of Women and Children. M. \$5. William Wood & Co., 51 Fifth Ave., New York.
- American Journal of Orthopedic Surgery. M. \$4. 126 Massachusetts Ave., Boston.
- American Journal of Physiology. M. \$5. Johns Hopkins Medical School, Baltimore.
- American Journal of Public Health. M. \$3. 126 Massachusetts Ave., Boston.
- American Journal of Roentgenology. M. \$5. 67 E. 59th St., New York.
- American Journal of Syphilis. Q. \$5. C. V. Mosby Co., St. Louis.
- American Review of Tuberculosis. M. \$3. 2419 Greenmount Ave., Baltimore.
- Anales de la Facultad de medicina, Montevideo. Bi-m. \$2. Montevideo.
- Annales de gynécologie et d'obstétrique. M. 22 francs. Paris.
- Annales de médecine. M. 23 francs. Paris.
- Annali d'igiene. M. 20 lire. Rome.
- Annals of Medical History. Q. \$6. Paul B. Hoeber, 67 E. 59th St., New York.
- Annals of Ophthalmology. Q. \$4. Mermod-Jaccard Bldg., St. Louis.
- Annals of Surgery. M. \$5. J. B. Lippincott Co., 227 S. 6th St., Philadelphia.
- Annals of Tropical Medicine and Parasitology. Q. \$5. Liverpool.
- Archives de médecine et de pharmacie militaires. M. 40 francs. Paris.
- Archives mensuelles d'obstétrique et de gynécologie. M. 25 francs. Paris.
- Archives of Diagnosis. Q. \$2. Rebman Co., 141 W. 36th St., New York.
- Archives of Internal Medicine. M. \$4. American Medical Association, 535 N. Dearborn St., Chicago.
- *Archives de médecine des enfants. M. 18 francs. Paris.
- Archives des maladies de l'appareil digestif et de la nutrition. M. 14 francs. Paris.
- Archives des maladies du cœur, des vaisseaux et du sang. M. 17 francs. Paris.
- Archives médicales Belges. M. 18 francs. Paris.
- Archives of Ophthalmology. Bi-m. \$5. G. P. Putnam's Sons, 2 W. 45th St., New York.
- Archives of Pediatrics. M. \$3. E. B. Treat & Co., 241 W. 23d St., New York.
- Archives of Radiology and Electrotherapy. M. \$5. London.
- Boston Medical and Surgical Journal. W. \$5. 126 Massachusetts Ave., Boston.
- Brazil-medico. W. 20 milreis. Rio de Janeiro.
- Bristol Medical and Chirurgical Journal. M. 6s. Bristol.
- British Journal of Children's Diseases. Q. \$5. London.
- British Journal of Surgery. Q. \$6.50. William Wood & Company, 51 Fifth Ave., New York.
- British Journal of Tuberculosis. Q. \$1.25. G. E. Stechert & Co., 151 W. 25th St., New York.
- British Medical Journal. W. \$10. London.
- Bulletin de l'Académie de médecine. W. 20 francs. Paris.
- Bulletin of the Johns Hopkins Hospital. M. \$3. Baltimore.
- Bulletin of the Lying-in Hospital of the City of New York. Irregular. \$1. 23 E. 93d St., New York.
- Bulletin of the Medical and Chirurgical Faculty of Maryland. M. \$0.25. 1211 Cathedral St., Baltimore.
- Bulletins et mémoires de la Société médicale des Hôpitaux de Paris. W. 28 francs. Paris.
- California State Journal of Medicine. M. \$1. Butler Bldg., San Francisco.
- Canadian Medical Association Journal. M. \$5. 386 Victoria St., Toronto.
- Chirurgie degli organi di movimento. Bi-m. 35 lire. Bologna.
- Cleveland Medical Journal. M. \$2. 2318 Prospect Ave., Cleveland.
- Colorado Medicine. M. \$2. Metropolitan Bldg., Denver.
- Correspondenz-Blatt für schweizer Aerzte. W. 22 francs. Basel.
- Cronica medica. Semi-m. 6 soles. Lima, Peru.
- Delaware State Medical Journal. M. \$1. Wilmington.
- Dublin Journal of Medical Science. M. \$5.
- Edinburgh Medical Journal. M. \$6.
- Escuela Médico-Militar. M. \$4. Mexico City.
- Gann. Irregular. Tokyo.
- Gazzetta degli ospedali e delle cliniche. Semi-w. 25 francs. Milan.
- Glasgow Medical Journal. M. \$5.
- Grèce médicale. Semi-m. 12 francs. Athens.
- Hospitalstidende. W. 27.5 kronen. Copenhagen.
- Hygiea. M. \$5. Stockholm.
- Illinois Medical Journal. M. \$2. 3338 Ogden Ave., Chicago.
- Indian Journal of Medical Research. Q. 10s. Calcutta.
- Indian Medical Gazette. M. \$5. Calcutta.
- Journal de chirurgie. M. 44 francs. Paris.
- Journal de médecine de Bordeaux. M. 15 francs.
- Journal de médecine de Paris. M. 10 francs. Paris.
- Journal de radiologie et d'électrologie. M. 28 francs. Paris.
- Journal of Abnormal Psychology. Bi-m. \$4. R. G. Badger, 194 Boylston St., Boston.
- Journal of the American Medical Association. W. \$5. 535 N. Dearborn St., Chicago.
- Journal of the Arkansas Medical Society. M. \$1. 810 State Bank Bldg., Little Rock, Ark.
- Journal of Bacteriology. Bi-m. \$5. Williams & Wilkins Company, Baltimore.
- Journal of Biological Chemistry. M. \$3. 2419 Greenmount Ave., Baltimore.
- Journal of Cancer Research. Q. \$5. Williams & Wilkins Company, Baltimore.
- Journal of Cutaneous Diseases. M. \$5. W. M. Leonard, 101 Tremont St., Boston.
- Journal of Experimental Medicine. M. \$5. Rockefeller Institute for Medical Research, 66th St. and Avenue A, New York.
- Journal of the Florida Medical Association. M. \$1. 334 St. James Bldg., Jacksonville, Fla.
- Journal of Immunology. Bi-m. \$5. Williams & Wilkins Company, Baltimore.
- Journal of the Indiana State Medical Association. M. \$2. 406 W. Berry St., Fort Wayne, Ind.
- Journal of Infectious Diseases. M. \$5. 629 S. Wood St., Chicago.
- Journal of Iowa State Medical Society. M. \$2. Des Moines.
- Journal of Kansas Medical Society. M. \$2. 303 Commerce Bldg., Topeka, Kan.
- Journal of Laboratory and Clinical Medicine. M. \$3. C. V. Mosby Company, St. Louis.
- Journal of Laryngology, Rhinology and Otology. M. \$5. London.
- Journal of Maine Medical Association. M. \$2. Portland, Maine.
- Journal of Medical Association of Georgia. M. \$1. Harison Bldg., Augusta, Ga.
- Journal of Medical Research. Bi-m. \$4. 240 Longwood Ave., Boston.
- Journal of Medical Society of New Jersey. M. \$2. 12 Cone St., Orange, N. J.
- Journal of Michigan State Medical Society. M. \$3.50. Power's Theatre Bldg., Grand Rapids, Mich.
- Journal of Missouri State Medical Association. M. \$2. 3517 Pine St., St. Louis.
- Journal of Nervous and Mental Diseases. M. \$8. 64 W. 56th St., New York.
- Journal of Oklahoma State Medical Association. M. \$2. Muskogee.
- Journal of Parasitology. Q. \$2. Urbana, Ill.
- Journal of Pathology and Bacteriology. Q. \$5.50. Cambridge, England.

- Journal of Pharmacology and Experimental Therapeutics. M. \$5. 2419 Greenmount Ave., Baltimore.
- Journal of South Carolina Medical Association. M. \$2. Greenville, S. C.
- Journal of Tennessee State Medical Association. M. \$2. Doctor's Bldg., Nashville, Tenn.
- Journal of Tropical Medicine and Hygiene. Semi-m. \$5. London.
- Journal of Urology. Bi-m. \$5. Williams & Wilkins Co., Baltimore.
- Journal-Lancet. Semi-m. \$2. 839 Lumber Exchange, Minneapolis.
- Kentucky Medical Journal. M. \$2. State and Twelfth Sts., Bowling Green, Ky.
- Kitasato Archives of Experimental Medicine. Twice a year. 60 cents. Tokyo.
- Lancet. W. \$10. London.
- Laryngoscope. M. \$5. 3858 Westminster Place, St. Louis.
- Lyon chirurgical. M. 25 francs.
- Lyon médical. M. 15 francs.
- Medical Journal of Australia. W. 6 d. Sydney.
- Medical Record. W. \$5. W. Wood & Co., 51 Fifth Ave., New York.
- Medicine and Surgery. M. \$3. Medicine and Surgery Publishing Co., Metropolitan Bldg., St. Louis.
- Mental Hygiene. Q. \$2. National Committee for Mental Hygiene, 50 Union Square, New York City.
- Military Surgeon. M. \$3.50. Seventh and B Streets, S. W., Washington, D. C.
- Mitteilungen aus der medizinischen Fakultät der Kaiserlichen Universität Kyushu. Irregular. Price varies. Fukuoka.
- Mitteilungen aus der medizinischen Fakultät der Kaiserlichen Universität zu Tokyo. Irregular. Price varies. Tokio.
- Modern Hospital. M. \$3. Metropolitan Bldg., St. Louis.
- National Medical Journal of China. \$2. 34 Nanking Road, Shanghai.
- Nebraska State Medical Journal. M. \$2.00. 468 Brandeis Bldg., Omaha.
- Nederlandsch Tijdschrift voor Geneeskunde. W. 10.50 florins. Amsterdam.
- New Mexico Medical Journal. M. \$2. P. O. 23, Las Cruces, N. M.
- New Orleans Medical and Surgical Journal. M. \$2. 1551 Canal St., New Orleans.
- New York Medical Journal. W. \$5. A. R. Elliott Publishing Co., 66 W. Broadway, New York.
- New York State Journal of Medicine. M. \$1. 17 W. 43d St., New York.
- Norsk Magazin for Lægevidenskaben. M. \$5. Christiania.
- Northwest Medicine. M. \$2. Cobb Bldg., Seattle, Wash.
- *Nourrisson. Bi-m. 14 francs. Paris.
- Ohio State Medical Journal. M. \$2. Physician's Bldg., Columbus, Ohio.
- Ophthalmic Record. M. \$4. 7 W. Madison St., Chicago.
- Ophthalmology. Q. \$5. 708 Cobb Bldg., Seattle, Wash.
- Paris médical. W. 16 francs.
- Pediatrics. M. 20 lire. Naples.
- Pennsylvania Medical Journal. M. \$2. Athens, Pa.
- Philippine Journal of Science. Irregular. \$3. Manila, P. I.
- Policlinico. W. 32 lire. Rome.
- Practitioner. M. \$6.50. London.
- Prensa medica argentina. Semi-m. 25 francs. Buenos Aires.
- Presse médicale. Semi-w. 15 francs. Paris.
- Progrès médical. W. 12 francs. Paris.
- Psychiatric Bulletin. Q. \$2. New York State Hospital Commission, Albany.
- Public Health Journal. M. \$2. York Publishing Co., Lumsden Bldg., Toronto.
- Quarterly Journal of Medicine. \$6.50. London.
- Revista clinica. Q. \$1. Medellin.
- Revista de la Asociacion medica argentina. M. Buenos Aires.
- Revista de medicina y cirugía de la Habana. Semi-m. \$4.50. Havana.
- Revue de chirurgie. M. 33 francs. Paris.
- Revue de médecine. M. 23 francs. Paris.
- Revue médicale de la Suisse romande. M. 14 francs. Geneva.
- Rhode Island Medical Journal. M. \$2. Providence.
- *Riforma medica. W. 35.50 lire. Naples.
- Rivista critica di clinica medica. W. 16 lire. Florence.
- Rivista di clinica pediatrica. M. 18 lire. Firenze.
- Russkiy Vrach. W. 13 rubles. Petrograd.
- Sei-I-Kwai. M. \$2. Tokio.
- *Semana médica. W. \$5. Buenos Aires.
- Siglo medico. W. 20 pesetas. Madrid.
- Southern Medical Journal. M. \$3. 807 Empire Bldg., Birmingham, Ala.
- Southwest Journal of Medicine and Surgery. M. \$2. El Reno, Okla.
- Southwestern Medicine. M. \$2. El Paso, Texas.
- Surgery, Gynecology and Obstetrics with International Abstract of Surgery. M. \$10. Surgical Publishing Co., 30 N. Michigan Ave., Chicago.
- Svenska Läkaresällskapets Handlingar. Q. 7.50 kronor. Stockholm.
- Texas State Journal of Medicine. M. \$1.50. Western National Bank Bldg., Fort Worth, Tex.
- Tumori. Bi-m. 25 lire. Rome.
- Ugeskrift for Læger. W. 20 kronen. Copenhagen.
- United States Naval Medical Bulletin. Q. \$1. Washington, D. C.
- Upsala Läkaresällskapets Förhandlingar. Irregular. 10 kronen.
- Vermont Medicine. M. \$1. Rutland, Vt.
- Washington Medical Annals. Bi-m. \$1. 2114 18th St., N. W., Washington, D. C.
- West Virginia Medical Journal. M. \$1.50. Huntington, W. Va.
- Wisconsin Medical Journal. M. \$2. Goldsmith Bldg., Milwaukee.

W.—Weekly; M.—Monthly; Semi-m.—Semi-monthly; Bi-m.—Bi-monthly; Q.—Quarterly. *Cannot be loaned.

SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "E," Editorial; "C," Correspondence; "T," Therapeutics; "M," Medicolegal; "P," Propaganda for Reform; "ME," Medical Economics; "ab," abstract; the star (*) indicates an "Original Article" in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths" and "Society Proceedings" are indexed under these titles at the end of the letters "B," "D" and "S." Matter pertaining to the Association is indexed under "American Medical Association."

The name of the author follows the subject entry in brackets. The figures in parentheses refer to the paragraph in the Current Medical Literature Department, the number following to the page in THE JOURNAL.

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A.—Association.
Acad.—Academy.
Am.—American.
Coll.—College.
Conf.—Conference.
Cong.—Congress.
Conv.—Convention.
Dist.—District.
Hosp.—Hospital.
Internat.—International.
M.—Medical or Medicine.
Nat.—National.
Phar.—Pharmaceutical.
Phys.—Physician.
Ry.—Railway.
S.—Society.
Surg.—Surgical, Surgeon or Surgery.
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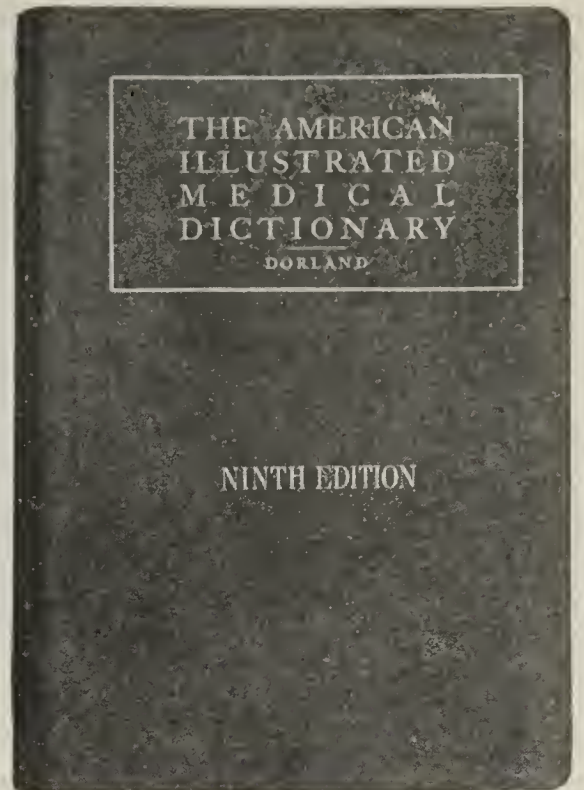
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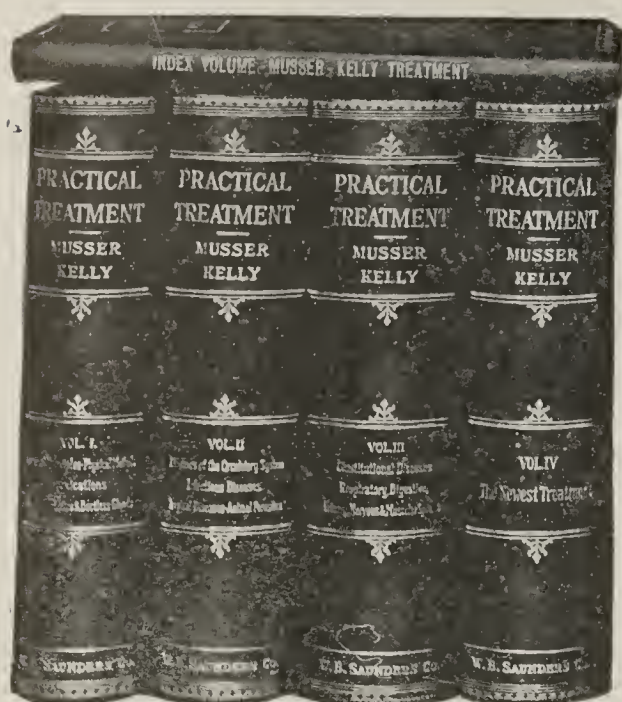
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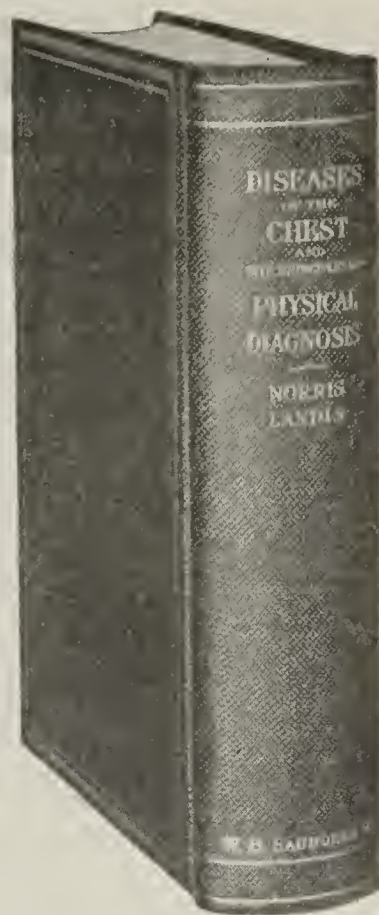
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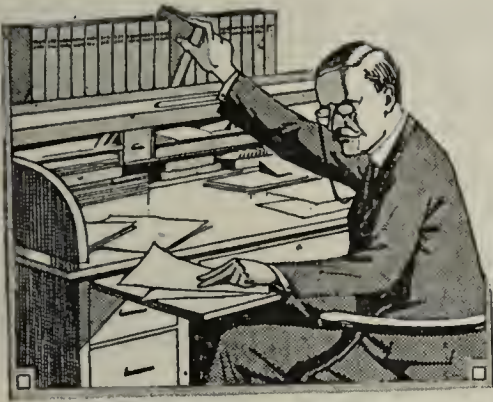
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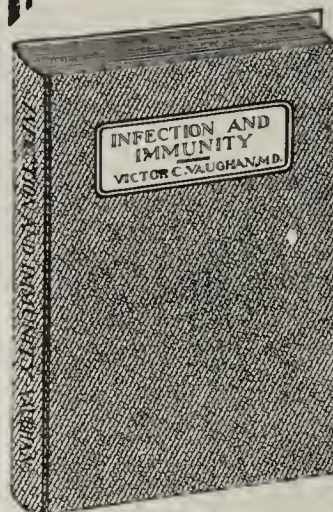
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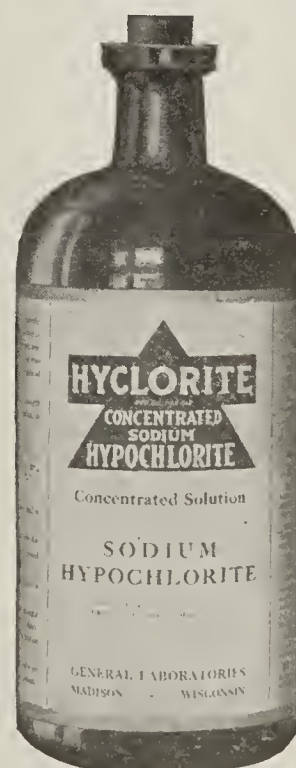
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A House Physician is appointed in June and December. Open the year round. Write for announcement to

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SCHOOL of PATHOLOGY and OPERATIVE SURGERY

Gives special courses in Individual Instruction, in General Surgery, Gynecology, Genito-Urinary, Ear, Nose and Throat, Brain and Bone Surgery on the Cadaver.

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Special Courses given in the Anatomy, Physiology, Pathology and Diseases of the Eye and its Appendages. Also in Ophthalmoscopy, Refraction and Ophthalmic Surgery. Instruction is didactic, clinical and on animals and cadaver. Classes limited. Write,

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EAR, NOSE and THROAT

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Free Instructions how to do the Wassermann Test.

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Analytical Dept., Fraser & Co.

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Our patrons are assured accurate results, based on approved methods of the most recent scientific development, and prompt reports.

Sterile containers for mailing specimens will be furnished upon request.

Send for our price list and copy of Fraser's Notes.

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RESULTS are better when an advertisement receives several consecutive insertions, and to those who remit \$6 (\$6.25 if answers are to be sent through this office) for four insertions of a 30-word advertisement we will give, free, two more insertions provided the first four do not consummate a deal.

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OVER 50% of the classified ads are keyed, answers being sent in care of The Journal; each week we transmit to advertisers over 500 replies.

Occasionally we receive notification from one who has answered an advertisement stating that he has had no reply and asking if his letter was transmitted. Letters sent in our care are forwarded promptly, but naturally we cannot compel an advertiser to answer all replies he receives.

It is advisable to send copies instead of original references

For current issue, ad must reach us by 4:30 p. m. Monday

Journal A.M.A., 535 N. Dearborn St., CHICAGO

N. B.—We exclude from our columns all known questionable ads. and appreciate notification from our readers relative to any misrepresentation.

ASSISTANTS WANTED

WANTED — PHYSICIAN TO DO EAR, eye, nose and throat work in private hospital; salary \$150 per month, or will put on commission if desired; give age, school, church, habits, married or single and how soon can come in first letter; man not subject to or exempted from military service preferred; must get license in West Virginia. Add. 3337 B, % AMA.

WANTED—MAN EXEMPT OF DRAFT TO assist in practice and 55-bed hospital in town 12,000 population; must have had hospital experience; splendid future for right man. Add. 3457 B, % AMA.

WANTED — ASSISTANT IN OFFICE AND private hospital in central west; practice limited to eye, ear, nose and throat; \$100 per month; in first letter state age, church, nationality, preliminary training, medical school, hospital or any special training and send photo. Add. 3466 B, % AMA.

WANTED—ASSISTANT PHYSICIAN FOR state hospital in Massachusetts; must be exempt from draft, graduate of recognized school, good habits; moderate salary and maintenance; send photo and references. Add. 3378 B, % AMA.

WANTED—AT ONCE — ASSISTANT IN mining practice; good salary and opportunities for good man; state qualifications and reference; man not subject to draft. Add. 3428 B, % AMA.

(Continued on next page)

WANTED—ASSISTANT — YOUNG MAN (exempt from military service) as assistant in medical and surgical practice; must be single, ambitious and not afraid of work; references; ultimate partnership to right man. Add. Lock Box 336, Station A, Waterloo, Iowa. B

WANTED — ASSISTANT SURGEON, S. P. de M. Ry. Hospital located Empalme, Sonora, Mex.; single, laboratory experience; some knowledge of Spanish. Write for details. B

WANTED — TWO ASSISTANT PHYSICIANS, state hospital for the insane; graduates of No. 1 medical school; single and over draft age; employment duration of war with privilege of permanent position; present incumbents at war; salary according to experience. Add. 3461 B, % AMA.

WANTED—ASSISTANT — AMERICAN— Country born preferred; general practice, New England village; no equipment needed except auto; single; exempt from draft; salary or interest. Add. 3446 B, % AMA.

WANTED—WEST VIRGINIA—ASSISTANT to surgeon and general practitioner with private hospital; man not subject to or exempt from military service preferred; give age, school, church, habits, married or single, first letter; must understand ordinary laboratory methods; a good mixer and one not afraid of work has a chance to secure permanent position; salary \$125 per month with office and outfit furnished; no contract practice; man with hospital experience preferred. Add. 3434 B, % AMA.

APPOINTMENTS

New York Eye and Ear Infirmary

Examinations for the following vacancies will be held at the **NEW YORK EYE AND EAR INFIRMARY**, Second Avenue and Thirteenth Street, Friday, Feb. 8, 1918, at 3 p. m.

OPHTHALMIC DEPARTMENT

Junior Assistant to House Surgeon; service sixteen months, with living in the Infirmary.

AURAL DEPARTMENT

Junior Assistant to House Surgeon; service sixteen months, with living in the Infirmary.

The examination will cover the ground of general medicine and surgery.

Candidates having general hospital experience are preferred.

THE NEW YORK EYE AND EAR INFIRMARY is the oldest and largest institution in the city devoted to the special treatment of eye and ear diseases, as is shown by the following statistics:

Average number of eye cases treated annually, 31,000.

Average number of ear cases treated annually, 16,000.

Average number of operations performed annually in the Eye Department, 5,500.

Average number of operations performed annually in the Ear Department, 4,500.

For application blanks address **THOMAS K. ROBERTSON**, Superintendent, 218 Second Avenue, New York City.

PHYSICIANS WANTED

WANTED — ASSISTANT SUPERINTENDENT for a general hospital of rank and size in a western city; must be a graduate of medicine, but executive ability important; preference will be given to unincumbered man who has had experience in a similar position; application must be in own handwriting, giving full details, school, references, age, married or single, experience, etc.; would like to have photograph; correspondence confidential if so requested; considering the character of the hospital and the opportunities of the position this should be an attractive offer to a man looking for institutional work. Add. 3458 J, % AMA.

WANTED—RESIDENT PHYSICIAN—Private institution of 150 beds; located in city; salary and maintenance; full particulars and references in first letter. Add. Superintendent, Detroit Tuberculosis Sanatorium, Detroit, Mich. C

WANTED—AT ONCE — PHYSICIAN IN good small town, growing community, large stock country; fees good; income \$3,000 or over; 100 miles from railroad; telephone connections; good roads; young man preferred. Write **J. D. Fraser**, Reserve, N. M. C

(Continued on next page)

Tonics and Sedatives

What a year! What a year!!

—O—

HE NEEDED A DOCTOR

Mrs. Jones rushed into her neighbor's and asked if she might use the telephone.

"What's the matter?" asked the neighbor.

"I want to send for the doctor for my husband!" panted Mrs. Jones.

"What's up with him?"

"He tells me he has got hepatitis, dyspepsia, rheumatism, enteritis, gastritis, appendicitis, nephritis, and cerebrospinal meningitis!"

"Where did he get all that?"

"Why, a man induced him to buy a household medical book, and he's just begun reading it!"

—O—

AN EASY TRANSITION

The little fellow, clad in his flannel pajamas, was on his knees saying his bedtime prayer. But he was so sleepy that the drowsy "Now I lay me" broke off in the middle.

"Now I lay me down to sleep," murmured the youngster. "I pray the Lord—my soul—to keep—"

"If—" prompted his mother.

"If," continued the little fellow, with a strange association of ideas—"If he hollers, let him go. Eenie, Meenie, Minie, Mo."

—O—

The Advance of Science in Wisconsin

Dr. W. W. C— and Dr. C. C. C—, recently purchased a fine new electrical x-ray machine and had the same installed in the dental offices of the latter Tuesday of this week. The instrument is known as the ——— *Electric X-Ray* and was purchased from the M. F. Pattison Co., of St. Paul. With this instrument it will become easily possible to take pictures, as well as examine any part of the body, and thus gives our professional men most valuable facilities in their practice.—Durand (Wis.) *Courier*.

—O—

THE NEEDFUL TRINITY

Andrew Carnegie was once asked which he considered to be the most important factor in industry—labor, capital, or brains? The canny Scot replied with a merry twinkle in his eye, "Which is the most important leg of a three-legged stool?"

—O—

ON HIS WAY

One day an ammunition dump blew up. Cordite was blazing, shells and bombs bursting, and splinters and whole shells flying everywhere in the vicinity. The atmosphere was full of smoke and resounding with metallic whines. Out of a shack hard by came a darky loaded to the water line with kit, blankets, rifle, etc., and up the road he dangled.

"Here! Where are you going?" shouted an officer.

"I ain't goin', suh," panted the darky, "I'se gone."

—O—

Close Harmony on the Last Line

My Tuesdays are meatless,

My Wednesdays wheatless,

I'm getting more eatless each day;

My house it is heatless,

My bed it is sheetless—

They've gone to the Y. M. C. A.;

The barrooms are treatless,

My coffee is sweetless,

Each day I get poorer and wiser;

My stockings are feetless,

My trousers are seatless—

Je-roosh, how I hate the dam Kaiser!

—O—

A NEW ANGLE ON AN OLD ONE

"William," snapped the dear lady, viciously, "didn't I hear the clock strike two as you came in?"

"You did, my dear. It started to strike ten, but I stopped it to keep from waking you up."

—Richmond *Times-Dispatch*.

(Continued on next page)

CHICAGO LABORATORY

CLINICAL—ANALYTICAL

Established 1904

Modern Equipment

combined with years of clinical and analytical experience is at your service.

Serological Tests, Pathological Examination of Tissue. Autogenous Vaccines, Complement Fixation Test for Gonorrhea, Sputum, Smears, Pus, etc. Urinalysis, Complete Chemical and Microscopical. All work at moderate prices.

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Pathological Department

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Bacteriology Department

Write for our fee table with instructions for sending specimens. Sterile containers and culture media on request. Prompt reports by mail, telephone or telegraph.

Our names and reputations stand back of our work.

25 E. Washington Street

Phone Randolph 3610
Private Exchange

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"AMBUMATIC" WASHABLE ABDOMINAL SUPPORTERS



Patented. Made buckled or laced.

DO THE WORK "JUST RIGHT" ADJUSTABLE FOR "LIFT-UP" OR "BINDER SUPPORT"

To any part of the abdomen. Adapted to any person, any condition requiring efficient, comfortable support.

Call or send to day for folder, order blanks and catalog.

We Are Experts in Corrective

ORTHOPEDIC APPLIANCES

ELASTIC STOCKINGS, TRUSSES, CORSETS, ETC.

Your correspondence solicited, given careful attention and full information. Phone Cent. 4623

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To secure greatest comfort, shortest period of confinement, best results and health for your

FRACTURES

of leg, knee, thigh, and hip patients. All dealers and direct from us. Wire order. State fracture, which limb, sex. Send for booklet, prices, etc. Recommend it.

Amb. Pneu. Splint Mfg. Co., 30 (A.) E. Randolph Street, Chicago

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Autogenous Vaccines

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Accurate Analysis of all Secretions, Excretions and Body Fluids

Special Courses in Laboratory Work

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WASSERMANN TEST \$5.00

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Expert work and prompt reports assured

Reports telegraphed without extra charge. Fee list and containers mailed on request.

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Los Angeles, Cal., Hollingsworth Bldg.
Oakland, Cal., Physicians' Bldg.
Seattle, Wash., Green Bldg.

THE MEDICAL RESEARCH LABORATORIES

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AUTOGENOUS VACCINES

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25 E. WASHINGTON ST.

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MALIGNANT INFECTION

is only one of the

Hidden Dangers of Your Profession

You need the protection from disability and accidental death afforded by insurance in the

PHYSICIANS CASUALTY ASSOCIATION

of OMAHA, NEBRASKA

A mutual accident Association writing insurance at actual cost.

Send today for information about our policies



E. E. ELLIOTT, Sec.

304 City National Bank Building
OMAHA, NEB.

TONICS AND SEDATIVES

(Continued from preceding page)

THE DOCTOR'S HELPMATE

The guests had departed after the dinner party, and the young doctor came back into the dining room, his countenance beaming with pleasure. "My dear," he said to his wife, "I congratulate you. I think our party was a tremendous success."

"I hope it will prove so," said the young wife. "I gave them the richest and most indigestible food I could think of."

—O—

The Language of Trade

WANTED—Girl to line tongues and table girls. D. Armstrong & Co., Inc., No. 155 Exchange-st. 211

Ad in Rochester (N. Y.) Democrat.

—O—

THE RELATIVE COST

A physician was called in one of the suburban towns to a boy who was suffering from tonsillitis. The boy's mother was relating the affair to a neighbor of more mature years, commending the doctor for his treatment. The response of the elderly woman was:

"Well, in old times when a boy had a sore throat, we used to take a strip of salt pork and sprinkle it plentifully with pepper and bind it around the boy's throat, but at the present price of salt pork, it may be cheaper to have a doctor."—Boston Post.

—O—

There Is Just Time to Remark

That Germany has its hands full—and lately its feet.

That more than one-sixth of the doctors in the U. S. are in the Army, Navy and Public Health Service—and the rest are ready and willing.

That after paying seven kinds of taxes, five or six kinds of licenses and paying for three or four kinds of bonds a doctor realizes he is more or less of a public character.

—O—

Her Identification

The following letter was received by the postmaster at Ozona, Texas, who forwards it to THE JOURNAL:

Dear Sir:—This is to identify a lady riding a dun horse and having a small spotted spitz dog with her so she can get her money order cashed. I am sending her today.

Very Resp'y,

Mrs. H. K. Yencer.

P. S. The lady's name is Miss H. H. Thinglestead.

—O—

AND BOTH WERE SATISFIED

A gentleman of color won a handsome gold-plated watch, chain, and charm in a crap game. He could not tell time, but he was proud of his winnings, and draped the chain from his coat lapel, placed the watch in his upper, outside coat pocket and started gaily up the street.

Soon he met a second negro, who also could not tell time, but who was immediately attracted by the bright chain.

"Why, hello dere, Sam," he said. "Whah you git dat fine watch?"

"Oh, I win it in a crap game," was the reply.

"Dats fine," resumed the first negro. "What time is it?"

With just a second's hesitation, the owner of the watch flopped it out of his pocket, face upward, under his friend's nose.

"Deah it is," he said.

Nonplussed, the other negro gazed fixedly at the face of the watch for a moment, and then, grinning, said:

"So it is, ain't it!"

—O—

Make Your Resolutions Now

(Continued from preceding page)

WANTED—RESIDENT PHYSICIANS AT the Connecticut State Sanatoria; single men with some sanatorium experience preferred, but any young physicians with satisfactory references and interested in tuberculosis eligible; splendid opportunities for the right men. Add., giving references, State Tuberculosis Commission, The Capitol, Hartford, Conn. C

WANTED—PHYSICIAN AND SURGEON—Physician to take half interest in a \$10,000 practice and have charge of a 15-bed up-to-date private hospital; must be able to do good surgery; young or middle-aged man; must furnish good reference. Add. Dr. W. M. Hunter, Vian, Okla. C

WANTED — PHYSICIANS ESPECIALLY trained in diagnosis and treatment of tuberculosis, with sanatorium experience, for institution positions; high salaries paid to good men. Write in detail to Robinson Bosworth, M.D., 814 Lowry Bldg., St. Paul, Minn. C

INTERNS WANTED

WANTED — INTERN — PACIFIC COAST Hospital; 90 beds; two surgeries, 50 pupil nurses; three fourths of cases surgical. Desire young man, single, exempt from draft; \$75 per month with maintenance. Add. 3469 D, % AMA.

WANTED — INTERN IN A GENERAL hospital of 150 beds; salary \$600 to \$900 a year with maintenance; applicants send photo, references and copies of testimonials in first letter. General Public Hospital, St. John, N. B., Canada. D

WANTED — INTERN ON SALARY FOR hospital of 100 beds in western city; must be graduate of A school and have good working knowledge of laboratory and x-ray. Add. 3407 D, % AMA.

WANTED—ONE OR TWO INTERNS, HOSPITAL 82 beds; excellent medical and surgical service; room, board, laundry and uniforms. Add. Dr. William H. Fox, Episcopal Eye, Ear and Throat Hospital, Washington, D. C. D

LOCUM TENENS WANTED

WANTED—DOCTOR FOR TERM OF WAR or will sell \$5,000 practice; fine opportunity for good man. Dr. Weinburgh, Waterville, Minn. F

WANTED — BY YOUNG PHYSICIAN IN Virginia who has received commission in the army, a doctor without the draft age to take charge of my practice when I leave; location, town of 3,500; good roads; main line railroad; practice of \$4,000; use car year round. Add. 3371 F, % AMA.

WANTED — PHYSICIAN FOR LOCUM tenens, at once; unopposed place; may let physician stay permanently if suited; or sell outright now; do \$5,000 year practice; population 300; write full particulars yourself; rich country. Add. Dr. J. Ross, Farmersburg, Iowa. F

NURSES WANTED

WANTED — BY GRADUATE AND REGISTERED nurse, position in western or southwestern states as tubercular or obstetrical nurse. Add. L. C. C., Glendive, Mont. T

NURSES FURNISHED FOR ANY KIND work anywhere. Quick and excellent service; also attendants, companions, institutional employees. Wire or write F. V. Kniest, Bee Bldg., Omaha, Neb.

SUPERINTENDENTS, SURGICAL, GENERAL duty nurses, etc. Excellent positions open. Send for free book. Aznoe's Central Registry for Nurses, 30 N. Michigan Blvd., Chicago, Ill.

LOCATIONS WANTED

WANTED—TO KNOW OF GOOD LOCATION by competent surgeon for small hospital in Arizona, West Texas or prefer southern New Mexico town with bright future. Add. 3448 E, % AMA.

WANTED — EYE, EAR, NOSE AND throat practice in a good live town of over 10,000; will consider partnership or assistant. Add. 3432 E, % AMA.

(Continued on page 24)



PROPERTIES consist of 30 buildings—accommodations for 1,200 patients—20 acres of beautiful shady lawns—model dairy—extensive farm and greenhouse systems—pure artesian water supply—large staff of specializing physicians, nurses, dietitians, physical directors and general assistants—wholesome, nutritious bill of fare—thoroughgoing diagnostic methods—complete, modern therapeutic equipment—splendid facilities for outdoor recreation.

THE BATTLE CREEK SANITARIUM

Box 250, Battle Creek, Michigan

(Continued from page 22)

WANTED — LOCATION — IF YOU HAVE a compact practice in Penna. where auto is used year around—home with modern conveniences—town or village—write undersigned now for quick sale; full particulars desired. Add. 3470 E, % AMA.

WANTED — EYE, EAR, NOSE AND throat practice; partnership or location; hospital experience; 7 years' general practice; at present taking special work; prefer Texas or other southern state. Add. 3456 E, % AMA.

PARTNERS WANTED

WANTED—YOUNG WOMAN, GRADUATE physician or nurse, as partner in x-ray laboratory, western city; must have some cash, pleasant personality and neat appearance; experience unnecessary. Add. 3400 G, % AMA.

PARTNERSHIP WANTED

WANTED — PARTNERSHIP OR LOCAT- ion in desirable community, Illinois or reciprocating state; graduate A1 college, '92; capable and experienced general medicine, surgery; locum tenens work considered; available immediately; appreciate hearing from physician knowing of desirable practice; references. Add. 3452 H, % AMA.

SITUATIONS WANTED

WANTED—SALARIED POSITION WITH industrial company, any kind; locum tenens work for not less than two years or general practice in splendid agricultural or stock country; will not consider practice for less than \$4,000 or \$5,000 annually; aged 45; general practice for 18 years; from Virginia; graduate from Medical College of Virginia; will invest if I find what I want; am active and healthy; can give good service. Add. 3399 I, % AMA.

WANTED — PHYSICIAN, EXPERIENCED, 1 year's internship, excellent connections, desires an assistantship with a busy surgeon and practitioner; best of references; moderate salary to begin; can serve at once. Add. 3453 I, % AMA.

WANTED — SALARIED POSITION BY physician, aged 31; graduate of A1 school; excellent references; now employed; prefer contract work; go any place; write for particulars; available January 1. Add. 3367 I, % AMA.

WANTED — SUPERINTENDENCY OR AS- sistantship in industrial school; graduate agriculture, pharmacy, medicine; 9 years' experience; 7 years' practice. Add. 3459 I, % AMA.

WANTED — SALARIED POSITION BY physician aged 31; graduate of A 1 school; excellent references; now employed; prefer contract work; go any place. Write for particulars; available Jan. 1st. Add. 3367 I, % AMA.

WANTED — A POSITION AS MEDICAL director with some large eastern corporation; experienced in social and industrial medicine and surgery; can give the best of references as to ability to do such work. Add. 3376 I, % AMA.

WANTED — ASSISTANTSHIP OR PART- nership with general surgeon; A.B. and M.D. degrees; 18 months' internship; postgraduate work in surgery; at present resident surgeon large hospital in central west; excellent references. Add. 3230 I, % AMA.

WANTED—WOMAN LABORATORY TECH- nician seeks reengagement; usual laboratory routine; urinalysis, sputa, Wassermann, autogenous vaccines, etc.; 4 years' experience New York City; references; locality immaterial. Add. 3455 I, % AMA.

WANTED — A WOMAN PHYSICIAN (Protestant), with over 10 years' experience in general practice, desires an assistantship or institutional position; capable; a good worker and will furnish highest references. Add. 3408 I, % AMA.

WANTED — SITUATION — PHYSICIAN of many years' experience in general practice desires salaried position in Twin Cities (Minneapolis and St. Paul); any proposition considered. Add. 3454 I, % AMA.

WANTED — IN CALIFORNIA — LOCUM tenens work for period of war, assistantship, or will buy practice; ready in 30 to 60 days; give full details. Add. 3467 I, % AMA.

Hecht-Gradwohl AND Wassermann Test

for Syphilis (a double
test for one price).

Complement Fixation
Test of Blood for Tu-
berculosis, using a
multiplicity of anti-
gens.

New Blood Chemical
Tests, very valuable
in nephritis, diabetes
mellitus, gout and
rheumatism.

Gonorrheal Comple-
ment Fixation Test.

Pus and Tissue Ex-
aminations.

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WE MAKE EVERY LABO-
RATORY TEST OF MERIT

Pasteur Treatment by
special delivery mail;
course of 18 treatments
with full instructions,
syringe, etc.

*Literature, Fee Lists, Slides,
Containers, sent free
on request.*

**GRADWOHL
Biological Laboratories**

926 No. Grand Avenue
ST. LOUIS

R. B. H. Gradwohl, M.D., Director

WANTED — INTERNSHIP — MARRIED man, graduating in June; competent to do Wassermann and all special tests; salary, maintenance; city above 75,000 preferred; Class A school; special training. Add. 3430 I, % AMA.

WANTED — SALARIED POSITION BY physician as an assistant to busy practitioner or intern in hospital; graduated Loyola University; 15 months' general practice Chicago; aged 33; single, Mason; not subject to draft; can give best references. Add. 3410 I, % AMA.

PRIZE ESSAY

THE PRIZE OF THE ALUMNI ASSO- ciation of the College of Physicians and Surgeons, Columbia University, New York, will be awarded at Commencement, 1918. This is a Biennial Prize of five hundred dollars open for competition to the alumni of the above college. It is awarded for the best medical essay submitted upon any subject the writer may select. The prize money is payable upon the filing with the treasurer of a printed copy of the prize essay. An essay, in order to be held worthy of the prize, must contain the results of original investigations made by the writer. This prize is not awarded to any essay previously published in any form, either in whole or in part, or to one which is the work of more than one author, or which is at the same time submitted for another prize. Each competitor is required to send with his essay to the Prize Committee a statement that these requirements have been complied with. Essays in competition for the prize to be awarded at commencement 1918 must be typewritten in English and sent to the Secretary of the Alumni Association on or before April 1, 1918. They must be marked with a device or motto, and accompanied by a sealed envelope similarly marked, containing the name and address of the author. If no one of the competing essays be deemed sufficiently meritorious, the prize is not awarded. In 1919 the Cartwright prize will be offered. The requirements of this are the same as those of the Alumni Prize, excepting that it is open to universal competition. H. E. Hale, M.D., Secretary of the Alumni Association of the College of Physicians and Surgeons, 64 West 50th St., New York City.

NURSES LOCATIONS WANTED

EXPERIENCED SUPERINTENDENTS, surgical, general duty nurses, etc., furnished hospitals anywhere without charge. Aznoe's Central Registry for Nurses, 30 N. Michigan Blvd., Chicago, Ill.

NURSES—WRITE F. V. KNIEST, R. P., Omaha, Neb., for permanent position, any kind work anywhere U. S.. Gilt-edge references.

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(Continued on page 26)

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(Continued from page 24)

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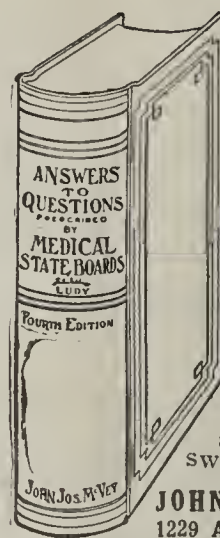
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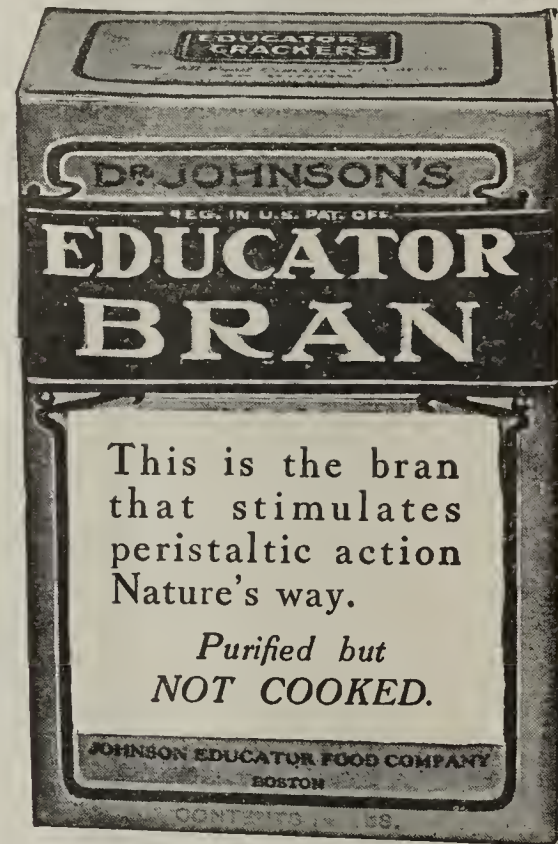
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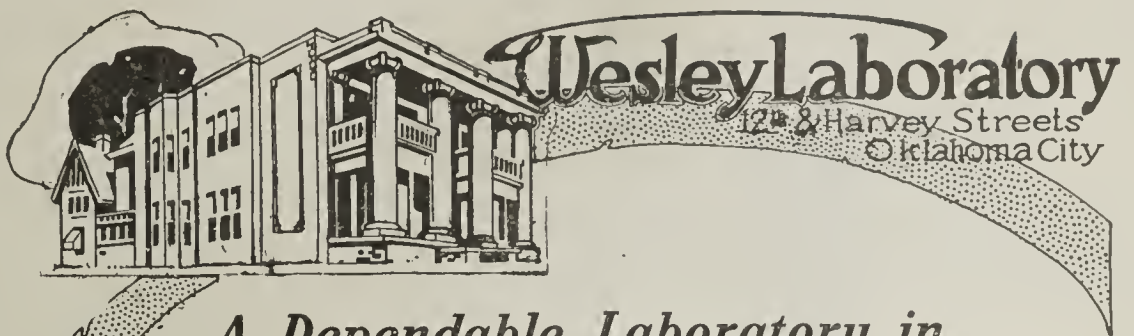
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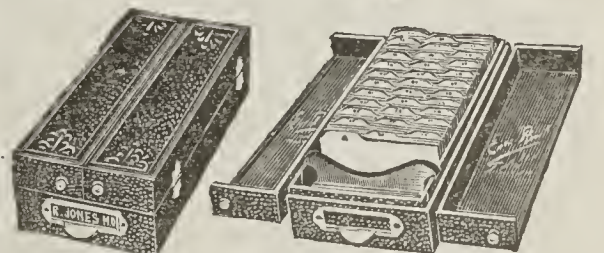
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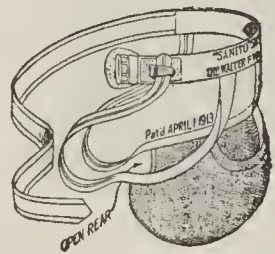
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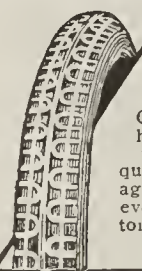
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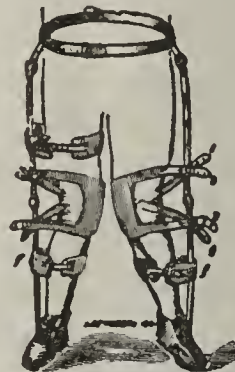
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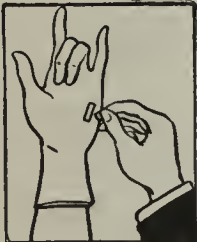
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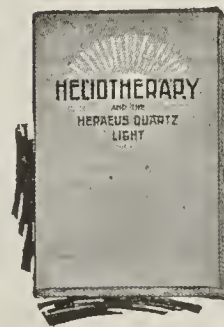
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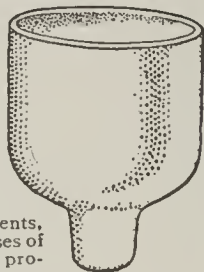




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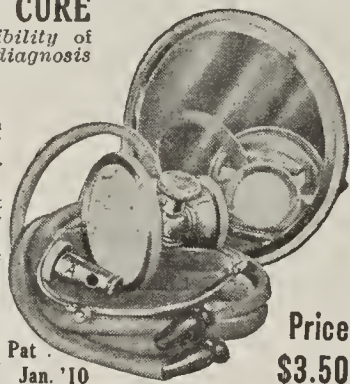
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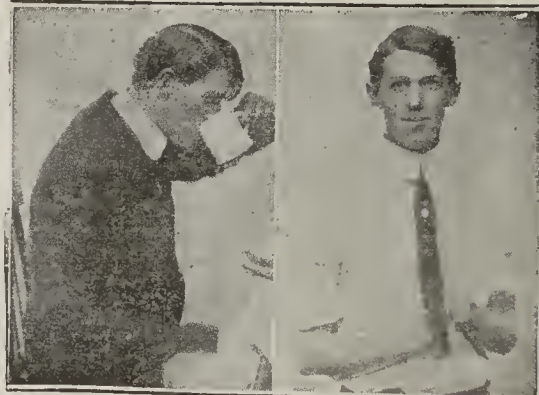
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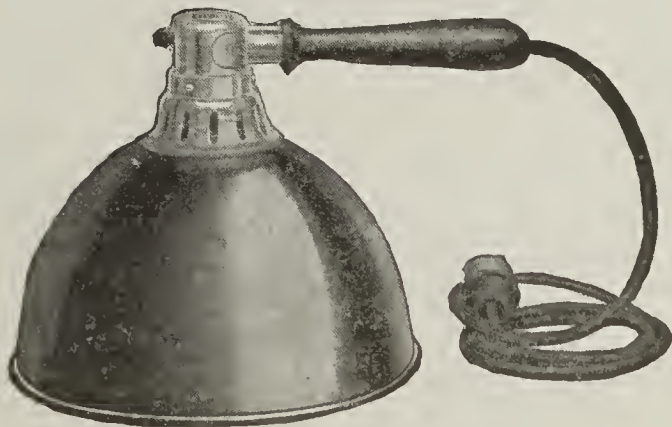
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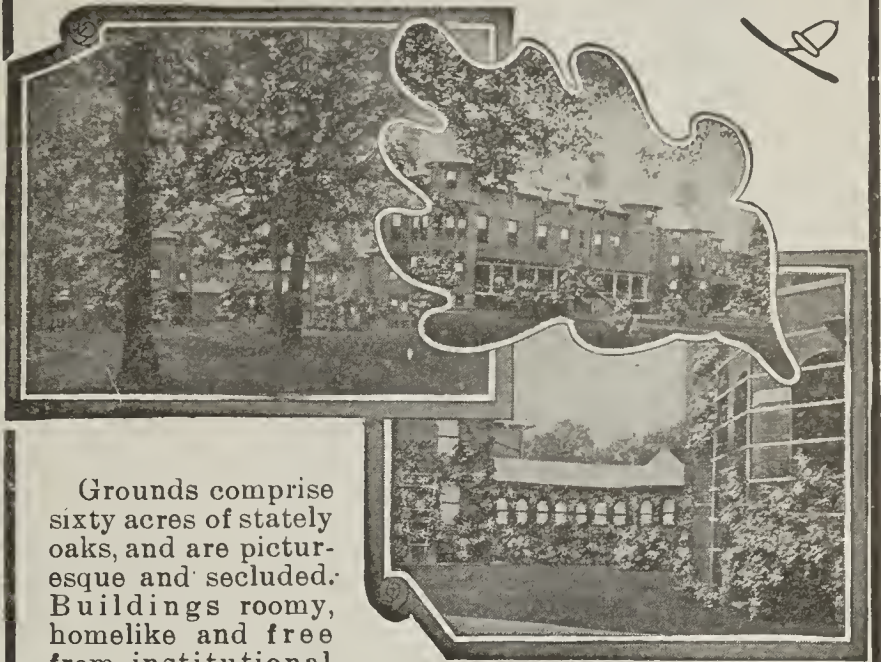
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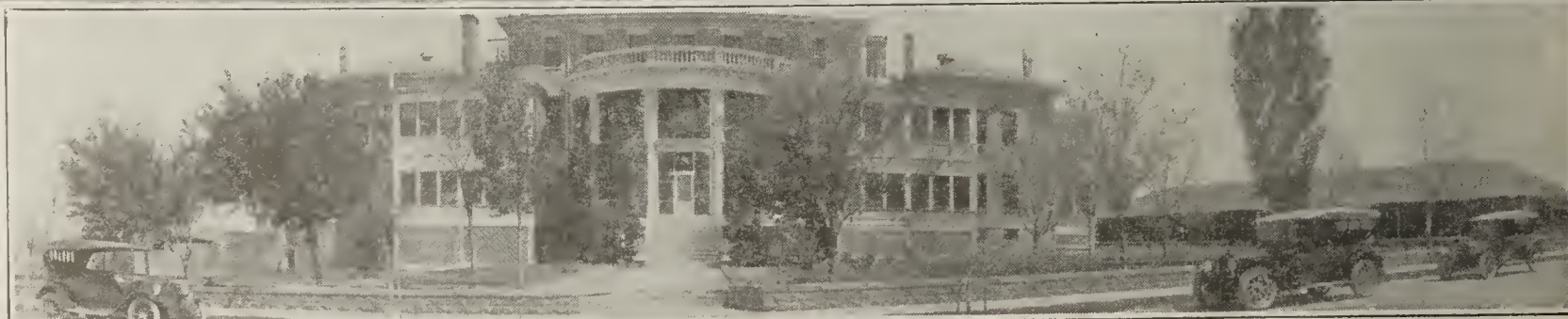
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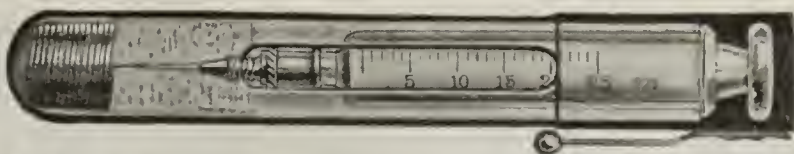
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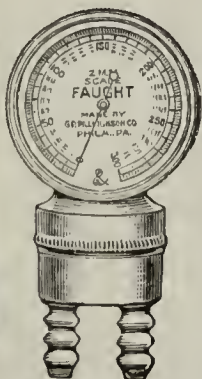
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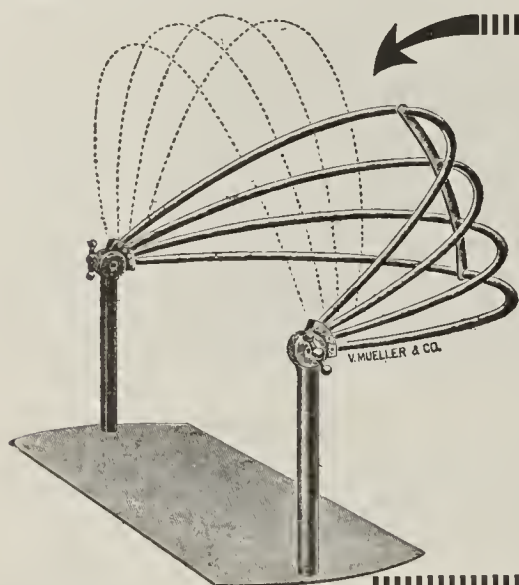
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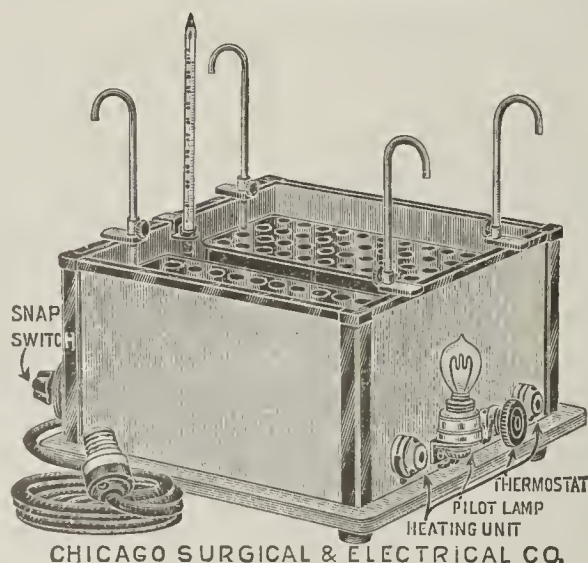
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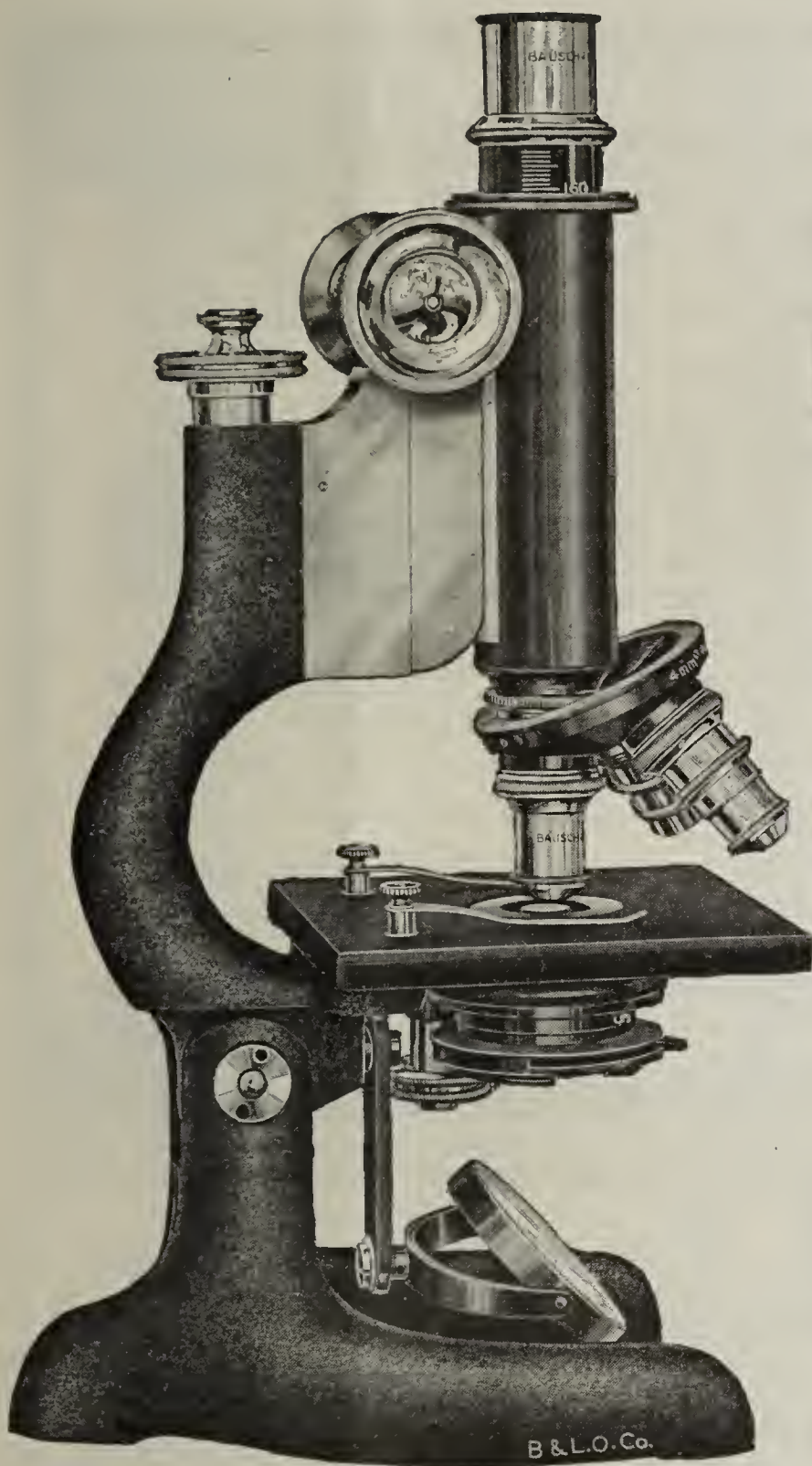
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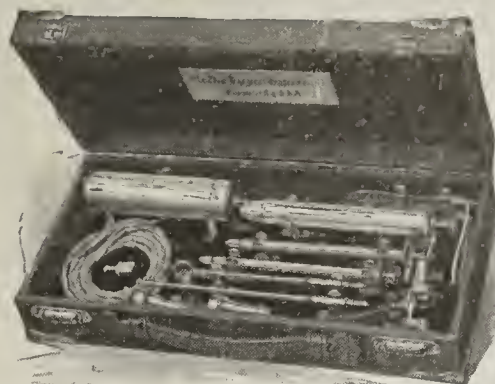
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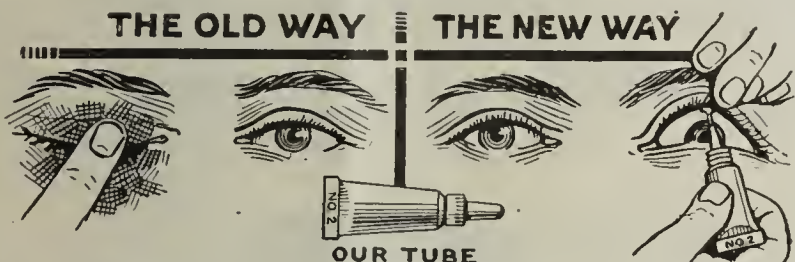
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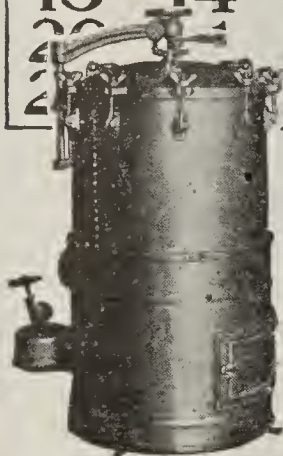
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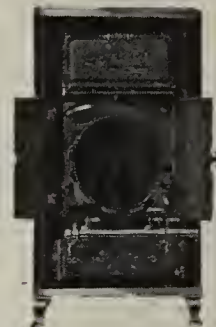
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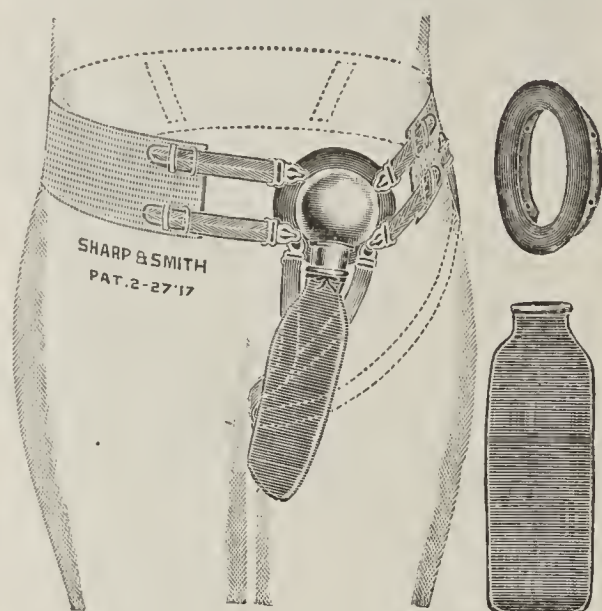
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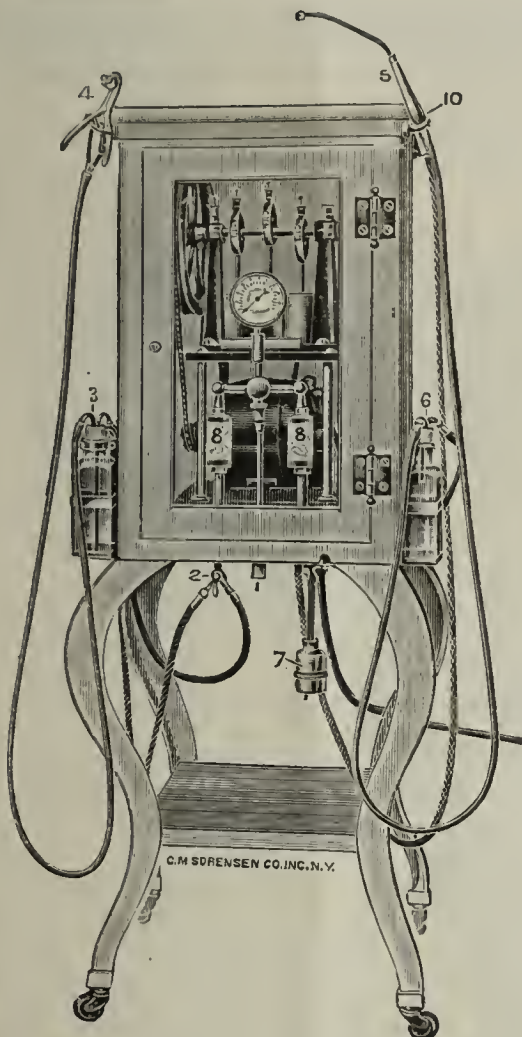


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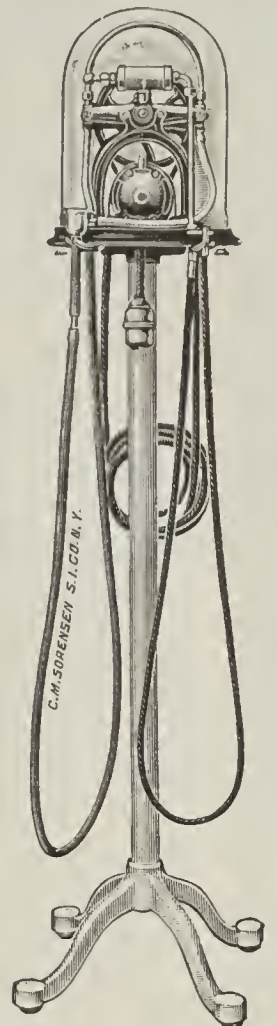
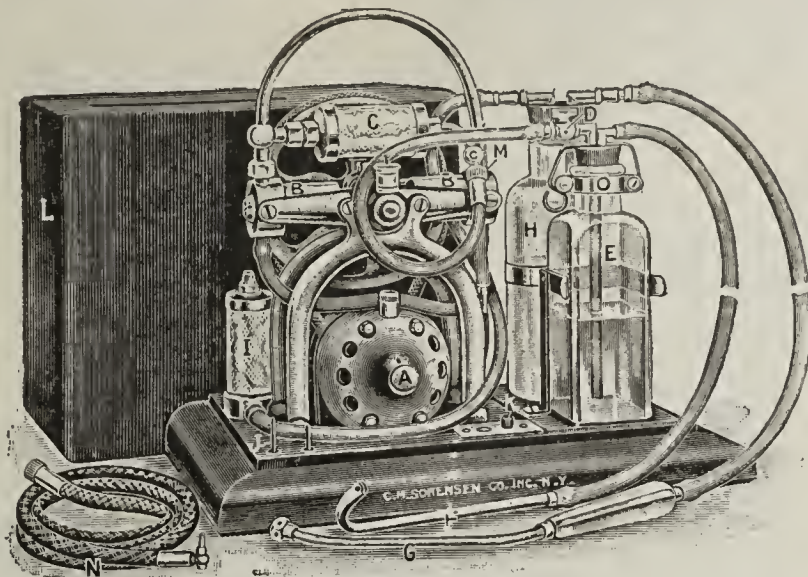
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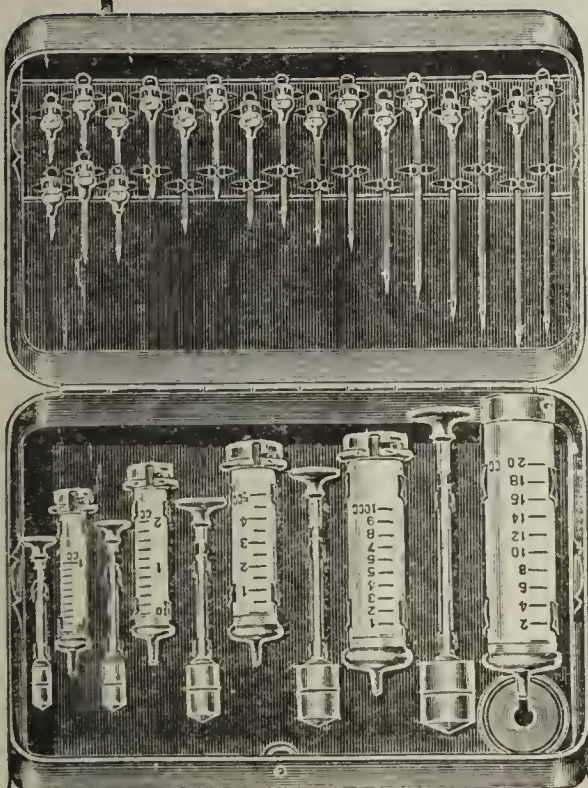
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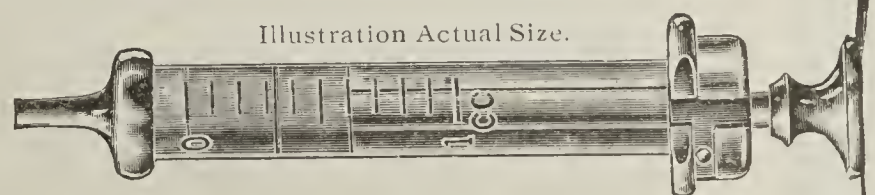


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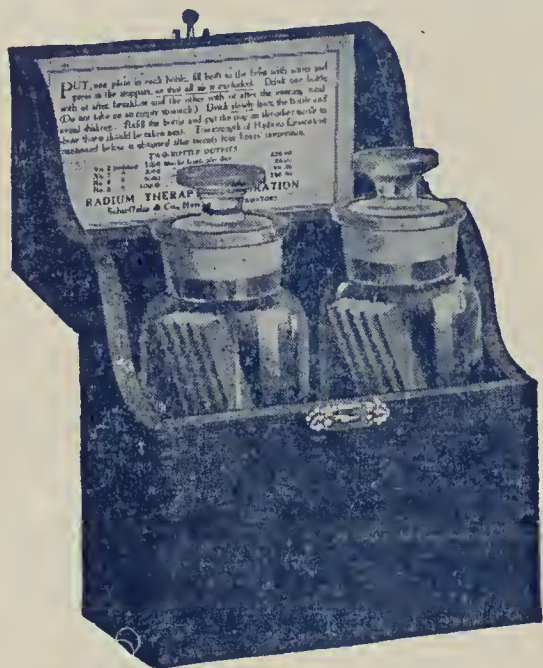
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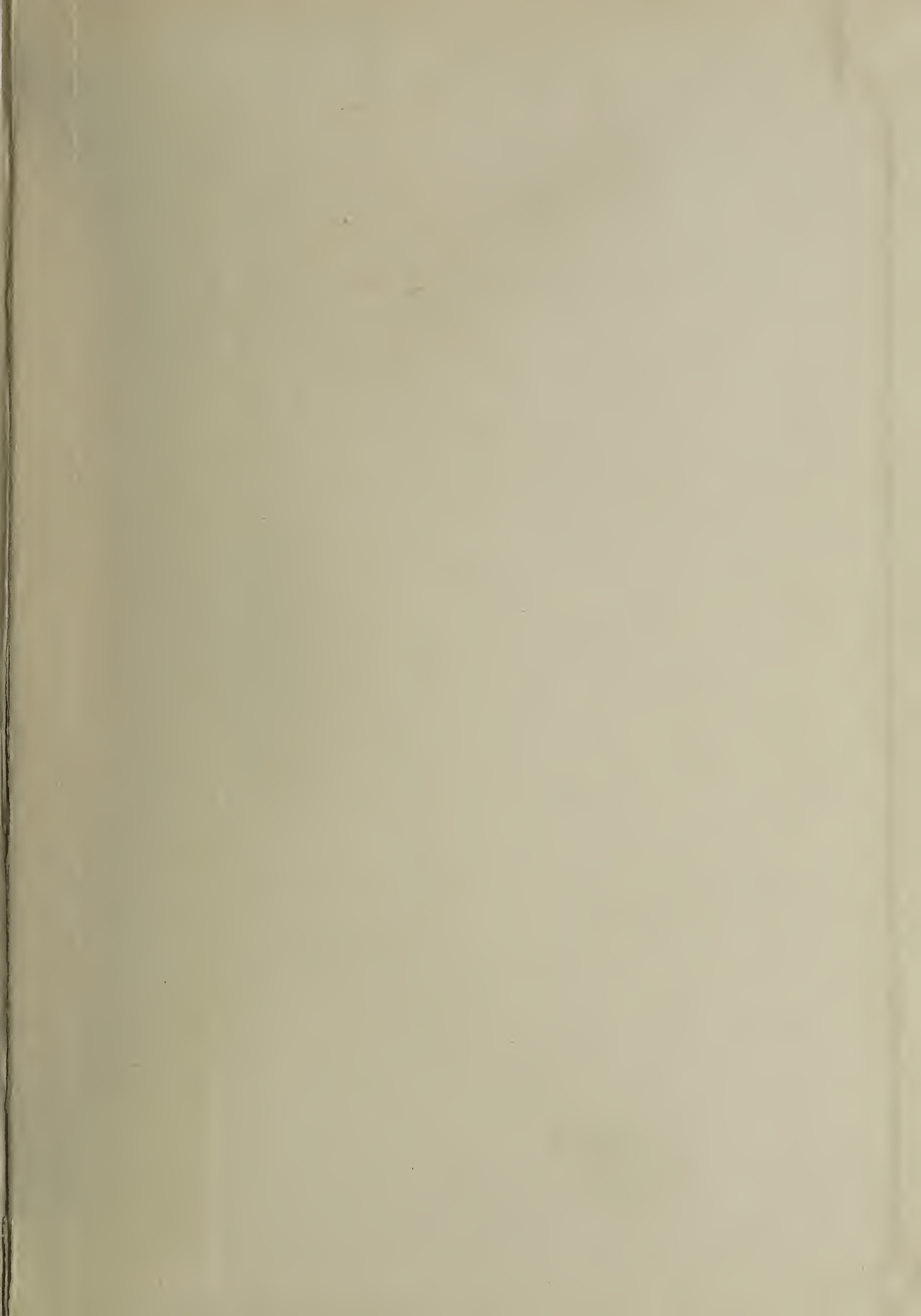
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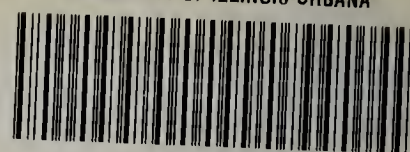
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